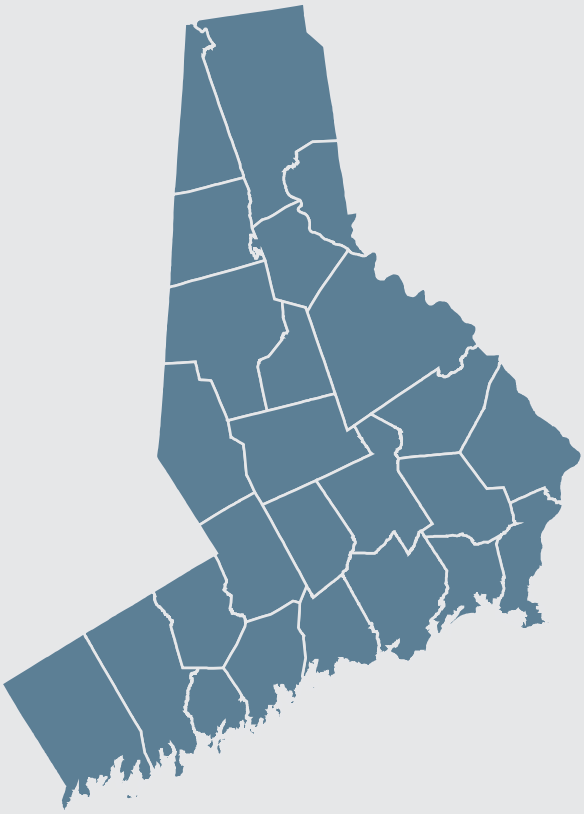
Southwest CT Climate Action Plan

Comprehensive Climate Action Plan for Bridgeport-Norwalk-Stamford Metropolitan Statistical Area



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METROCOG

WESTCOG

NVCOG

Weston & Sampson℠

Southwest CT Climate Action Plan

EPA

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Bridgeport, CT. Photo by MetroCOG.

Executive Summary

A Plan for reducing greenhouse gases (GHG) at the local level. Developed under the Inflation Reduction Act, the United States Environmental Protection Agency (US EPA)'s Climate Pollution Reduction Grant (CPRG) program provides funding to state and local governments, tribes and territories, and local planning groups to develop ambitious plans for reducing greenhouse gas emissions and other harmful air pollution. The goal of the CPRG program is to fund emissions reduction measures that will reduce the effects of climate change across the country—and at all levels of government.

Developed through the COGs with local, state, and federal partners. The greenhouse gas reductions measures included in this plan were developed through active involvement by:

- MetroCOG
- WestCOG
- NVCOG
- Weston & Sampson
- State of CT
- Municipal Staff
- Regional Stakeholders
- Community Groups
- The Public

Pressing climate driven natural hazards warrant proactive action. Climate action in Southwestern Connecticut is imperative to mitigate significant impacts of climate change, improve long-term sustainability, and preserve the region for future generations. This Climate Action Plan identifies actions in the transportation, buildings, electric power, waste management, and agriculture and environmental protection sectors. While these actions may not achieve complete carbon neutrality on their own, they represent major initial strides towards reaching overarching climate action objectives.

What is in this plan? The Comprehensive Climate Action Plan (CCAP) builds upon the previously developed Priority Climate Action Plan (PCAP) to create a comprehensive emissions inventory and develop long term emissions reduction measures that include a holistic benefits evaluation, workforce development analysis, and implementation guidance. The following document encompasses the CCAP for all stakeholders in the Southwest Connecticut region.

Action today will shape outcomes for generations to come. The measures in this plan can only happen with the support and commitment from the community to take action. "Sustainability" and "climate action" are not just buzz words; they are principles that embody our collective commitment to a better future and will pave the way for a cleaner, greener, and healthier region.

GHG Reduction Measures

The measures in this plan focus on the most significant GHG reductions possible, while considering other regional planning goals (Table 1). The reduction measures span the following sectors:

1. Transportation
2. Buildings
3. Electric Power
4. Waste
5. Agriculture and Environmental Protection

Note: Industry was considered in the GHG emissions inventory analysis; however, it was ultimately excluded from the focus areas due to the limited ability of local or regional efforts to significantly influence emissions in this sector. The state's forthcoming CCAP will consider areas for impact in the industry sector in Connecticut.

Table 1 Comprehensive Climate Action Plan - GHG Reduction Measures

TRANSPORTATION		
1	MEASURE	SUBMEASURE
A	**MODE SHIFT:** ensure transportation planning prioritizes safe, car-alternative mobility; Strengthen public transit infrastructure, service, and operations.	i. **Complete Streets** Policy/Planning, and projects
		ii. **Transportation Demand Management** (TDM) programs
		iii. **Mixed-Use/Transit-Oriented Development** (TOD) land use incentives
		iv. **Public Transit** Planning/technical support
B	**CLEAN MOBILITY:** support the transition to net-zero vehicles, infrastructure; Leverage ITS technologies to reduce emissions.	i. Advocate for **EV legislation** (affordability, accessibility)
		ii. **Fleet/infrastructure planning** (evaluate gaps in facilities/resources to develop a transition plan)
		iii. Research and support for **Intelligent Transportation Systems** (ITS) across road and transit projects
BUILDINGS		
2	MEASURE	SUBMEASURE
A	**WEATHERIZE BUILDING ENVELOPES:** address health & safety barriers (e.g. mold, asbestos); seal and insulate	i. Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs (e.g. REPs, WAP)

	buildings to reduce energy demand.	
B	**DECARBONIZE BUILDING SYSTEMS:** retrofit mechanical, electrical, and environmental systems.	i. Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs (e.g. C&LM, heat pumps)
C	**NET-ZERO READY NEW CONSTRUCTION:** apply energy-saving requirements for new/renovated buildings.	i. Advocate to update state **building codes**
		ii. Encourage/enable **energy use reporting**
		iii. **Technical assistance for zoning** code minimum energy standards
ELECTRIC POWER		
3	**MEASURE**	**SUBMEASURE**
A	**RENEWABLE ENERGY GENERATION & STORAGE:** deploy community solar, energy storage, microgrid, geothermal, and other renewable energy projects.	i. Provide **technical assistance/resources** from planning through construction (e.g. models, best practices)
		ii. Maximize state **funding opportunities** for renewables
B	**COMMUNITY CHOICE AGGREGATION:** support projects allowing municipalities to collectively purchase electricity from a supplier of their choice.	i. Assist municipalities in **adopting local resolutions** in support of HB5945.
WASTE		
4	**MEASURE**	**SUBMEASURE**
A	**WASTE DIVERSION:** expand materials management, waste diversion (e.g. food scraps), and waste processing programs.	i. Advocate for **waste reduction legislation** (e.g. Extended Producer Responsibility, Unit-Based Pricing)
		ii. Provide **technical assistance for regional waste management practices** (e.g. Regional Waste Authority, analysis of infrastructure/systems)
		iii. Assist with **applying for/implementing state waste funding programs** (e.g. Comprehensive Materials Management Strategy), food waste diversion sites/programs

AGRICULTURE & ENVIRONMENTAL PROTECTION		
5	MEASURE	SUBMEASURE
A	**SUSTAINABLE DEVELOPMENT & AGRICULTURE:** leverage nature-based strategies to sequester atmospheric carbon and reduce emissions from land development and agricultural practices.	i. Support **low impact development across plans and projects**, which incorporate CO2 removal (e.g. urban greening, green infrastructure, tree planting).
		ii. Support **conservation across plans and projects** (e.g. protecting forests and wetlands)
		iii. Support **agriculture practices that reduce emissions** from farm operations and improve long-term farm viability
B	**RESILIENCE HUBS:** public-serving facilities to provide climate action education, information/resources, and services.	i. Provide **technical assistance for organizations** implementing community resilience hubs

Norwalk, CT. Photo by WestCOG.

Background

Climate Pollution Reduction Grant

The EPA's CPRG program is designed to provide $5 billion to aid in the development of "ambitious plans for reducing greenhouse gas emissions and other harmful air pollution."[1] Developed under the Inflation Reduction Act, the CPRG program is a lever aimed at reducing the effects of climate change across the country, and at all levels of government awarding grants to States, local government, tribes and territories, and other local planning groups.

The grant is divided into two overlapping phases, approximately $250 million in non-competitive planning grants and approximately $4.6 billion in competitive implementation grants. During the first phase, states, large metro areas, tribes and territories received $1 to $3 million each to develop climate actions plans that identify sources of emissions and propose reduction measures. The program requires two plans: the Priority Climate Action Plan and the Comprehensive Climate Action Plan. During the second phase, EPA awarded competitive implementation grants in the summer of 2024 to fund reduction measures identified in the plans.

Priority Climate Action Plan

The PCAP is a first cut of measurable, high impact, and implementable climate actions which served as the foundation for applications in the CPRG Implementation Grant Program funding (Phase 2). The planning efforts and content of the PCAP fed directly into the development of the CCAP.

The PCAP includes a greenhouse gas (GHG) inventory, reduction measures, a review of the authority to implement, list of complimentary funding sources, a preliminary workforce planning analysis, and a Low Income/Disadvantaged Communities (LIDAC) benefits analysis.

The PCAP was submitted to the US EPA on March 1, 2024. The PCAP is available at the following link: https://ctmetro.s3.amazonaws.com/CPRG/SWCT_PCAP_2024-03-01_Final.pdf

Comprehensive Climate Action Plan

The CCAP is the fully formed climate action plan which is more encompassing and reflects the climate actions for all stakeholders in the Southwest Connecticut region. The development of the CCAP is an extension of the PCAP, but is an expanded collection of climate actions, stakeholder engagement, GHG inventory, GHG estimations, and cost benefit analyses for the entire region.

[1] Climate Pollution Reduction Grants | US EPA

The CCAP is comprised of the following sections:

- Background
- Approach
- Chapter 1 - Transportation
- Chapter 2 - Buildings
- Chapter 3 - Electric Power
- Chapter 4 - Waste
- Chapter 5 - Agriculture & Environmental Protection

Planning Grant Area

The CPRG planning grant awarded to encompass the Bridgeport-Stamford-Norwalk Metropolitan Statistical Area (MSA) is led by the Connecticut Metropolitan Council of Governments (MetroCOG) and supported by the Western Connecticut Council of Governments (WestCOG), hereafter "planning grant leads." As two of the nine planning regions within the State of Connecticut, the pair covers the Bridgeport-Stamford-Norwalk MSA, more commonly Fairfield County, as the focus of the Priority and Comprehensive Climate Action Plans.

The MetroCOG Region is about 50 miles east of New York City and 150 miles west of Boston, Massachusetts. MetroCOG consists of six municipalities, the City of Bridgeport and the Towns of Easton, Fairfield, Monroe, Stratford, and Trumbull. Bridgeport, Fairfield, and Stratford are coastal communities, situated along Long Island Sound, while Easton, Monroe and Trumbull are inland communities. All six of these municipalities are represented within the Priority and Comprehensive Climate Action Plans.

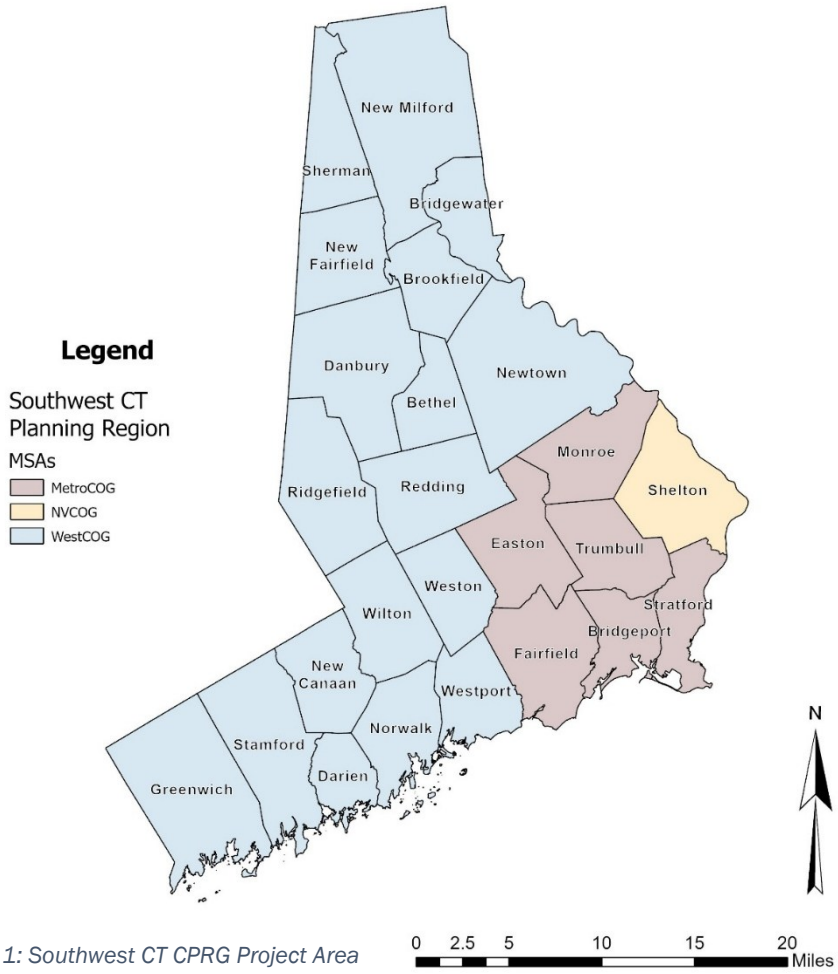

Figure 1: Southwest CT CPRG Project Area

The MetroCOG region is a densely populated area with the State of Connecticut's largest community, the City of Bridgeport, at its urban core. The region's population of over 325,000 people living within a planning area of 145-square-miles makes MetroCOG the most densely populated planning region in Connecticut.[2] MetroCOG's coastal communities are more developed, while its inland communities are more rural.

The Western Connecticut, WestCOG, region encompasses the eighteen municipalities in southwestern Connecticut, including Bethel, Bridgewater, Brookfield, Danbury, Darien, Greenwich, New Canaan, New Fairfield, New Milford, Newtown, Norwalk, Redding, Ridgefield, Sherman, Stamford, Weston, Westport, and Wilton. It falls within the greater metropolitan area of New York City and encompasses an area of 532-square-miles with a population of over 610,000 residents.[3] The WestCOG region has both rural and developed suburban communities, spanning both coastline and forested areas bordering the vast state of New York.

Two of the WestCOG municipalities fall outside the MSA boundary. Bridgewater and New Milford were considered in the scope of this planning process. Also, although the town of Shelton is within the Naugatuck Valley Council of Governments (NVCOG) planning region, it is within the MSA border and is included in this plan's scope.

Bridgeport-Stamford-Danbury MSA - Demographics

Based on the ACS 2023 5-Year estimate tables, the median age for the Bridgeport-Stamford-Danbury MSA (41.0) is slightly younger compared to statewide (41.2). The median household income in the MSA is higher ($111,656) compared to statewide ($93,760), as is the unemployment rate (6.1 percent in the MSA compared to 5.6 percent statewide).

The Planning Area for this plan encompassing the Bridgeport Stamford-Danbury MSA and the towns of Bridgewater and New Milford have a total population of 988,930. The population is about 63 percent White, 11 percent Black or African American, 5 percent Asian, and 17 percent Hispanic or Latino. For a comparison of the state and planning area demographics please refer to Table 2.

[2] Governance | MetroCOG
[3] Adopted POCD, 2020-2030 | WestCOG

Table 2: 2023 ACS 5-Year Estimates Demographics Planning Area vs. Connecticut

Total Population	Plan Area		Connecticut	
	988,930		3,598,348	
ACS 2023 – 5-Year Estimates	Pop.	%	Pop.	%
White alone	620,723	63%	2,431,342	68%
Black or African American alone	107,850	11%	384,753	11%
American Indian and Alaska Native alone	3,324	0.3%	9,569	0.3
Asian alone	54,118	5%	170,954	5%
Native Hawaiian and Other Pacific Islander alone	477	0.05	1,806	0.1%
Some Other Race alone	95,575	10%	256,744	7%
Two or More Races:	106,863	11%	343,180	10%
Two races including Some Other Race	77,770	8%	211,625	6%
Two races excl. some Other Race & three or more races	29,093	3%	131,555	4%
Hispanic or Latino	213,806	22%	640,668	17%

Connecticut - Statewide Climate Action

The State of Connecticut has been proactive in planning for future climate change and working toward reducing GHG emissions. Alongside all regional and municipal planning efforts, the state has also set up climate focused groups and initiatives that are aiding municipalities and residents in climate action related efforts. Some of the notable groups and initiatives being led statewide include the following:

GreenerGovCT

GreenerGovCT a Lead by Example initiative, established in 2019 was responsible for the very first set climate action goals for Connecticut state agencies to follow.[4] These ambitious GHG reduction measures and sustainability focused goals were formed as such for state agencies and local governments to conduct and reduce GHG emissions in their own respective governing areas, while also enabling interagency coordination and model initiatives for others to take climate change action.

Governor's Council on Climate Change

Originally established in 2015 and reestablished in 2019, the Governor's Council on Climate Change (GC3) includes members from state agencies, quasi-public agencies, businesses, local governments, and nonprofits.[5] The Council is tasked with monitoring and reporting on reduction

[4] GreenerGov | State of Connecticut
[5] GC3 | Connecticut Department of Energy and Environmental Protection

strategies originally set forth in their inaugural report and to developing and implementing further adaptation strategies to assess and prepare for climate change impacts.

In 2021, Connecticut Executive Order No. 21-3[6] built upon the original list of recommendations from the GC3 and called for an additional 23 measures that direct significant action be taken by state agencies to reduce carbon emissions. With a goal of 45 percent reduction in CO_2 levels by 2030, GC3 calls on industries, regions, and towns to further this possibility through enabling their own climate actions.

Recent Legislation

In 2025, Connecticut passed key pieces of legislation: P.A. 25-173[7] *An Act Concerning Energy Affordability, Access, and Accountability* and P.A. 25-125[8] *An Act Concerning the Protection of the Environment and the Development of Renewable Energy Sources and Associated Job Sectors.* Together, these acts respond to the climate crisis by:

- Updating the Global Warming Solutions Act to make Connecticut's greenhouse gas emissions targets more in line with other states in the region;
- Creating incentives for businesses that engage in clean economy sectors or employ environmentally sustainable practices;
- Developing plans for transitioning to a clean economy, including workforce training and long-term policy implementation;
- Supporting nature-based solutions, such as preserving marshlands and forests.

DEEP Climate Resilience Fund

Established through CT Executive Order 21-3 and actioned by Connecticut Department of Energy and Environmental Protection (DEEP), the DEEP Climate Resilience fund provides communities with grants for projects directly related to helping the community become more resilient.[9] The grant covers a variety of topic areas within the planning and project development phases.

Connecticut - Additional CPRG Plans in the State

There are three additional CPRG grantees in Connecticut and one planning region grouped within a Massachusetts plan. The CPRG grantees in Connecticut and their scopes are as follows:

- A Statewide plan led by CTDEEP

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[6] Executive Order 21-3 | Connecticut State Climate Action
[7] Public Act No. 25-173 | State of Connecticut
[8] Public Act No. 25-125 | State of Connecticut
[9] DEEP Climate Resilience Fund | Connecticut State Climate Action

- A New Haven-Milford MSA plan led by South Central Regional Council of Governments (SCRCOG) supported by the Naugatuck Valley Council of Governments (NVCOG)
- A Hartford-East Hartford-Middletown MSA plan led by Capitol Regional Council of Governments (CRCOG) supported by the Lower Connecticut River Valley Council of Governments (RiverCOG)
- Lastly, Northeastern Connecticut Council of Governments (NECCOG) included within the Worcester MA-CT MSA plan led by the Central Massachusetts Regional Planning Commission (CMRPC).

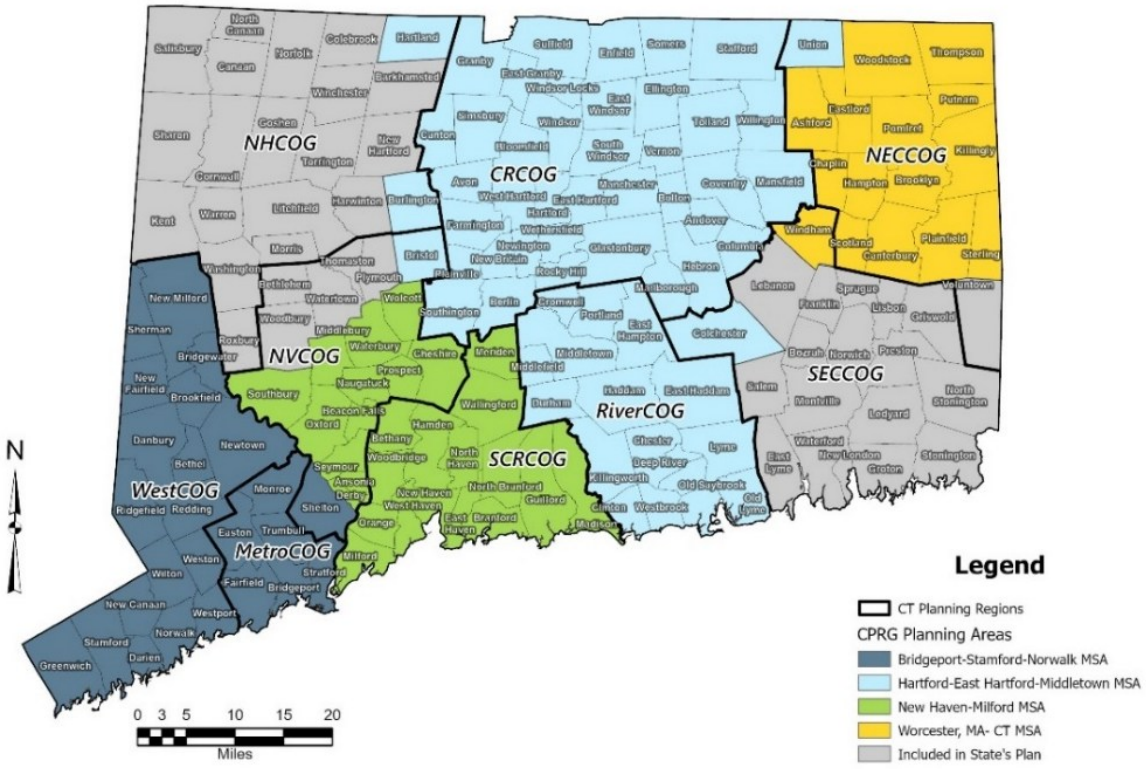

Figure 2: CPRG Planning Areas in Connecticut

Approach

GHG Inventory Methodology

Carbon dioxide, methane, nitrous oxide, and fluorinated gases are considered greenhouse gases (GHGs). Although these gases are also released naturally, human-caused activities (i.e., burning fossil fuels to power buildings, vehicles, etc.) are responsible for significant increases in GHGs in the atmosphere in the last century.[10] Because greenhouse gas emissions trap heat, they greatly contribute to global warming. The rate at which GHG emissions are being produced has accelerated and is leading to long-term shifts in temperatures and weather patterns, resulting in climate impacts such as extreme heat, flooding, and sea level rise.

To understand Southwest Connecticut's contributions to climate change, a baseline greenhouse gas emissions inventory was conducted for the calendar year 2021. This inventory identifies sources of emissions and applies a standardized methodology to quantify these sources in units of million metric tons of carbon dioxide equivalents ($MMTCO_2e$), in accordance with the Quality Assurance Project Plan. The 2021 inventory included in the PCAP used primarily county- and state-level data to determine estimated emissions, whereas this updated 2021 inventory developed for the CCAP prioritized the use of municipal-level data, when available.

Emissions sources are grouped by sector including Buildings (Stationary Energy), Electricity, Transportation, Waste, and Agriculture. Industrial Process emissions were also evaluated but omitted due to lack of MSA specific data.[11] Table 3 and Figure 3 summarize the emissions generated by the Southwest CT region by sector. Emission sources within each sector are summarized in their respective chapters throughout this plan. Refer to the appendix for a detailed summary of the GHG inventory methodology, assumptions, and data sources.

Buildings are the largest source of emissions in the region, accounting for 40 percent of the inventory, followed by transportation (36 percent), as shown in Figure 3. Over half of the building emissions, or about a quarter of the entire inventory, are from natural gas usage and leakages and another 22 percent of emissions are associated with electricity consumption. Waste and agriculture account for only 0.13 $MMTCO_2e$ or two percent of the inventory.

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[10] The Causes of Climate Change | NASA

[11] The industrial processes which are included in CT DEEP's annual GHG inventory were evaluated, and it was determined that activities such as semiconductor manufacturing are not occurring within the MSA and other sources such as soda ash and limestone and dolomite use, could not be accurately downscaled and allocated to the MSA given the wide variety of uses.

Table 3: Total 2021 Greenhouse Gas Emissions Inventory by Sector

Sector	Source Descriptions	Emissions ($MMTCO_2e$)
Buildings (Stationary Energy) 	Residential and commercial/industrial fuel usage (natural gas, fuel oil, propane)	3.23
Electricity 	Residential and commercial/industrial electricity usage, transmission and distribution losses	1.77
Transportation 	Passenger, commercial, and municipal vehicles	2.94
Waste 	Landfilled, incinerated, and composted waste; wastewater	0.12
Agriculture 	Fertilizer and agriculture soils, enteric fermentation, and manure management	<0.01
Industrial Processes	See footnote	N/A
	Total Gross Emissions Total emissions from all activities	8.06
Carbon Sequestration	Forest Carbon Sequestration	-0.70
	Total Net Emissions Total including activities that sequester or remove carbon from the atmosphere	7.36

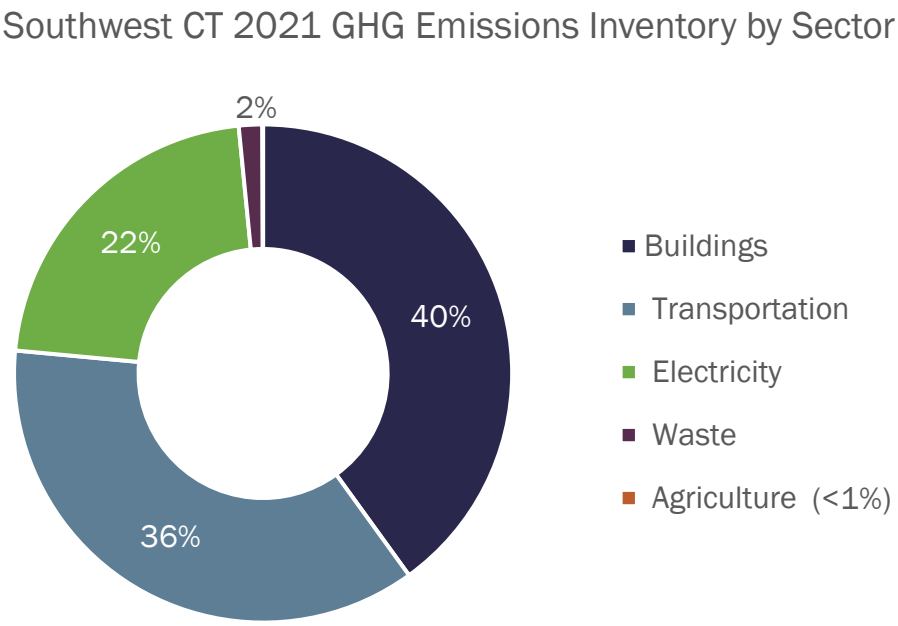

Figure 3: 2021 Greenhouse Gas Emissions Inventory by Sector

Emissions Reduction Targets

In 2009, the *Global Warming Solutions Act (Public Act 08-98)* established GHG reduction targets for the State of Connecticut, including an 80 percent reduction below 2001 emissions levels by 2050. More recently in 2018, *An Act Concerning Climate Change Planning and Resiliency (Public Act 18-82)*, established an emissions reduction of 45 percent below 2001 level by 2030. The state has also committed to a zero-carbon electrical grid by 2040.

Figure 4: State of Connecticut Reduction Targets

To align emissions reduction targets of the region with statewide mandates, the regional 2021 emissions inventory was back cast to estimate emissions levels in 2001 using statewide annual emissions inventories. It is estimated that the region produced about 11.7 $MMTCO_2e$ in 2001.

Figure 5 shows the estimated historical emissions and business-as-usual (BAU) scenario through 2050. The BAU reflects a downward trend in emissions and demonstrates that the region would come close to the 2030 target in around 2039 if no further action was taken than what was assumed in the BAU. The BAU was determined using the Energy Policy Simulator and downscaled to the project area.

To achieve a 45 percent reduction in 2030 from 2001 levels, the region needs to reduce an estimated 5.3 $MMTCO_2e$ and a total of 9.4 $MMTCO_2e$ by 2050 to achieve the 80 percent reduction target. Figure 6 shows the target achievement scenario compared to the reductions expected from the proposed measures and the BAU.

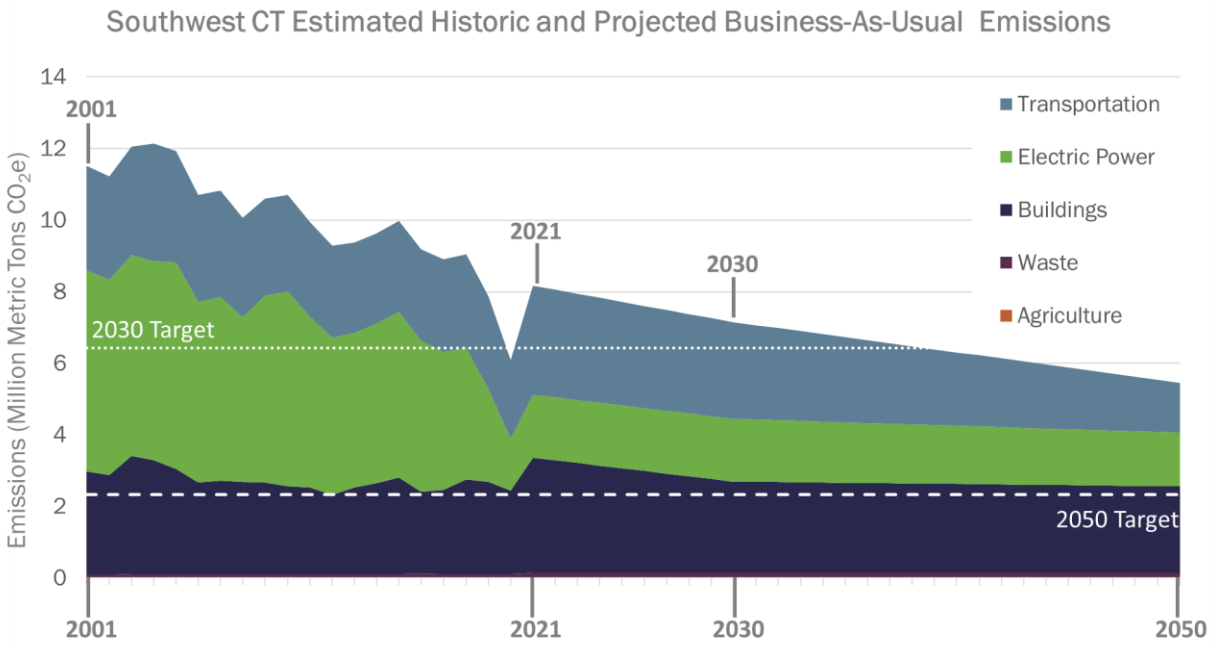

Figure 5: Southwest CT Estimated Historic and Projected Business-As-Usual Emissions

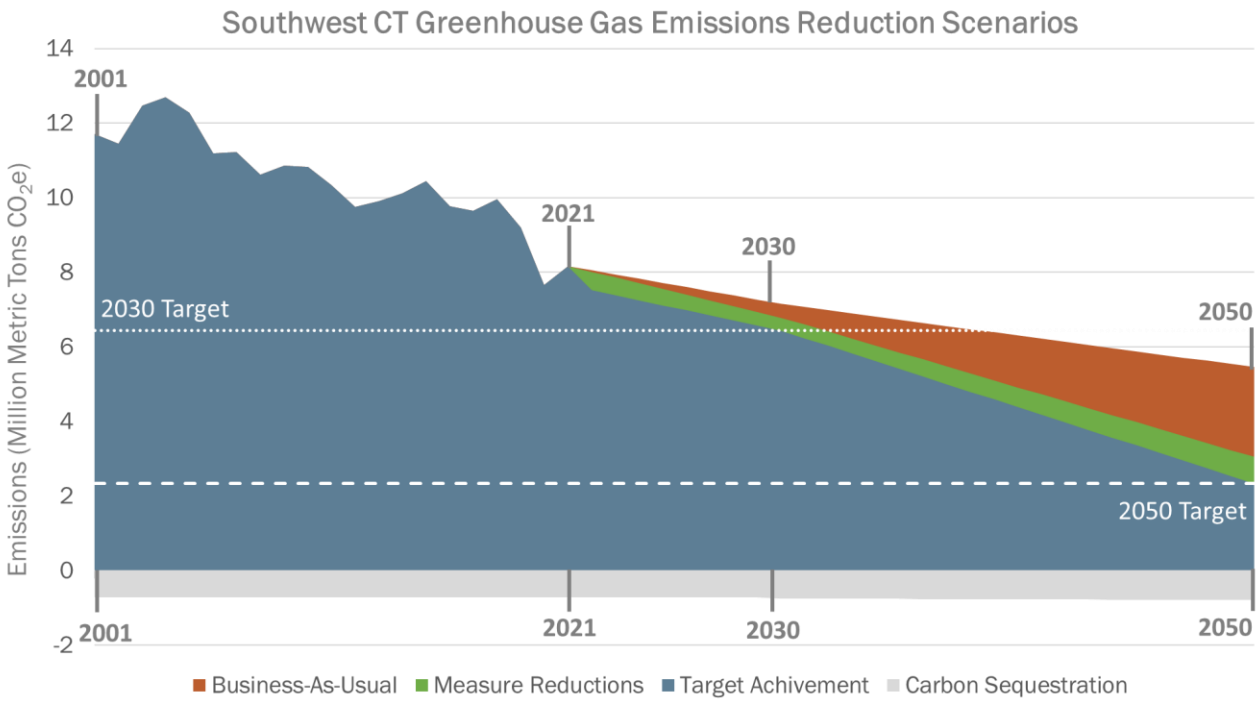

Figure 6: Southwest CT Greenhouse Gas Emissions Reduction Scenarios

When quantifying the proposed measures, data and assumptions were used that reflect a scale of implementation that is likely feasible, considering authority to implement, cost, and funding limitations, rather than what may be technically possible. The proposed measures are also intended to complement measures at the statewide scale and through combined efforts of local, regional, and state governmental organizations, of which greater emission reductions can be achieved to meet the 2030 and 2050 targets.

The impact of statewide action in the region has not been directly included for all measures or sectors in the emissions scenarios and therefore, these are likely undercounting residential and commercial emissions reduction potential. Refer to the appendix for additional information on GHG reduction measure quantification and scenarios.

Co-Pollutant Inventory

A baseline co-pollutants emissions inventory year has been conducted for 2020. To determine an estimate of the Criteria Air Pollutants (CAPs) and Hazardous Air Pollutants (HAPs) emitted, data from the 2020 National Emissions Inventory (NEI) database was analyzed.[12] Quantifying these CAP and HAP sources provide a more holistic picture of the total air pollutants emitted by and consequently impacting the region.

The general methodology for determining the quantity of CAP and HAP emissions consisted of downloading county specific data and allocating a percentage of the co-pollutant emissions based on population. The following sectors were assessed for this inventory, as they relate to the sectors quantified in the GHG inventory methodology:

- Agriculture - Fertilizer Application
- Agriculture - Dust Tilling
- Fuel Comb - Comm/Institutional - Natural Gas
- Fuel Comb - Comm/Institutional - Oil
- Fuel Comb - Industrial Boilers, ICEs - Natural Gas
- Fuel Comb - Industrial Boilers, ICEs - Oil
- Fuel Comb - Residential - Natural Gas
- Fuel Comb - Residential - Oil
- Mobile - Locomotives
- Mobile - Non-Road Equipment - Diesel
- Mobile - Non-Road Equipment - Gasoline
- Mobile - Non-Road Equipment - Other
- Mobile - On-Road Diesel Heavy Duty Vehicles
- Mobile - On-Road Diesel Light Duty Vehicles
- Mobile - On-Road non-Diesel Heavy Duty Vehicles
- Mobile - On-Road non-Diesel Light Duty Vehicles
- Waste Disposal

CAPs emissions estimated as part of this co-pollutants inventory include the following:

- Ammonia
- Carbon Monoxide
- PM10 Primary (Filt + Cond)
- PM2.5 Primary (Filt + Cond)
- Sulfur Dioxide
- Volatile Organic Compounds

Nearly 70 HAPs were included in the inventory.

Table 4: Co-Pollutant Baseline Emissions Inventory for 2020

Criteria Air Pollutants	Hazardous Air Pollutants
71,776 metric tons	1,406 metric tons

[12] 2020 National Emissions Inventory Data | EPA

Forecasting Workforce Needs

The various measures identified in this plan will require a range of workers to fully implement, from entry-level positions to those requiring advanced training. Connecticut is fortunate to have already begun work on identifying critical workforce needs for the green energy sector and related emission-reduction initiatives. According to the Connecticut Department of Labor, market projections predict the Southwest Connecticut Labor Market Area will experience an 8.4 percent increase in the total number of jobs across all industries between 2022 and 2032.[13]

Recent reports indicate positive signs for the state's clean energy sector. The 2024 Connecticut Clean Energy Industry Report, a state-level subset of the U.S. Energy Department's U.S. Energy and Employment Report (USEER), noted significant growth in the state's clean energy workforce, outpacing overall employment growth and reversing previous trends of slower regional progress in the Northeast. The report noted that Connecticut's clean energy employment grew by 3.9 percent between 2022 and 2023, adding over 1,700 jobs and reaching nearly 46,000 total jobs. Over this period, clean energy job growth was nearly three percentage points higher than its share from 2021 to 2022, outpacing the state's overall employment growth of 1.4 percent.[14]

Labor Market Definition

The Connecticut Department of Labor and Connecticut Green Bank also identified ten general occupations that are likely to be critical for implementing clean energy and emission reduction projects. These occupations include:

- Heating, Air Conditioning, Refrigeration Mechanics and Installers
- General and Operations Managers
- Construction Managers
- Bookkeeping, Accounting, and Auditing Clerks
- Engineers
- Sales Representatives
- Construction Laborers
- Electricians
- Insulation Workers, Floor, Ceiling and Wall
- Solar Photovoltaic Installers

Future clean energy technologies are difficult to predict, making projections challenging. However, the ten "CT Green Bank Career Profiles" listed above represent a likely cross-section of

[13] 2022-2032 State of Connecticut Occupational Projections | CT Department of Labor
[14] 2024 Connecticut Clean Energy Industry Report | EnergizeCT

the varied skills and tasks needed by the workforce to successfully implement the identified CCAP measures.[15]

The Bridgeport-Stamford-Danbury Labor Market Area (LMA) is largely coterminous with the CPRG planning area, apart from the City of Shelton. The LMA consists of 23 municipalities shown in Figure 7. The City of Shelton's workforce projections are included in the Comprehensive Climate Action Plan for New Haven County.

Figure 7: Connecticut Labor Market Areas (CT DOL)

Key Industries and Priority Occupations

In 2020, the Connecticut Department of Labor's Office of Workforce Competitiveness published a dataset outlining opportunities in the State's green technology sector. This data, colloquially referred to as the "Connecticut Green Jobs Career Lattices" was intended to link employers in the green jobs sector with technical education and career schools and institutions of higher education to foster coordination and grow the workforce in the green technology sector. [16]

The dataset covers nine sectors that directly or indirectly include many of the workforce sectors necessary to implement the CCAP measures, including:

- Agricultural and Forestry
- Energy Efficiency and Storage

[15] Connecticut Green Bank Career Profiles | CT Department of Labor
[16] Connecticut Green Jobs Career Lattices | CT Department of Labor

- Environmental Protection and Waste Reduction
- Government and Regulatory Administration
- Green Construction
- Manufacturing
- Renewable Energy Generation
- Research, Design, Consulting and Support Services
- Transportation

Within these broad sectors, a subset of over 130 occupations were identified, ranging from entry-level positions to those requiring advanced training. For this CCAP workforce analysis, selected occupations from Green Jobs Career Lattice were then identified, specifically focusing on the particular measures in this CCAP, listed in Table A1 in the appendix.

CCAP Engagement & Outreach

Engaging community stakeholders was a vital step for developing this plan and its proposed reduction measures. The engagement strategy for the CCAP consisted of three tiers: State and COG coordination, Municipal Engagement, and Public and Stakeholder Engagement.

State and COG Coordination

Following the submission of the PCAP, State and COG coordination occurred monthly throughout the development of the CCAP, with additional meetings scheduled as needed to discuss specific topics. Active participants included staff from WestCOG, MetroCOG, NVCOG, CRCOG, NHCOG, SCRCOG, RiverCOG, and SCCOG. Participants routinely discussed their emerging priorities and shared their ideas. The CTDEEP held regular coordination calls.

MetroCOG and WestCOG collaborated with CPRG grantees throughout the state to plan and execute the ColleCTive Climate Action Forum held at Connecticut Community College Middlesex in Middletown, Connecticut on October 23, 2024. The Collective Climate Action Forum was intended to bring together sector experts from across the state to help refine the eventual strategies in the regional climate action plans. The event was organized by some of the major emission sectors, along with strategies to reduce emissions. Within each sector, participants reviewed and amended proposed measures, prioritized actions, identified the authority to implement, highlighted workforce needs, and outlined current implementation obstacles.

A summary of findings from the stakeholder summit can be found at the following link: https://sustainablect.org/fileadmin/Random_PDF_Files/Other/ColleCTive_Climate_Action_Forum_Final_Report_FINAL.pdf

Municipal Engagement

Building on the eight municipal meetings held in December 2023 and January 2024 in preparation of the PCAP, a municipal feedback session focused on the CCAP was held both virtually and in-person at the MetroCOG office on June 11, 2025. Chief Elected Officials, municipal staff, and key stakeholders from across the MSA were first presented with a summary of the emissions inventory and the plan measures, then were invited to provide amendments. Municipalities in the region shared the following feedback on the CCAP measures:

Transportation

- Ensure that sufficient electric grid infrastructure is in place to properly support measures involving an increase in the share of electric vehicles and charging facilities in the MSA.
- Clarify "mobility" to be "vehicles and systems."
- Include micromobility in the electric vehicle measure.

Buildings

- There is a need for better incentives and regulations to push landlords to upgrade their buildings.
- Many residents need more targeted outreach and easier language to improve accessibility to and understanding of residential building programs.
- Asbestos, lead, and other barriers must be addressed first to allow for basic weatherization to be conducted.
- A significant amount of housing in the region was built before 1960 and requires a holistic approach to installing efficient energy systems.
- Municipalities need more staff and technical assistance to advise on facility upgrades.
- Measures should include zoning code standards with incentives that encourage more environmentally friendly new build construction.

Electric Power

- Cost and workforce development are hurdles in implementing the current measures.
- Measures are generally beyond municipal control, but utilities want to work with and assist municipalities in their clean energy transition.

Agriculture and Environmental Protection

- Emphasize that the carbon sequestration value of old-growth forests is much higher than new plantings.
- Measures should serve to support local agricultural producers in the region.

Public & Stakeholder Engagement

Climate Action Plan Survey

A public survey was launched on April 1, 2025, and was open to all community members throughout the region until June 12, 2025. The survey included 38 ranking, multiple choice, and open-ended questions which considered participant demographics, opinion on incentive programs, perception on GHG reduction measure effectiveness, and allowed them to provide any additional comments.

The survey received a total of 215 responses, with 205 respondents taking the resident survey and 10 respondents taking the business survey. There were 24 municipalities within the MSA represented among the responses.

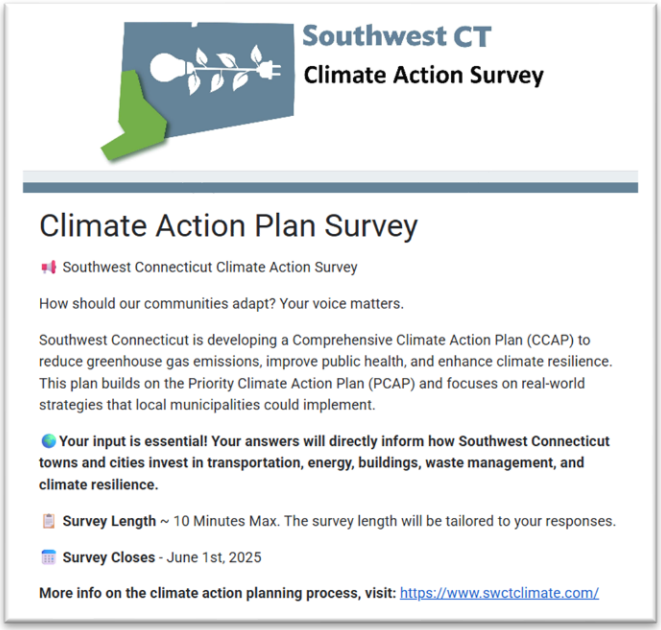

Figure 8: Southwest Connecticut Comprehensive Climate Action Plan (CCAP) Survey

Resident Survey

Longtime residents of the MSA for over 20 years made up the majority of respondents at 56.4 percent, 8.3 percent have resided in the region for 16-20 years, 8.8 percent for 11-15 years, residents of the region for 6-10 and 1-5 years made up 12.7 percent of respondents each, and newcomers living in the MSA for less than a year comprised 1 percent. A plurality, at 41.5 percent of respondents, reported being able to easily cover their expenses and had disposable income for improvements while a further 33 percent could meet their expenses but had limited funds available for additional spending. 82.4 percent of respondents were homeowners, while 17.6 percent were renters. Of the renters, a slim majority of 54.3 percent responded that their building operations were handled by a management company.

Business Survey

Of the business respondents, 50 percent employed more than 50 employees, 10 percent employed between 25-50 people, while businesses comprising between 5-25 and fewer than 5 employees made up 20 percent of respondents each. The survey also found that 88.9 percent of business respondents owned their commercial space while 11.1 percent rented. Additionally, 62.5 percent of business respondents reported training their employees in sustainability.

Taking Action…Fairfield County Workshops

The *Taking Action…Fairfield County* workshop series was hosted by MetroCOG and WestCOG on July 14th, July 15th, July 16th in-person at Sacred Heart University in Fairfield, CT, and virtually on July 23rd. The workshops invited industry experts to present about emerging best practices, available funding opportunities, tools, and guidance for municipalities, organizations, and residents to implement and take action on illustrative projects included in the CCAP. The four workshops in the series focused on:

Taking Action…to Reduce Waste. The "Taking Action… to Reduce Waste" workshop revolved around innovative food waste diversion and waste management programs run by regional waste authorities, municipalities, community organizations, and private operators in Fairfield County. The workshop consisted of four 15-minute presentations followed by a panel-style Q&A. Presenters included:

- Housatonic Resources Recovery Authority
- Town of Fairfield Public Schools Green Team
- City of Stamford Recycling and Sanitation Department
- Park City Compost

Taking Action…to Enable Clean Mobility. The "Taking Action… to Enable Clean Mobility" workshop focused on local initiatives within the transportation sector that serve to reduce emissions and enhance the quality of infrastructure and systems. The workshop was split into three distinct sessions concerning mode shift, green infrastructure, and clean vehicles, which consisted of four 15-minute presentations followed by a panel-style Q&A. Presenters included:

- Town of Fairfield Engineering Department
- City of Stamford Transportation, Traffic, and Parking Department
- City of New Haven Engineering Department
- CT Rides
- City of Bridgeport Sustainability Manager
- UCONN CLEAR
- Yale School of the Environment
- Save the Sound
- WestCOG
- CTDOT

- CT Green Bank
- Clean Transportation Coalition

Taking Action…to Decarbonize Buildings. The "Taking Action… to Decarbonize Buildings" workshop served to inform municipalities, organizations, businesses, and residents on the programs, financing, and technical support available to help transition their buildings towards cleaner and more efficient envelopes and systems. The workshop consisted of half-hour presentations, each followed by a dedicated Q&A. Presenters included:

- Connecticut Green Bank
- Avangrid – Energize CT

Community Choice Aggregation 101. The "*Community Choice Aggregation 101"* workshop invited Peter Millman of the People's Action for Clean Energy (PACE) to provide a comprehensive overview of the community choice aggregation including background on the practice, the development of relevant enabling legislation, and potential impacts and actions that municipalities can take in anticipation.

Figure 9: Taking Action…Fairfield County Public Outreach Flyer (Buildings Sector)

To access the workshop materials and recordings, visit

https://www.swctclimate.com/

Chapter 1 - Transportation

In Fairfield County, decades of zoning policies favoring suburban development reinforced auto-centric growth. This lower-density development pattern disperses daily destinations beyond the reach of walking or cycling and limits access to jobs and services via public transit.[17] As a result, driving is the default travel mode across the county. Strategies aimed at reducing miles driven, decreasing the number of vehicles on roadways, and transitioning to electric vehicles (EVs) can significantly reduce greenhouse gas emissions.

Passenger vehicles make up 80 percent of vehicle emissions and nearly 30 percent of total inventory emissions (Figure 10). Electric vehicle adoption is on the rise, but barriers still exist to having access to EV charging at home. The survey revealed that 47 percent of respondents felt that reliance of a public charger would disincentivize them to drive an EV. Of the respondents that already have an EV, 85 percent reported their home as their primary charging location. Some barriers that prevent people from installing EV charging infrastructure at their homes include street parking, building ownership, cost, or service upgrades needed.

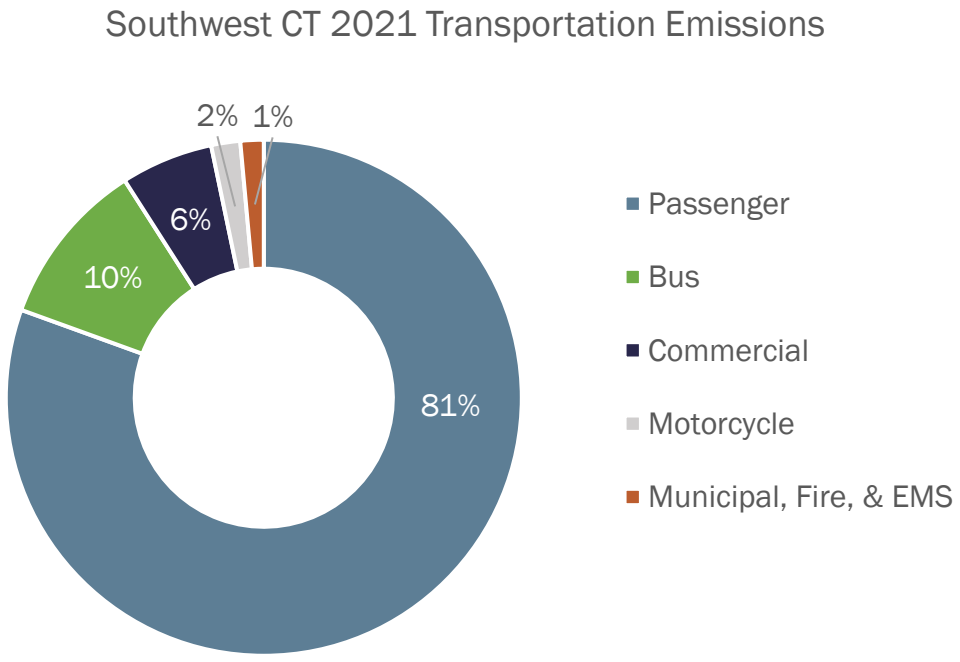

Figure 10: Transportation Sector Emissions in MTCO2e

[17] 100-Year History in Connecticut | Regional Plan Association

Proposed Reduction Measures

Our reliance on single occupancy vehicle travel is exacerbating air pollution, greenhouse gas emissions, and urban sprawl. If the infrastructure we build continues to prioritize car travel over mobility and transit access, the development of sustainable transportation alternatives will remain out of reach.

As car travel continues to be the primary mode of transportation in the county, transitioning to net-zero vehicles through strategic investments in clean fuel technologies, electric vehicles, and charging infrastructure is essential for reducing emissions.

This plan proposes two high-impact measures for lowering emissions to meet the reduction targets in the Transportation sector: A) Mode Shift, and B) Clean Mobility. The measures and submeasures are summarized in Table 5 and described in the following sections.

Table 5: GHG Reduction Measures - Transportation Sector

TRANSPORTATION		
1	MEASURE	SUBMEASURE
A	**MODE SHIFT:** ensure transportation planning prioritizes safe, car-alternative mobility; strengthen public transit infrastructure, service, and operations.	i. **Complete Streets** Policy/Planning, and projects
		ii. **Transportation Demand Management** (TDM) programs
		iii. **Mixed-Use/Transit-Oriented Development** (TOD) land use incentives
		iv. **Public Transit** Planning/technical support
B	**CLEAN MOBILITY:** support the transition to net-zero vehicles, infrastructure; leverage ITS technologies to reduce emissions.	i. Advocate for **EV legislation** (affordability, accessibility)
		ii. **Fleet/infrastructure planning** (evaluate gaps in facilities/resources to develop a transition plan)
		iii. Research and support for **Intelligent Transportation System** (ITS) across road and transit projects

Transportation Measure Benefits

Cost Benefits

- EV incentives and low-rate charging stations reduce the cost of vehicle ownership by diminishing purchasing and fueling costs.
- Developing safe active mobility supports low-cost transportation options for communities that may not have access to personal vehicles.
- Travel times can be reduced across different modes from improved transportation technologies, infrastructure, and strategies.
- Increasing public transit and active transportation enhances residents' ability to move across the region and connects people to job opportunities, which in turn supports economic growth.
- Expansion of EV infrastructure creates jobs in the utilities and construction industries.
- Retrofitting streets into Complete Streets creates municipal and construction sector jobs.
- Increased foot traffic boosts local business sales and employment.[18]
- Improved non-vehicular infrastructure can result in property value rises for the surrounding area.[19]
- Expanding infrastructure for human centered transportation creates more curb space for greenery, green stormwater infrastructure, outdoor dining, and other environmental and economic development amenities.
- The average cost of owning an automobile in 2024 was $12,296. Limited car use or a car-free lifestyle made possible by Complete Streets improvements can help residents save on those costs.[20]

Climate Resilience

- Adopting electric vehicles that no longer rely on internal combustion engines that produce waste heat as a byproduct can reduce the local urban temperature by 2.5 degrees, reducing urban heat island effects. [21]

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[18] Volker, J. M. B., & Handy, S. (2021). Economic impacts on local businesses of investments in bicycle and pedestrian infrastructure: a review of the evidence.
[19] Welch, T.F., et. al. (2016). Long-term impact of network access to bike facilities and public transit stations on housing sales prices in Portland, Oregon
[20] Average Cost of Owning and Operating an Automobile | US DOT Bureau of Transportation Statistics
[21] Hata, H. et. al. (2025). Impact of introducing electric vehicles on ground-level O3 and PM2.5 in the Greater Tokyo Area: yearly trends and the importance of changes in the urban heat island effect

- Electric vehicles can serve as a backup power source in the event of an outage to power homes to feed electricity back to the grid.

Public Health

- The reduced combustion of gasoline and diesel improves air quality and reduces noise pollution.
- Shifting to a nationwide electric transportation system by 2050 could save approximately 6,300 lives, 93,000 asthma attacks, and 416,000 lost workdays every year.[22]
- Complete Streets and transit-oriented development provide opportunities for safe alternative transportation and recreation. Complete Streets implementation can significantly reduce the amount of roadway fatalities and injuries for all road users. Studies have found that the probability of a pedestrian crash is 1.67 times greater when no sidewalk is present on a roadway.[23]
- Facilitation of safe active transportation promotes increased physical activity, serving to prevent chronic disease, improve mental health outcomes, and foster greater levels of social connection.

Potential Disbenefits

- Electric vehicles are heavier and accelerate faster than gas-powered vehicles, resulting in greater tire wear that releases more heavy metals, microplastics, and other pollutants into the environment. Tires need to be replaced more regularly, resulting in added consumer costs. These concerns can be mitigated through increased mode shift that decreases the total amount of vehicular usage in the region.
- Increased weight and quicker attainment of high speeds make electric vehicles potentially more deadly in collisions with non-vehicular road users. Investment in Complete Streets and roadway safety infrastructure can reduce vehicle speeds and roadway conflicts.
- The transition to electric vehicles can put a strain on the existing electrical transmission and distribution infrastructure, requiring upgrades to the current grid to keep up with EV adoption. Working with utility providers to understand capacity limits and prepare for new charging stations can help create a smooth transition while investments into alternative modes of transportation can reduce the total amount of vehicles reliant on the electrical grid.
- Complete Streets infrastructure projects have the potential to contribute to gentrification as they have been shown to increase the value of neighboring properties. In response,

[22] Benefits to Communities | US Department of Transportation
[23] Abou-Senna, H. et. al. (2022) Investigating the correlation between sidewalks and pedestrian safety

municipalities can employ a variety of strategies aimed at keeping residents in the community and preserving affordable housing.

1A: Mode Shift

The Mode Shift measure is intended to reduce single occupancy vehicle travel by prioritizing safe, car-alternative mobility and strengthening public transit infrastructure, service, and operations. Prioritizing transportation planning and infrastructure investments which embody the principles of Complete Streets, TOD, TDM, and increased use of public transit can transform the Southwestern CT region and yield considerable emissions reductions. The following sub-measures represent key strategies for encouraging mode shift across the region.

1.A.i. Complete Streets: Complete Streets is a transportation policy and design approach that requires streets to be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation. Implementation of Complete Streets projects can deliver GHG reductions along with safety, mobility, and health benefits in a single intervention by redesigning streets to serve all users.

1.A.ii. Transportation Demand Management Programs: TDM programs are strategies designed to reduce reliance on single-occupancy vehicles, decrease traffic congestion, and promote more sustainable transportation choices. These programs can include incentives for carpooling, telecommuting, flexible work hours, bike-sharing, and commuter benefits. TDM measures aim to optimize existing transportation infrastructure while supporting environmental goals and reducing greenhouse gas emissions.

1.A.iii. Mixed-Use/Transit-Oriented Development Land Use Incentives: Mixed-use and TOD land use incentives encourage development that integrates residential, commercial, and recreational uses near transit hubs. These incentives promote compact, walkable communities that reduce vehicle miles traveled, improve access to public transit, and enhance economic vitality. Strategies may include zoning bonuses, density allowances, expedited permitting, or financial incentives to support sustainable, transit-connected development.

1.A.iiii. Public Transit Planning/Technical Support: Public transit planning and technical support involves the development, analysis, and implementation of transit strategies to improve accessibility, efficiency, and sustainability of regional transportation networks. This includes route planning, scheduling optimization, infrastructure upgrades, and coordination with municipalities and transit agencies. Technical support also helps evaluate performance metrics, assess ridership trends, and integrate transit with broader climate and land-use planning goals.

Expected Geographic Location

Mode shift strategies are expected to occur at various scales across the region. The implementation of Complete Streets is expected to occur regionwide at the municipal level, with regional coordination. Projects generally occur at the intersection and corridor scales within

each municipality, while regional plans can help support multi-municipal active transportation networks. Implementation is expected to be regionwide, with a focus on denser areas that are most conducive to walking, biking, and efficient public transportation operations. TDM programs are expected to be implemented regionwide, with higher concentrations around employment hubs that experience higher levels of commuter traffic. TOD is anticipated to occur near train stations and town centers regionwide. Public transit is primarily operated by regional transit authorities which generally operate within more dense service areas, with potential for the expansion of micro-transit into more rural geographies.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Mode Shift measure are summarized in Table 6. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 6: GHG & Co-Pollutant Reductions - Measure 1A (Mode Shift)

EMISSIONS TYPE	2030	2050
GHG	138,867 $MTCO_2e$	277,232 $MTCO_2e$
	Methodology: CTDOT established 2030 vehicle miles traveled (VMT) goals and strategies, including a 5 percent reduction of VMT from the 2019 baseline by 2030. Given that gasoline passenger vehicles are the most common across the MSA, the fuel efficiency for this vehicle type from the 2021 GHG inventory was utilized to calculate the avoided gallons of gasoline from the VMT reduction. A VMT percent reduction of 10 percent was assumed for 2050.	
CO-POLLUTANTS	7,084 MT	11,034 MT
	Methodology: The Federal Highway Administration CMAQ Emissions Calculator Toolkit for Bicycle, Pedestrian, and Shared Micromobility was used to determine co-pollutant emissions reductions from replacing vehicle trips with walking and biking trips. It was assumed that of the VMT reduced, 2 percent and 5 percent would be replaced by walking or biking by 2030 and 2050, respectively.	

Cost

The Mode Shift Measure is expected to cost $93,624,080 (2025 dollars) and with inflation by 2050 the projected cost would be $150,968,829. Average costs from example Complete Streets infrastructure projects and an assumed number of projects were used to develop cost estimates. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

Municipalities across the Southwestern CT region regularly leverage funding to advance mode shift strategies including Complete Streets, TOD, and public transit. As of 2024, over 15 Community Connectivity Grants had been awarded in the region, with some communities having received more than one grant.[24] Other priority funding sources include the Local Transportation Capital Improvement Program, Safe Streets and Roads for All (SS4A), the Transportation Alternatives (TA) program, TOD Planning Grant, and the TOD Implementation Fund. Additional information pertaining to these programs and others can be found in Appendix III.

Authority to Implement

Timeline: Short to Medium Term – 1 to 5 years for project implementation.

Milestones: Depending on the scale of the project, Complete Streets improvements can vary significantly in implementation time from an initial study to the design process, and eventual construction. Improvements on state routes, which are generally more complex, will require permission and close collaboration with CTDOT. TDM programs do not rely on external approval beyond a given organization to implement, though effectiveness of regionwide implementation depends on effective education of available programs and incentives for employers and willingness from organizations to adopt them. TOD can be permitted and promoted through changes to municipal zoning codes, though the development that follows once denser building types are allowed is a more gradual process. While minor public transit service adjustments can be made relatively quickly, significant changes to routes and facilities necessitate in-depth studies and additional funding support over several years.

Table 7: Authority to Implement - Measure 1A (Mode Shift)

1.A.i: COMPLETE STREETS	AUTHORITY TO IMPLEMENT
Municipalities	Can implement Complete Streets projects on **Local Roads**
CTDOT	Can implement Complete Streets projects on **State Roads**
COGs	Can provide technical assistance e.g. Planning support for Complete Streets projects on both State and Local Roads
1.A.ii: TDM PROGRAMS	**AUTHORITY TO IMPLEMENT**
Municipalities & COGs	COGs and municipalities have the authority to advertise available TDM programs and incentives, however implementing an effective strategy may require implementation by others

[24] Highlighted Projects Community Connectivity Grant Program | CT Department of Transportation

CTDOT	Can implement a range of TDM strategies, including transit improvements, parking management, and incentives to reduce/shift travel
Building Owners, Employers & Transit Operators	Can implement incentives to reduce/shift travel
1.A.iii: TOD	**AUTHORITY TO IMPLEMENT**
Municipalities	Land use regulations and economic incentives
Developers	Development of TOD/Mixed-use projects
CTDOT	Can implement transit station projects
1.A.iv: PUBLIC TRANSIT	**AUTHORITY TO IMPLEMENT**
Municipalities	Plan for how transit service operates and where physical infrastructure is required to improve and expand transit operations.
CTDOT	Improve and expand service on systems owned and operated by the State (CTtransit, CTfasttrak)
Transit Operators	Local transit districts provide express and local bus and rail service

Metrics

Tracking progress of the implementation of the mode shift measure and submeasures can be accomplished using the following metrics:

- Feet of sidewalk installed
- Feet of bike lane and protected bike lane installed
- No. of municipalities with a Complete Streets policy
- No. of completed or in-progress Complete Streets projects
- No. of TDM programs established or in-progress
- Public transportation ridership

Workforce

Table 8 summarizes the necessary workforce to successfully implement mode shift initiatives over time.

Table 8: Summary of Workforce Needs - Measure 1A (Mode Shift)

MEASURE	SUBMESAURE	WORKFORCE NEEDS
MODE SHIFT: ensure transportation planning prioritizes safe, car-alternative mobility; strengthen public transit infrastructure, service, and operations.	Complete Streets Policy/Planning, and projects	• Highway Maintenance Workers • Engineers • Urban and Regional Planners • Construction Laborers • Project Management Specialists
	TDM programs	• Training and Development Managers • Advertising, Marketing, Promotions, PR, and Sales Managers
	Mixed-Use/TOD land use incentives	• Project Management Specialists • Urban and Regional Planners • Compliance Officers
	Public transit planning/technical support	• Bus and Truck Mechanics and Diesel Engine Specialists • Bus Drivers, Transit and Intercity

CASE STUDY – MODE SHIFT

Stratford Complete Streets

In Stratford, a combination of State and Federal funding sources are coming together to realize the Town's vision of a cohesive active transportation network. In 2017, the Town of Stratford completed its Complete Streets Improvement Plan, including an Action Plan and Design Recommendations for identified corridors within the Stratford Center area. Since then, Local Transportation Capital Improvement Program (LOTCIP) funding from CTDOT has enabled Stratford to design and construct new bicycle facilities and Complete Streets improvements along its Main Street in the Downtown area, and now additional LOTCIP funding is facilitating the extension of those improvements to the Paradise Green village center. Federal Transportation Alternatives Program (TAP) funds have been secured to fund another project identified in the Complete Streets Improvement Plan, the extension of the Housatonic River Greenway from Main Street eastward along State Route 130, further supporting emissions free movement across Town.

1B: Clean Mobility

The Clean Mobility measure promotes the transition of internal combustion vehicles to low-emission and zero-emission alternatives, including electric vehicles (EVs). Leveraging EV Legislation, such as tax incentive programs, improves the affordability and accessibility of electric vehicles, narrowing the cost gap between traditional gasoline-powered cars and cleaner alternatives. Fleet/infrastructure planning assessing current resources and gaps, necessary investments, timelines, and responsibilities is critical for developing a roadmap to transition to a system that supports widespread electric vehicle adoption. Additionally, Intelligent Transportation System projects contribute to emission reductions by minimizing vehicle idling through improved traffic flow.

1Bi. EV Legislation: Advocate for policies that make electric vehicles more affordable and accessible to the public. This includes supporting tax incentives, rebates, and other financial programs that reduce the upfront cost of EVs. By narrowing the cost gap between traditional gasoline-powered cars and cleaner alternatives, these measures encourage widespread adoption.

1Bii. Fleet/infrastructure planning: Conduct a comprehensive assessment of current fleet resources and infrastructure to identify gaps and future needs. Develop a detailed transition plan that outlines necessary investments, timelines, and responsibilities for upgrading facilities and charging networks. This planning promotes a smooth shift toward a system capable of supporting large-scale electric vehicle deployment.

1Biii. Intelligent Transportation Systems: Research and promote ITS technologies that improve traffic flow and reduce vehicle idling, thereby lowering emissions. Support the integration of ITS solutions across road and transit projects to enhance efficiency and sustainability. These systems play a critical role in optimizing transportation networks and complementing clean mobility initiatives.

Expected Geographic Location

Electric vehicle enabling legislation would occur at the state or federal level, therefore having a regionwide impact once passed. Electric vehicle transition planning is expected to occur regionwide, with both municipalities and transit agencies to evaluate facility needs and enact transition plans. Regionwide implementation of intelligent transportation systems is expected to occur at the intersection and corridor scales within each municipality, with greater inter-municipal, COG, and State coordination on larger corridors.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Clean Mobility measure are summarized in Table 9. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 9: GHG & Co-Pollutant Reductions - Measure 1B (Clean Mobility)

EMISSIONS TYPE	2030	2050
GHG	224,293 $MTCO_2e$	989,650 $MTCO_2e$
	Methodology: Municipal fleet vehicle data as estimated in the 2021 GHG Inventory was used to quantify GHG emissions reductions by assuming 20 percent of municipal vehicles were electrified by 2030 and 90 percent of vehicles were electrified by 2050. The Federal Highway Administration CMAQ Emissions Calculator Toolkit Adaptive Control Systems tool was also used to estimate emissions reductions associated with ITS systems.	
CO-POLLUTANTS	MT 56.31	MT 100.5
	Methodology: The Federal Highway Administration CMAQ Emissions Calculator Toolkit Adaptive Control Systems tool provides gasoline and diesel co-pollutant emission factors. These were applied to the number of vehicles electrified.	

Cost

The costs associated with the Clean Mobility measure include elements of ITS and municipal fleet electrification and charging infrastructure. Refer to the appendix for additional information regarding the cost estimation methodology.

ITS is expected to cost $11,661,000 annually (2025 dollars) and with inflation by 2050 the projected cost would be $18,803,363 per year. This cost was developed by utilizing CT DOT 2024 Estimating Guidelines for the total cost per intersection and total state-owned signals replaced annually.

Municipal fleet vehicles and charging infrastructure are expected to cost $261,293,801 (2025 dollars) and with inflation by 2050 the projected cost would be $421,336,254. Average costs for electric vehicles and charging infrastructure were sourced from the EPA's Estimating Costs of CCAP Measures resource.

Funding

Municipalities can advance clean mobility by adopting local policies and ordinances that support electric vehicle deployment. Legislative actions position municipalities to qualify for implementation funding from PURA's EV Infrastructure Incentive Program, VW Settlement, and the Alternative Fuel Infrastructure Tax Credit.

Municipalities can seek planning support through CTDEEP technical assistance, such as their Energy Storage Solutions program and grant-funded infrastructure feasibility studies. Implementation of public fleet charging is supported by VW Settlement, PURA make-ready

incentives, and DERA/Low-No funds for heavy-duty vehicles. Additional information about these programs is available in Appendix III.

Authority to Implement

Timeline: Medium to Long Term – 2 to 5+ years for project implementation.

Milestones: The transition to clean vehicle fleets is a gradual one, depending upon funding for EV acquisition, the development of supporting facilities and charging infrastructure, and ensuring that proper transmission capacity is in place to support new charging stations. While changes in zoning incentives and requirements can spur the private development of charging infrastructure and promote public adoption of electric vehicles, municipal and transit fleets will need to first build up their charging and maintenance capacity to be able to accommodate new electric vehicles. The implementation schedule is primarily impacted by funding availability and coordination with utilities to ensure sufficient transmission capacity. For ITS projects, traffic analyses, and approval from CTDOT if located on a state route, precede any signal upgrades.

Table 10: Authority to Implement - Measure 1B (Clean Mobility)

1.B.i: EV LEGISLATION	AUTHORITY TO IMPLEMENT
Municipalities	Use zoning incentives and requirements for new development to incorporate EV charging stations
Developers	Incorporate EV charging stations into development projects.
CTDOT	Continue to identify locations for installation of EV chargers, provide resources to municipalities and other stakeholders for the deployment of EV charging stations.
1.B.ii: EV TRANSITION PLANNING	**AUTHORITY TO IMPLEMENT**
Municipalities	Plan for and incorporate EVs into municipal fleet as feasible.
CTDOT	Implement measures outlined in the Electric Vehicle Roadmap for Connecticut which includes transitioning the state's fleet to EVs when feasible.
Transit Operators	Transition transit fleet to EVs as financial resources allow.
1.B.iii: ITS	**AUTHORITY TO IMPLEMENT**
Municipalities	Implement systems on local routes that improve transportation operations, efficiency, and safety on Local Roads.

CTDOT	Implement systems on state routes that improve transportation operations, efficiency, and safety on State Roads.
Transit Operators	Utilize ITS to enhance transit operations and improve service.

Metrics

Tracking progress of the implementation of the Clean Mobility measure and submeasures can be accomplished using the following metrics:

- No. of towns in favor of EV legislation
- No. of electric vehicle charging stations
- No. (or percentage) of electric vehicles in municipal fleets
- No. of ITS projects identified and in-progress

Workforce

Table 11 summarizes the necessary workforce to successfully implement clean mobility initiatives over time.

Table 11: Summary of Workforce Needs - Measure 1B (Clean Mobility)

MEASURE	SUBMESAURE	WORKFORCE NEEDS
CLEAN MOBILITY: support the transition to net-zero vehicles, infrastructure; Leverage ITS technologies to reduce emissions.	Advocate for **EV legislation** (affordability, accessibility)	• Vehicle/Mobile Equip. Mechanics, Installers, and Repairers • Automotive Body and Related Repairers • Automotive Service Technicians and Mechanics
	Fleet/infrastructure planning (evaluate gaps in facilities/resources to develop a transition plan)	• Transportation, Storage, and Distribution Managers
	Research and support for **ITS** across road and transit projects	• Other Transportation Workers

CASE STUDY - CLEAN MOBILITY

School Bus Electrification

EPA Clean School Bus Rebate Program. The Bridgeport, Fairfield, and Ridgefield School Districts were awarded funding from US EPA's Clean School Bus Rebate Program to replace 25, 10, and 7 diesel buses respectively, with zero- and low-emission alternatives. EPA funding also provided for the installation of charging infrastructure that supports the further transition of their school bus fleets. Beyond the associated emissions reduction, the removal of particulate matter and other criteria air pollutants from bus exhausts will reduce poor air quality exposure and risk of respiratory disease for the children they serve.

New Canaan Train Station. Photo by WestCOG.

Chapter 2 - Buildings

In the Bridgeport-Stamford-Norwalk MSA, nearly one fifth of all housing units were built before 1940 (These are some of the oldest buildings in the US!).[25] Compared to newer buildings constructed to meet current energy standards, older buildings tend to be poorly insulated, experience thermal bridging, and rely on inefficient fossil-fuel systems. These inefficiencies force HVAC equipment to work harder, leading to disproportionately high energy use, indoor and outdoor air pollution, and greenhouse gas emissions per unit of building area.

Stationary energy from all types of buildings makes up about 40 percent of the region's total GHG emissions. The largest fuel contributions are natural gas with 53 percent of the building emissions, followed by 29 percent of emissions from fuel oil (Figure 11). Natural gas leaks in the distribution system also account for another 14 percent of stationary fuel emissions.

According to the CCAP survey results, 26 percent of respondents expect to replace heating or cooling equipment within the next 5 years (167 responses). Natural repair and replacement cycles are a convenient time to transition away from fossil fuels. For those that expect to replace their heating or cooling systems, 57 percent are already planning to install an all-electric alternative (42 responses).

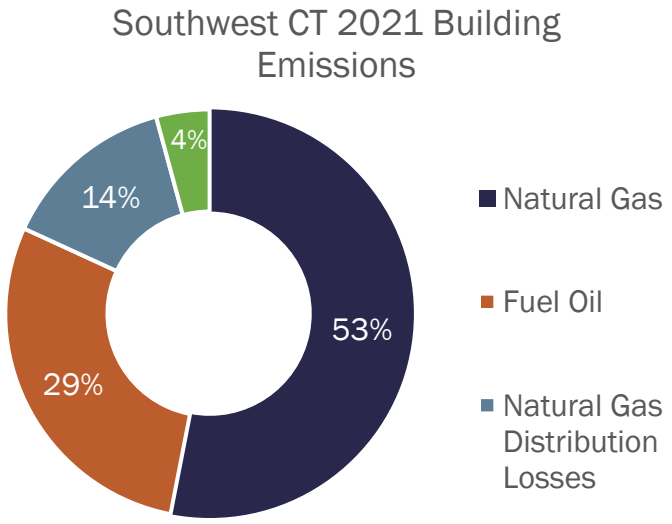

Figure 11: 2021 Building Sector Emissions in $MTCO_2e$

[25] These Connecticut areas have some of the oldest homes in US, report says | Ginny Monk New Haven Register

Across the county, residents, businesses, and municipalities have been taking steps to improve energy efficiency. Since 2010, 94,409 households (28 percent) in the Southwest CT region have participated in the Home Energy Solutions, Home Energy Solutions - Income Eligible, or Residential New Construction Programs offered by Energize CT. In that same period, 58,707 households (17 percent) received a rebate for appliances, insultation, HVAC, and/or hot water heaters. Business and municipal projects through the various EnergizeCT programs total over 11,800 from 2010 to 2025.[26]

Proposed Reduction Measures

To reduce emissions in this sector, existing buildings need to be retrofit to improve energy efficiency and electrify building systems. To avoid the production of additional building emissions as the demand for housing across the region grows, new construction must be net-zero or prepared to easily become net-zero in the future.

This plan proposes three high-impact measures for lowering emissions to meet the reduction targets in the Buildings sector: A) Weatherize Building Envelopes, B) Decarbonize Building Systems, and C) Net-Zero Ready New Construction. The measures and submeasures are summarized in Table 12 and described in the following sections.

Table 12: GHG Reduction Measures - Electric Power Sector

BUILDINGS		
2	MEASURE	SUBMEASURE
A	**WEATHERIZE BUILDING ENVELOPES:** address health & safety barriers (e.g. mold, asbestos); seal and insulate buildings to reduce energy demand.	i. Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs (e.g. REPs, WAP)
B	**DECARBONIZE BUILDING SYSTEMS:** retrofit mechanical, electrical, and environmental systems.	i. Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs (e.g. C&LM, heat pumps)
C	**NET-ZERO READY NEW CONSTRUCTION:** apply energy-saving requirements for new/renovated buildings.	i. Advocate to update state **building codes** ii. Encourage/enable **energy use reporting** iii. **Technical assistance** for zoning code minimum energy standards

[26] Energy Efficiency and Municipal Dashboards Annual Reports (accessed August 29, 2025) | Energize CT

Building Measure Benefits

Cost Benefits

- Reduced utility costs for residents and businesses from improved energy efficiency.
- Energy cost savings from municipal buildings can be used for community benefits.
- Installation and the need for maintenance of building systems expand as energy efficiency programs grow, which creates skilled trade opportunities.
- Retrofits create work for technicians in the utility and construction sectors, including electricians, plumbers, and HVAC mechanics.
- FEMA projects that when 18.1 million buildings are constructed with higher building codes to mitigate natural disasters about $1.6 billion is saved annually nationwide.

Climate Resilience

- Buildings equipped with on-site solar and storage or connected to microgrids can have improved resilience during power outages. Studies found that energy efficient codes can improve habitability by 120 percent during extreme cold and 140 percent during extreme heat.[27]
- Enhanced building codes with sustainable goals for new construction boost the ability of structures to withstand climate change.

Public Health

- Businesses' participation in energy reduction improves air quality in both outdoor and indoor spaces.
- Improvement in the development and construction of office buildings can increase in-person attendance in the workplace.
- Decarbonizing buildings and promoting sustainable infrastructure can improve thermal comfort and lower the danger of airborne infections.

Potential Disbenefits

- A common obstacle to implementation in many buildings is the need for supporting upgrades that are prerequisite to the installation of efficient systems and envelopes. For example, to support the added weight of rooftop solar panels or solar heating, some roofs may need to be replaced, leading to increased project cost and complexity that may not be covered by existing funding programs. Funding and technical assistance to prepare buildings for efficiency and weatherization improvements can increase the number of properties that can accommodate efficiency upgrades.

[27] Enhancing Resilience in Buildings Through Energy Efficiency | US Department of Energy

- Net-zero new construction generally has a higher upfront cost than traditional construction. Incentives for developers can help address this issue in the short term while the effect of economies of scale that occurs as more net-zero developments are built can reduce costs over time.
- If weatherization measures are installed without accompanying ventilation and dehumidification, they can lead to entrapped moisture and poor indoor air quality. Post-installation inspection can help ensure that any improvements are up to code.

2A: Weatherize Building Envelopes

The region's older building stock means many buildings have insufficient insulation and airtightness, leading to heat loss in winter and heat gain in summer. This not only increases energy demand for heating and cooling but also worsens air quality and GHG emissions.

2.A.i. Provide technical assistance to building owners to maximize state programs for building weatherization: Support residential, commercial, and municipal property owners in leveraging statewide programs to address health and safety barriers (e.g. mold, asbestos) and implement building weatherization. These programs include Residential Energy Preparation Services (REPS) and Weatherization Assistance Program (WAP).

Expected Geographic Location

Building weatherization is expected to occur regionwide at the responsibility of building owners with financial support and technical assistance from state and federal weatherization programs.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Weatherize Building Envelopes measure are summarized in Table 13. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 13: GHG and Co-Pollutant Reductions - Measure 2A (Weatherize Building Envelopes)

EMISSIONS TYPE	2030	2050
GHG	179,312 $MTCO_2e$	316,010 $MTCO_2e$
	Methodology: Utilized EnergizeCT Dashboard to determine residential participation in energy savings programs. This measure aims to increase overall participation to determine an energy and emissions savings in 2030 to 2050.	
	113 MT	178 MT

CO-POLLUTANTS	***Methodology:*** The total residential and commercial kWh savings were applied to co-pollutant emission factors derived from the EPA AVERT.

Cost

Energize CT has a 2025 budget of $2,989,594 for education and community outreach, however, this budget is projected to decrease to $2,806,738 in 2027. The difference in support required to continue the level of education and outreach for the program is $182,856, which could be made up with approximately two full-time staff. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

Residents in the region regularly participate in statewide programs such as the Weatherization Assistance Program, Home Energy Solutions, Energy Conservation Loans, and Residential Energy Preparation Services. These programs can support the weatherization of buildings to reduce energy use. Additional programs and opportunities, including those that municipalities and businesses can utilize, are described in Appendix III.

Authority to Implement

Timeline: Short to Long Term – 1 to 5+ years for project implementation.

Milestones: The weatherization of building envelopes is a process that is often complicated by the need for abatement of lead, asbestos, and mold, thus lengthening implementation, requiring additional permitting, and necessitating additional funding. For buildings which do not require abatement, implementation, including an initial assessment, installation, and quality assurance can be completed within several months.

Table 14: Authority to Implement - Measure 2A (Weatherize Building Envelopes)

2.A.i: WEATHERIZE BUILDINGS	AUTHORITY TO IMPLEMENT
Municipalities	Provide funding, services or technical assistance to support residents and local agencies with insulation, air sealing, window/door replacements, etc., retrofit municipal buildings.
CTDEEP	Administer Connecticut's Weatherization Assistance Program in partnership with the Connecticut Community Action Network and other local community action agencies.
COGs	Assist member municipalities with outreach and education on weatherization programs, assist with and/or apply for grants for building weatherization.

Metrics

Tracking progress of the implementation of the weatherization measure and submeasure can be accomplished using the following metrics:

- No. of residents, businesses, and municipalities that are served by technical assistance for weatherization

Workforce

Table 15 summarizes the CCAP measures and the necessary workforce to successfully implement building weatherization initiatives over time.

Table 15: Summary of Workforce Needs - Measure 2A (Weatherize Building Envelopes)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
WEATHERIZE BUILDING ENVELOPES: address health & safety barriers (e.g. mold, asbestos); seal and insulate buildings to reduce energy demand.	Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs	• Architectural and Civil Drafters • Architecture and Engineering Occupations • Construction Laborers • Roofers • Other Construction and Related Workers • Construction and Building Inspectors

CASE STUDY - WEATHERIZE BUILDING ENVELOPES

EnergizeCT Home Energy Solutions Program

Through EnergizeCT's Home Energy Solutions (HES) and Home Energy Solutions – Income Eligible (HES-IE) programs, thousands of households across Southwest Connecticut have received in-home energy assessments with blower-door-guided air sealing, duct sealing, and basic weatherization measures (e.g., pipe wrap, aerators, low-flow showerheads), plus referrals to rebates for deeper upgrades like insulation and HVAC improvements. Since 2010, the Southwest CT region has recorded 94,409 participating households across HES/HES-IE/Residential New Construction programs.

2B: Decarbonize Buildings Systems

The majority of the building stock across the region relies on fossil fuels, such as natural gas, fuel oil, and propane. Building electrification reduces GHG emissions by replacing fossil fuel-based heating and cooking systems with electric alternatives that can be powered by clean energy sources. As the electric grid increasingly incorporates renewable energy like solar and wind, electrified buildings draw from a low-carbon supply, accelerating overall decarbonization. This measure intends to support property owners with building decarbonization by providing technical assistance to support the transition to electric alternatives.

2.B.i. Provide technical assistance to building owners to maximize state programs for building decarbonization: Retrofitting mechanical, heating, ventilation, and air conditioning (HVAC) systems of existing buildings can be achieved through the provision of technical assistance to building owners (residents/landlords, businesses, municipalities) to maximize state programs.

Expected Geographic Location

Building decarbonization measures will occur regionwide at the responsibility of building owners with financial support and technical assistance from state and federal building system efficiency programs.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Decarbonize Building Systems measure are summarized in Table 16. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 16: GHG and Co-Pollutant Reductions - Measure 2B (Decarbonize Building Systems)

EMISSIONS TYPE	2030	2050
GHG	267,314 $MTCO_2e$	1,669,876 $MTCO_2e$
	Methodology: Emissions reductions were quantified by scaling a proposed 2030 statewide heat pump installation goal to the MSA based on population. The natural gas, fuel oil, and propane fuel usage reductions and associated increase in electricity usage for installing over 84,000 heat pumps was quantified based on typical household energy use. For 2050, it was assumed that residential natural gas, fuel oil, and propane usage was eliminated.	
CO-POLLUTANTS	1,313 MT	6,180 MT
	Methodology: The total residential and commercial kWh savings were applied to co-pollutant emission factors derived from the EPA AVERT.	

Cost

The Decarbonize Building Systems Measure is expected to cost $1,799,729,882 (2025 dollars) and with inflation by 2050 the projected cost would be $2,902,064,435. Average costs for a residential air source heat pump and installation were sourced from the EPA's Estimating Costs of CCAP Measures resource, which are also within range of EnergizeCT's installation estimates. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

Residents in the region regularly participate in statewide programs such as Home Energy Solutions, Energy Conservation Loans, and Residential Energy Preparation Services. These programs can support the preparation for, and decarbonization of buildings. Additional programs and opportunities, including those that municipalities and businesses can utilize, are described in Appendix III. The Southwest CT region can also benefit from the New England Heat Pump Accelerator Program, a CPRG implementation grant funded project.

Authority to Implement

Timeline: Short to Long Term – 1 to 5+ years for project implementation.

Milestones: Implementation across the MSA is expected to be gradual as regional adoption is dependent on the availability and uptake of funding and incentive programs. For non-municipal buildings, obtaining the proper permits necessary for any electrical, HVAC, or plumbing upgrades can vary from a few weeks to months. Standalone installation is anticipated to take several months to years depending on the size of the building. Common barriers within the MSA are buildings with antiquated or lacking HVAC systems, which can significantly increase the complexity, length, and cost of projects.

Table 17: Authority to Implement - Measure 2B (Decarbonize Building Systems)

2.B.i: DECARBONIZE BUILDINGS	AUTHORITY TO IMPLEMENT
Municipalities	Municipalities have the authority to guide energy efficient patterns of development, density, and even building design through zoning. Municipalities can establish decarbonization targets, track GHG reductions; increase municipal building electrification
CTDEEP	Review and update high performance (green) building construction regulations for state facilities or any construction/renovation using state funds
COGs	Provide educational outreach on building decarbonization, assist municipalities with state and federal funding opportunities

Metrics

Tracking progress of the implementation of the building decarbonization measure and submeasures can be accomplished using the following metrics:

- No. of residents, businesses, and municipalities that are served by technical assistance for decarbonization

Workforce

Table 18 summarizes the necessary workforce to successfully implement building decarbonization initiatives over time.

Table 18: Summary of Workforce Needs - Measure 2B (Decarbonize Building Systems)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
DECARBONIZE BUILDING SYSTEMS: retrofit mechanical, electrical, and environmental systems.	Provide **technical assistance to building owners** (residents/landlords, businesses, municipalities) to maximize state programs	• Electricians • Plumbers, Pipefitters, and Steamfitters • Painters, Construction and Maintenance • Mobile Heavy Equipment Mechanics, Except Engines • Supervisors of Building and Grounds • Heating, AC, and Refrigeration Mechanics and Installers Home Appliance Repairers

CASE STUDY – Decarbonize Building Systems

Bayview Towers Multifamily Retrofit (Stamford, CT)

Bayview Towers—a 200-unit affordable multifamily complex in downtown Stamford—completed a comprehensive building-systems retrofit through Eversource's Multifamily Initiative (EnergizeCT). Measures included whole-property LED lighting upgrades, air-sealing/weatherization, replacement of central boilers with high-efficiency natural-gas models, and installation of variable-frequency drives and new hot-water pumps tied into controls. Documented outcomes include 265,300 kWh and 25,800 CCF saved annually, about $60,400/year in utility cost reductions, and an estimated 3,879 tons CO_2 avoided over the equipment lifetime. In total, the project is estimated to result in approximately $800k in lifetime savings, with around $440k in incentives.

2C: Net-Zero Ready New Construction

Buildings last for decades—sometimes over a century. If new construction is not "green," building owners and operators are locked into higher energy use and resource consumption for generations. Zoning regulations are a tool for municipalities to align development with climate goals by requiring energy performance standards for new construction. Building sustainably from the outset means lower carbon footprints over the building's entire life cycle.

The following submeasures represent key strategies for promoting net-zero ready new construction.

2.C.i. Advocate to update state building codes: Updating state building codes ensures that new construction incorporates advanced energy efficiency and electrification standards. By aligning codes with net-zero principles, builders are required to integrate technologies such as high-performance insulation, efficient HVAC systems, and renewable-ready infrastructure. This advocacy helps create a regulatory framework that accelerates the transition to low-carbon buildings.

2.C.ii. Encourage/enable energy use reporting: Implementing energy use reporting for new construction provides transparency and accountability in meeting performance targets. Regular reporting allows stakeholders to track progress toward net-zero goals and identify opportunities for improvement. This data-driven approach fosters continuous optimization and supports compliance with sustainability objectives.

2.C.iii. Technical assistance for zoning code minimum energy standards: Offering technical assistance to municipalities helps integrate minimum energy performance requirements into zoning codes. This guidance ensures that local regulations support efficient building design and renewable energy integration from the planning stage. By providing expertise and resources, communities can adopt standards that drive net-zero readiness in all new developments.

Expected Geographic Location

Adopting net-zero standards for new construction will require municipalities to amend zoning codes to enforce energy standards within their jurisdiction, while state legislation is necessary to ensure statewide, and thus regionwide, adherence to net-zero standards.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Net-Zero New Construction measure are summarized in Table 19. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 19: GHG and Co-Pollutant Reductions - Measure 2C (Net-Zero Ready New Construction)

EMISSIONS TYPE	2030	2050
GHG	5,535 $MTCO_2e$	77,053 $MTCO_2e$
	Methodology: The avoided emissions from future residential homes expected to be built between 2025 and 2050 were quantified assuming energy codes require a 42 HERS rating (compared to 55 currently) and that homes built after 2030 are all electric.	
CO-POLLUTANTS	24 MT	313 MT
	Methodology: Utilizing the EPA co-pollutant emission factors total reductions were calculated based on the total fuel reduction in natural gas and fuel oil.	

Cost

The Net-Zero Ready Construction Measure is expected to cost $369,215 (2025 dollars) in staff time for five full time equivalents. Costs incurred by COGs or municipalities for advocacy of updated building codes, energy use reporting, and zoning code updates are minimal and likely include staff time from existing staff or hiring of new staff to manage an energy use reporting program, for example. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

The Building Energy Codes Program (BECP) from the U.S. Department of Energy's Building Technologies Office offers technical assistance for state- and local-level building energy code adoption and implementation. More information on this program and other building-related funding and financing programs is available in Appendix III.

Authority to Implement

Timeline: Short Term – 1 to 2 years for project implementation.

Milestones: The State of Connecticut maintains the authority to update the state building code to ensure stricter energy standards for new development. Municipalities have the authority to make amendments to their zoning regulations that promote sustainable forms of development. Municipalities can also audit the energy use of municipal buildings, with both actions being achievable within several months.

Table 20: Authority to Implement - Measure 2C (Net-Zero Ready New Construction)

2.C.i: BUILDING CODES	AUTHORITY TO IMPLEMENT
Municipalities & COGs	COGs and municipalities do not have the authority to change the state building code, including its energy requirements. However, they can advocate for stricter energy standards by engaging with state agencies.
State Agencies	The State of Connecticut has the authority to set and update building code requirements, including energy efficiency standards.
2.C.ii: ENERGY USE REPORTING	**AUTHORITY TO IMPLEMENT**
Municipalities	Collect and report energy usage for municipally owned buildings; identify buildings that are underperforming
State Agencies	Continue use of EnergyCAP to track energy usage and spending; identify buildings that are underperforming
COGs	Provide technical assistance to municipalities
2.C.iii: ZONING CODE STANDARDS	**AUTHORITY TO IMPLEMENT**
Municipalities	Promote and/or require the use of certain energy conservation tools, including solar and other renewable forms of energy. The zoning enabling act has been implemented in all municipalities in the service area of this project.
State Agencies	State agencies are expected to voluntarily comply with municipal zoning as a matter of best practice.
COGs	COGs provide technical assistance and the review of zoning regulations.

Metrics

Tracking progress of the implementation of the Net-Zero New Construction measure and submeasures can be accomplished using the following metrics:

- No. of municipalities in favor of state building code updates
- No. of buildings reporting energy use
- No. of municipalities which establish an energy use reporting program
- No. of municipalities which participate in technical assistance for zoning updates

Workforce

Table 21 summarizes the CCAP measures and the necessary workforce to successfully implement net-zero new construction initiatives over time.

Table 21: Summary of Workforce Needs - Measure 2C (Net-Zero Ready New Construction)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
NET-ZERO READY NEW CONSTRUCTION: apply energy-saving requirements for new/renovated buildings.	Advocate for **enabling legislation** for municipalities to update building codes	• Project Management Specialists • Compliance Officers
	Encourage/enable energy use reporting	• General and Operations Managers
	Technical assistance for zoning code minimum energy standards	• Urban and Regional Planners • Architects, Surveyors, and Cartographers

CASE STUDY – NET-ZERO NEW CONSTRUCTION

Net-Zero Schools

Manchester, Connecticut transformed three aging elementary schools—Buckley, Bowers, and Keeney—into high-performance, net-zero energy facilities through the EnergizeCT program and support from Eversource. Originally built in the 1950s, the schools were fully renovated with efficient building envelopes, ground- and water-source heat pumps, LED lighting, and rooftop solar. Buckley and Bowers achieved impressively low energy use intensities of 18.3 and 15.25 kBtu/ft²-yr, far below typical benchmarks. Incentives helped offset costs, and ongoing verification ensures performance goals are met. The project showcases Manchester's leadership in sustainable school design and its long-term investment in clean energy and community resilience.

Source: Eversource Case Study

Chapter 3 - Electric Power

According to CT DEEP, the state's power mix, including out-of-state resources in 2023 (the most recent data available) comprised approximately 57 percent of electricity supplied from zero carbon resources.[28] The remaining 43 percent of electricity comes from fossil fuel-based sources. In 2021, the region consumed nearly 7,000,000 MWh of electricity, emitting 1,770,119 $MTCO_2e$ (1.7 $MMTCO_2e$), or 22 percent of the total GHG inventory. The GHG inventory captures both consumed electricity and transmissions and distribution losses (Figure 12) from residential and commercial users.

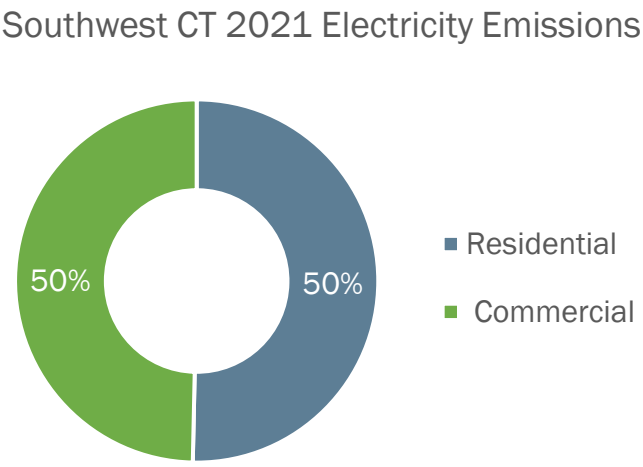

Figure 12: Electricity Sector Emissions in MTCO2e

Proposed Reduction Measures

Increasing the share of renewable sources in the county's electricity mix can reduce reliance on carbon-intense processes, like burning natural gas for power generation.

To meet these ambitions, reducing existing energy demands, promoting renewable energy adoption, and improving energy system resilience is vital. Over time, as renewable sources of energy become more common and the electricity grid becomes more saturated with clean sources, the GHG emissions associated with electricity usage will decrease.

[28] 2024 CEQ Annual Report | CTDEEP

This plan proposes two high-impact measures for lowering emissions to meet the reduction targets in the Electric Power sector: A) Renewable Energy Generation & Storage, and B) Community Choice Aggregation. The measures and submeasures are summarized in Table 22 and described in the following sections.

Table 22: GHG Reduction Measures - Electric Power Sector

ELECTRIC POWER		
3	MEASURE	SUBMEASURE
A	**RENEWABLE ENERGY GENERATION & STORAGE:** deploy community solar, energy storage, microgrid, geothermal, and other renewable energy projects.	i. Provide **technical assistance/resources** from planning through construction (e.g. models, best practices)
		ii. Maximize state **funding opportunities** for renewables
B	**COMMUNITY CHOICE AGGREGATION:** support projects allowing municipalities to collectively purchase electricity from a supplier of their choice.	i. Assist municipalities in **adopting local resolutions** in support of HB5945.

Electric Power Measure Benefits

Cost Benefits

- Renewable energy generation within communities enables lower-cost energy options for residents.
- Increased renewable energy infrastructure requires more technicians and creates jobs to install and maintain technology.
- Using combined purchasing power, rates are often lower than that of other electricity suppliers. For example, in Somerville, Massachusetts residents have saved over $5 million dollars through its community aggregation program between July 2017 and December 2019.[29]

Climate Resilience

- Utilization of local renewable energy sources to power communities reduces reliance on cross-county or foreign energy sources.

[29] Municipal aggregation savings 'shattering expectations' in Massachusetts | Green Energy Consumers Alliance

- Fairfield, Connecticut's 47-kilowatt solar photovoltaic system coupled with a clean natural gas burner and a combined heat and power generator, can provide up to 120 percent of peak power for its facilities.[30]

Public Health

- Through valuable and lifetime-saving incentives, local communities can see an overall improvement in quality of life with the ability to save more money in their pocket and for their future.
- Electrifying households nationwide would lead to 3,400 fewer premature deaths, 1,300 fewer hospitalizations, 220,000 less asthma attacks, and can prevent 670,000 missed workdays annually.[31]
- Generating and promoting clean and renewable energy locally can improve overall air quality for towns, reducing a variety of pollution-related health risks.

Potential Disbenefits

- The placement of large-scale renewable energy generation facilities presents potential conflicts, as development on greenfield locations that offer the greatest expanse of open space can encroach on agricultural and natural spaces, threatening valuable green spaces and carbon sinks. Councils of Government and municipalities can protect existing agricultural and natural lands by working to identify, plan for, and properly zone areas that would be amenable to context-sensitive renewable energy generation. Engaging with the Connecticut Siting Council, which has jurisdiction over permitting and siting of major solar installations, will be essential to properly align the development of renewable energy with open space conservation.
- Electricity production has historically been centralized, with linear transmission to consumers. The decentralized nature of rooftop solar and other renewable sources will require upgrades to electricity transmission infrastructure and changes in management to properly accommodate them into the electric grid without causing surges or blackouts. Coordination with utility partners will be essential to determining the investments and measures needed to ensure a smooth transition.
- Solar and wind power generation is susceptible to fluctuations in production due to changing conditions. Therefore, investments in accompanying battery infrastructure will be necessary to ensure energy reliability and resilience.

[30] Microgrids improve resilience, efficiency | We Are Still In
[31] Home Electrification Health Benefits | Rewiring America

Measure 3A: Renewable Energy Generation & Storage

Increasing renewable energy generation and storage capacity across the region is essential for achieving economy-wide decarbonization. Expanding clean energy infrastructure, such as solar, wind, and geothermal systems, along with energy storage solutions, will reduce reliance on fossil fuels and strengthen grid resilience. Leveraging available resources and funding opportunities can accelerate the transition to a cleaner, more sustainable energy mix. The following sub-measures represent key strategies for advancing renewable energy generation and storage.

3.A.i. Provide technical assistance/resources from planning through construction: Comprehensive guidance and access to resources during all project phases can help expand the installation of distributed solar, community solar, energy storage systems, microgrids, and geothermal installations across the Southwestern CT region.

3.A.ii. Maximize state funding opportunities for renewables: Supporting property owners and municipalities in securing state-level funding and financing for renewable energy and storage projects can help drive further expansion.

Expected Geographic Location

Deployment of renewable energy will occur regionwide with municipalities and property owners responsible for siting small to medium-scale renewable energy systems on their buildings and land. Large scale projects are expected to be implemented by the utility providers. Municipalities and property owners alike are expected to apply for state funding for the implementation of renewable energy with assistance from the COG's and CT Green Bank.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Renewable Energy Generation & Storage measure are summarized in Table 23. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 23: GHG and Co-Pollutant Reductions - Measure 3A (Renewable Energy Generation and Storage)

EMISSIONS TYPE	2030	2050
GHG	62,639 $MTCO_2e$	128,686 $MTCO_2e$
	Methodology: The emissions reduction associated with meeting CT's energy storage program goal of 580 MW by 2030 was scaled to the MSA utilizing the EPA AVERT tool with an assumed 1,200 MW by 2050 (based on limitations with the AVERT). The accompanying MW of solar was assumed using several factors as detailed in the appendix.	
CO-POLLUTANTS	87 MT	168 MT

	Methodology: Emission reduction calculations were sourced from the EPA Avert Tool.

Cost

The Renewable Energy Generation and Storage Measure is expected to cost $386,474,574, and with projected inflation by 2050 the projected cost would be $623,190,250. This was sourced from the NREL Solar Installed System Cost Analysis. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

Municipalities and community-community based organizations across the region have been expanding renewable energy and storage by leveraging programs such as:

- Energy Storage Solutions Program,
- Shared Clean Energy Facility (SCEF) Program,
- Connecticut Community Partnership Initiative (CCPI),
- Clean Energy Communities Program,
- Smart-E Loan Program,
- CT SMARTE (Sustainable Manufacturing Assistance & Resilience Through Efficiency), and
- Low-Income Energy Assistance & Weatherization (CEAP/WAP).

Additional information about dollar values, eligibility, and program descriptions are available in Appendix III.

Authority to Implement

Timeline: Medium to Long Term – 2 to 5+ years for project implementation.

Milestones: The incorporation of new renewable energy sources into the grid requires permits from the municipality and approval from the utility provider. Major installations are dependent on approval from the Connecticut Siting Council. The scale of projects is a major predictor of the timeline as residential projects are expected to take several months to complete, with large-scale commercial generation installations estimated to take several years.

Table 24: Authority to Implement - Measure 3A (Renewable Energy, Generation & Storage)

3.A.i ENERGY GENERATION & STORAGE	AUTHORITY TO IMPLEMENT
Municipalities	Install/operate solar photovoltaic systems, microgrids, fuel cells and other renewable sources of energy on municipally owned buildings/land
State	Shapes policy, regulates utilities

COGs	COGs provide technical assistance with photovoltaic and microgrid projects and assist with funding applications that focus on renewable energy generation
Green Bank	Manages procurement and finances clean energy deployment

Metrics

Tracking progress of the implementation of the energy storage and generation measure and sub-measures can be accomplished using the following metrics:

- No. of materials produced or events hosted for renewable energy
- No. of municipalities that participate in technical assistance for renewable energy
- No. of grants applied for and awarded

Workforce

Table 25 summarizes the necessary workforce to successfully implement renewable energy generation and storage initiatives over time.

Table 25: Summary of Workforce Needs - Measure 3A (Renewable Energy Generation & Storage)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
RENEWABLE ENERGY GENERATION & STORAGE: deploy community solar, energy storage, microgrid, geothermal, and other renewable energy projects.	Provide technical assistance/resources from planning through construction (e.g. models, best practices)	• Mechanical Engineers • Installation, Maintenance, and Repair Occupations • Electrical Engineers • Electrical/Electronic Equip. Mechanics, Installers/Repairers
	Maximize state funding opportunities for renewables	• Surveying and Mapping Technicians • Environmental Engineers

CASE STUDY – RENEWABLE ENERGY GENERATION & STORAGE

Fairfield Microgrid

Under the Connecticut Department of Energy and Environmental Protection's Microgrid Grant and Loan Program, the Town of Fairfield was able to install a microgrid system for its critical facilities, including the police and fire stations, emergency communications center, a public shelter, and a cell phone tower. The project included the installation of 47 kilowatts of rooftop solar photovoltaic systems across the shelter, police, and fire stations. In combination with control system optimization and upgrades to natural gas generators in the complex, the microgrid can provide 120 percent of the peak power demand for the buildings it serves while also being able to isolate itself from the grid in the case of a grid outage.

Measure 3B: Community Choice Aggregation

Community Choice Aggregation (CCA) gives communities more control over where power is sourced, enabling them to prioritize renewable options like solar energy and invest in local solutions such as community solar projects, while also potentially securing lower rates than traditional electricity suppliers offer.

3.B.i. Assist municipalities in adopting local resolutions on support of HB5945: Supporting municipalities in adopting local resolutions in favor of HB5945 can help make this model a reality in Connecticut.

Expected Geographic Location

Enabling legislation for CCA is expected to occur at the state level, thus having a regionwide impact once passed. Collective purchasing of power would be coordinated regionally.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Community Choice Aggregation measure are summarized in Table 26. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 26: GHG and Co-Pollutant Reductions - Measure 3A (Community Choice Aggregation)

EMISSIONS TYPE	2030	2050
GHG	499,867 $MTCO_2e$	1,719,484 $MTCO_2e$
	Methodology: The 2021 residential and commercial electricity usage included in the GHG Inventory was used in conjunction with data from 32 community aggregation programs in Massachusetts to determine estimated	

	emissions reductions for 2030 and 2050 for the development of community aggregation programs across the MSA. By 2050, it was assumed all electricity would be from renewable sources based on CT's statewide goals. Participation in the aggregation program was assumed to be an opt-out type program and therefore a value of 100% was assumed.	
CO-POLLUTANTS	1,419 MT	2,027 MT
	Methodology: Co-pollutant emissions factors were sourced from EPA's AVERT tool and used in conjunction with projected electricity for 2030 and 2050.	

Cost

The Community Choice Aggregation measure is expected to have minimal costs. Given that the state legislature has not yet authorized CCA, there is no direct cost associated with this measure as municipalities can pass a resolution as part of their typical processes to demonstrate support. Once enabled, there are several models for executing CCA, but they are usually designed to minimize costs incurred by municipalities.

Funding

External funding may not be needed to establish CCA programs within the region, depending upon the model which is enabled by state legislation.

Authority to Implement

Timeline: Short Term – 1 to 2 years for project implementation.

Milestones: Once enabling legislation is passed at the state level, initial municipal coalitions can form relatively quickly, with additional municipalities joining over time. In New Hampshire, the Community Power Coalition began serving residents within a year and a half of its incorporation, with the coalition doubling in size the year after.

Table 27: Authority to Implement - Measure 3B (Community Choice Aggregation)

3.B.i CCA	AUTHORITY TO IMPLEMENT
Municipalities	Local governments can pass resolutions in support of CCA and once enabled, purchase power to reduce costs for their customers.
COGs	COGs play a role in this process by clarifying the financial, administrative and technical requirements for establishing community choice aggregation.
State	Pass legislation to enable CCA.

Metrics

Tracking progress of the implementation of the Community Choice Aggregation measure and submeasures can be accomplished using the following metrics:

- No. of municipalities that adopt a resolution in support of community aggregation

Workforce

Table 28 summarizes the necessary workforce to successfully implement community choice aggregation programs over time.

Table 28: Summary of Workforce Needs - Measure 3B (Community Choice Aggregation)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
COMMUNITY CHOICE AGGREGATION: support projects allowing municipalities to collectively purchase electricity from a supplier of their choice.	Assist municipalities in adopting local resolutions in support of **Community Choice Aggregation enabling legislation**	• Project Management Specialists • Urban and Regional Planners • Compliance Officers

CASE STUDY – COMMUNITY CHOICE AGGREGATION

While enabling legislation for Community Choice Aggregation is currently being debated in the Connecticut State Legislature, ten states have already adopted the initiative. New Hampshire's Community Power Coalition exists as a model to follow for future implementation across the state and MSA, with the coalition now purchasing power on behalf of 65 municipalities, achieving over $14 million in energy savings for customers in its first year alone. The Community Power Coalition of New Hampshire allows communities to control rates for their customers and revenues from the program fund the development of clean energy projects. Within the MSA, the Town of Fairfield was the first municipality in the MSA to pass a resolution endorsing and seeking to explore a community power program in 2024.

Chapter 4 - Waste

Greenhouse gas emissions associated with waste are a product of the material production process, the decomposition of waste, and the methods used to treat wastewater for health and safety reasons. Materials impact the environment throughout their "lifecycle": material acquisition, manufacturing, production, use, reuse/maintenance, and disposal.[32] Embodied carbon encompasses emissions throughout a product's life cycle, from extraction to end-of-life. At the end of the life cycle, many products end up in a landfill or waste incinerator. Methane emissions from landfills are a major source of anthropogenic methane emissions globally. Alternative waste disposal can include composting, which can be done at home or through municipal composting programs.

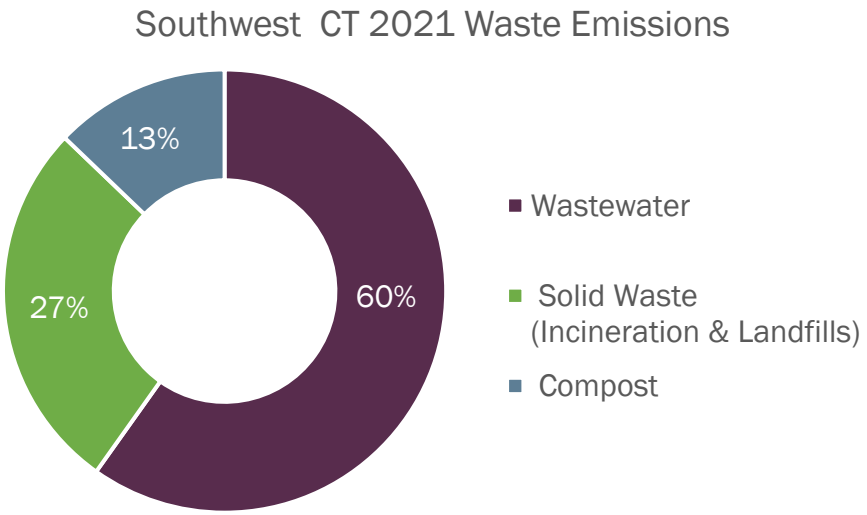

Figure 13: Waste Sector Emissions in MTCO2e

The GHG inventory quantified emissions associated with wastewater, solid waste (landfilled waste and incinerated waste), and composting in 2021 (Figure 13). While waste may only make up 1.5 percent of the region's total annual GHG emissions, residents, businesses, and municipalities can benefit in multiple ways from improved waste management strategies.

Proposed Reduction Measures

Diverting solid waste, through actions such as waste prevention, reuse, recycling, and composting, can reduce waste disposal associated emissions. Solid waste is a broad term that includes solid and hazardous waste including many waste streams that are potentially reusable or recyclable depending on market demand for specific materials. Greenhouse gas emissions

[32] Sustainable Materials Management Basics | EPA

are associated with organics (wood, food waste, leaf waste, stumps and brush, etc.). Composting converts food and other organic waste into productive soils that can then be used to grow plants. Because composting also digests (breaks down) organic material that would otherwise be sent to a landfill—when implemented at-scale, it has the potential to greatly reduce the amount of methane produced.[33]

This plan proposes one high-impact measure for lowering emissions to meet the reduction targets in the Waste sector: A) Waste Diversion. The measures and submeasures are summarized in Table 29 and described in the following sections.

Note: Waste measures in this plan are within the municipal/regional jurisdiction. However, additional state action will be needed to advance this action area.

Table 29: GHG Reduction Measures - Waste Sector

WASTE		
4	**MEASURE**	**SUBMEASURE**
A	**WASTE DIVERSION:** expand materials management, waste diversion (e.g. food scraps), and waste processing programs.	i. Advocate for **waste reduction legislation** (e.g. Extended Producer Responsibility, Unit-Based Pricing)
		ii. Provide **technical assistance for regional waste management practices** (e.g. Regional Waste Authority, analysis of infrastructure/systems)
		iii. Assist with **applying for/implementing state waste funding programs** e.g. CMMS (comprehensive materials management strategy), food waste diversion sites/programs

Waste Measure Benefits

Cost Benefits

- Regional and municipality-wide waste management programs can help lower costs and provide subsidies for communities.
- Additional waste disposal programs and wastewater treatment retrofits create job opportunities in the Waste Management industry and within the utilities and construction trades.

[33] Composting | EPA

- Diverting about 30 percent of waste to composting can save approximately $60 per ton compared with incineration or landfilling.[34]

Climate Resilience

- Redirecting solid waste from landfills and incineration to an anaerobic digester or composting can reduce local VOCs and methane released, which in turn can reduce the impacts of local urban heat island effects.

Public Health

- Increased regionwide disposal programs reduce the amount of illegal dumping.
- Reducing waste conserves energy and reduces the air, soil, and water contamination that is often caused by the manufacture of those materials and supplies that become waste.[35]
- Managing waste as an asset rather than a liability has positive public health consequences by creating recycling jobs, eliminating illegal dumping, minimizing public exposure to putrescible, odiferous and bioactive waste streams.
- Composting facilities generate twice as many jobs as landfills, and four times more than incinerators, per million dollars invested—spurring employment and supporting a local green workforce.[34]

Potential Disbenefits

- The creation of new facilities to handle organic waste can result in increased traffic and noise, while improper operations may attract pests and create odors. Siting facilities in a proper area will be necessary to prevent conflicts with residents. Strict adherence to proper heat levels and aeration protocols can mitigate smell and pest issues, requiring inspections to ensure that standards are being upheld.
- The collection of organic waste from households and businesses may create more localized air pollution, even while overall the diversion of waste will reduce the emissions that are currently produced by trucking excess waste out of state.
- Public inexperience with new organic waste and recycling collection programs can lead to unintentional contamination of those waste streams. Contamination can be mitigated with educational programs and campaigns.

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[34] Farhidi F. et al. (2022) How the US Economy and Environment can Both Benefit From Composting Management.
[35] Waste Reduction | CT Department of Energy and Environmental Protection

Measure 4A: Waste Diversion

Increasing waste diversion across the region is essential for reducing GHG emissions and supporting a circular economy. The following submeasures represent key strategies to accelerate progress toward sustainable waste management systems through coordinated efforts for policy advocacy, technical support, and funding access.

4.A.i. Advocate for waste reduction legislation: Advocating for waste reduction legislation such as Extended Producer Responsibility (EPR) and Unit-Based Pricing (UBP) reduces waste by targeting the incentives and behaviors that lead to waste generation in the first place.

4.A.ii. Provide technical assistance for regional waste management practices: Offering technical assistance for regional waste management practices, such as regional waste authorities, supports more efficient waste management systems by improving coordination and optimizing resources across multiple municipalities.

4.A.iii. Assist with applying for/implementing state waste funding programs: Securing resources by applying for/implementing state waste funding programs helps communities establish and expand recycling, composting, and waste reduction initiatives.

Geographic Location

The implementation of the proposed waste diversion submeasures is expected to occur at the municipal, regional, and state levels. Waste legislation is expected to occur at the state level, thus having a regionwide impact. Regional waste management will require coordination between municipalities and their respective Councils of Government to shift waste management from its current municipal scale to a more regional operation. Application for and implementation of state program funding is expected to occur at the municipal level with the possibility for greater regional applications.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Waste Diversion measure are summarized in Table 30. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 30: GHG and Co-Pollutant Reductions - Measure 4A (Waste Diversion)

EMISSIONS TYPE	2030	2050
GHG	9,419 $MTCO_2e$	13,088 $MTCO_2e$
	Methodology: The CT DEEP 2024 Solid Waste report identified that an additional 708,395 tons of waste would need to be reduced or diverted across the state to meet goals set in the 2016 Comprehensive Materials Management Strategy (CMMS). The portion of the needed reduction/diversion which can be allocated to the Bridgeport-	

	Stamford Norwalk MSA was calculated. It was assumed that while the statewide goals for 2024 were not met, this could be achieved by 2030, and a greater reduction or diversion could also be achieved by 2050.	
CO-POLLUTANTS	43 MT	43 MT
	Methodology: EPA LandGEM emission factors for HAPs and CAPs in relation to Landfill emissions were applied to total diverted waste from landfills. Limited data was available to complete incineration co-pollutant emissions.	

Cost

Costs associated with this measure include expansion of recycling and food waste programs. Recycling is expected to cost $3,212,358, and with projected inflation by 2050 the projected cost would be $5,179,927. This was sourced from the EPA CCAP estimation resource.

Food waste diversion expansion is expected to cost $20,373,343, and with projected inflation by 2050 the projected cost would be $32,852,016. This cost was developed through applying the state's average grant program costs to an expected number of programs by a given year. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

The Southwestern CT region has been advancing waste management efforts, particularly food waste diversion, supported by grant funding through the Materials Management Infrastructure (MMI) Grant Program. Greenwich, Stratford, and the Housatonic Resource Regional Authority (HRRA) were awarded MMI grants in early 2025. Information on the MMI grant and several others which can advance waste diversion are included in Appendix III.

Authority to Implement

Timeline: Long Term – 5+ years for project implementation.

Milestones: Changes to the current waste management landscape are expected occur gradually. While enabling legislation and waste diversion pilot programs can be enacted within the course of a few years, building up the collection and management capacity needed to accomplish town-, or region-wide waste diversion is a long-term process. Similarly, while regional waste authorities can accomplish economies of scale in waste diversion though management of a larger service area, the creation of a new authority, expansion of an existing one, and the transition from municipal or private handlers is a long-term process.

Table 31: Authority to Implement - Measure 4A (Waste Diversion)

4.A.i: WASTE LEGISLATION	AUTHORITY TO IMPLEMENT
Municipalities	Municipalities can promote and implement source reduction, recycling, composting
CTDEEP	Implement actions outlined in CTDEEP's Comprehensive Materials Management Strategy (the statewide solid waste management plan), a roadmap to achieve waste diversion.
COGs	Section 4-14s, A Regional Performance Incentive program authorizes the COGs to undertake a range of projects including waste diversion to achieve multi-town objectives with the approval of the secretary of OPM.
4.A.ii: REGIONAL WASTE MANAGEMENT	**AUTHORITY TO IMPLEMENT**
Municipalities	Municipalities have significant authority over solid waste management within their boundaries, including collection, disposal, and recycling programs. Intermunicipal and regional strategies for waste management are authorized by the powers granted to municipalities.
CTDEEP	Partner with local governments and COGs to plan for, implement, and evaluate regional waste reduction programs.
COGs	COGs have the authority to implement regional waste management solutions if two or more municipalities choose to work on waste management.
4A.iii: STATE PROGRAMS	**AUTHORITY TO IMPLEMENT**
Municipalities	Implement solid waste, recycling, and waste diversion programs established by the state.
CTDEEP	Implement actions outlined in CTDEEP's Comprehensive Materials Management Strategy.
COGs	COGs provide technical assistance with implementing state solid waste, recycling and waste diversion programs and coordinate/administer regional household hazardous waste collection events.

Metrics

Tracking progress of the implementation of the Waste Diversion measure and sub-measures can be accomplished using the following metrics:

- No. of materials developed or events hosted for waste management
- No. of municipalities in favor of waste reduction legislation
- Tons of organic and recycled waste diverted
- No. of municipalities with food waste diversion programs

Workforce

Table 32 summarizes the necessary workforce to successfully implement waste diversion initiatives over time.

Table 32: Summary of Workforce Needs - Measure 4A (Waste Diversion)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
WASTE DIVERSION: expand materials management, waste diversion (e.g. food scraps), and waste processing programs.	Advocate for waste reduction legislation (e.g. Extended Producer Responsibility, Unit-Based Pricing)	• Project Management Specialists • Urban and Regional Planners • Compliance Officers
	Provide technical assistance for regional waste management practices (e.g. Regional Waste Authority, analysis of infrastructure/systems such as trucking)	• Chemists • Water and Wastewater Treatment Plant/System Operators
	Assist with applying for/implementing state waste funding programs (e.g. CMMS) and food waste diversion sites/programs	• Material Moving Workers • Refuse and Recyclable Material Collectors

CASE STUDY – WASTE DIVERSION

Food Waste Programs

The City of Stamford was awarded funding under US EPA's Solid Waste Infrastructure for Recycling Grants program in 2023. The project involves creating four new food waste collection points, a curbside drop-off program for residential and commercial food waste, a recycling education and outreach program for the public. In addition, a pilot for a food waste collection and composting program will be formed, resulting in three new public composting sites. Overall, this initiative is projected to increase food waste diverted from landfills by 165 tons, and increase composting capability by 430 percent, from 1,000 to 4,300 pounds per day.

Bridgeport, CT. Photo by MetroCOG.

Chapter 5 - Agriculture and Environmental Protection

Connecticut's agriculture sector represents a relatively small portion of overall GHG emissions compared to major U.S. farming states. According to EPA's latest inventory, agriculture accounts for 10 percent of overall GHG emissions nationwide.[36] Agriculture operations contribute to climate change mainly through methane, nitrous oxide, and carbon dioxide emissions from livestock, soil management, and fossil fuel use for farming equipment.

In the Southwest CT region, agriculture has the lowest total sector emissions at 3,772 $MTCO_2e$ (0.004 $MMTCO_2e$), which represents less than one percent of the region's emissions. This sector has three main sources of emissions and is dominated by enteric fermentation emissions from livestock at 69 percent of the sector (Figure 14).

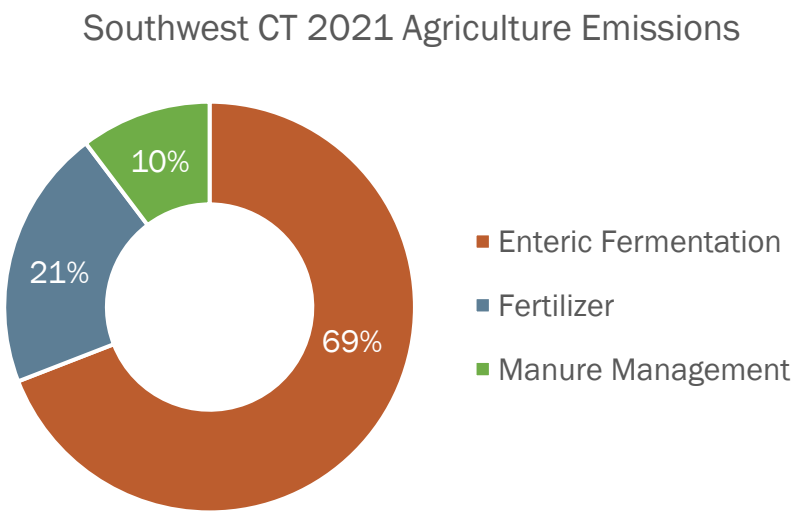

Figure 14: Agriculture Sector Emissions

Connecticut's forests play a vital role in capturing and storing carbon dioxide, helping to mitigate climate change through carbon sequestration. Forests in Southwestern CT are estimated to sequester **704,913 $MTCO_2e$** (0.7 $MMTCO_2e$) annually.

[36] Inventory of U.S. Greenhouse Gas Emissions and Sinks | EPA

Proposed Reduction Measures

Developing sustainable infrastructure requires a careful balance between future-proofing systems against climate risks and simultaneously conserving energy, enhancing carbon sequestration, mitigating urban heat, and preserving healthy soils and ecosystems.

Land use conservation practices protect critical natural resources from urban encroachment. Additionally, implementing targeted actions to cut emissions associated with farming is essential to preserving local food production, which decreases emissions associated with long distance transport of foods.

This plan proposes two high-impact measures for lowering emissions to meet the reduction targets in the Agriculture & Environmental Protection sector: A) Sustainable Development & Agriculture, and B) Resilience Hubs. The measures and submeasures are summarized in Table 33 and described in the following sections.

Table 33: GHG Reduction Measures – Agriculture & Environmental Protection Sector

AGRICULTURE & ENVIRONMENTAL PROTECTION		
5	MEASURE	SUBMEASURE
A	**SUSTAINABLE DEVELOPMENT & AGRICULTURE:** leverage nature-based strategies to sequester atmospheric carbon and reduce emissions from land development and agricultural practices.	i. Support **low impact development across plans and projects**, which incorporate CO2 removal (e.g. urban greening, green infrastructure, tree planting)
		ii. Support **conservation across plans and projects** (e.g. protecting forests and wetlands)
		iii. Support **agriculture practices that reduce emissions** from farm operations and improve long-term farm viability
B	**RESILIENCE HUBS:** public-serving facilities to provide climate action education, information/resources, and services.	i. Provide **technical assistance for organizations** implementing community resilience hubs

Agriculture and Environmental Protection Benefits

Cost Benefits

- Limiting sprawl reduces housing and transportation costs for communities.
- Improvement in local property values can increase in conjunction with developed green spaces.

- Increased employment opportunities for municipal public works, parks department, arborists, and landscapers.
- Some sustainable agricultural practices have input cost savings.
- Agricultural businesses can participate in the growing market for sustainably produced food.

Climate Resiliency Benefits

- The preservation of natural lands can provide natural barriers during major storm events and reduce damage to properties and buildings.
- Increased tree canopy produces shade, which cools the area and reduces urban heat island effect.
- Access to local, sustainable food production can build resilience to supply chain disruptions.

Public Health Benefits

- Bridgeport's "Cool Corridors" initiative is planting trees along major pedestrian routes to reduce urban heat islands and provide shade, improving walkability and public health.[37]
- Conservation of forested areas creates carbon sinks and improves air quality for the surrounding communities.
- Trees can remove contaminants from the air, for every 10 percent increase in tree canopy cover, there is a 4 percent decrease in asthma emergency department visits in CT.[38]
- Protection of mature trees protects communities from pollutants infiltrating soil and contaminating nearby water bodies.
- The addition of trees to communities has a positive impact on the physical and mental health of the population.
- Developing vacant lots through providing green spaces, studies have found decreased feelings of poor mental health by 62.8 percent for individuals living near green places versus vacant lots.[39]
- Reducing synthetic fertilizer and pesticides can improve air and water quality.

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[37] Cities Meet Mounting Urban Heat Challenges With Trees | Arbor Day Foundation
[38] Lee, S. et al. (2022) Tree canopy, pediatric asthma, and social vulnerability: An ecological study in Connecticut
[39] South, E. C. et al (2018) Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults

Potential Disbenefits

- To prevent the premature death of newly planted trees and other green infrastructure, consistent watering and maintenance are required to ensure high survival rates. Therefore, additional funding will be required for municipal staff and equipment to ensure that new and existing trees are cared for properly.
- An increase in street trees can create mobility issues as branches fall after storms, visual impairments for roadway users when overgrown, and can uproot roads and sidewalks. Placing trees in locations suitable to their size where they do not interfere with critical infrastructure and consistent pruning to prevent overgrowth can mitigate such concerns.
- While trees absorb certain air pollutants, they can contribute to the spread of allergens such as pollen in the air.

Measure 5A: Sustainable Development & Agriculture

Leveraging nature-based strategies is a powerful approach to sequester atmospheric carbon and reduce emissions associated with land development and agricultural practices. These strategies not only help mitigate climate change but also enhance ecosystem resilience, improve air and water quality, and support biodiversity. By integrating conservation, low-impact development, and sustainable agriculture into planning and projects, communities can achieve long-term environmental and economic benefits while advancing toward net-zero goals.

5.A.i. **Support low impact development across plans and projects which incorporate CO_2 removal**: Encourage development practices that minimize environmental disruption and enhance carbon sequestration from the atmosphere. Examples of these practices include urban greening, green infrastructure, and tree planting.

5.A.ii. **Support conservation across plans and projects**: Prioritize the protection and restoration of forests, wetlands, and other critical ecosystems across planning efforts and projects in the region.

5.A.iii. **Support agriculture practices that reduce emissions from farm operations and improve long-term farm viability:** Promote farming techniques such as cover cropping, reduced tillage, and nutrient management to lower greenhouse gas emissions. These practices not only cut emissions but also improve soil health, water retention, and overall farm productivity, enabling more sustainable agricultural systems.

Geographic Location

The implementation of the low impact development, conservation, and agricultural practices submeasures are expected to occur regionwide at the municipal level. Municipalities hold the power to influence the location of development, limit the practices allowed in certain areas, and

ensure new developments are required to implement sustainable initiatives through updates to their zoning regulations.

GHG and Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Sustainable Development & Agriculture measure are summarized in Table 34. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 34: GHG and Co-Pollutant Reductions - Measure 5A (Sustainable Development & Ag.)

EMISSIONS TYPE	2030	2050
GHG	39,032 $MTCO_2e$	80,998 $MTCO_2e$
	Methodology: Quantified emissions reductions associated with sustainable development and agriculture include an increase in forested area for carbon sequestration, increased area of coastal wetlands, and the expanded use of no-till and cover-cropping agricultural practices.	
CO-POLLUTANTS	231 MT	462 MT
	Methodology: Emission reduction calculations for co-pollutants were sourced from the OurTree by iTree.	

Costs

Costs associated with the Sustainable Development and Agriculture measure include expansion of forest carbon sequestration, wetland restoration, and use of cover crops. Refer to the appendix for additional information regarding the cost estimation methodology.

Forest Carbon Sequestration is expected to cost $7,691,336, and with projected inflation by 2050 the projected cost would be $12,402,280. This was sourced from the EPA CCAP Estimation Resource.

Wetland protection is expected to cost $1,458,018, and with projected inflation by 2050 the projected cost would be $2,351,054 This was sourced from the resources available from the United States Department of Agriculture.

Cover Crops are expected to cost $182,693, and with projected inflation by 2050 the projected cost would be $294,593. This was sourced from the resources available from Sustainable Agriculture Research and Education (SARE).

Funding

There are a variety of funding sources which can support sustainable development and agriculture, including some which municipalities within the region are already leveraging. This has included Stamford, Stratford, and Ridgefield, which received Urban and Community Forestry grants for urban and community forestry projects. The 2025 Agricultural Enhancement program awards included projects in Westport and Bridgeport for farmer's market outreach and expansion of local food production, respectively. Other programs which have also funded cities, towns, and organizations in the region include Climate Smart Agriculture and Foresty, Trees for Communities, and the Long Island Sound Futures Fund, among others. Refer to Appendix III for additional information about grant requirements and eligibility.

Authority to Implement

Timeline: Short Term – 1 to 2 years for project implementation.

Milestones: The implementation of changes to municipal zoning codes to promote low-impact development, ensure conservation, and sustainable agricultural practices could move relatively quickly, with most municipalities already aiming to adhere to these principles in their current Plans of Conservation and Development.

Table 35: Authority to Implement - Measure 5A (Sustainable Development & Ag.)

5.A.i: LID	AUTHORITY TO IMPLEMENT
Municipalities	Connecticut's enabling act authorizes municipalities to establish regulations that make reasonable consideration for the impact of such regulations on agriculture. Municipal governments may also establish funds for agricultural land preservation.
COGs	Plan for sustainable development practices and provide local municipalities technical assistance and funding to implement recommended practices.
5.A.ii: CONSERVATION	**AUTHORITY TO IMPLEMENT**
Municipalities	Conserve land for open space protection under chapter 97 section 7-131a of the Connecticut General Statutes
COGs	Plan for and map areas suitable for open space conservation and provide technical assistance to municipalities for land conservation efforts.
5.A.iii: AGRICULTURAL PRACTICES	**AUTHORITY TO IMPLEMENT**
Municipalities	Municipal zoning regulations have an important role in sustaining agricultural practices. Section 8-2(b) 7

	requires zoning to make reasonable consideration for its impact on agriculture.
COGs	COGs have the authority to provide technical assistance with agricultural practices as they impact land use, open space and zoning in general.

Metrics

Tracking progress of the implementation of the Sustainable Development and Agriculture measure and sub-measures can be accomplished using the following metrics:

- No. of planning efforts which integrate low impact development and/or conservation
- No. of materials produced or events hosted for sustainable agriculture

Workforce

Table 36 summarizes the necessary workforce to successfully implement sustainable development and agriculture initiatives over time.

Table 36: Summary Workforce Needs - Measure 5A (Sustainable Development & Ag.)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
SUSTAINABLE DEVELOPMENT & AGRICULTURE: leverage nature-based strategies to sequester atmospheric carbon and reduce emissions from land development and agricultural practices.	Support **low impact development across plans and projects**, which incorporate CO2 removal (e.g. urban greening, green infrastructure, tree planting)	• Environmental Scientists and Specialists • Civil Engineers • Farming, Fishing, and Forestry Occupations
	Support **conservation across plans and projects** (e.g. protecting forests and wetlands)	• Natural Sciences Managers
	Support **agriculture practices that reduce emissions** from farm operations and improve long-term farm viability	• Pest Control Workers • Agricultural Workers • Farmworkers and Laborers, Crop, Nursery, and Greenhouse Farmers, Ranchers, and Other Agricultural Managers

CASE STUDY – Sustainable Development & Agriculture
Bridgeport Urban and Community Forestry Grants

Awarded through CTDEEP, U.S. Forest Service Urban and Community Forestry Grant funding has supported several community initiatives to increase and better maintain urban forests in Bridgeport. Groundwork Bridgeport, in partnership with EMERGE Connecticut, is working to plant at least 200 trees in underserved neighborhoods while conducting ongoing maintenance to ensure their survival. The Aspetuck Land Trust, in collaboration with the Wakeman Boys and Girls Club, is using the funding to plant a dense "microforest" in Seaside Park. These projects serve to increase tree canopy cover to improve carbon sequestration while combatting the urban heat island effect, promoting better stormwater infiltration, and enhancing local species diversity.

Measure 5B: Resilience

Providing technical assistance for organizations implementing community resilience hubs—which incorporate renewable energy systems, energy-efficient design, and sustainable infrastructure—reduces reliance on centralized utilities, builds educational outreach capacity across all reduction measures, and strengthens public support by involving the community in climate action.

Geographic Location

The development of Resilience Hubs is expected to occur regionwide, with locations concentrated in areas that are more prone to natural hazards such as coastal and riverine areas that are susceptible to flooding as well as city centers which endure greater exposure to extreme heat events due to the urban heat island effect.

GHG & Co-Pollutant Reductions

GHG emissions and co-pollutant reductions associated with the Resilience Hubs measure are summarized in Table 37. Refer to the appendix for information on the assumptions, data sources, and methodology used to estimate the potential reductions.

Table 37: GHG and Co-Pollutant Reductions - Measure 5B (Resilience Hubs)

EMISSIONS TYPE	2030	2050
GHG	97 $MTCO_2e$	292 $MTCO_2e$
	Methodology: It was assumed that by 2030, five resilience hubs would be established in net-zero buildings with on-site solar and battery storage. By 2050, it was assumed the region would have 15 resilience hubs. The baseline buildings were assumed to use natural gas based on EIA Commercial Buildings Energy Consumption Survey.	
CO-POLLUTANTS	0.08 MT	0.23 MT
	Methodology: Quantified several resilience hubs by 2030 and 2050. The calculations were sourced by the natural gas EIA Commercial Buildings Energy Consumption survey coupled with the EPA co-pollutant emission factors for natural gas, with the assumption that natural gas will be replaced with electricity.	

Cost

The Resilience Hubs measure is expected to cost $11,557,500, and with projected inflation by 2050 the projected cost would be $18,636,469. Refer to the appendix for additional information regarding the cost estimation methodology.

Funding

Municipalities throughout the region offer cooling and warming shelters as needed, but to provide resilience hubs with more comprehensive services with expanded community access, additional funding beyond operating budgets will likely be needed. This may come from a variety of local, state and federal sources. Refer to Appendix III for additional information about grant requirements and eligibility.

Authority to Implement

Timeline: Short to Medium Term – 1 to 5 years for project implementation.

Milestones: Most municipalities already have designated emergency related resilience hubs and hold the authority to make upgrades to those properties. Proper marketing to ensure that residents are aware of their nearest resilience hub and service enhancements are short term endeavors. The establishment of new resilience hubs or comprehensive renovations of existing hubs will take longer to secure funding and to construct.

Table 38: Authority to Implement – Measure 5B (Resilience)

5B.i: RESILEINCE HUBS	AUTHORITY TO IMPLEMENT
Municipalities	Local governments have broad authority to establish resilience hubs and other emergency preparedness related functions under Chapter 98, Section 7-148.
COGs	COGs have the authority to provide technical assistance with emergency related resilience hubs.

Metrics

Tracking progress of the implementation of the resilience measure and sub-measures can be accomplished using the following metrics:

- No. of stakeholders identified and engaged
- No. of materials produced or events hosted for resilience hubs

Workforce

Table 39 summarizes the necessary workforce to successfully implement resilience initiatives over time.

Table 39: Summary of Workforce Needs – Measure 5B (Resilience)

MEASURE	SUBMEASURE	WORKFORCE NEEDS
RESILIENCE HUBS: public-serving facilities to provide climate action education, information/resources, and services.	Provide technical assistance for organizations implementing community resilience hubs	• Training and Development Managers • Social and Community Service Managers

Measure Implementation & Next Steps

This plan will serve as a guide to taking climate action across the Southwestern CT region. The measures are intended to be implemented by municipalities and COGs in collaboration with partners including state agencies and community-based organizations. Obtaining funding to support the development of projects, programs, and policies is a critical next step to advance the measures and make progress toward 2030 and 2050 net-zero goals and targets.

Along with the CCAP, additional resources are available to support municipalities with community specific greenhouse gas emissions accounting and taking local action in alignment with this plan.

To stay up to date on regional climate action efforts and access resources, visit

https://www.swctclimate.com/

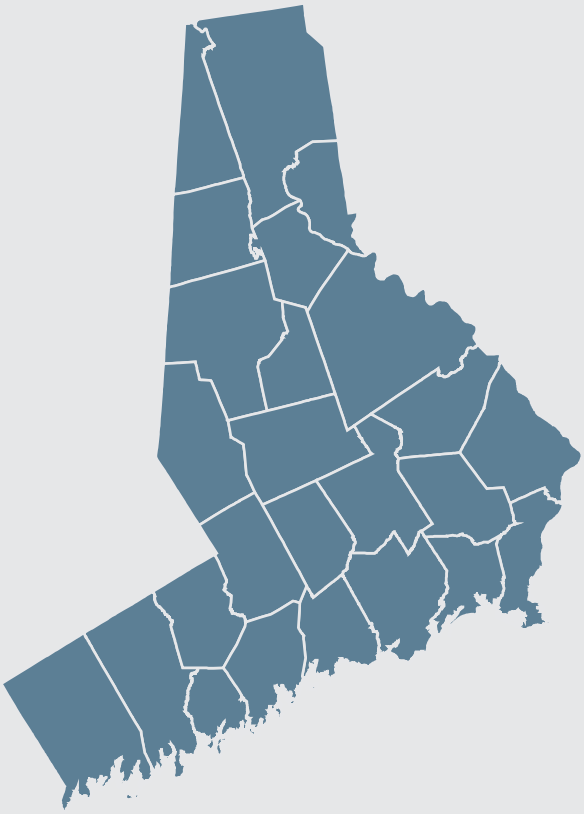
Monroe, CT. Photo by MetroCOG.

Version 2

APPENDIX

Southwest CT Climate Action Plan

Comprehensive Climate Action Plan for Bridgeport-Norwalk-Stamford Metropolitan Statistical Area



November 2025

METROCOG

WESTCOG

NVCOG

Weston & Sampson℠

Southwest CT Climate Action Plan

Appendix

I. Workforce Planning Analysis - Bridgeport-Stamford-Danbury Labor Market Area

Workforce Supply & Projections

Table A1 details the current and projected employment for the selected occupations relevant to CCAP measures.

Table A1: 2032 Workforce Projections by Occupation Title (CT DOL)

SECTOR	SOC CODE	OCCUPATION TITLE	EMPLOYMENT			ANNUAL		
			Base 2022	Projected 2032	# Change	Exits	Transfers	Open
Transportation	11-3071	Transportation, Storage, and Distribution Managers	451	510	6	14	24	44
	47-4051	Highway Maintenance Workers	224	258	3	11	11	25
	49-3000	Vehicle/Mobile Equip. Mechanics, Installers, and Repairers	3257	3492	24	126	164	314
	49-3021	Automotive Body and Related Repairers	318	323	0	14	14	28
	49-3023	Automotive Service Technicians and Mechanics	1616	1706	9	58	82	149
	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	504	537	3	19	24	46
	53-3052	Bus Drivers, Transit and Intercity	610	725	12	53	31	96
	53-6000	Other Transportation Workers	386	419	3	22	34	59
Buildings	47-0000	Construction and Extraction Occupations	11653	12994	134	423	610	1167
	47-2061	Construction Laborers	2363	2686	32	87	127	246
	11-9041	Architectural and Engineering Managers	939	1027	9	19	42	70
	17-0000	Architecture and Engineering Occupations	6449	7121	67	180	238	485
	17-1000	Architects, Surveyors, and Cartographers	634	700	7	22	23	52
	17-1011	Architects, Except Landscape and Naval	303	331	3	9	10	22
	17-1022	Surveyors	102	114	1	3	3	7
	17-2000	Engineers	4831	5402	57	118	163	338
	17-2051	Civil Engineers	685	750	6	15	26	47

	17-3000	Drafters, Engineering Technicians, and Mapping Technicians	984	1019	4	41	52	97
	17-3011	Architectural and Civil Drafters	130	136	1	6	7	14
	17-3013	Mechanical Drafters	92	89	0	3	4	7
	47-1000	Supervisors of Construction and Extraction Workers	1360	1523	16	48	66	130
	47-2000	Construction Trades Workers	9479	10578	110	336	500	946
	47-2061	Construction Laborers	2363	2686	32	87	127	246
	47-2111	Electricians	1369	1541	17	48	78	143
	47-2152	Plumbers, Pipefitters, and Steamfitters	1026	1123	10	34	58	69
	47-2181	Roofers	171	190	2	5	9	16
	47-4000	Other Construction and Related Workers	676	741	6	34	35	75
	47-4011	Construction and Building Inspectors	208	73	0	2	3	5
	49-1011	Supervisors of Mechanics, Installers, and Repairers	1209	950	8	26	42	73
	49-9021	Heating, AC, and Refrigeration Mechanics and Installers	1094	172	6	4	38	14
	49-9031	Home Appliance Repairers	67	731	1	51	5	75
	49-9071	Maintenance and Repair Workers, General	2957	731	35	51	228	75
	11-1021	General and Operations Managers	11154	12195	104	291	627	1022
	11-3000	Operations Specialties Managers	12218	13843	162	332	555	1049
	47-2141	Painters, Construction and Maintenance	749	834	8	27	34	69
	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	117	136	2	4	6	12
	37-1000	Supervisors of Bldg and Grounds Cleaning and Maintenance	1597	1827	23	77	106	206
	37-1011	Supervisors of Housekeeping and Janitorial Workers	664	769	10	37	45	92
	37-2000	Building Cleaning and Pest Control Workers	11196	12487	129	832	821	1782
	49-9012	Control and Valve Installers/Repairers, Except Mech. Door	92	89	0	3	4	7
	49-9000	Other Installation, Maintenance, and Repair Occupations	6223	6824	60	259	313	632
Electric Power	17-2141	Mechanical Engineers	747	885	14	18	26	58
	17-2199	Engineers, All Other	643	718	8	16	22	46
	17-3029	Engineering Techs, Except Drafters, All Other	79	93	1	3	4	8
	47-2073	Operating Engineers/Other Construction Equip. Operators	629	703	7	22	34	63
	49-0000	Installation, Maintenance, and Repair Occupations	11883	12753	87	474	605	1166

	49-1000	Supervisors of Install., Maintenance, and Repair Workers	1209	1289	8	48	54	110
	49-3053	Outdoor Power Equip. and Other Small Engine Mechanics	221	245	2	12	11	25
	49-9000	Other Installation, Maintenance, and Repair Occupations	6223	6824	60	259	313	632
	51-8000	Plant and System Operators	347	345	0	13	19	32
	17-2071	Electrical Engineers	495	524	3	12	15	30
	17-2072	Electronics Engineers, Except Computer	124	131	1	3	4	8
	17-2081	Environmental Engineers	104	117	1	3	4	8
	17-3023	Electrical and Electronics Engineering Techs	165	164	0	8	7	15
	17-3031	Surveying and Mapping Technicians	99	107	1	4	8	13
	49-2000	Electrical/Electronic Equip. Mechanics, Installers/Repairers	1194	17464	-5	528	74	1506
	49-2022	Telecom. Equip. Installers/Repairers, Except Line Installers	707	673	-3	24	45	66
	51-2028	Electric. Assemblers, Except Coil Winders/Tapers/Finishers	849	843	-1	42	47	88
	51-4121	Welders, Cutters, Solderers, and Brazers	387	408	2	12	26	40
	51-4041	Machinists	1104	1173	7	45	65	117
	51-4000	Metal Workers and Plastic Workers	3693	3701	1	149	219	369
	19-2031	Chemists	212	234	2	3	12	17
	51-8031	Water and Wastewater Treatment Plant/System Operators	184	185	0	8	10	18
Waste	53-7000	Material Moving Workers	11925	13041	112	685	1093	1890
	53-7081	Refuse and Recyclable Material Collectors	222	245	2	11	18	31
	11-9013	Farmers, Ranchers, and Other Agricultural Managers	727	731	0	51	24	75
	37-1012	Supervisors of Landscaping, Lawn Serv., and Groundskeep.	933	1058	12	40	61	113
	37-3000	Grounds Maintenance Workers	5173	5945	77	273	434	784
	37-3011	Landscaping and Groundskeeping Workers	4965	5706	74	265	414	753
	37-2021	Pest Control Workers	182	212	3	6	19	28
	45-0000	Farming, Fishing, and Forestry Occupations	350	367	2	20	32	54
Ag. & Enviro. Protection	45-2000	Agricultural Workers	317	332	2	18	29	49
	45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	203	206	0	12	18	30
	45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	91	99	1	5	9	15

	Transportation and Material Moving Occupations	14,303	15,082	779	5.4%		
17-0000	Architecture and Engineering Occupations	6,449	7,121	67	10.4%	1.04	1.03
		2,612	2,747	135	5.2%		
37-0000	Building and Grounds Cleaning and Maintenance Occupations	17,966	20,259	229	12.8%	1.37	1.45
		5,501	5,594	93	1.7%		
49-0000	Installation, Maintenance, and Repair Occupations	11,883	12,753	87	7.3%	0.79	0.78
		6,315	6,544	228	3.6%		
45-0000	Farming, Fishing, and Forestry Occupations	350	367	2	4.9%	0.01	0.15
		996	977	-19	-1.9%		
41-0000	Sales and Related Occupations	35,422	35,454	3	0.1%	1.03	1.00
		14,476	14,102	-375	-2.6		

Although not included in the location quotient analysis due to data incompleteness, *tree fallers* (trained and specialized arborists who cut down trees) and *solar photovoltaic installer* jobs are also foreseen to grow in demand.

Additionally, significant numbers of automotive mechanics, electricians, and salespersons for technological equipment and services are also needed although their rates of employment in Connecticut are similar to national trends.

Aligning with the measures mentioned in this plan, there are four industries that stand out as related sectors for job creation in the Southwestern CT region. The four industries are described according to the US Bureau of Labor Statistics definitions.

Utilities

The utilities industry includes all jobs within utility companies and services, those within the electric power generation, transmission, distribution, and wastewater treatment sectors. The measures within this plan, such as carrying out increased renewable electricity use, storage, and generation projects, or projects involving efficiency improvements to wastewater treatment systems, call for the creation of more clean energy focused jobs within the utilities companies and the sector overall. Starting from a 2022 base year, the CT Department of Labor predicts the

Southwestern Connecticut Labor Market Area will experience a decrease of -12.4% by the year 2032, totaling 93 fewer industry professionals within this sector.

Construction

The construction sector is comprised of several types of construction, including residential and commercial. This could include jobs oriented towards new construction, retrofits, maintenance, and building repairs. Actions such as retrofitting municipal, residential, and commercial buildings would directly contribute to creating jobs within this sector. To further the goals of this plan, industry leaders can lean on established workforce development programs and job boards to increase the number of construction workers coming from low-income areas. The CT Department of Labor predicts growth of 10.8% by the year 2032, totaling 1,301 new construction sector jobs in Southwestern Connecticut.

Transportation and Warehousing

Transportation and Warehousing is the encompassing sector for all types of transportation, including the public transit and freight services mentioned in this plan. The actions within this plan involve the training of employees to properly operate new carbon free or less carbon intensive vehicles, such as electric public transit buses, low carbon freight vehicles, or alternative fuel school buses. The CT Department of Labor predicts an 18.3% increase in jobs by 2032, which is a numeric increase of 1,551 jobs for this sector in Southwestern Connecticut.

Waste Management and Remediation Services

Waste Management and Remediation Services is a subsector of the 'Administrative and Support and Waste Management and Remediation Services' sector. The subsector encompasses all waste collection, waste treatment and disposal, remediation, and other waste management services. This subsector covers job creation from actions in this plan that involve waste services such as composting, recycling, and additional trash disposal strategies mentioned, as well as cleanup of contaminated buildings or lots such as brownfield sites or landfills. Actions within this plan that would create jobs in this sector involve the use of landfills or brownfields as redevelopment or electricity generation sites and any new waste management options in municipalities or across the region. The CT Department of Labor predicts a 13.3% increase in jobs for the subsector by 2032, totaling 200 jobs created for Southwestern Connecticut.

Potential Actions, Solutions and Key Partners

A combination of on-the-job training, internships, apprenticeships for skilled blue-collar occupations and formal degree programs, including higher education programs for positions requiring advanced education are necessary to train the workforce necessary for CCAP implementation.

19-1000	Life Scientists	668	805	14	10	34	58
19-2041	Environmental Scientists and Specialists, Including Health	182	200	2	3	12	17
11-9121	Natural Sciences Managers	169	195	3	4	8	15
11-3131	Training and Development Managers	156	172	2	4	8	14
11-9141	Property, Real Estate, and Community Association Managers	1374	1532	16	61	49	126
11-9151	Social and Community Service Managers	765	858	9	26	36	71
13-1041	Compliance Officers	989	1071	8	36	42	86
13-1082	Project Management Specialists	1837	1995	16	44	88	148
19-3051	Urban and Regional Planners	60	66	1	2	3	6
43-3031	Bookkeeping, Accounting, and Auditing Clerks	3982	3916	-7	256	201	450
11-2000	Advertising, Marketing, Promotions, PR, and Sales Managers	5321	5731	41	132	280	453

Government & Support

Potential Workforce Shortages and Challenges

Potential workforce shortages were identified through a location quotient analysis shown in Table A2. As a proportion of total employment, key occupational categories in Connecticut generally track at or slightly below national trends. Modest growth targets in these categories, both in real and proportional terms, would close the gap.

As shown by the location quotients significantly less than 1, there is a concerning shortage of the following:

- Construction and Extraction Occupations
- Transportation and Material Moving Occupations
- Installation, Maintenance, and Repair Occupations, and
- Farming, Fishing, and Forestry Occupations
-

Table A2: Location Quotient Analysis - SWCT Labor Market Area vs. National Trends

		SWCT Labor Market Area vs. National					
NAICS Code	Occupation	Base 2022	Projected 2032	# Change	% Change	LQ 2022	LQ 2032
47-0000	Construction and Extraction Occupations	11,653	12,994	134	11.5%	0.67	0.69
		7,336	7,521	185	2.5%		
53-0000		22,859	25,332	247	10.8%	0.67	0.67

Apprenticeships

The State of Connecticut plays a key role in developing the future workforce, including apprenticeships for skilled blue-collar occupations. Apprenticeship programs in the State of Connecticut are administered by the Department of Labor (CT DOL), Office of Apprenticeship Training. Skilled consultants provide technical assistance, monitoring, and consulting services to qualified employers willing to take on the responsibilities and obligations of program sponsorship. CTDOL is the state's only federally authorized entity for Registered Apprenticeship Programs and currently works with more than 1,800 businesses that employ approximately 7,000 Registered Apprentices. Many of the various apprenticeship programs would likely be key pipelines for occupations critical for implementing the CCAP measures.

A featured apprenticeship opportunity of relevance to many CCAP measures pertaining to electrification is the Hartford Electricians Joint Apprenticeship and Training Committee. Other apprenticeships include carpentry, photovoltaic electrician, heating-cooling mechanic, pump servicer and installer, and solar mechanic, to name a few.

Other existing programs and initiatives of note include:

CT Building Trades Training Institute (BTTI): Founded by the CT State Building Trades Council in 2022, the CT Building Trades Training Institute (BTTI) is a construction readiness program that will prepare CT residents interested in applying for and/or entering a registered union apprenticeship; especially those from historically marginalized populations such as people of color, women, and opportunity youth. BTTI offers training in generalize apprenticeship readiness, a "Women Can Weld" course, and drywall finishing.

Connecticut Technical Education and Career System (CTECS) – CTECS is a leading Career Technical Education (CTE) provider in the State of Connecticut, operating 17 diploma-granting technical high schools, one technical education center and two airframe mechanics and aircraft maintenance programs. The school system provides a direct employment pipeline for high school students and adult learners, serves approximately 11,200 full-time high school students, offering 31 career technical education programs. CTECS apprenticeship programs specifically relating to CCAP workforce development needs include training in Electrical, Heating/Cooling, Plumbing, and Sheet Metal trades.

Higher Education - University of Connecticut and Connecticut State Colleges and Universities

As the State's flagship public university, the University of Connecticut (UConn) plays an indispensable role in developing a highly skilled workforce, and the clean energy sector is no exception. With a total enrollment of 33, 554 (including 25,304 undergraduates and 6,883 graduate students), UConn educates a large percentage of Connecticut's future workers and leaders across an array of fields, awarding 5,739 bachelor's degrees and 1,797 graduate degrees in 2023-2024.

Connecticut State Colleges and Universities (CSCU) consists of 6 public colleges and universities – 4 state universities, CT State Community College (with 12 campuses) and Charter Oak State College (online). CSCU enrolls roughly 85,000 students. Between 2012-23 and 2023-24, the CSCU system has conferred roughly 66,000 bachelor's degrees and 16,000 master's degrees.

UConn offers multiple programs with curriculum relevant to CCAP workforce needs. A partial listing is provided below.

Undergraduate Programs

College of Agriculture, Health and Natural Resources

- Agriculture, Health and Natural Resources (BS) - An interdisciplinary major designed for students who want broad training in agricultural, environmental, and/or health sciences
- Economics of Sustainable Development and Management (BS) - Prepares students to use economic analysis and quantitative methods to understand and evaluate decision problems faced by individuals, firms, and public agencies.
- Environmental and Natural Resource Economics (BS) - Prepares students to use economic analysis and quantitative methods to understand and evaluate complex interactions between economic markets, societal values, human needs and wants, and government policies. The curriculum incorporates economics into the study of pollution (air, water, and land), waste disposal and recycling, business and consumer behavior, sustainable development, climate change and adaptation, pollution control, energy, renewable resources, environmental justice, poverty, economic valuation of environmental protection, benefit cost analysis, and policy evaluation.
- Environmental Sciences (BS) and (BA) - Curriculum offers a comprehensive approach to the study of environmental problems, including not only a rigorous scientific background, but also detailed analyses of the social and economic implications of environmental issues.
- Landscape Architecture (BS) – This program includes instruction in Histories and theories of landscape, Construction techniques, Plant and soil science, and other skills necessary for a career in landscape architecture.
- Natural Resources (BS) - Prepares students for careers related to the management of natural resources. Students develop skills in applying modern technology, concepts and principles dealing with sustainable development, environmental protection and resource conservation.
- Plant Science (BS)- Focuses on the science and practices associated with sustainable plant production and/or use within managed systems. Courses emphasize practices and concepts related to reducing environmental impact during production and in managed land use systems.

College of Engineering

UConn's College of Engineering provides education and training for the highly skilled engineers necessary for the successful implementation of clean energy and emission reduction projects. Relevant engineering degrees offered include:

- Civil Engineering (BSE)
- Electrical Engineering (BSE)
- Environmental Engineering (BSE)
- Management and Engineering for Manufacturing (BS)
- Materials Science and Engineering (BSE)
- Mechanical Engineering (BSE)
- Multidisciplinary Engineering (BSE)

Ratcliffe Hicks School of Agriculture

The Ratcliffe Hicks School of Agriculture confers Associate of Applied Science Degrees in Animal Science, Plant Science, and Urban Forestry and Arboriculture. Students include recent high school graduates as well as adults who are interested in continuing education or a career change. Course work offers a balance between technical and theoretical aspects of each subject with emphasis on hands-on learning.

- Plant Science (AAS) - Plant Science majors may concentrate in ornamental horticulture, turfgrass management, or sustainable crop production. Graduates pursue careers in golf course management, sports turf management, floriculture, landscape and grounds maintenance, greenhouse and garden center operations, nursery management, interiorscaping, park and land management, public horticulture or various positions within the entire food crop production chain from field to fork.
- Urban Forestry and Arboriculture (AAS) - Urban Forestry and Arboriculture majors focus on the care and maintenance of individual trees and urban forest tracts near buildings, roads, and other developments. This major provides students with needed vocational skills to pursue a career in arboriculture and urban forest management, including the knowledge required to sit for the CT Arborist license exam.

Graduate Programs

UConn offers multiple graduate degree programs and post-graduate certificates relevant to developing the workforce necessary for successful CCAP implementation. A partial listing of these programs include:

- Advanced Manufacturing for Energy Systems (MS)
- Agricultural and Resource Economics (PhD)
- Applied and Resource Economics (MS)

- Biodiversity and Conservation Biology (MS)
- Civil Engineering (MS, PhD)
- Electrical Engineering (MS, PhD)
- Energy and Environmental Management MS)
- Environmental Engineering (MS, PhD)
- Natural Resources: Land, Water, and Air (MS, PhD)
- Plant Science (MS, PhD)
- Power Engineering (Certificate)
- Power Grid Modernization (Certificate)
- Sustainable Environmental Planning and Management (Certificate)

Workforce Development Programs for Green Jobs

In addition to actions that should enhance the number of jobs created in related sectors, two actions are directly related to workforce development within the southwestern Connecticut region. The state of Connecticut has several career development tools and websites that are focused on the procurement of skilled workers in 'green' industries specifically.

CT Governor's Workforce Council

The Connecticut Governor's Workforce Council (GWC) is the state leading workforce development agency, serving as the "prime coordinator for businesses, educators, trainers, state agencies, state workforce boards, non-profits, and others". Comprised of 51 business, collegiate, and state leadership members, the GWC has a unique opportunity to shape the Connecticut workforce to its growing and most prominent industries.

Connecticut Clean Economy Council CCEC

The Connecticut Clean Economy Council is an advisory council including leaders from the Department of Economic Community Development, the Department of Energy and Environmental Protection, Office of Policy and Management, Department of Transportation, Office of Workforce Strategy and the Office of the Governor, the CT Green Bank, and Connecticut Innovations. This council was formed to engage businesses to connect and communicate on relevant opportunities, inform needs and opportunities, and help develop workforce training programs focused on growing Connecticut's clean economy.

Efficiency for All

Efficiency for All is a Connecticut based green jobs focused workforce training program. The program focuses on energy efficiency and developing workers who can go on to gain jobs in the energy sector. Participants leave with certificates that will allow them to gain jobs such as working for Energize CT as a lead tech, becoming a residential or commercial building evaluator

addressing building improvements educators to residents on the importance of energy efficiency and how to properly utilize their energy efficient technology, and more.

Connecticut Green Occupations

Connecticut Green Occupations is an online resource provided by the Connecticut Department of Labor focused on green occupations and industries that are available within the state. The site serves as a hub for information related to environmentally sustainable jobs, renewable energy, and green initiatives that are available across the state of Connecticut. The sites variety of resources include green occupation profiles with detailed descriptions of various green occupations, green industry information, training and educational programs targeted at green occupations, and search tools to allow individuals the chance to search open employment opportunities and notworking spaces for sustainable and green focused jobs.

Summary

Institutions and stakeholders across Connecticut have demonstrated consistent interest in developing a more robust clean energy sector, including training the necessary workforce. The State appears to be roughly on par with overall national trends in terms of workforce readiness and supply for the selected CCAP measures. Continued investment in traditional K-12 schooling, apprenticeships and higher education will be critical to ensure the pipeline of necessary workers is adequate.

II. Southwest Connecticut - Critical Assets

Critical assets for communities, such as transportation and waste facilities, play a vital role in the economic and social well-being of localities. The repurposing of existing energy assets, including coal, oil, and natural gas power facilities, is essential for addressing environmental impacts and reducing greenhouse gas emissions. The following section identifies critical assets within the region.

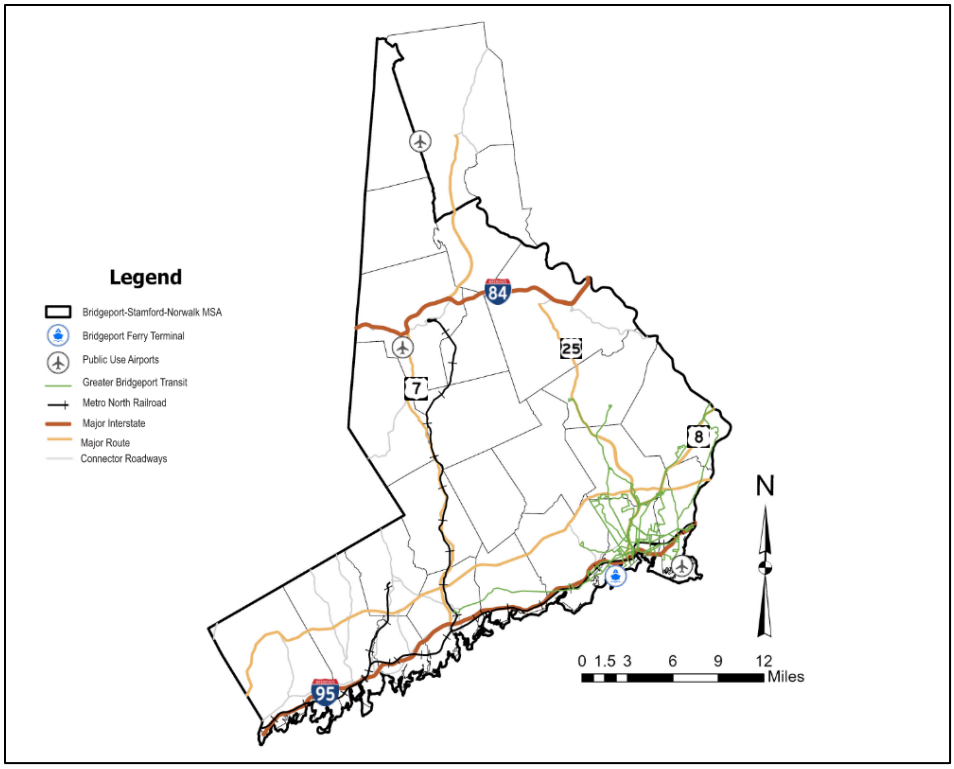


Figure A1: Critical Assets in Southwest Connecticut

Ports

Bridgeport Harbor and Water Street Dock

One of three deep-water ports in Connecticut, Bridgeport Harbor is classified as a commercial harbor. Located within the harbor is Water Street Dock, a ferry terminal operated by the Bridgeport and Port Jefferson Steamboat Company which provides passenger and vehicle ferry service across Long Island Sound to Port Jefferson, NY.

Airports

Igor Sikorsky Memorial Airport

Located in Stratford, though owned by the City of Bridgeport, Sikorsky Memorial Airport is classified as a General Aviation airport. Sikorsky Memorial predominantly serves private and charter aircraft.

Danbury Airport

Located in Danbury, the Danbury Municipal Airport is just 3 miles southwest of the city center sitting on approximately 260 acres of property. The airport is managed by the City of Danbury and is classified as a public use airport.

Railroads

Metro North New Haven Line

Running parallel to the coast, the Metro-North railroad mainly facilitates the New Haven Line commuter rail service, connecting Grand Central Terminal in New York City, NY with New Haven, CT, with most of its length running through the county. Major transit terminals along the line are in Stamford and Bridgeport and local stations are in Greenwich, Cos Cob, Riverside, Old Greenwich, Noroton Heights, Darien, Rowayton, South Norwalk, East Norwalk, Westport, Greens Farms, Southport, Fairfield, Fairfield Metro, and Stratford. Splitting off from the main New Haven Line are the New Canaan and Danbury Branches.

New Canaan Branch

The New Canaan Branch provides commuter rail service to stations in Glenbrook, Springdale, Talmadge Hill, and New Canaan. This branch also accommodates freight operations.

Danbury Branch

Metro-North commuter rail services the Danbury Branch at the Merrit 7, Wilton, Cannondale, Branchville, Redding, Bethel, and Danbury stations. This branch is also utilized by freight trains.

Amtrak

The New Haven Line is also utilized by through-running Amtrak intercity rail services and by freight operations, though the railroad is owned by MetroNorth and CTDOT. Metro North's Bridgeport Station is served by the Amtrak Northeast Regional and Vermonter lines and the Stamford Station by the Amtrak Northeast Regional, Vermonter, and Acela lines.

Major Highways

Interstate 84

I-84 is an interstate highway that runs across the state of Connecticut from New York through Danbury, Waterbury, Hartford, and Union and into Massachusetts. I-84 has junctions with Route 7 in Danbury, Route 8 in Waterbury and is a major interstate highway for commercial and commuter traffic.

Interstate 95

I-95 runs parallel to the coast through the county. The interstate provides connections along the eastern seaboard to New York City, New Haven, Providence, and Boston. The highway is a major throughfare for commercial and commuter traffic consisting of three lanes in each direction for most of its length in Fairfield County.

CT Route 7

Route 7 is a roadway running from I-95 in Norwalk, through the I-84 junction in Danbury and continues north to the border of Massachusetts and into Vermont. The roadway has two expressway stretches near the Norwalk and Danbury junctions.

CT Route 8

Route 8 is a north-south limited access expressway that runs through Shelton, Trumbull, and Stratford before connecting to I-95 in Bridgeport as Route 8-25. Route 8 runs north to provide connections to Waterbury and Western Massachusetts.

CT Route 15, Merritt Parkway

The Merritt Parkway is an inland, limited access expressway facilitating east-west traffic between New York Cit, NY and Hartford, CT. As a scenic parkway listed in the National Registry of Historic Places, Route 15 does not allow commercial and oversize vehicles, thus mainly serving commuter traffic.

CT Route 25

After splitting from Route 8 in Northern Bridgeport, Route 25 operates as a limited access expressway with three lanes in each direction until Northern Trumbull, from which point it becomes surface road with one lane of travel in each direction until its terminus in Brookfield.

Waste and Hazardous Materials Facilities

Waste and hazardous materials facilities are critical infrastructure which provide vital management and disposal of various types of waste. Emissions from waste processing methods such as incineration are generated both through the combustion of waste materials and the energy used to operate the machinery. These systems can also affect nearby communities by causing decreased water quality, soil contamination, higher GHG emissions from ongoing operations, noxious fumes and toxic chemicals, and increased noise levels.

There are several waste and hazardous materials facilities located throughout the Southwestern CT region. Some examples of these facilities located around the dense LIDAC community population within Bridgeport include the Win Waste Incinerator and the Bridgeport Water Pollution Control Authority (WPCA).

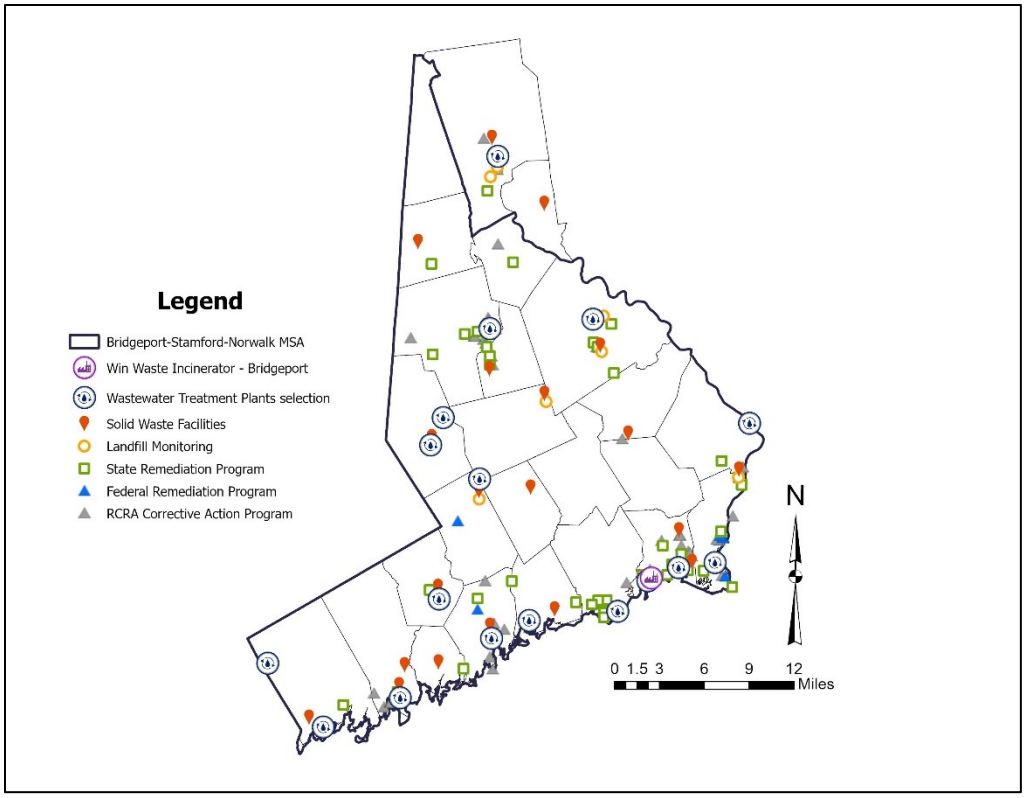


Figure A2: Waste and Hazardous Materials Facilities in Southwest Connecticut

The Win Waste Incinerator, formerly known as the Wheelabrator Bridgeport Waste to Energy Plant is one of four remaining waste-to-energy incinerators[1] left in Connecticut. Commissioned in 1988, the plant imports 737,000 tons of municipal solid waste annually, which is subsequently combusted to produce power. The incinerator generates 67 MW of energy, enough to power 83,000 surrounding households.

The City of Bridgeport WPCA operates two advanced secondary wastewater treatment plants. The West Side treatment plant is designed to process 30-million-gallons of water per day (MGD) and the East Side plant 10 MGD. The West Side facility is currently undergoing a multi-million-dollar upgrade, while many of the pumps currently feeding into the system are being renovated.

[1] Energy Recovery from the Combustion of Municipal Solid Waste (MSW) | US EPA

III. Funding Resources

Transportation

Buses and Bus Facilities Program (FTA 5339)

This Federal program provides capital funding to replace, rehabilitate, or purchase buses and build or upgrade transit facilities. Transit districts and municipalities with transit assets can use this program to modernize fleets, improve rider experience, or prepare for electrification. It is often combined with Low-No grants for zero-emission vehicles.

FUNDING: Up to $1.5 billion annually (no specified min/max per project); 20% match required
ELIGIBILITY: States, transit agencies, and direct recipients of FTA funding
AGENCY: Federal Transit Administration (FTA), Federal

Low or No Emission Vehicle Program (Low-No)

This federal program funds the purchase or lease of zero- and low-emission transit buses along with associated infrastructure like charging stations. Transit agencies and municipalities working on fleet electrification or climate action can use this program to replace aging diesel vehicles and reduce local air pollution.

FUNDING: Up to $1.1 billion in total; up to 85% for vehicle costs and 90% for infrastructure
ELIGIBILITY: States and local government authorities
AGENCY: Federal Transit Administration (FTA), Federal

Safe Streets and Roads for All (SS4A)

SS4A funds local safety initiatives to prevent roadway deaths and serious injuries. Municipalities can apply for planning funds to develop comprehensive safety action plans, or for implementation funds to build traffic calming, pedestrian crossings, and other improvements. Prioritize projects in high-injury areas.

FUNDING: $5 billion over 5 years; planning grants up to $1 million; implementation grants vary
ELIGIBILITY: Local governments, MPOs, tribal governments
AGENCY: U.S. Department of Transportation (USDOT), Federal

Charging and Fueling Infrastructure (CFI) Program

This program funds electric vehicle charging and alternative fuel infrastructure along corridors and within communities. Municipalities can apply directly or in partnership with utilities and site hosts to install public charging stations, especially in areas lacking private investment.

FUNDING: $2.5 billion over 5 years; grants vary by scope and location
ELIGIBILITY: States, local governments, MPOs, and transportation authorities
AGENCY: Federal Highway Administration (FHWA), Federal

National Electric Vehicle Infrastructure (NEVI) Formula Program

NEVI provides federal formula funding to states for deploying fast-charging EV infrastructure along designated corridors. While administered by CTDOT, municipalities can benefit by supporting eligible sites or coordinating regional siting. COG staff can assist in identifying priority corridors and gaps.

FUNDING: CT to receive approx. $52 million over 5 years; project-level max varies
ELIGIBILITY: States (can sub-grant to public/private/nonprofit entities)
AGENCY: Federal Highway Administration (FHWA), Federal
NOTE: Program is under review.

CHEAPR (Connecticut Hydrogen and Electric Automobile Purchase Rebate)

CHEAPR offers rebates for the purchase or lease of eligible electric or hydrogen vehicles, with extra incentives for low-income households. While municipalities are not direct applicants, staff can promote awareness and connect residents, especially in overburdened neighborhoods—with Rebate+ options. Outreach can also support fleet transitions.

FUNDING: Up to $9,500 in rebates per vehicle (standard and Rebate+ combined)
ELIGIBILITY: CT residents; Rebate+ available to low-income residents
AGENCY: CT DEEP, State

Community Connectivity Grant Program (CCGP)

This state program funds small capital projects that improve pedestrian and bicycle safety and access, such as sidewalk connections, curb ramps, crosswalks, and bike lanes. Ideal for municipal engineers or planners addressing last-mile gaps or designing near-term complete streets improvements.

FUNDING: Varies by project size; most grants <$1 million
ELIGIBILITY: Connecticut municipalities
AGENCY: CTDOT, State

Carbon Reduction Strategy Program (CRS)

Part of the Bipartisan Infrastructure Law, this program funds projects that reduce carbon emissions from transportation, such as mode shift, electrification, or TDM. CRS funds flow through CTDOT and are coordinated with MPOs. Municipal staff should work through their MPO to access this funding.

FUNDING: Approx. $79.1 million over 5 years for CT; match required
ELIGIBILITY: MPOs and local governments
AGENCY: CTDOT, State

CTrides

CTrides is a statewide travel demand management (TDM) program offering technical assistance and commuter incentives to reduce single-occupancy vehicle use. Municipalities and employers can use it to support ridesharing, promote transit, or incentivize active commuting through local campaigns or employer partnerships.

FUNDING: Technical assistance and incentive support
ELIGIBILITY: Employers, municipalities, commuters in Connecticut
AGENCY: CTDOT (via NuRide), State

Transit Oriented Development (TOD) Planning Grant

This state grant funds planning for compact, walkable development near rail and bus hubs, including zoning studies, infrastructure assessments, and housing or economic development strategies. Planning staff can use the funds to update zoning around stations, identify infrastructure needs, or prepare implementation plans aligned with POCDs and regional growth frameworks. COGs are eligible and often partner on multi-town efforts.

FUNDING: Grant amounts vary; prior rounds up to $2 million
ELIGIBILITY: CT municipalities and COGs (with partners encouraged)
AGENCY: CT Office of Policy and Management (OPM)

Connecticut Municipal Development Authority (CMDA)

CMDA is a quasi-public agency that partners with municipalities to catalyze development near transit, with a focus on creating walkable, mixed-use neighborhoods and expanding housing production. Municipalities can engage CMDA to help coordinate infrastructure investment, site assembly, or public-private partnerships around rail and bus hubs. Planning and economic development staff should consider CMDA as a resource for advancing TOD projects that align with local and regional plans.

FUNDING: Determined by CMDA on a case-by-case basis
ELIGIBILITY: Connecticut municipalities
AGENCY: Connecticut Municipal Development Authority (CMDA), State

Transit Oriented Development Fund

This competitive grant supports capital projects within a half-mile of transit stations that include a residential component and a defined share of affordable housing. Projects must promote compact, walkable development and align with local or regional TOD goals. Municipalities must

partner with developers. Planning staff should coordinate closely with economic development and housing agencies to prepare eligible proposals.

FUNDING: Varies; up to $3 million per project
ELIGIBILITY: Connecticut municipalities and COGs (must partner with developers)
AGENCY: CT Department of Economic and Community Development (CTDECD), State

Responsible Growth & Transit Oriented Development Grant Program (RGTOD)

RGTOD supports planning and design for walkable, mixed-use development near transit, with an emphasis on housing, infrastructure coordination, and responsible land use. Ideal for municipalities revising zoning, planning new development, or preparing sites near transit. Applications with developers or nonprofits are encouraged. This program is well suited for communities seeking to align transit access with affordable housing or climate goals.

FUNDING: Varies by project; typically, between $100,000 and $2 million
ELIGIBILITY: CT municipalities and COGs; joint partnerships encouraged
AGENCY: CT Office of Policy and Management (OPM), State

CT Recreational Trails Program

This grant funds trail construction, signage, maintenance, and access improvements for both motorized and non-motorized users. Planning and public works staff can use it to expand local greenways, improve ADA accessibility, or close gaps in regional trail networks. It is especially useful for implementing recreation and open space plans or enhancing connections to transit and schools.

FUNDING: Up to 80% of total project costs; grant amounts vary by scope
ELIGIBILITY: Municipalities, nonprofits, and state agencies
AGENCY: CT DEEP, State

VW Settlement Grants

Connecticut's allocation from the Volkswagen emissions settlement supports EV infrastructure and vehicle replacement projects that reduce diesel pollution. Municipalities and transit agencies can apply for funding to replace diesel buses, trucks, or school buses, or to install public EV charging infrastructure. These grants are often paired with broader climate or fleet transition plans. Past awards have covered up to 100% of costs for public-sector projects.

FUNDING: Varies by project type and round; up to 100% for public projects
ELIGIBILITY: Municipalities, transit agencies, and nonprofits
AGENCY: CT DEEP, State

DEEP/PURA EV Infrastructure Incentives

This state program provides incentives to install EV charging stations at workplaces, apartment complexes, public facilities, and commercial sites. Municipalities can use it to add chargers at parks, downtowns, or town halls—especially in underserved areas. Emphasis is placed on increasing charger access where private investment is lacking. Planning and public works staff should coordinate with property owners early to assess site feasibility.

FUNDING: Up to $40,000 per site for Level 2 chargers; up to $250,000 for DC fast chargers
ELIGIBILITY: Property owners, municipalities, businesses, and nonprofits
AGENCY: CT DEEP / PURA, State

Local Transportation Capital Improvement Program (LOTCIP)

LOTCIP funds capital improvements to local roads, intersections, sidewalks, and pedestrian facilities in urbanized areas. The program uses state funds and offers a faster, less burdensome alternative to federal aid. Municipal engineers or planners should work with their regional COG to submit project concepts. LOTCIP is well-suited for shovel-ready projects that support safety, multimodal access, or economic development.

FUNDING: Varies by project; no federal match required
ELIGIBILITY: Urbanized area municipalities
AGENCY: CTDOT, State

Statewide Transportation Improvement Program (STIP)

The STIP is Connecticut's four-year capital plan that governs the use of federal transportation funds. For municipalities and transit districts to access federal aid, projects must be included in the STIP. Planners and engineers should coordinate with their MPO to ensure that proposed projects—such as road resurfacing, bridge repair, or transit improvements—are programmed in advance.

FUNDING: No fixed amount; must meet project-specific requirements
ELIGIBILITY: CTDOT, municipalities, and transit operators
AGENCY: CTDOT, State

Transportation Alternatives (TA) Program

This federal program supports smaller-scale projects that improve biking, walking, and school access, including sidewalks, shared-use paths, and Safe Routes to School improvements. TA is a good fit for towns with complete streets plans, trail projects, or pedestrian safety needs near schools. CTDOT administers the program; municipalities apply through their MPO.

FUNDING: Project-dependent; federal cost shares up to 80%
ELIGIBILITY: Municipalities, MPOs, transit agencies, and school districts
AGENCY: CTDOT / FHWA, Federal/State

Clean School Bus Program

This EPA program funds replacement of older school buses with zero-emission or low-emission models. Municipalities and school districts can use it to modernize bus fleets, cut operating costs, and reduce exposure to diesel pollution, especially near schools. The program includes both competitive grants and rebates and prioritize applications that serve disadvantaged communities.

FUNDING: $5 billion total (FY2022–2026); individual award amounts vary by vehicle type and project scale
ELIGIBILITY: State and local government entities, public school districts, tribal governments, and eligible contractors
AGENCY: U.S. Environmental Protection Agency (EPA), Federal

Diesel Emissions Reduction Act (DERA) Program

DERA provides funding to retrofit or replace older diesel vehicles and equipment. Municipalities can use this program to update school buses, fire trucks, snowplows, construction equipment, or marine vessels. Projects that reduce exposure in overburdened communities are prioritized. Match requirements vary, and funds may be used for electrification, cleaner fuels, or emissions controls.

FUNDING: Grant amounts vary; 25%–100% of eligible costs depending on project type
ELIGIBILITY: Regional, state, local, and tribal agencies with jurisdiction over transportation or air quality
AGENCY: U.S. Environmental Protection Agency (EPA), Federal

Alternative Fuel Infrastructure Tax Credit

This federal tax credit helps offset the cost of installing EV chargers and hydrogen fueling stations. The credit covers both commercial and residential installations located in eligible census tracts. Municipalities can use this incentive when installing chargers at public buildings or transit-oriented sites, or when partnering with developers or businesses on shared infrastructure.

FUNDING: Up to 30% of the cost, with a $100,000 maximum for commercial property and $1,000 for residential
ELIGIBILITY: Businesses, municipalities, and individuals installing qualifying equipment
AGENCY: Internal Revenue Service (IRS) / U.S. Department of the Treasury, Federal

Buildings

Energy Efficiency and Conservation Block Grant (EECBG)

This federal program supports energy efficiency and sustainability efforts at the local level. Municipalities can use it for energy audits, HVAC upgrades, LED lighting retrofits, weatherization, or community outreach. Towns with populations over 35,000 may receive direct formula allocations; others can apply through the state. Planning or public works staff should confirm eligibility with DEEP and coordinate with utilities or regional energy coordinators.

FUNDING: Varies; municipalities over 35,000 population receive direct formula funding; others apply through the state
ELIGIBILITY: Large municipalities, states, tribes, territories, and consortia of smaller local governments
AGENCY: U.S. Department of Energy (DOE), Federal

IRA Building Energy Codes Technical Assistance

This federal initiative provides technical assistance and incentives for adopting up-to-date residential and commercial building codes. Municipalities can work with the state or regional partners to integrate energy efficiency into zoning or permitting workflows. Planning and code enforcement staff should assess opportunities to adopt voluntary “stretch codes” or improve enforcement of current standards.

FUNDING: Technical assistance and incentives; no match required
ELIGIBILITY: States and local governments
AGENCY: U.S. Department of Energy (DOE), Federal

Green and Resilient Retrofit Program (GRRP)

GRRP funds upgrades to HUD-assisted multifamily housing to improve energy efficiency, electrify systems, and enhance climate resilience. While the property owner is typically the applicant, municipal housing and sustainability staff can encourage local HUD-assisted properties to apply, provide letters of support, or coordinate site-specific resilience planning.

FUNDING: Grants and loans; award size varies by property and need
ELIGIBILITY: Owners of HUD-assisted multifamily properties
AGENCY: U.S. Department of Housing and Urban Development (HUD), Federal

Clean Water State Revolving Fund (CWSRF)

Primarily focused on water quality, the CWSRF can be used to fund building-related infrastructure such as green roofs, rain gardens, or stormwater retrofits that reduce infiltration/inflow. Public works and stormwater coordinators should consider this program when working on public building or campus retrofits that integrate green infrastructure.

FUNDING: Low-interest loans; some grants available for disadvantaged communities
ELIGIBILITY: Municipalities, utilities, and public/private project sponsors
AGENCY: U.S. Environmental Protection Agency (EPA) & CT DEEP, Federal/State

EnergizeCT

EnergizeCT offers a suite of rebates, financing, and technical assistance to help municipalities, businesses, and residents improve energy efficiency. Eligible measures include weatherization, HVAC upgrades, building automation, and appliance replacement. Facilities managers and energy committees should consult the program early during capital improvement planning.

FUNDING: Varies by measure and program; includes rebates and loans
ELIGIBILITY: Residential and commercial customers of Eversource, UI, CNG, or SCG
AGENCY: CT Green Bank / Utilities, State

Energy Conservation Loan Program

This loan program provides low-interest financing to low- and moderate-income homeowners for energy upgrades. While not directly accessed by municipalities, local housing or social service staff can help residents take advantage of it when weatherization or HVAC work is planned. The program pairs well with EnergizeCT rebates.

FUNDING: Up to $25,000 per loan; 0% interest for qualifying upgrades
ELIGIBILITY: Homeowners meeting income limits
AGENCY: CT Department of Housing (DOH) / Capital for Change, State

Loans Improving Multifamily Efficiency (LIME) Program

LIME provides unsecured loans to support energy upgrades and health/safety improvements in low- and moderate-income multifamily housing. Property owners can use the funds for weatherization, HVAC, insulation, and lead/asbestos abatement. Municipal housing staff can refer eligible landlords or assist with outreach in LMI neighborhoods or TOD zones. Repayment is structured through energy cost savings, making it attractive for affordable housing properties.

FUNDING: Up to ~$750,000 per loan; interest rates ~5–6%; terms up to 20 years
ELIGIBILITY: Multifamily property owners with ≥5 units and ≥60% of units ≤80% AMI; HUD-, CHFA-, or FHA-financed, or located in LMI/TOD areas
AGENCY: Connecticut Green Bank / Capital for Change (CDFI), State

Weatherization Assistance Program (WAP)

WAP provides free weatherization services to income-eligible households, including insulation, air sealing, and mechanical system upgrades. Municipal staff can help connect qualifying residents or coordinate with community action agencies when targeting energy improvements in older housing stock. Often used in tandem with health/safety programs like REPS.

FUNDING: Average ~$7,500 per home; no match required
ELIGIBILITY: Low-income households
AGENCY: CT DEEP / Community Action Agencies, State/Federal

Home Energy Solutions (HES)

HES offers subsidized energy audits and on-the-spot efficiency upgrades such as air sealing, LED lighting, and duct sealing. A no-cost version is available to income-eligible households. Town sustainability or housing staff can promote this as a first step for residents interested in energy savings, or as a precursor to deeper upgrades through EnergizeCT.

FUNDING: ~$50–$175 co-pay for market-rate; free for income-eligible households
ELIGIBILITY: Residential customers of participating utilities
AGENCY: Energize CT / Utilities, State

Commercial Property Assessed Clean Energy (C-PACE)

C-PACE allows commercial and multifamily property owners to finance energy improvements through long-term assessments on their property tax bill. Eligible uses include solar, HVAC, insulation, and windows. Municipalities must opt in through enabling ordinances. Economic development staff can use C-PACE to attract or support energy-efficient redevelopment projects.

FUNDING: 100% financing with 20–25 year repayment terms
ELIGIBILITY: Commercial and multifamily property owners (5+ units); lender consent required
AGENCY: CT Green Bank, State

Conservation and Load Management (C&LM) Program

C&LM offers rebates and incentives for energy efficiency upgrades in municipal, residential, and commercial buildings. Eligible measures include lighting retrofits, HVAC replacements, and building envelope improvements. Facility managers should coordinate with utility account reps to scope projects. Planning or finance staff may include C&LM incentives in capital planning.

FUNDING: Incentives vary by project type
ELIGIBILITY: Utility customers statewide
AGENCY: CT DEEP and Utilities (Eversource/UI), State

Residential Energy Preparation Services (REPS)

REPS covers the cost of health and safety repairs (e.g., mold, asbestos, knob-and-tube wiring) that would otherwise disqualify income-eligible households from weatherization programs. Housing or health departments can help residents access this program as a first step before WAP or HES. Often coordinated through community action agencies or housing nonprofits.

FUNDING: Full coverage of remediation costs
ELIGIBILITY: Income-eligible homeowners or renters
AGENCY: CT DEEP, State

EPA Brownfields Grants

This federal program funds cleanup and reuse of contaminated properties, including building rehab and environmental site work. Municipalities can apply for assessment or cleanup grants, or work through a regional coalition. Planners can use Brownfields funds to prep buildings for housing, mixed-use, or public reuse. Technical assistance is available through UConn TAB or EPA's Targeted Brownfields Assessments.

FUNDING: Assessment grants up to ~$600K; Cleanup grants up to $500K/site; RLFs ~$1M+; 20% match typical
ELIGIBILITY: Municipalities, COGs, tribal governments, nonprofits, redevelopment authorities
AGENCY: U.S. Environmental Protection Agency (EPA), Federal

Brownfield Municipal Grant Program (CT DECD)

This state program funds assessment and remediation of municipally owned or controlled brownfield sites. Municipalities can apply for reuse-ready sites, particularly those in TOD areas or economic development zones. Suitable for buildings slated for housing, civic use, or commercial redevelopment. Round 22 is active as of July 2025.

FUNDING: Up to ~$4 million for remediation; up to ~$200,000 for assessment; 10–20% match
ELIGIBILITY: CT municipalities and municipal entities
AGENCY: CT Department of Economic & Community Development (DECD), State

Capital for Change Landlord Loans

This loan program provides small, unsecured loans to rental property owners for energy upgrades, weatherization, and general building improvements. It is often used in tandem with EnergizeCT rebates. Housing staff can promote the program to small landlords—particularly those operating older 2–4 unit buildings—who may not qualify for larger loan products.

FUNDING: Loans from $3,000 to $40,000; interest rates ~4.5%–7%
ELIGIBILITY: Rental property owners (single- or multi-family) in Connecticut
AGENCY: Capital for Change (CDFI), State/Local

Electric Power

Energy Storage Solutions Program

This state program provides upfront incentives for installing battery or thermal energy storage systems, helping lower energy costs and improve grid reliability. Municipalities can use it for resilience hubs, public safety facilities, or emergency shelters. Facilities managers and sustainability staff should explore pairing storage with solar PV to enhance energy resilience and qualify for higher incentives.

FUNDING: Up to $7,500 for residential systems; $225/kWh for commercial or municipal systems
ELIGIBILITY: Homeowners, businesses, and municipalities in Eversource and UI service territories
AGENCY: Connecticut Green Bank & Utilities (Eversource, UI), State

Shared Clean Energy Facility (SCEF) Program

The SCEF program supports subscription-based solar projects where residents and businesses can receive bill credits from a shared off-site system. Municipalities can sponsor or host a facility, helping expand access to solar—especially for renters or low-income residents. Planning and sustainability staff should consider SCEF as a way to bring solar benefits to properties that cannot host their own systems.

FUNDING: Bill credit model; developer incentives awarded via RFP
ELIGIBILITY: CT residents and small businesses (as subscribers); municipalities and developers (as sponsors)
AGENCY: CT DEEP / Utilities (Eversource & UI), State

Community Clean Energy Resilience Program (Proposed)

This anticipated program would fund microgrids, solar-plus-storage systems, and resilient energy hubs serving critical facilities such as schools, shelters, or fire stations. While not yet released, municipalities interested in resilience planning should prepare candidate sites and partnerships. Planning or public works departments can begin feasibility work now in coordination with DEEP and CT Green Bank.

FUNDING: Variable; past proposals suggest grants over $1 million for key facilities
ELIGIBILITY: Municipalities, COGs, and critical facility operators

AGENCY: CT DEEP / CT Green Bank, State
STATUS: Expected; program framework under development

Connecticut Community Partnership Initiative (CCPI)

CCPI funds outreach and engagement activities to boost participation in state energy programs like EnergizeCT, WAP, or SCEF. COGs, municipalities, and nonprofits can use this program to fund canvassing, workshops, or education campaigns—particularly in LMI or underserved communities. Planning or sustainability staff can lead or partner on community-facing initiatives.

FUNDING: Often up to $100,000 per project
ELIGIBILITY: Community-based organizations, nonprofits, and COGs (must serve or partner with distressed or environmental justice communities)
AGENCY: CT DEEP / Utilities / EnergizeCT, State

Clean Energy Communities Program

This voluntary program rewards municipalities for actions taken to reduce energy use, support renewables, and improve sustainability. Communities earn points toward grants and receive recognition for energy benchmarking, EV readiness, solar adoption, and other milestones. Planning staff should coordinate across departments to maximize participation and access available grants.

FUNDING: Varies; includes grants of $5,000–$15,000 and technical assistance
ELIGIBILITY: Connecticut municipalities
AGENCY: EnergizeCT / Eversource & UI / CT Green Bank, State

Smart-E Loan Program

This program offers unsecured low-interest personal loans for home energy improvements. While not a direct municipal program, staff in housing, energy, or sustainability roles can promote Smart-E loans to help residents afford solar, insulation, HVAC upgrades, or electric panel upgrades. Loans are available through participating lenders statewide.

FUNDING: Loans from $500 to $50,000; terms up to 12 years; interest rates vary (~4–7%)
ELIGIBILITY: Connecticut homeowners
AGENCY: Connecticut Green Bank, State

CT SMARTE (Sustainable Manufacturing Assistance & Resilience Through Efficiency)

SMARTE connects small and mid-sized manufacturers with assessments, technical assistance, and grants for energy efficiency and process upgrades. Municipal economic development staff can refer local manufacturers or use SMARTE as part of a business retention strategy. The program helps lower operating costs while reducing emissions.

FUNDING: Typically up to $50,000 per project
ELIGIBILITY: Small and medium-sized manufacturers in Connecticut
AGENCY: CT Department of Economic and Community Development (DECD) / U.S. Department of Energy, State/Federal

Low-Income Energy Assistance & Weatherization (CEAP/WAP)

While primarily known for utility bill assistance, CEAP connects eligible residents with weatherization and heating system upgrades. Municipal housing and social services staff should ensure that residents receiving CEAP are referred to related programs like WAP or REPS for more permanent energy savings.

FUNDING: Benefit amount varies by need; weatherization up to ~$7,500 per household
ELIGIBILITY: Households earning ≤60% of state median income
AGENCY: CT Department of Social Services / CT DEEP / Community Action Agencies, State/Federal

Waste

Solid Waste Infrastructure for Recycling (SWIFR) Grant Program

SWIFR provides federal grants for improving recycling and composting infrastructure. Municipalities can use the funds for recycling centers, food scrap drop-off sites, anaerobic digesters, or equipment upgrades. Planning and public works departments should consider SWIFR for long-term infrastructure needs tied to diversion goals or regional collaboration.

FUNDING: ~$55M/year (FY 2022–2026); individual grants variable, including those for political subdivisions, states/territories, and tribes
ELIGIBILITY: Political subdivisions (counties, cities, towns), state agencies, tribal governments, and intertribal consortia
AGENCY: U.S. Environmental Protection Agency (EPA), Federal

Consumer Recycling Education & Outreach Grant Program

This EPA program funds public education and outreach campaigns focused on reducing contamination, increasing diversion rates, and improving public understanding of recycling and composting. Municipalities can apply directly or partner with nonprofits or school districts. Ideal for supplementing curbside program launches or food scrap initiatives.

FUNDING: ~$39 million total in recent rounds; awards vary by project
ELIGIBILITY: Municipalities, nonprofits, educational institutions
AGENCY: U.S. Environmental Protection Agency (EPA), Federal

Materials Management Infrastructure Grant Program (MMI)

Connecticut's largest state-funded waste infrastructure program, MMI supports purchase and construction of recycling, composting, and food scrap collection systems. Municipalities and regional authorities can apply for drop-off centers, processing equipment, or composting infrastructure. Well-suited to towns launching curbside diversion or regional processing sites.

FUNDING: Up to ~$4.8 million per award; $15M total in first round
ELIGIBILITY: CT municipalities, COGs, and regional waste authorities
AGENCY: CT Department of Energy & Environmental Protection (DEEP), State

Recycling Incentive & Technical Assistance Grants (RecycleCT)

This statewide program supports local recycling and composting initiatives, especially those involving outreach, pilot projects, or school and housing engagement. Towns can use funds for signage, sorting guides, composting starter kits, or technical support for programs. Planning and sustainability staff should coordinate across departments to identify needs.

FUNDING: Grant award amounts vary depending on outreach, equipment, or pilot initiative scope; technical assistance available for planning and implementation
ELIGIBILITY: Municipal governments, municipal/regional planning organizations, nonprofits, school districts, and housing authorities in CT
AGENCY: CT DEEP, State

EPA Brownfields Grants – Site Reuse & Materials Recovery

EPA Brownfields funding can support redevelopment of contaminated sites for recycling hubs, compost facilities, or other adaptive reuse that improves materials management. Municipalities planning to co-locate waste diversion infrastructure on brownfield land should explore this option. COGs can assist with regional coordination and applications.

FUNDING: Assessment grants up to ~$300K–$600K; Cleanup grants up to ~$500K/site; RLF grants ~$1M or more (20% match typical)
ELIGIBILITY: Municipalities, COGs, nonprofits, tribal governments, and redevelopment agencies
AGENCY: EPA Brownfields Program (Federal)

Sustainable Materials Management (SMM) Grant Program

SMM funds planning, pilot programs, or expansion of innovative waste reduction strategies such as unit-based pricing, curbside food scrap collection, and regional collaboration. Municipalities can use this program to test pay-as-you-throw models or launch school composting. Ideal for scaling up or replicating proven models from other CT towns.

FUNDING: Award amounts vary by scope and anticipated impact; prior rounds funded multiple municipalities with pilot grants from ~$20,000 to $250,000

ELIGIBILITY: CT municipalities and regional waste authorities
AGENCY: CT Department of Energy and Environmental Protection (DEEP), State

Regional Waste Authority (RWA) Grant Program

This DEEP program funds planning to create or expand regional waste authorities. Grants can be used for feasibility studies, cost-sharing models, or organizational development. COGs or municipalities interested in regional coordination of diversion or disposal should consider this grant to establish formal shared governance or procurement structures.

FUNDING: Up to $1.5 million total available; individual grant amounts determined by proposal
ELIGIBILITY: Connecticut municipalities and existing or proposed regional waste authorities
AGENCY: CT Department of Energy and Environmental Protection (DEEP), State

Agriculture and Environmental Protection

Climate Smart Agriculture and Forestry (CSAF) Grants

This federal program supports large-scale projects that reduce greenhouse gas emissions from agriculture and forestry while increasing carbon sequestration. Eligible activities include cover cropping, no-till farming, compost application, manure management, and agroforestry. While most CSAF projects are led by nonprofits or university partners, municipalities can participate by working with conservation districts, local farms, or nonprofit sponsors. Planners might use CSAF-backed practices in farmland preservation efforts or collaborate on zoning strategies that support regenerative agriculture. COGs can coordinate agricultural resilience plans that attract strong regional applicants. UConn Extension and local land trusts can help identify candidate sites.

FUNDING: $250,000 to $5 million (project-dependent; multi-partner collaborations encouraged)
ELIGIBILITY: Nonprofits, conservation districts, municipalities, tribal entities, and agricultural producers (often via partnerships)
AGENCY: U.S. Department of Agriculture (USDA), Federal

Urban and Community Forestry (UCF) Grant Program

This federal grant program funds tree planting, urban forest planning, green infrastructure, and forestry-related workforce development, with priority for underserved communities. Municipal planners and public works departments can use the funds for street trees, park planting, or shade trees near schools and housing. The program also supports the development or expansion of urban forestry plans and green workforce pipelines. Communities qualifying as disadvantaged can apply with no local match. COGs can support by preparing regional analyses or organizing multi-town efforts.

FUNDING: Up to $1 million per project; no match required for disadvantaged community projects
ELIGIBILITY: Local governments, nonprofits, and tribal organizations
AGENCY: U.S. Forest Service (USFS), Federal

Trees for Communities Grant Program

This state grant supports tree planting on public land and near public facilities, with emphasis on heat-vulnerable areas, underserved neighborhoods, and transit stops. Municipal staff can use these funds to advance tree canopy goals, improve walkability, or add shade where shelters are limited. Projects that serve transit riders, seniors, or neighborhoods with low canopy cover are well suited for this funding. A strong maintenance plan and thoughtful species selection are important. Staff from planning, public works, or sustainability offices should coordinate internally and consider involving schools, housing authorities, or conservation commissions. COGs can assist with mapping or help towns collaborate on joint applications.

FUNDING: Up to $25,000 per grant; no match required
ELIGIBILITY: Connecticut municipalities, land trusts, conservation districts, and nonprofits
AGENCY: CT DEEP, State

Climate Resilience Fund – Planning Grants

This state grant supports municipalities and councils of governments in assessing climate risks and developing resilience strategies, with a focus on nature-based solutions like riparian buffers, floodplain restoration, and forest protection. Municipal planners and public works staff can use the funds to create stand-alone resilience plans or incorporate resilience into POCDs, stormwater management, or infrastructure investment strategies. Projects in distressed municipalities are prioritized and require no local match. While the program does not prescribe exact methods, proposals that incorporate public engagement, interdepartmental coordination, and GIS-based risk assessment tools tend to align well with DEEP expectations and recent award patterns.

FUNDING: Up to $250,000 per plan; no match required for distressed municipalities
ELIGIBILITY: Municipalities and COGs
AGENCY: CT DEEP, State

Agricultural Enhancement Program

This state grant funds projects that improve soil health, conserve water, lower emissions, and enhance the long-term viability of Connecticut farms. Agricultural producers can use it to adopt cover cropping, no-till practices, nutrient management, or precision irrigation. Municipal staff can support local farms by sharing this opportunity through land use boards or farmland preservation efforts. Cooperative applications are encouraged, and the required 25% match can include in-kind services or labor.
FUNDING: Grants up to $49,999; 25% match required

ELIGIBILITY: Connecticut agricultural producers and cooperatives
AGENCY: DoAg, State

Community Gardens and Urban Agriculture Grants

This competitive program funds small-scale food production, green infrastructure, and site remediation projects in urban and suburban areas. Eligible activities include installing raised beds, composting systems, pollinator habitats, and rainwater harvesting. Municipal departments, public housing authorities, and schools can apply directly or partner with local nonprofits. Planning and health departments may also use this grant to support vacant lot reuse or urban greening strategies.
FUNDING: Up to $25,000 per project; technical assistance may also be provided
ELIGIBILITY: Municipalities, nonprofits, public housing authorities, and schools
AGENCY: USDA / CT DoAg / Local Health Departments, Federal/State/Local

Long Island Sound Futures Fund (LISFF)

LISFF supports projects that protect natural habitats, improve water quality, and build climate resilience in the Long Island Sound watershed. Municipalities can use these funds for wetland restoration, riparian buffers, stormwater retrofits, or community green infrastructure. This grant aligns well with POCD goals, MS4 compliance, and resilience planning. Matching funds are encouraged but not required. Regional or multi-site proposals may score well.

FUNDING: Up to $1 million per project; match encouraged but not required
ELIGIBILITY: Municipalities, land trusts, conservation NGOs, tribal nations
AGENCY: National Fish and Wildlife Foundation (NFWF), Federal/Other

Land and Water Conservation Fund (LWCF)

LWCF funds the acquisition and development of parks, trails, and outdoor public spaces, especially in underserved areas. Town planners and parks departments can use it to buy land, build greenways, or improve recreational access. Projects must remain in public recreational use in perpetuity. A 50% match is typically required and may include land value. This is a reliable tool for implementing open space and recreation goals in POCDs or capital plans.

FUNDING: Typically up to 50% of project cost (state-side matching grant); individual awards vary (often $100k to several million)
ELIGIBILITY: CT municipalities, state agencies, and designated public recreation entities
AGENCY: National Park Service / CT DEEP (State Side), Federal/State

Brownfield Area-Wide Revitalization Planning Grant

This planning grant supports coordinated efforts across multiple brownfield sites, with a focus on infrastructure needs, reuse strategies, and community engagement. Planning departments can use this funding to target disinvested corridors or clusters of sites, laying the groundwork for

future cleanup and redevelopment. Projects that link land use, housing, and transportation strategies are a good fit. COGs may apply or support technical scoping.

FUNDING: Typically $50,000–$200,000 per planning grant (based on program scale) CT.gov
ELIGIBILITY: Connecticut municipalities, councils of governments, redevelopment authorities
AGENCY: CT Department of Economic & Community Development (DECD), State

Urban Act Grant Program

Urban Act provides flexible capital funding to support a wide range of projects in economically distressed or urban center municipalities. Eligible uses include transportation access improvements, parks, brownfield cleanup, affordable housing, and community development. Projects that revitalize downtowns, connect neighborhoods, or leverage prior plans (e.g. POCDs, TOD plans) are good candidates. This program does not require a match, and applications are accepted on a rolling basis.

FUNDING: Rolling application; awards vary widely; no hard cap; no match required
ELIGIBILITY: Connecticut municipalities designated as economically distressed, urban centers, or public investment communities
AGENCY: CT Department of Economic & Community Development (DECD), State

Appendix IV. GHG Inventory Methodology Description and Summary by Sector

Southwest Connecticut 2021 Regional Greenhouse Gas Inventory

Methodology Description and Summary by Sector

METROCOG

WESTCOG

NVCOG

Weston & Sampson

APPENDIX – GHG METHODOLOGY DESCRIPTION AND SUMMARY BY SECTOR

1.1 Summary Overview

The Greenhouse Gas (GHG) emissions inventory was conducted for the year 2021, building upon the GHG emissions inventory, which was completed as part of the Priority Climate Action Plan (PCAP). The PCAP and methodology are available on the project website. This 2021 GHG inventory for Southwest CT has been developed to guide the region's Comprehensive Climate Action Plan (CCAP), focusing on town-specific sectors and emissions, while the PCAP demonstrates a regional and state-level approach. Providing town-specific data is more valuable for each town and encourages local governmental leaders in tracking and managing their emissions.

The framework that guided the structure of this CCAP was sourced from Massachusetts's Metropolitan Area Planning Council (MAPC). This agency developed a community-based greenhouse gas emissions inventory tool, that can be utilized to format, track, and align with EPA's reporting requirements. This tool's framework has been captured in this inventory, with variation in methodology, sourcing, and calculation to best represent this MSA.

MAPC's resources were also coupled with the EPA's Local Greenhouse Gas Inventory Tool (LGGIT). This tool provides various calculation and methodology resources that have been used as a reference and guide to calculate a multitude of sectors.

This inventory's framework also takes into account the Greenhouse Gas Protocol. Led by the World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI), this organization establishes a comprehensive global standard for measuring and managing greenhouse gas emissions, which provides further technical support and tools for quantifying and best calculating each sector's emissions. Various worksheets and guidance references were utilized throughout this inventory across sectors, examples include Emission Factors and Global Warming Potentials.

The CCAP includes the following sectors: stationary energy, electricity, transportation, waste, agriculture, and natural and working lands. Table 1 describes the emissions sources for each sector.

Table 1. Community-wide Emissions Sectors and Subsectors

1.2 Data Summaries by Sector

Sector	Subsector	Source
Stationary Energy	Residential Buildings	Fuel Oil
		Propane
		Natural Gas
		Nat. Gas. Dist. Losses
		Fuel Oil
		Propane

	Commercial & Institutional Buildings & Manufacturing Industries	Natural Gas
		Nat. Gas. Dist. Losses
		Off-Road (Various Fuels)
	Construction	Off-Road (Various Fuels)
Electricity	Residential Buildings	Electricity
		Electricity T&D Losses
	Commercial & Institutional Buildings & Manufacturing Industries	Electricity
		Electricity T&D Losses
Transportation	On-road	CNG
		Diesel
		Gasoline
		Electricity
		Electricity T&D Losses
Waste	Solid Waste Disposal	Methane Commitment
	Biological Treatment of Waste	Direct Emissions
	Incineration and Open Burning	Incineration
	Wastewater Treatment and Discharge	WWTFs and Septic Systems
Agriculture	Fertilizer & Agricultural Soils	Fertilizer & Soils
	Enteric Fermentation	Livestock
	Manure Management	Livestock
Industrial	Assessed but not included	N/A
Natural & Working Lands	Forest Land	Carbon Sequestration

The industrial processes which are included in CT DEEP's annual GHG inventory were evaluated, and it was determined that activities such as semiconductor manufacturing are not occurring within the MSA and other sources such as soda ash and limestone and dolomite use, could not be accurately downscaled and allocated to the MSA given the wide variety of uses.

1.2.1 Stationary Energy

Stationary Energy

Data for the stationary energy subsector sources were collected from publicly available state and federal datasets, as identified in Table 5.

Table 2. Stationary Energy Sources and Datasets

Sector	Source	Dataset	Description
Stationary Energy	*Off-Road County Total and Manufacturing Employment*	U.S Census	US Census Data from Table S2405.All Sectors: County Business Patterns by Legal Form of Organization and Employment Size Class for U.S., States, and Selected Geographics: 2021. This is county-level employment data for all sectors and the manufacturing sector. Town-specific data is sourced from
Stationary Energy	*Residential Propane*	U.S Census	The number of housing units by type was obtained from the Census Table B25032: Tenure by Units in Structure (2021: ACS 5-year estimate). The Census Table B25117: Tenure by House Heating Fuel and Propane was also used to determine the percentage of housing units using heating oil vs. propane.
Stationary Energy	*Commercial Propane*	U.S Census	NAICS codes of all industries by town, Primary building activity with # of establishments, annual av. Employment to determine overall Fuel oil and propane consumption per employer establishment.
Stationary Energy	*Natural Gas usage by community*	CT Energy Dashboard[1]	2021 natural gas consumption was sourced from the CT Municipal Energy Dashboard from EnergizeCT to determine the C&I and Residential annual natural gas use for each town in the MSA. The three towns without data do not appear to be served by a natural gas utility.
Stationary Energy	*Off-road Emissions*	U.S Census	Utilized economic characteristics in Connecticut from 2021 – 5 Year Estimates, Census Bureau (Table x), and developed open space. Commercial, lawn and garden, construction, and industrial are the included off-road emission sectors.
Stationary Energy	*Square Feet of Developed Open Space*	CT Annual Construction Report[2], CT.Gov, National Land Cover Data[3], and Census Bureau[4]	Open space off-road county and municipality landscaped area emissions. Employment by sector was only available for county data 2021, thus 2019 was used to determine the proportion for each municipality.
Stationary Energy	*Municipal Heating Oil and Propane*	MassEnergyInsight	Municipal fuel oil and propane usage data were unavailable for communities within the MSA and were therefore estimated based on average data from Massachusetts municipalities. This was data sourced from MassEnergyInsight, a

[1] Connecticut Municipal Energy Dashboard
[2] https://portal.ct.gov/decd/content/about_decd/research-and-publications/01_access-research/exports-and-housing-and-income-data
[3] https://www.mrlc.gov/data/nlcd-2021-land-cover-conus
[4] https://data.census.gov/table/ACSST5Y2021.S2405?q=S2405&g=050XX00US09001,09005

Sector	Source	Dataset	Description
			municipal reporting platform used by the MA Department of Energy Resources (MA DOER)
Stationary Energy	*Square Feet of Developed Open Space*	NLCD	Square feet of developed open space from the National Land Cover Database for 2021. Developed open Space is defined as "Developed, Open Space- areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes."
Stationary Energy	*Commercial and Industrial Heating Oil, Natural Gas, and Propane*	U.S Census, NAICS	Annual Census of Employment & Wages for Labor Market Areas from the U.S Census 2021. Data includes three-digit NAICS codes, the number of establishments (units), and average annual employment.

Southwest CT's GHG Emissions Inventory Tool's methodology was used as the basis for calculating CO_2e emissions (MMT) for the stationary energy sector. Please refer to the Tool's detailed methodology document for further details.[5] However, there were a few variations made to the methodology in order to most accurately represent the MSA. They included the following:

- Commercial and residential natural gas usage was unavailable through the CT Energy Dashboard for Bridgewater, New Fairfield, and Sherman.
- To determine Connecticut's municipal fuel oil and propane consumption, a statewide average from the Massachusetts Energy Insight, was applied as a percent to determine the annual consumption of both fuels. See table of sources under stationary energy for more details.

Stationary Energy Summary

Table 3. SUMMARY Community-wide Summary of Building Energy Use by Subsector & Source

Subsector	Source	Emissions (MTCO2e)
Residential Buildings	Res. Fuel Oil	812,554
	Res. Propane	73,597
	Res. Natural Gas	764,610
	Res. Natural Gas Dist. Losses	200,710
Commercial & Institutional Buildings and Facilities & Manufacturing Industries*	Comm. & Man. Fuel Oil	116,456
	Comm. & Man. Propane	62,658
	Comm. & Man. Natural Gas	948,167
	Comm. & Man. Natural Gas Dist. Losses	248,894

[5] https://www.mapc.org/resource-library/community-ghg-inventory-resources/

All Buildings	Fuel Oil	929,010
	Propane	136,256
	Natural Gas	1,712,777
	Natural Gas Dist. Losses	449,605

1.2.2 Electricity

Electricity

Data for the electricity subsector sources were collected from publicly available state and federal datasets, as identified in Table 6.

Table 4. Electricity Subsector Sources

Sector	Subsector	Source	Dataset	Description
Electricity	Residential, and Commercial	Electricity Usage by Community	CT Energy Dashboard[6]	EnergizeCT usage data for electricity by user type.
Electricity	Residential, and Commercial	Transmission & Distribution Grid Loss	EIA State Electricity Profile 2021[7]	Utilized total disposed electricity and direct usage by state to estimate a grid loss factor

MAPC's Inventory Tool methodology was used as the basis for calculating CO_2e emissions (MMT) for the electricity sector. Please refer to the Tool's detailed methodology document for further information.[8] However, there were a few variations made to the methodology from the MAPC Tool, in order to most accurately represent the MSA. They included the following:

- New England eGRID emissions factors were used for CT electricity calculations.
- In 2021, CT did not have any community choice aggregation or municipal utilities.
- CT's Transmission & Distribution Grid Loss Factor (%) was determined based on the 2021 EIA CT electricity profile,

Table 5. Electricity Transmission & Distribution Grid Loss Factor for Connecticut

Total Disposition (MWh)	Direct Use (MWh)	Total Disposition Excluding Direct Use (MWh)	Estimated Losses (MWh)	Grid Loss Factor (%)
6,693,192,124	6,901,699,640	(208,507,516)	1,304,957	3.02%

The results of the electricity emissions calculations are shown in Table 4.

Table 3. Community-wide Electricity CO_2e Emissions

Sector	Subsector	Source	Carbon Dioxide Equivalent Emissions ($MTCO_2e$)
Electricity	Residential Buildings	Electricity	866,087

[6] https://www.ctenergydashboard.com/CEC/CECTownData.aspx
[7] https://www.eia.gov/electricity/state/archive/2022/connecticut/
[8] https://www.mapc.org/resource-library/community-ghg-inventory-resources/

		Electricity T&D Losses	26,165
	Commercial & Institutional Buildings & Manufacturing Industries	Electricity	853,396
		Electricity T&D Losses	25,782

Electricity Summary

Results of the electricity and stationary energy consumption for the MSA are described in Tables 7 & 8.

1.2.3 Transportation

The Connecticut 2021 Department of Motor Vehicles provided data which served as the primary data source for transportation-related emissions for 2021, and towns within the MSA were utilized. Vehicle data included all registered vehicles, including commercial and passenger, by fuel type. This large data set was simplified utilizing plate class to estimate passenger and commercial vehicles, as well as removing non-road vehicles such as trailers, snow mobiles, and ATV's. This data was paired with the planning regions' estimated daily vehicle miles traveled. Total annual miles were calculated on a town basis, and it's following vehicles were applied a percentage of the total in order to allocate miles traveled in 2021.

Table 10. Transportation Sources and Datasets

Sector	State	Source	Dataset	Description
Transportation	CT	*On-road vehicles*	CT 2021 DMV	2021 registered vehicles by town, show by fuel type (gasoline, diesel, liquified petroleum gas, compressed natural gas, hybrid, and electric) and vehicle type (motorcycle, passenger car, truck).

Table 11. Transportation Results

Type	Description	CO2e Emissions (MT CO2e)
Passenger	Passenger	1,855,481
	Passenger Van	81,133
	Passenger Truck/SUV	302,616
	Passenger Commercial	97,216
	Motorcycles	52,763
Commercial	Commercial Truck	120,247
	Commercial Van	26,471
	Commercial Truck Tractor	16,758
	Commercial Wrecker (Tow Truck)	4,337

Municipal EMS Vehicles	Ambulance	477
	Fire Apparatus	3,281
Bus	Public Service Bus	1,570
	School Bus	23,646
	Other Bus	276,722

1.2.4 Waste

Waste emissions were calculated based on the following four subsectors: Solid Waste Disposal, Biological Treatment of Waste, Incineration and Open Burning, and Wastewater Treatment and Discharge.

The MAPC GHG Emissions Inventory Tool's methodology was used as the basis for calculating CO_2e emissions (MMT) for the waste sector. Please refer to the Tool's detailed methodology document for further details.[9] However, there were a few variations made to the methodology from the MAPC Tool, in order to most accurately represent the MSA. They included the following:

- Captured methane from landfills was sourced from the EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT).[10] An average value of the estimated gas collection systems efficiency from landfills where waste is sent from the MSA was developed from reported data.

Table 12. Waste Sources and Datasets

Sector	Source	Dataset	Description
Waste	Solid Waste Disposal	CT DEEP	Tons landfilled waste out of MSA, Tons incinerated out of MSA, Tons incinerated in MSA
Waste	Methane Captured	EPA FLIGHT	Statewide Average of Methane Recovered at Landfills
Waste	Biological Treatment of Waste	CT DEEP	Composted waste
Waste	Incineration and Open Burning	CT DEEP	Tons incinerated waste
Waste	Wastewater Treatment and Discharge	CT DEEP	Percent of MSA population served by WWTPs with anaerobic digestion and co-generation systems and other WWTPs

[10] https://ghgdata.epa.gov/ghgp/main.do?site_preference=normal

Table 13. Waste Summary Table

Subsector	Total Emissions ($MTCO_{2e}$)	% of Total Emissions
Solid Waste	33,525	0.4%
Compost	15,745	0.2%
Wastewater Treatment and Discharge	73,410	0.9%

Table 14. Summary of Waste Activity Data by Subsector and Total Emissions

Subsector	Est. Total Waste to Landfill (short tons)	Est. Mass of Waste Incinerated (short tons)	Est. Mass of Organics Sent to Compositing Facility (short tons)
Solid Waste Disposal	25,815		
Biological Treatment of Waste			90,633
Incineration and Open Burning		769,583	
Wastewater Treatment and Discharge			

Table 14 displays landfilled and incinerated waste, as well as organic waste through composting. Only solid waste and incinerated waste within the MSA were allocated to scope 1, while waste sent outside the MSA is attributed to scope 3.

1.2.5 Agriculture

The MAPC GHG Emissions Inventory Tool does not include sources pertaining to agriculture, therefore this sector was added to the regional GHG inventory as it is a requirement of the Climate Pollution Reduction Grant Program. The EPA Local Greenhouse Gas Inventory Tool, GHG Protocol and CT State Inventory Tool were referenced in determining an appropriate methodology. The inventory includes emissions sources associated with fertilizer and agricultural soils, enteric fermentation, and manure management.

Fertilizer application to lands within the MSA contributes to GHG emissions from the volatilization into the air in the form of nitrous oxide (N_2O). A portion of total metric tons of carbon dioxide of liming, urea, and agriculture soils from the CT statewide inventory was allocated to the MSA using a top-down approach. Statewide inventory data was scaled to each community using the cultivated/planted land area data for each state and each community. The land area data was sourced from the National Land Cover Database[11] and a GIS-based analysis yielded

[11] https://www.usgs.gov/centers/eros/science/national-land-cover-database

land area in units of square meters for each community. Livestock is a source of emissions through enteric fermentation and manure management. The number of farms and types of livestock were not publicly available at the town level. A top-down approach was conducted by allocating county-wide livestock inventories to individual towns' pasture and hay land (sq m) sourced from the National landcover data (2021).

Table 15. Agriculture Sources and Datasets

Sector	Source	Dataset	Description
Agriculture	Land Cover	2021 National Landcover Database[12]	Land use and types
Agriculture	Liming, Urea, and Ag Soils	CT Annual GHG Report[13]	Statewide Agricultural Emissions
Agriculture	Number of Livestock by County	NASS USDA AG Census (CT)[14]	Agriculture Population by animal type

Table 16. Agriculture Sector Emissions

Sector	Subsector	Total Emissions ($MTCO_{2e}$)
Agriculture	Agricultural Soils	766
	Enteric Fermentation	2,572
	Manure Management	383

Table 17. Results of Total Fertilizer & Agricultural Soils by State

Cultivated Crop land MSA-wide (sq mi)	Percent of Statewide Cropland	Ag. Soils Emissions ($MTCO_{2e}$)
4,268,700	2.2%	766

[12] https://www.mrlc.gov/data/nlcd-2021-land-cover-conus
[13] https://portal.ct.gov/deep/climate-change/ct-greenhouse-gas-inventory-reports
[14] 2022 Ag Census County Level CT

Results were calculated from the CT statewide fertilizer and agricultural emissions inventory. Utilizing town-specific land cover data by type (i.e. Crop land in square miles), a percentage of the statewide emissions for each fertilizer type and Ag. Soils were applied to this.

Table 20. Results of Total Manure Management and Enteric Fermentation County-Wide

Number of Heads by County in MSA	Manure Management Total Emissions (MT CH4)	MSA Manure Management Total Emissions ($MTCO_{2e}$)	Enteric Fermentation Total Emissions (MT CH4)	MSA Enteric Fermentation Total Emissions ($MTCO_{2e}$)	Total Manure and Enteric Fermentation Emissions ($MTCO_{2e}$)
34,747	339	1,151	605	16,946	18,097

The number of heads and total agricultural land, both county-wide in the U.S. agricultural census, were used to estimate town-specific emissions. Emission factors for each animal consist of manure management and enteric fermentation in the form of methane, which were pulled from the IPCC and EPA US GHG Inventory. This calculation was paired with the NLCD, specifically Agricultural land for Pasture and Hay use by town.

1.2.6 Natural and Working Lands

Carbon sequestration associated with forested lands was included in the GHG emissions inventory. The land area (square meters) for three forest types, including deciduous forests, evergreen forests, and mixed forests, was sourced from the National Land Cover Database for each municipality in the MSA. The land area was converted to hectares, and an average carbon sequestration factor of 2.3 metric tons C per hectare per year was used, sourced by the EPA. This was converted to metric tons of CO_2e to be compared to the rest of the GHG emissions inventory.

Table 21. Natural Working Lands and Datasets

Sector	Source	Dataset	Description
Natural Working Lands	Land Cover	2021 National Landcover Database[15]	Deciduous, Evergreen, and Mixed Forests
Natural Working Lands	EPA	EPA State Inventory Tools	Land-Use and Land-Use Change and Forestry module

Table 22. Results of Annual Carbon Sequestration

State	Total Forest Sequestering Land (Sq m)	MSA Total Carbon Sequestering Land (Hectare)	MSA Annual Carbon Sequestration (MTCO2) Forested Lands
Total MSA-Wide	862,102,800	86,210	704,913

[15] NLCD 2021 USFS Tree Canopy Cover (CONUS)

Town-specific forested land (Deciduous, Evergreen, and Mixed), sourced from the 2021 National Land Cover database. Calculations to determine total sequestered carbon utilized the EPA land-use, land-use change, and forestry model as the carbon sequestration factor.

Appendix V. GHG Measure Reduction, Co-Pollutant, and Cost Calculations

Measure: 1A	MODE SHIFT: ensure transportation planning prioritizes safe, car-alternative mobility; Strengthen public transit infrastructure, service, and operations.

Annual GHG emissions reduced in 2030	***138,867***	***MTCO2e***
Annual GHG emissions reduced in 2050	***277,232***	***MTCO2e***

CTDOT established 2030 vehicle miles traveled (VMT) goals and strategies, including a 5% reduction of VMT from the 2019 baseline by 2030. Given that gasoline passenger vehicles are the most common across the MSA, the fuel efficiency for this vehicle type from the 2021 GHG inventory was utilized to calculate the avoided gallons of gasoline from the VMT reduction. A VMT percent reduction of 10% was assumed for 2050.

VMT Reduction

[input] **VMT reduction by 2030 from 2019 baseline**

5% (%) *Source: CTDOT 2030 VMT Goals and Strategies*

[value] **VMT in MSA in 2019**

Source: CTDOT DVMT Lane Miles Mileage by Town and County

7,690,448,895 (VMT)

[calc] **VMT reduction by 2030**

384,522,445 (VMT)

[input] **Average miles per gallon (passenger vehicle with passenger plate class)**

Source: 2021 Southwest CT GHG Inventory

24.4 (mpg)

[calc] **Gallons gasoline saved per year from VMT reduction for 2030**

15,759,117 (Gallons)

[input] **VMT reduction by 2050 from 2019 baseline**

10% (%) *Assumption*

[calc] **VMT reduction by 2050**

769,044,890 (VMT)

[calc] **Gallons gasoline saved per year from VMT reduction for 2050**

31,518,233 (Gallons)

[value] **Gasoline emissions factors**

CO_2	0.00878	($MTCO_2$/gal)	*Source: EPA Emissions Factor Hub*	
CH_4	0.0000004	($MTCH_4$/gal)	*28*	*GWP*
N_2O	0.0000001	(MTN_2O/gal)	*265*	*CO2*

[FINAL] **Annual GHG emissions reduced in 2030**

138,867 ($MTCO_2e$)

[FINAL] **Annual GHG emissions reduced in 2050**

277,232 ($MTCO_2e$)

Cost of Measure

[value] **Consumer Price Index Conversion 2022 to 2025 Dollars**

2021	1.23	(conversion)	*Source: US Bureau of Labor Statistics CPI Inflation Calculator*
2022	1.15		
2023	1.08		
2024	1.05		

[Value] **Ridgefield Branchville Road TOD Ped/Bike Improvements**

$	2,316,400	(2023 dollars)	*Source: WestCOG Complete Streets Prioritization Plan*
$	2,501,712	(2025 dollars)	

[value] **Fairfield budget to create safe walking access to underserved neighborhoods near the Mikinley school**

$ 4,181,900 (2025 dollars) *Sources: Town of Fairfield, MetroCOG*

[value] **Stratford Complete Streets Phase II**

$	6,400,000	(2022 dollars)	*Source: MetroCOG*
$	7,360,000	(2025 dollars)	

[value] **Bridgeport Park Avenue South Streetscape Improvements - Phase II**

$ 3,000,000 (2025 dollars) *Source: MetroCOG*

[value] **South Norwalk Pedestrian and Streetscape Improvements (LOTCIP):**

$2,069,045 (2025 dollars) *Source: MetroCOG*

[value] **Trumbull Spring Hill Rd.**

$2,609,555 (2025 dollars) *Source: MetroCOG*

[value] **Lower Atlantic Street Corridor Improvements**

$ 3,157,400 (2025 dollars) *Source: MetroCOG*

[calc] **Average cost of example projects MSA**
$ 4,681,204 (2025 dollars)

[input] **Number of projects**
20 (projects) *Assumption*

[calc] **Total cost**
$ 93,624,080 (2025 dollars)

[value] **2050 Inflation cost variables** *Source: CTDOT 2024 Estimating Guidelines*
12.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **Total cost with inflation**
$ 150,968,829 (2050 dollars)

Co-Pollutant Emissions

Methodology Description: The Federal Highway Administration CMAQ Emissions Calculator Toolkit for Bicycle, Pedestrian, and Shred Micromobility was used to determined co-pollutant emissions reductions from replacing vehicle trips with walking

[value] **Average trip distance**
2.0129 (miles/trip) *Default value*

[input] **Percent of VMT reduction attributed to walking/biking**
2030 2% (%) *Assumptions*
2050 5% (%)

[calc] **Number of trips attributed to walking or biking**
2030 3,820,582 (trips)
2050 9,551,454 (trips)

2030			
Pollutant	**Total (kg/day/trip) reduced**	**Total (MT/year/trip) reduced**	**Total (MT/year) reduced**
Carbon Monoxide (CO)	0.00466	0.00170090	6,498
Particulate Matter ≤2.5 µm	0.00002	0.00000730	28
Particulate Matter ≤10 µm (PM10)	0.00009	0.00003285	126
Nitrogen Oxides (NOx)	0.00015	0.00005475	209
Volatile Organic Compounds	0.00016	0.00005840	223

2050			
Pollutant	**Total (kg/day/trip) reduced**	**Total (MT/year/trip) reduced**	**Total (MT/year) reduced**

Carbon Monoxide (CO)	0.00289	0.00105494	10,076
Particulate Matter ≤2.5 µm	0.00002	0.00000594	57
Particulate Matter ≤10 µm (PM10)	0.00009	0.00003174	303
Nitrogen Oxides (NOx)	0.00006	0.00002046	195
Volatile Organic Compounds	0.00012	0.00004213	402

[calc] **2030 Total Co-Pollutant Reductions**
7,084 (MT Co-Pollutants)

[calc] **2050 Total Co-Pollutant Reductions**
11,034 (MT Co-Pollutants)

Additional Source Information:
GHG:
CTDOT VMT Goals
https://portal.ct.gov/dot/pp_bureau/2030-vmt-goals-and-strategies?language=en_US

COSTS:
Stratford CT Press
https://patch.com/connecticut/stratford/stratford-complete-streets-project-gets-state-funding-boost

Town of Fairfield
https://www.fairfieldct.org/service/engineering_department/projects.php

WestCOG Complete Streets Prioritization Plan
https://westcog.org/wp-content/uploads/2022/08/Complete-Streets-Prioritization-Plan.pdf

CO-POLLUTANTS:
Federal Highway Administration CMAQ Emissions Calculator Toolkit
https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/#sect1c

Measure 1B	CLEAN MOBILITY: support the transition to net-zero vehicles, infrastructure; Leverage ITS technologies to reduce emissions.

Annual GHG emissions reduced in 2030	***224,293***	***MTCO2e***
Annual GHG emissions reduced in 2050	***989,650***	***MTCO2e***

Methodology Description: Municipal fleet vehicle data as estimated in the 2021 GHG Inventory was used to quantify GHG emissions reductions by assuming 20% of municipal vehicles were electrified by 2030 and 90% of vehicles were electrified by 2050. The Federal Highway Administration CMAQ Emissions Calculator Toolkit Adaptive Control Systems tool was also used to estimate emissions reductions associated with ITS systems.

Municipal Vehicle Fleet Data and Emission Reduction Calculations

[value] **Emission Factors by Fuel Type Used in GHG Inventory**

Fuel Type	CO2	Units	CH4	Units	N2O		Units
Diesel	0.010206	MTCO2/ gal	0.0000005	MTCH4/ gal	4E-07		MTN2O/ gal
Gasoline	0.008775	MTCO2/ gal	0.0000004	MTCH4/ gal	3E-07		MTN2O/ gal
Electric	0.000245	MTCO2/ kWh	0.00000003	MTCH4/ kWh	#####		MTN2O/ kWh

[value] **IPCC AR5 100-Year Global Warming Potentials**

28 GWP
265 GWP

[input, calc] **Gasoline Municipal Vehicle Data**

76,254,837 (miles) *Source:*
2,723,387 (gallons)
24,147 (MT CO2e)
3,324 (vehicles)
819 hicle/year)
28 (average miles/gallon)
22,937 miles/vehicl

[input, calc] **Diesel Municipal Vehicle Data**

23,534,940 (miles) *Source:*
1,384,408 (gallons)
14,296 (MT CO2e)
1,717 (vehicles)
806 hicle/year)
17 (average miles/gallon)

13,707 (average miles/vehicle)

[input calc] **Electric Municipal Vehicle Data**

268,427 (kWh)
1,525 (MT CO2e)
20.00 (vehicles
107,371 (total miles)
0.40 (kWh/mile)

Source: 2021 GHG Emissions Inventory for municipal vehicles

BASELINE Municipal Vehicle Data by Fuel Type					
Fuel Type	**Total Number of Vehicles**	**Avg Annual Miles/ Vehicle**	**Fuel Consumption/ Per Vehicle (gal or kWh)**	**Total Miles Traveled**	**Total Fuel Consumption (gal or kWh)**
Gasoline	3,324	22,937	819	76,254,837	2,723,387
Diesel	1,717	13,707	806	23,534,940	1,384,408
Electric	20	5,369	13,421	107,371	42,948

BASELINE Municipal Vehicle Emissions				
Fuel Type	**Total MTCO2**	**Total MTCH4**	**Total MTN20**	**Total MTCO2e**
Gas	23,898	1	1	24,147
Diesel	14,130	1	1	14,438
Electric	11	0	0	11

[input] **2030 Percent of Gasoline and Diesel Vehicles Electrified**

20% (percent) *Assumption*

2030 Projected Municipal Vehicle Data by Fuel Type					
Fuel Type	**Total Number of Vehicles**	**Avg Annual Miles/Vehicle**	**Fuel Consumption/ Per Vehicle (gal or kWh)**	**Total Miles Traveled**	**Total Fuel Consumption (gal or kWh)**
Gasoline	2,660	22,937	819	61,003,870	2,178,710
Diesel	1,374	13,707	806	18,827,952	1,107,527
Electric	1,028	5,369	13,421	20,065,326	8,026,131

2030 Estimated Emissions				
Fuel Type	**Total MTCO2**	**Total MTCH4**	**Total MTN20**	**Total MTCO2e**
Gas	19,118	0.94	0.65	19,318
Diesel	11,304	0.55	0.44	11,437
Electric	1,964	0.26	0.03	1,980
			2022 Total Emissions (MTCO2e)	38,596
			Number of Vehicles Electrified	1,008
			2030 Total Emissions (MTCO2e)	32,734
			2030 Emissions Reduced (MTCO2e)	**5,861**

[input] **2050 Percent of Gasoline and Diesel Vehicles Electrified**

90% (percent) *Assumption*

2050 Projected Municipal Vehicle Data by Fuel Type					
Fuel Type	**Total Number of Vehicles**	**Avg Annual Miles/ Vehicle**	**Fuel Consumption/ Per Vehicle (gal or kWh)**	**Total Miles Traveled**	**Total Fuel Consumption (gal or kWh)**
Gasoline	332	22,937	819	7,625,484	272,339
Diesel	172	13,707	806	2,353,494	138,441
Electric	4,557	5,369	13,421	89,918,171	35,967,268

2050 Estimated Emissions				
Fuel Type	**Total MTCO2**	**Total MTCH4**	**Total MTN20**	**Total MTCO2e**
Gas	2,390	0.12	0.08	2,415
Diesel	1,413	0.0692204	0	1,430
Electric	8,800	1.17	0.15	8,872
		2022 Total Emissions (MTCO2e)		38,596
		Number of Vehicles Electrified		3,529
		2050 Total Emissions (MTCO2e)		12,716
		2050 Emissions Reduced (MTCO2e)		**25,879**

ITS Project Emissions Reductions

Source: Federal Highway Administration
CMAQ Emissions Calculator Toolkit
Adaptive Control Systems
Inputs: 2030/2040, Urban, 5, 10, 4, 30, 1000/600, 710/650, 5%/2%

[calc]

2030	9,206.8	(kg CO2e/day/project)
	3,360	(MTCO2e/project/year)
2030		
2050	8,125	(kg CO2e/day/project)
2050	2,965	(MTCO2e/project/year)

[input] **Number of Projects Per year**
13 (projects)

[calc] **Emissions Reductions Per Year**
2030 43,686 (MTCO2e/year)
2050 38,551

[calc] **Number of years**
2030 5
2050 25

[calc] **ITS Emissions Reductions**
2030 218,432
2050 963,771

[FINAL] **Annual GHG Emissions Reduced**
2030 *224,293* (MTCO2e)
2050 *989,650* (MTCO2e)

Cost of Measure

EVs + Charging Infrastructure

[calc] **Number of Municipal Vehicles Electrified**
4,537 (vehicles)

[value] **Average Cost of Electric Vehicle**
$ 55,000 (2025 dollars)
Source: EPA CCAP estimation resource

[calc] **Total Cost of Vehicles**
$ 249,553,446 (2025 dollars)

[value] **Consumer Price Index Conversion 2015 to 2025 Dollars**
$ 1.38 (dollar conversion) *Source: US Bureau of Labor Statistics CPI Inflation Calculator*

Average Cost for a Level 2 Charger
[value] $ 7,500 (2015 dollars)
[calc] $ 10,350 (2025 dollars) *Source: EPA CCAP estimation resource*

Ports Per Charger
[input] 2 (ports/charger) *Assumption*

EVs Per Port

[input] 2 (vehicle/port) *Assumption*

[calc] **Evs Per Charger**
4 (charger/vehicle)

[calc] **Number of Chargers Needed**
1134 (chargers)

[calc] **Cost of EV Charger Installation**
$11,740,355 (2025 Dollars)

[calc] **Cost of Vehicles and Chargers**
$ 261,293,801 (2025 dollars)

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*

12.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **Total Cost with Inflation**
$ 421,336,254 *(2050 dollars)*

ITS Costs

[value] **State Highway CTSS intersection**

$650,000 (2024 dollars/ intersection) *Source: CTDOT 2024 Estimating Guidelines*

[value] **Number of State-Owned Signals Replaced Each Year**

65 (signals) *Source: CTDOT 2022 Transportation Asset Management Plan*

[input] **Percent of Signal Replacements in MSA**
20% (percent) *Assumption*

[calc] **Number of Intersections/year**
13 (intersections/year)

[value] **Consumer Price Index Conversion 2015 to 2025 Dollars**
$ 1.38 (dollar conversion)

[calc] **ITS Project Cost**
$11,661,000 (2025 dollars/year)

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*

12.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **Cost with Inflation**

$ 18,803,363 (2050 dollars/year)

Co-Pollutant Reductions

Pollutant	Daily total (kg/day)	Yealy Total (Metric tons/year)
Carbon Monoxide (CO)	30.79	11.24
Particulate Matter < 2.5 um (PM2.5)	1.88	0.69
Particulate Matter < 10 um (PM10)	0.37	0.14
Nitrogen Oxide (Nox)	4.55	1.66
Volatile Organic Compounds (VOC)	2.78	1.02
Total		14.7

Source: Federal Highway Administration CMAQ Emissions Calculator Toolkit Adaptive Traffic Control System

(MT Co-Pollutants)

Vehicle Electrification

[calc] **Number of Vehicles Electrified**

Gas 2,992 (vehicles)

Diesel 1,545 (vehicles)

[value] **Gasoline Co-pollutants Reduction**

Type	**kg/day/ vehicle**	**MT/year/ vehicle**	**MT/year**
Carbon Monoxide (CO)	0.0788	0.0287	86
Nitrogen Oxide (NOx)	0.0015	0.0005	1.61

Source: Federal Highway Administration CMAQ Emissions Calculator Toolkit Electric Vehicles and EV Charging Infrastructure

Measure: 2A	WEATHERIZE BUILDING ENVELOPES: address health & safety barriers (e.g. mold, asbestos); seal and insulate buildings to reduce energy demand.

Annual GHG emissions reduced in 2030	***179,312***	***MTCO2e***
Annual GHG emissions reduced in 2050	***316,010***	***MTCO2e***

Methodology Description: The EnergizeCT Dashboard data and reports were used to determine residential and commercial participation in energy savings programs from 20190 to 2025 and scaled participation through 2030 and 2050.

Provide technical assistance to building owners (residents/landlords, businesses, municipalities) to maximize state programs

[value] **Total Number of Businesses MSA Only**
35,093 (businesses) *Source: Energize CT 2021 Annual Report*

[value] **Total Number of Businesses Enrolled in State Programs - MSA Only**
9,469 (businesses) *Source: Energize CT 2021 Annual Report*

avings Data and Emission Reductions

[value] **Number of Households in MSA**
338,993 (households) *Source:*

[value] **Number of Households**
94,409 (households) *Source:*

Percent of Households Participated
[calc] 28% (percent)

[value] **Program Participation Targets**
2030 80% (percent) *Assumption:*
2050 90% (percent)

[calc] **Number of Additional Households**
2030 176,785 (households)
2050 210,685 (households)

[input] **Energy Solutions-**
350 ($/home) *Source:*

[input] **Allocation of Energy Savings**

Elec	50%	(percent)	*Assumptions*
NG	50%	(percent)	

Residential Energy Costs in CT

Elec	0.32	($/kWh)	*Source: EIA CT State Profile and Energy Estimates April 2025*
NG	16.65	$/Mcf	

[calc] **Program Annual Energy Savings**

Elec	56	(kWh saved/year/household)
NG	11	(Mcf saved/year/household)

[calc] **Total Electricity Savings for Residential Households**

2030	9,986,607	(kWh saved/year)
2050	11,901,579	(kWh saved/year)

[calc] **Emissions Factors**

Elec	0.00025	(MTCO2e/kWh)	*Source: New England eGrid. Assuming no increased renewable energy in the measure (accounted for elsewhere), EPA Emissions Factor Hub*
NG	0.00544	(MTCO2e/Ccf)	

[calc] **Total Natural Gas Savings for Residential Households**

2030	18,581,048	(Ccf saved/year)
2050	22,144,038	(Ccf saved/year)

[calc] **Total MTCO2e Reductions for Residential Households 2030 and 2050**

2030	103,619	(MTCO2e)
2050	123,488	(MTCO2e)

Commercial and Businesses Energy Savings and Emission Savings

[value] **Number of Business Projects Through Energize CT in MSA from 2010 to 2025**

11,808	(projects)	*Source: Energize CT Dashboard 2025 Annual Reports Exports*

[value] **Total Number of Businesses and Municipalities in MSA**

38,635	*Source: Energize CT Dashboard 2025 Annual Reports Exports*

[calc] **Percent of Businesses That Participated**

31%	(percent)	Assuming one project per business

[value] **Program Participation Targets**

2030	50%	(percent)
2050	80%	(percent)

[calc] **Number of Additional Projects**

2030	7,510	(projects)	Assuming one project per business
2050	19,100	(projects)	

[value] **Average Electricity Saving Per Project**

40,864 (kWh savings/project)

Source: C&LM Plan Filing 2021

[calc] **Total Electricity Savings**

2030	306,868,807	(kWh/year)
2050	780,503,923	(kWh/year)

[calc] **Emissions Reductions From Additional Projects**

2030	75,693	(MTCO2e)
2050	192,522	(MTCO2e)

[calc] **Commercial Savings 2021 for Small Businesses**

1,572	(Small/Med Business Projects/year)
33,473	(MWh savings/year)
33,473,000	(kWh savings/year)

Source: C&LM Plan Filing 2021

Electricity Saving Per Project

21,293 (kWh/project)

[input] **Percent increase in SMB Participants by 2030 and 2050**

2030	75%
2050	100%

[calc] **SMB Participation by 2030 and 2050**

2030	2,751	2030
2050	3,144	2050

[calc] **Total SMB Annual Electricity Savings by 2030 and 2050**

2030	58,577,750	(kWh)
2050	66,946,000	(kWh)

[calc] **Total MTCO2e Reductions for SMBs 2030 and 2050**

2030	14,449	(MTCO2e)
2050	16,513	(MTCO2e)

[calc] **Commercial Savings 2021 for Energy Opportunities (EO)**

1,000	(projects)
69,000	(MWh savings /year)
69,000,000	(kWh savings /year)
69,000	(kWh savings/project)

[input] **Target increase in EO Participants by 2030 and 2050**

2030	75%	(percent)
2050	100%	(percent)

[calc] **Additional EO Participation by 2030 and 2050**

1,750 2030

2,000 2050

[calc] **Total EO kWh annual savings by 2030 and 2050**

2030	120,750,000	(kWh)
2050	138,000,000	(kWh)

[calc] **Total Emissions Reductions for ECBs 2030 and 2050**

2030	29,785	(MTCO2e)
2050	34,040	(MTCO2e)

[FINAL] **Annual GHG emissions reduced in 2030**

179,312 (MTCO2e)

[FINAL] **Annual GHG emissions reduced in 2050**

316,010 (MTCO2e)

Cost Estimates

The following is sourced from Eversource which provides details on actual and projected costs for community outreach, workforce development, energy education, and portfolio manager/engagement tool. This data ranges from 2017 to 2027.

[input] **Education and Community Outreach Budget for EnergizeCT**

2025	$	2,989,594	(2025 dollars)	*Source: 4-ES 2025-2027 EE BUDGET MASTER -*
2027	$	2,806,738	(2025 dollars)	*ELECTRIC November Update 11-01-24.xlsx*

Budget Reduction

$ 182,856

Can supplement budget reduction with technical assistance from 2 FTEs.

Co-Pollutants

[value] **Conversion kWh to MWh**

0.001 kWh to MWh

Total MWh Savings for All Programs in 2030 and 2050

2030	9,987	Residential Total kWh savings
	306,869	Business Total kWh savings
	316,855	*Totals*
2050	11,902	Residential Total kWh savings
	780,504	Business Total kWh savings
	792,406	*Totals*

[value] **Conversion Lbs to Metric Ton**

2,205 (Lbs/Metric Ton)

[calc] **2030 AVERT-Derived Emission Rates, and Associated Total Co-pollutant Emissions**

Emission Rate		*Metric Tons*
0.0280	SO2 (lb/MWh)	4.0 Total MTSO2
0.1470	NOX (lb/MWh)	21.1 Total MTNOX
0.0280	PM2.5 (lb/MWh)	4.0 Total MT PM2.5
0.0110	VOCs (lb/MWh)	1.6 Total MTVOCs
0.0170	NH3 (lb/MWh)	2.4 Total MTNH3
		33.2 Total

[calc] **2050 AVERT-Derived Emission Rates, and Associated Total Co-pollutant Emissions**

Emission Rate		*Metric Tons*
0.0280	SO2 (lb/MWh)	10.1 Total MTSO2
0.1470	NOX (lb/MWh)	52.8 Total MTNOX
0.0280	PM2.5 (lb/MWh)	10.1 Total MT PM2.5
0.0110	VOCs (lb/MWh)	4.0 Total MTVOCs
0.0170	NH3 (lb/MWh)	6.1 Total MTNH3
		83.0 Total

[value] **Co-Pollutant Emissions Factors For Natural Gas Furnace**

NG (NO_x)	94	(lbs/Mmcf)
NG (SO_2)	0.6	(lbs/Mmcf)

Source: NESCAUM Estimating the Emissions Benefits of Switching to Heat Pumps for Residential Heating Table 2

[calc] **Natural Gas Savings**

2030	18,581,048	(Ccf/year)
2050	22,144,038	(Ccf/year)
2030	1,858	(Mmcf/year)
2050	2,214	
		(Mmcf/year)

[calc] **2030 Co-Pollutants from Natural Gas**

NG (NO_x)	174,662	(lbs/year)
NG (SO_2)	1,115	(lbs/year)
Total	175,777	(lbs/year)

Links to data sources:

Energy Evaluation Small Business Energy Advantage | EnergizeCT

Connecticut Statewide Energy Efficiency Dashboard

HomeComfortPractice - Contractor of EnergizeCT
https://www.homecomfortpractice.com/energize-ct/

CT DEEP Weatherization Goal
https://portal.ct.gov/deep/energy/weatherization/weatherization-definition-in-ct

Energize CT Budget 4-ES 2025-2027 EE BUDGET MASTER - ELECTRIC November Update 11-01-24.xlsx
https://app.box.com/s/olbonpn1u7ceg7fxvne13u3q9vqal1t5/file/1663822883059?sb=/details

NESCAUM Estimating the Emissions Benefits of Switching to Heat Pumps for Residential Heating Table 2 https://otcair.org/upload/Documents/Reports/nescaum-otc-emission-reduction-analysis-for-residential-heating-202106.pdf

Measure: 2B	DECARBONIZE BUILDING SYSTEMS: retrofit mechanical, electrical, and environmental systems.

Annual GHG emissions reduced in 2030 ***267,314*** ***MTCO2e***

Annual GHG emissions reduced in 2050 ***1,669,876*** ***MTCO2e***

Emissions reductions were quantified by scaling a proposed 2030 statewide heat pump installation goal to the MSA based on population. Natural gas, fuel oil, and propane fuel usage reductions and associated increase in electricity usage for installing over 84,000 heat pumps was quantified based on typical household energy use. For 2050, it was assumed that residential natural gas, fuel oil, and propane usage was eliminated.

GHG Emissions Reductions

[value] **2021 Population Data**

3,605,330	CT Statewide Population
986,344	Southwest CT MSA Wide Population
27%	Percent of State Population

[input] **CT Statewide Heat Pump Installation Target**

310,000 *Source: Raised Bill No. 5439*

[calc] **Estimated Heat Pump Installation for Southwest CT**

84,810

[value] **Total Gallons of Oil Needed to Meet Average Home Energy Load**

450 (Gallons) *Source:*

[value] **Total Therms of Natural Gas Needed to Meet Average Home Energy Load**

556 (Therms) *Source:*

[value] **Total Gallons of Propane Needed to Meet Average Home Energy Load**

608 (Gallons) *Source: Northeast/Mid-Atlantic Air-Source Heat Pump Market Strategies Report 2016 Update Table 4 (page 36)*

[value] **Total Number of Households in MSA**

312,278 (households)

[value] **Number of Households by Fuel Type in MSA**

NG	143,989	(households)	*Census Table*
Oil	130,286	(households)	
Propane	17,027	(households)	
Total	*291,302*		

[value]	**Percent of Households by Fuel Type**		
NG	49%	(percent)	*Source: Calculated from Census Table B25177*
Oil	45%	(percent)	
Propane	6%	(percent)	

[calc]	**Number of Households Transitioned to Heat Pump in MSA**	
NG	41,921	(households)
Oil	37,931	(households)
Propane	4,957	(households)

[calc]	**Reduction in Fuel Use by Type**	
NG	23,308,038	(Therms)
Oil	17,069,149	(Gallons)
Propane	3,014,001	(Gallons)

[values]	**Emission Factors and Conversions**	
	1.037	Therms to Ccf
	0.138	Fuel Oil to MMBTU
	0.091	Propane Gallons to MMBTU
	0.00544	Natural Gas (MTCO2e/Ccf)
	0.07420	Oil (MTCO2e/MMBTU)
	0.06311	Propane (MTCO2e/MIMBTU)

[value]	**Emission Factor for Electricity**	
2030	0.00012	(MTCO2e/kWh)
2050	0.00002	(MTCO2e/kWh)

[calc]	**2030 Emissions Reductions**	
NG	131,584	(MTCO2e)
Oil	174,788	(MTCO2e)
Propane	17,310	(MTCO2e)
Total	*323,682*	*(MTCO2e)*

[value]	**Natural Gas Distribution System Leakage**		
	2.5%	*(percent)*	*Source: 2021 GHG Inventory*

[calc]	**2030 Emissions Reduction From Natural Gas Distribution System**	
	3,290	(MTCO2e)

[value]	**Total Electricity Needed to Meet Average Home Energy Load for Air Source Heat Pump**	
	5,862	(kWh)

[calc]	**Total Number of Households with New HP Installation and Associated Consumption and Emissions**	
	84,810	(Number of households)
	497,153,948	(Total annual kWh)

59,658 (MTCO2e) - 2030

[calc] **2030 Net Emission Reductions From ASHP Installations**
267,314 (MTCO2e)

[value] **Total Natural Gas Residential Ccf and T&D Losses**
140,449,932 (Ccf) *Source: 2021 GHG Inventory*
3,511,248 (Ccf) T&D Losses

[value] **Total Residential Fuel Oil Residential** *Source: 2021 GHG Inventory*
10,950,422 (MMBTU)

[value] **Total Residential Propane** *Source: 2021 GHG Inventory*
1,166,122 (MMBTU)

[input] **Percent Reduction in Fossil Fuels by 2050**
100% (percent) *Assumption*

[calc] **2050 Emission Reduction**

NG	764,610	(MTCO2e)
NG T&D	19,115	(MTCO2e)
Oil	812,554	(MTCO2e)
Propane	73,597	(MTCO2e)

[FINAL] **Annual GHG Emissions Reduced in 2030**
267,314 (MTCO2e) *Assuming all increased electricity is from renwable sources and has zero emissions*

[FINAL] **Annual GHG Emissions Reduced in 2050**
1,669,876 (MTCO2e)

Cost of Measure

[value] **Consumer Price Index Conversion 2022 to 2025 Dollars**
2022 $ 1.15 (dollar conversion) *Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[value] **Cost of Residential Air Source Heat Pump and Installation**
$ 6,880 *(2022 dollars)* *Source: EPA CCAP estimation resource, is also within the range from Energize CT ($5,000-$25,000)*
$ 7,912 (2025 dollars)

[value] **2030 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*
2.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **2030 Cost of Air Source Heat Pump and Installation in MSA**
$ 671,013,654 *(2025 dollars)*
(2030 dollars)

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*
12.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **2050 Cost of Air Source Heat Pump and Installation in MSA**

$ 1,799,729,882 *(2025 dollars)*

$ 2,902,064,435 *(2050 dollars)*

Co-Pollutants Emissions Reductions Switching to Heat Pumps

[value] **Emission Factors for Natural Gas Co-Pollutants**

NG (NO_x)	94	(lbs/Mmcf)	*Source: NESCAUM Estimating the Emissions Benefits of Switching to Heat Pumps for Residential Heating Table 2*
NG (SO_2)	0.6	(lbs/Mmcf)	

[value] **Emission Factors for Fuel Oil Co-Pollutants**

Oil (NO_x)	0.10815	(lbs/MMBtu)
Oil (SO_2)	142	(lbs/1,000 gallons)

[value] **2030 Fuel Reduction for Natural Gas and Fuel Oil**

NG	23,308,038	(Therms)	*Source: GHG Reduction Measure Calculation*
Oil	17,069,149	(Gallons)	

[value] **2050 Fuel Reduction for Natural Gas and Fuel Oil**

NG	145,787,029	(Therms)	*Source: GHG Reduction Measure Calculation*
Oil	78,217,769	(Gallons)	

[value] **Conversions**

2,205	lbs to Metric Ton conversion
0.14	(MMBtu/gal)
0.0001	Therms to Mmcf conversion

[calc] **Natural Gas Reduction**

2030	2,267	(Mmcf)
2050	14,178	(Mmcf)

[calc] **2030 Co-Pollutant Reductions for Natural Gas**

NO_x	213,070	(lbs)
SO_2	1,360	(lbs)

[calc] **2050 Co-Pollutant Reductions for Natural Gas**

NO_x	1,332,712	(lbs)
SO_2	8,507	(lbs)

[calc] **Fuel Oil Reduction**

2030	2,372,612	(MMBtu)
2050	10,872,270	(MMBtu)
2030	17,069	(thousands of Gallons)
2050	78,218	(thousands of Gallons)

[calc] **2030 Co-Pollutant Reductions for Fuel Oil**

NO_x	256,598	(lbs)
SO_2	2,423,819	(lbs)

[calc]	**2050 Co-Pollutant Reductions for Fuel Oil**		
NO_x	1,175,836	(lbs)	
SO_2	11,106,923	(lbs)	
[calc]	**2030 Natural Gas Co-Pollutant Reduction**		
NO_x	97	(MT NOx)	
SO_2	0.6	(MTSO2)	
[calc]	**2030 Fuel Oil Co-Pollutant Reduction**		
NO_x	116	(MT NOx)	
SO_2	1,099	(MTSO2)	
[FINAL]	**2030 Total Co-Pollutant Emissions Reductions**		
NO_x	213	(MT NOx)	
SO_2	1,100	(MTSO2)	
	1,313	MT	
	2050 Natural Gas Co-Pollutant Reduction		
NO_x	605	(MT NOx)	
SO_2	4	(MTSO2)	
	2050 Fuel Oil Co-Pollutant Reduction		
NO_x	533	(MT NOx)	
SO_2	5,038	(MTSO2)	
	2050 Total Co-Pollutant Emission Reductions		
NO_x	1,138	(MT NOx)	
SO_2	5,042	(MTSO2)	
	6,180	MT	

Additional Information on sources:
GHG Calculation Sources:
Raised Bill No. 5439 https://www.cga.ct.gov/2024/TOB/H/PDF/2024HB-05439-R00-HB.PDF

Northeast/Mid-Atlantic Air-Source Heat Pump Market Strategies Report 2016 Update Table 4 (page 36)
https://neep.org/sites/default/files/NEEP_ASHP_2016MTStrategy_Report_FINAL.pdf

Census Bureau Table B25117: Tenure by house heating fuel
https://data.census.gov/table/ACSDT1Y2022.B25117

Cost Sources:
Connecticut Department of Transportation 2024 Estimating Guidelines

US Bureau of Labor Statistics CPI Inflation Calculator https://www.bls.gov/data/inflation_calculator.htm

https://energizect.com/rebates-incentives/heating-cooling/heat-pumps/residential-air-source

Measure: 2C	*NET-ZERO READY NEW CONSTRUCTION: apply energy-saving requirements for new/renovated buildings.*

Annual GHG emissions avoided in 2030 ***5,535*** ***MTCO2e***

Annual GHG emissions avoided in 2050 ***77,053*** ***MTCO2e***

Methodology Description: The avoided emissions from future residential homes expected to be built between 2025 and 2050 were quantified assuming energy codes require a 42 HERS rating (compared to 55 currently) and that homes built after 2030 are all electric.

Advocate for enabling legislation for municipalities to update building codes)

[value] **Energy requirement of an**

Elec	20	[MMBtu/house]	Source: 2022
NG	46	[MMBtu/house]	
Propane	38	[MMBtu/house]	
Fuel Oil	58	[MMBtu/house]	
Total	163	[MMBtu/house]	

[value] **Energy requirement of an**

Elec	15	[MMBtu/house]	Source:
NG	35	[MMBtu/house]	
Propane	29	[MMBtu/house]	
Fuel Oil	44	[MMBtu/house]	
Total	124	[MMBtu/house]	

[calc] **Fuel Savings by Type**

Elec	5	[MMBtu/house]
NG	11	[MMBtu/house]
Propane	9	[MMBtu/house]
Fuel Oil	14	[MMBtu/house]
Total	38	[MMBtu/house]

[input] **All Electric Home Electricity Usage**

50 [MMBTU/house] *Assumption*

[calc] **Estimated number of new homes constructed in the MSA Per Year**

1730.8 (homes/year) Source: Census https://www.census.gov/construction/bps/msamon

[calc] **Number of Years**

2030	5	(years)
2050	25	(yates)

[calc] **Estimated Future Number of New Homes Constructed in the MSA**

2030	8,654	(homes)
2050	43,270	(homes)

[calc] **Percentage of Fuel Source Used for Homes in the MSA Baseline**

Electric	18%	Source: Census
NG	41%	
Propane	5%	
Oil	37%	

[calc] **Percentage of Fuel Source Used for Homes in the MSA 2050**

Electric	100%	Source: Census
NG	0%	
Propane	0%	
Oil	0%	

[calc] **Estimated number of new homes constructed by 2030 and 2050 by Fuel Type**

	2030	2050	Difference	
Electric	1,517	43,270	34,616	*Assumed new home all elec*
NG	3,528	-		
Propane	417	-		
Oil	3,192	-		

[calc] **2030 Estimated Annual Savings from New Homes**

Electric	7,160	(MMBtu)
NG	38,476	(MMBtu)
Propane	3,780	(MMBtu)
Oil	43,819	(MMBtu)

2050 Estimated Annual Savings (Homes After 2030)

Electric	163,353	(MMBtu)	*Assuming more efficient and still have saving from baseline*
NG	497,227	(MMBtu)	*Assuming all electric so savings equivalent to 42 HERS MMBtu*
Propane	48,847	(MMBtu)	
Oil	566,272	(MMBtu)	

[calc] **2050 Total Electricity Used for New Homes**

1,730,800 (MMBtu)

[value] **Emission Factors**

GHG Measure Reductions Calculations

2030 Electric			*Asumed projected factor*
	0.0001184	(MTCO2e/MMBtu)	
2050 Elec	0.00000000	(MTCO2e/MMBtu)	*Asumed projected factor*
NG	0.0531148	(MTCO2e/MMBtu)	*Source: 2021 GHG Inventory*
Propane	0.0631238	(MTCO2e/MMBtu)	*(EPA Emissions Factor Hub)*
Oil	0.0742138	(MTCO2e/MMBtu)	

[calc] **Estimated Annual 2030 Emissions Savings from New Home Construction**

Electric	0.848	(MTCO2e)
NG	2,044	(MTCO2e)
Propane	239	(MTCO2e)
Oil	3,252	(MTCO2e)

[calc] **Estimated Annual 2050 Emissions Savings from New Home Construction**

Electric	-	(MTCO2e)	*Assuming all elec from renewable sources (2040*
NG	28,454	(MTCO2e)	*CT goal)*
Propane	3,322	(MTCO2e)	
Oil	45,277	(MTCO2e)	

[FINAL] **Annual GHG emissions reduced in 2030**

5,535 (MTCO2e)

[FINAL] **Annual GHG emissions reduced in 2050**

77,053 (MTCO2e)

Cost of Measure

Costs incured by COGs or municiplaities for advocacy of updated building codes, energy use reporting, and zoning code updates are minimal and likely inluce staff time of existing staff or hiring of new staff to manage an enery use reporting program, for example.

[input] **FTEs to Execute**

5 (FTE) *Assumption*

[input] **Salary Per FTE**

$ 73,843 (2025 dollars) *Source: Zip Recruiter https://www.ziprecruiter.com/Salaries/City-Planner-Salary--in-Connecticut#:~:text=While%20ZipRecruiter%20is%20seeing%20salaries,making%20$88%2C469%20annually%20in%20Connecticut.*

Staff Cost

$ 369,215 (2025 dollars)

Not acounting for inflation in this cost

Co-Pollutants

[value]	**Emission Factors for Natural Gas Co-Pollutants**		
NG (NO_x)			*Source: NESCAUM Estimating the Emissions Benefits of Switching to Heat Pumps for Residential Heating*
	94	(lbs/Mmcf)	
NG (SO_2)	0.6	(lbs/Mmcf)	
[value]	**Emission Factors for Fuel Oil Co-Pollutants**		
Oil (NO_x)	0.10815	(lbs/MMBtu)	
Oil (SO_2)	142	(lbs/1,000 gallons)	
[calc]	**2030 Fuel Reduction for Natural Gas and Fuel Oil**		
NG	38,476	(MMBTU)	
Oil	43,819	(MMBTU)	
[calc]	**2050 Fuel Reduction for Natural Gas and Fuel Oil**		
NG	497,227	(MMBTU)	
Oil	566,272	(MMBTU)	
[value]	**Conversions**		
	2,205	lbs to Metric Ton conversion	
	0.14	(MMBtu/gal)	
	0.0001	Therms to Mmcf conversion	
	1,025	MMBTU to MMcf	
[calc]	**2030 Copollutant Calculations for Natural Gas (NO_x)**		
	38	NG MMcf	
	3,529	Lbs of NG	
	2	**Total MT of No_x**	
[calc]	**2050 Copollutant Calculations for Natural Gas (NO_x)**		
	485	NG MMcf	
	45,599	Lbs of NG	
	21	**Total MT of No_x**	
[calc]	**2030 Copollutant Calculations for Natural Gas (SO_2)**		
	38	NG MMcf	
	23	Lbs of NG	
	0.01	**Total MT of SO_2**	
[calc]	**2050 Copollutant Calculations for Natural Gas (SO_2)**		
	485	NG MMcf	

	291	Lbs of NG
	0.13	**Total MT of SO_2**
[calc]	**2030 Copollutant Calculations for Oil (No_x)**	
	4,739	Oil (NO_x)
	2.15	**Total MT of No_x**
[calc]	**2050 Copollutant Calculations for Oil (No_x)**	
	61,242	Oil (NO_x)
	27.78	**Total MT of No_x**
[value]	**Fuel oil to MMBTU**	
	0.138	MMBTU/gallon
[calc]	**2030 Copollutant Calculations for Oil (SO_2)**	
	317,527	gallons
	45,089	lb
	20	**Total MT of SO_2**
[calc]	**2050 Copollutant Calculations for Oil (SO_2)**	
	4,103,423	gallons
	582,686	lb
	264	**Total MT of SO_2**
[FINAL]	**Total Co-Pollutants Avoided**	
2030	24	(MT Co-Pollutant)
2050	313	(MT Co-Pollutant)

Measure: 3A	*RENEWABLE ENERGY GENERATION & STORAGE: deploy community solar, energy storage, microgrid, geothermal, and other renewable energy projects.*

Annual GHG emissions reduced in 2030 ***62,639*** ***MTCO2e***

Annual GHG emissions reduced in 2050 ***128,686*** ***MTCO2e***

The emissions reduction associated with meeting CT's energy storage program goal of 580 MW by 2030 was scaled to the MSA utilizing the EPA AVERT tool with an assumed 1,200 MW by 2050 (based on limitations with the AVERT). The accompanying MW of solar was assumed using several factors as detailed in the appendix.

Provide technical assistance/resources from planning through construction (e.g. models, best practices)

[value] **Statewide Energy Storage Solution Program 2030 Target**

580 (MW) Energy

[input] **Assumed Solar PV to Support the Storage Target**

315 (MW) Assumes 150

[calc] **Regional fossil fuel generation displacement**

503 (GWh) EPA AVERT,

[calc] **2030 Statewide Emissions Reduction**

255,660 (tons) EPA AVERT, inputs 315 MW Distributed Solar, 580 MW Storage

231,996 (MTCO2)

[input] **Percent of Statewide Population in MSA**

27% (percent) Source: 2021 GHG Inventory (Census)

[Final] **Annual GHG Emissions Reduced in 2030**

62,639 (MTCO2e)

[input] **Statewide Energy Storage Estimate 2050**

1,200 (MW) Assump

[input] **Assumed Solar PV to Support the Storage Target**

652 (MW) Assume

[calc] **Regional fossil fuel generation displacement**

1,042 (GWh) EPA AVERT, inputs 652 MW Distributed Solar, 1200 MW Storage

[calc] **2050 Statewide Emissions Reduction**

525,230 (tons) EPA AVERT, inputs 652 MW Distributed Solar, 1200 MW Storage

476,615 (MTCO2)

[input] **Percent of Statewide Population in MSA**

27% (percent) Source: 2021 GHG Inventory (Census)

[FINAL] **Annual GHG Emissions Reduced in 2050**

128,686 (MTCO2e)

Co-Pollutant Emissions

Conversion Lbs to Metric Ton

2,205 (Lbs/Metric Ton)

[calc] **2030 Co-Pollutant Reductions**

Emissions		*Metric Tons*		
50,770	(lb SO2)	23	(MT SO2)	*Source: EPA AVERT, inputs as listed above*
107,360	(lb NOX)	49	(MT NOX)	
18,620	(lb PM2.5)	8	(MT PM2.5)	
6,690	(lb VOCs)	3	(MT VOCs)	
9,020	(lb NH3)	4	(MT NH3)	
		87	**(MT Co-Pollutants)**	

[calc] **2050 Co-Pollutant Reductions**

Emissions		*Metric Tons*		
93,490	(lb SO2)	42	(MT SO2)	*Source: EPA AVERT, inputs as listed above*
206,400	(lb NOX)	94	(MT NOX)	
37,710	(lb PM2.5)	17	(MT PM2.5)	
13,460	(lb VOCs)	6	(MT VOCs)	
18,470	(lb NH3)	8	(MT NH3)	
		168	**(MT Co-Pollutants)**	

Cost of Measure

[value] **Distribution of Storage by Type**

26% (percent)

74% (percent)

Source: DOCKET NO. 24-08-05 ANNUAL ENERGY STORAGE SOLUTIONS PROGRAM REVIEW – YEAR 4 Table 10

[value] **Solar Installed System Cost Analysis**

Res	2.7	(2023 dollars/W dc))	*Source: NREL Solar Installed System Cost Analysis*
Com	1.8	(2023 dollars/W dc))	

[calc] **Solar and Storage Cost**

Res	$	122,924,483	(2023 dollars)
Com		234,922,345	(2023 dollars)
Total	$	357,846,828	(2023 dollars)

[value] **Consumer Price Index Conversion 2022 to 2025 Dollars**

2023 1.08 *Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[calc] **Solar and Storage Cost 2025 Dollars**

Total $ 386,474,574 (2025 dollars)

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*

12.25	(years)	Number of years to midpoint
0.05	(percent)	Percent inflation

[calc] **Total Cost with Inflation**

$ 623,190,250 (2050 dollars)

Sources:

EPA Avoided Emissions and generation Tool (AVERT)
https://www.epa.gov/avert/avert-web-edition

Energy Storage Solution Program Manual, January 17 2025
https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/09638a04e2cb169685258c15006a79ea/$FILE/ESS%20Program%20Manual%2001172025%20Clean%20FINAL.pdf

DOCKET NO. 24-08-05 ANNUAL ENERGY STORAGE SOLUTIONS PROGRAM REVIEW – YEAR 4 pg. 37 footnote
https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/5dfd10f7c319dfec85258be90050bf9c/$FILE/240805-120424.pdf

NREL Solar Installed System Cost Analysis
https://www.nrel.gov/solar/market-research-analysis/solar-installed-system-cost

US Bureau of Labor Statistics CPI Inflation Calculator
https://www.bls.gov/data/inflation_calculator.htm

Measure: 3B	COMMUNITY CHOICE AGGREGATION: support projects allowing municipalities to collectively purchase electricity from a supplier of their choice.

Annual GHG emissions reduced in 2030 ***499,867*** ***MTCO2e***

Annual GHG emissions reduced in 2050 ***1,719,484*** ***MTCO2e***

The 2021 residential and commercial electricity usage included in the GHG Inventory was used in conjunction with data from 32 community aggregation programs in Massachusetts to determine estimated emissions reductions for 2030 and 2050 for the development of community aggregation programs across the MSA. By 2050, it was assumed all electricity would be from renewable sources based on CT's statewide goals. The participation in the aggregation program was assumed to an opt-out program and therefore a value of 100% was assumed.

[value] **Residential Electricity Usage 2021**
2021 3,511,203,401 (kWh) *Source:*

[value] **Commercial and Industrial Electricity Usage for 2021**
2021 3,459,753,128 (kWh) *Source:*

[value] **Average Annual Percent Increase in Net Electricity Use**
1.8% *Source: ISO New*

[value] **Number of years from 2022 to 2030, 2040, 2050**
8 (years)
28 (years)

[calc] **Residential Electricity Projected for 2030 and 2050**
2030 4,049,843,235 (kWh)
2050 5,786,204,417 (kWh)

[calc] **Commercial and Industrial Electricity Projected for 2030 and 2050**
2030 3,990,500,179 (kWh)
2050 5,701,418,159 (kWh)

[value] **Emissions Factor**
0.000246664 (MTCO2e/kWh) *Source: New England E-Grid*

[calc] **Total Residential Emissions for 2021 (Baseline)**

866,087 (MTCO2e)

[calc] **Total Commercial and Industrial Emissions for CT MSA (Baseline)**
853,397 (MTCO2e)

2030 Emissions Reductions

[input] **2030 Residential Renewable Energy Content in Aggregation Options**

Opt 1	15%	(%)	*Source: Based on common aggregation*
Opt 2	70%	(%)	*tiers from 32 MA communities*
Opt 3	100%	(%)	

[calc] **2030 Residential Non-Renewable Energy Content in Aggregation Options**

Opt 1	85%	(%)	*Source: Based on common aggregation*
Opt 2	30%	(%)	*tiers from 32 MA communities*
Opt 3	0%	(%)	

[input] **2030 Residential Program Participation (Must Total 100%)**

Opt 1	71%	(%)	*Source: Based on common aggregation*
Opt 2	13%	(%)	*tiers from 32 MA communities*
Opt 3	16%	(%)	

[calc] **2030 Residential Calculated Weighted Average Emission Factor**

Opt 1	0.000209664	(MTCO2e/kWh)
Opt 2	0.000073999	(MTCO2e/kWh)
Opt 3	0.000000000	(MTCO2e/kWh)

[calc] **2030 Residential Annual Emissions**

Opt 1	602,867	(MTCO2e)
Opt 2	38,959	(MTCO2e)
Opt 3	-	(MTCO2e)

[calc] **2030 Total Residential Annual Emissions Reduced From Baseline**
224,262 (MTCO2e)

[input] **2030 Commercial Renewable Energy Content in Aggregation Options**

Opt 1	15%	(%)	*Source: Based on common aggregation*
Opt 2	70%	(%)	*tiers from 32 MA communities*
Opt 3	100%	(%)	

[calc] **2030 Commercial Non-Renewable Energy Content in Aggregation Options**

Opt 1	85%	(%)	*Source: Based on common aggregation*
Opt 2	30%	(%)	*tiers from 32 MA communities*
Opt 3	0%	(%)	

[input] **2030 Commercial Program Participation (Must Total 100%)**

Opt 1	68%	(%)	*Source: Based on common aggregation*
Opt 2	3%	(%)	*tiers from 32 MA communities*

Opt 3 29% (%)

[calc] **2030 Commercial Annual Emissions**
Opt 1 568,932.76 (MTCO2e)
Opt 2 8,858.81 (MTCO2e)
Opt 3 - (MTCO2e)

[calc] **2030 Total Commercial Annual Emissions Reduced From Baseline**
275,605 (MTCO2e)

[FINAL] **Annual GHG Emissions for Residential and Commercial Reduced in 2030**
499,867 (MTCO2e)

2050 Emissions Reductions

[input] **2050 Residential Renewable Energy Content in Aggregation Options**
Opt 1 100% (%) *Assumption: All electricity will be renewable by 2040 based on statewide target*

[calc] **2050 Residential Renewable Energy Content in Aggregation Options**
Opt 1 0% (%) *Assumption: All electricity will be renewable by 2040 based on statewide target*

[input] **2050 Residential Program Participation (Must Total 100%)**
Opt 1 100% (%)

[calc] **2050 Total Residential Annual Emissions**
0 (MTCO2e)

[calc] **2050 Total Residential Annual Emissions Reduced From Baseline**
866,087 (MTCO2e)

[input] **2050 Commercial Renewable Energy Content in Aggregation Options**
Opt 1 100% (%)

[calc] **2050 Commercial Non-Renewable Energy Content in Aggregation Options**
0% (%)

[input] **2050 Commercial Program Participation (Must Total 100%)**
Opt 1 100% (%)

[calc] **2050 Total Commercial and Industrial Annual MTCO2e**
0 (MTCO2e) *Source:*

[calc] **2050 Total Commercial Annual Emissions Reduced From Baseline**
853,397 (MTCO2e)

[FINAL] **Annual GHG emissions for Residential, Commercial, and Industrial Reduced in 2050**

1,719,484.02 (MTCO2e)

Cost of Measure

Given that the state legislature has not yet authorized community choice aggregation, there is no direct cost associated with this measure as municipalities can pass a resolution as part of their typical processes to demonstrate support. Once enabled, there are several models for executing CCA, but they are usually designed to minimize costs incurred by municipalities.

Co-Pollutants

Co-pollutant emissions factors were sourced from EPA's AVERT tool and used in conjunction with projected electricity for 2030 and 2050.

[calc] **2030 Total kWh Consumption (Projected)**

8,040,343,414 kWh

8,040,343 MWh

[calc] **2050 Total kWh Consumption (Projected)**

11,487,622,577 kWh

11,487,623 MWh

[input] **Conversion Lbs to Metric Ton**

2,205 Lbs/Metric Ton

[calc] **AVERT-derived Emission Rates and associated Total Co-Pollutant Emissions**

Emission Factor	2030	2050	Unit
0.0280 SO2 (lb/MWh)	102	146	MT SO2
0.1470 NOX (lb/MWh)	536	766	MT NOX
0.1580 Ozone season NOX (lb/MWh)	576	823	MT Ozone Season NOX
0.0280 PM2.5 (lb/MWh)	102	146	MT PM2.5
0.0110 VOCs (lb/MWh)	40	57	MT VOCs
0.0170 NH3 (lb/MWh)	62	89	MT NH3
Total	1,419	2,027	MT Co-Pollutants

Measure: 4A	WASTE DIVERSION: expand materials management, waste diversion (e.g. food scraps), and waste processing programs.

Annual GHG emissions reduced in 2030 ***9,419*** ***MTCO2e***

Annual GHG emissions reduced in 2050 ***13,008*** ***MTCO2e***

The CT DEEP 2024 Solid Waste report identified that an additional 708,395 tons of waste would need to be reduced or diverted across the state to meet goals set in the 2016 Comprehensive Materials Management Strategy (CMMS). The portion of the needed reduction/diversion which can be allocated to the Bridgeport-Stamford Norwalk MSA was calculated. It was assumed that while, the statewide goals for 2024 were not met, this could be achieved by 2030 and a greater reduction or diversion could also be achieved by 2050.

Waste Data and Reduction/Diversion Targets			
[value]	**Total Landfilled Waste From MSA**		
	25,815	(tons)	*Source: CTDEEP*
[value]	**Total Incinerated Waste in MSA**		
	735,080	(tons)	*Source: CTDEEP*
[value]	**Total Incinerated Waste Sent Out of MSA**		
	34,503	(tons)	*Source: CTDEEP*
[calc]	**Total Incinerated Waste Generated by MSA**		
	769,583	(tons)	*Source: CTDEEP*
[value]	**Total Waste Recycled by MSA**		
	98,602	(tons)	*Source: CTDEEP*
[value]	**Total Waste Composted by MSA**		
	90,633	(tons)	*Source: CTDEEP*
[value]	**2021 MSA Total Waste (Landfilled, Incinerated, Recycled, Composted)**		

984,633 (tons) *Source: CTDEEP via Brenna Giannetti (Brenna.Giannetti@ct.gov) for calendar year 2021*

[calc] **2021 Percent of Waste Diverted**
19%

[value] **2021 Statewide Total Waste**
3,332,763 (tons) *Source: CTDEEP CMMS Amendment January 2021*

[value] **Additional MSW Diversion or Reduction Needed to Meet Statewide Goal**
756,401 (tons) *Source: CTDEEP 2023 Solid Waste Disposal & Diversion Report Table 3*

[calc] **2021 MSA Portion of Total Statewide Waste**
30% (%)

[calc] **Additional Reduction or Diversion in MSA to Meet Statewide Goal**
223,471 (tons)

[calc] **Percent Reduction or Diversion Needed to Meet Statewide Goals for 2030**
42% (%) *Assumption: can be accomplished for 2030*

[input] **Percent Reduction or Diversion for 2050**
60% (%) *Assumption: can be accomplished for 2050*

[calc] **Additional Reduction or Diversion in MSA 2050**
401,545 (tons)

Emissions Reductions

[values] **Waste Disposal by Type**

Landfill	3%	(%)	*Source: Southwest CT GHG Inventory*
Incineratio	97%	(%)	

[values] **Landfill Methane Emissions Variables**

Lo	0.08	*Source: Southwest CT GHG Inventory. GPC Equation 8.3*
frec	0.85	
Ox	0.10	

[calc] **Landfill Methane Emissions Reduced**
77.85 (MTCH4)

[values] **Incineration CO2, CH4, and N2O Emissions Variables**

	0.6%		*Source: Southwest CT GHG Inventory Waste Sector*
C to CO2	3.67		
conversior	0.000001		
CH4	0.20	(g CH4/ton)	

N2O	50	(g N2O/ton)	
CH4 GWF	28		(AR5)
N2O GWF	265		(AR5)

[calc] **Incineration CO2, CH4, N2O Emissions**

CO2	4,373	(MTCO2e)
CH4	1.2	(MTCO2e)
N2O	2,865	(MTCO2e)

[calc] **2030 Total Emissions Reduced from Incineration**

7,239 (MTCO2e)

[calc] **2030 Total Emissions Reduced from Landfill**

2,180 (MTCO2e)

[FINAL] **2030 Annual GHG Emissions Reduced**

9,419 (MTCO2e)

[calc] **Landfill Methane Emissions Reduced**

139.88 (MTCH4)

169.37 (MTCO2e)

[calc] **Incineration CO2, CH4, N2O Emissions**

CO2	7,858	(MTCO2e)
CH4	2	(MTCO2e)
N2O	5,148	(MTCO2e)

[FINAL] **Annual GHG Emissions Reduced in 2050**

13,008 (MTCO2e)

Co-Pollutants

Landfill Co-Pollutants

Source: EPA Landfill Gas Emissions Model (LandGEM) Version 3.1 User Manual
https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=551140&Lab=CESER

[value] **Conversion for Landfill gas (LFG) generated per ton of waste**

1.98E-08 ppmv × ft³ × MW = lb

7,063 ft³/ton

Pollutant	ppmv	MW	EF (lb/ton)	Waste (lb)	Emissions (Metric Tons)
Benzene	39	78.11	0.43	25,815	5
Toluene	170	92.13	2.190	25,815	28
Vinyl chloride	7.3	62.5	0.064	25,815	1
Carbon monoxide	110	28.01	0.431	25,815	6

Methylene chloride	5.8	84.93	0.069	25,815	1
Chloroform	0.34	119.38	0.006	25,815	0
Carbon tetrachloride	0.0004	153.84	0.00001	25,815	0
Ethylbenzene	4.6	106.17	0.068	25,815	1
Trichloroethylene	2.8	131.4	0.051	25,815	1
Perchloroethylene	2.1	165.83	0.049	25,815	1
				[FINAL] ***Total***	***43*** ***(MT Co-Pollutants)***

Incineration Co-Pollutants: Limited data or tools found to support this calculation. May revisit at later time**.**

Cost of Measure

Recycling Cost

[value] **Expanding Curbside Recycling**

64 ($/ton) *Source: EPA CCAP estimation resource*

[value] **Consumer Price Index Conversion 2020 to 2025 Dollars**

2020 $ 1.25 (dollar conversion) *Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[value] **Cost of Curbside Recycling**

$ 64 *(2022 dollars/ton)* *Source: EPA CCAP estimation resource*

$ 80 (2025 dollars/ton)

[input] **Percent of Additional Diverted Waste to Recycling**

10% (percent) *Assumption*

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*

12.25 (years) Number of years to midpoint

5% (percent) Percent inflation

[calc] **2050 Cost of Curbside Recycling for MSA with Expected Increase**

$ 3,212,358 *(2025 dollars)*

$ 5,179,927 *(2050 dollars)*

[value] **Consumer Price Index Conversion 2018/2021 to 2025 Dollars**

2018 $ 1.30 *Source: US Bureau of Labor*

2021 $ 1.23

Food Waste Cost

[value] **Grant Funding for Food Scrap Collection/Compost Programs in Stamford**

$ 2,016,941 (2021 dollars)

$ 2,480,837 (2025 dollars) *Sources: City of Stamford SWIFR*

[value] **Grant HRRA Received to Expand Residential Food Scraps Collection and Composting**
$ 779,850 (2025 dollars) *Sources: Biocycle CT DEEP awards*

[value] **New Haven Grant to Build a Food Scrap Diversion Sorting Facility**
$ 3,300,000 (2025 dollars) *Sources: Biocycle CT DEEP awards*

[value] **Bridgeport Compost and Food Waste Reduction Pilot Program Grant**
$ 219,429 (2025 dollars) *Sources: Bridgeport compost*

[value] **Bridgeport Funds Raised for Bridgeport Park City Compost Initiative**
$ 15,000 (2025 dollars) *Sources: Bridgeport compost*

[value] **Darien Minimizing Food Waste Grant**
$ 8,460 (2018 dollars)
$ 10,998 (2025 dollars) *Sources: Darien's Food Scraper Program*

[calc] **Average Composting Grant Amount for 2025**
$ 1,358,223

[input] **Number of Additional Grant to Further Expansion**
15 (grants) *Assumption*

Total Additional Grant Funds for Expansion
$ 20,373,343 (2025 dollars)

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*
12.25 (years) Number of years to midpoint
0.05 (percent) Percent inflation

[calc] **Total Cost with Inflation**
$ 32,852,016 (2050 dollars)

Total Cost for Recycling and Food Waste Collection Expansion

[FINAL] $ 23,585,701 2030
[FINAL] $ 38,031,943 2050

Additional Data

[value] **WestCOG Solid Waste Study Report 2021**

Town	MSW T&D cost per ton 2021	SSR T&D cost per ton 2021	MSW T&D cost per ton 2025	SSR T&D cost per ton 2025
Darien	$ 97.42	$ (7.50)	119.83	$ (9.23)
Greenwich	$ 93.66	$ 65.00	115.2	$ 79.95
New Canaan	$ 88.20	$ 83.74	108.49	$ 103.00

Norwalk	$ 93.00	$ (17.50)	114.39	$ (21.53)
Stamford	$ 75.70	$ 66.00	93.111	$ 81.18
Wilton	$ 104.14	$ 82.99	128.09	$ 102.08
Weston (private haulers)	$ 95.31	-	117.23	-
Weston (residents)	$ 89.77	$ 49.46	110.42	$ 60.84
Weston (commercial)	-	$ 107.18	-	$ 131.83
Westport	$ 80.59	$ 78.46	99.126	$ 96.51
Average cost per ton	$ 90.87	$ 56.43	111.76	$ 69.40

HRRA grant is being used to install an in vessel composting system in the town of Kent buying a bagging system for HRRA municipalities to be shared among towns with composting sites, and purchasing a truck lit gate to be used regionally and service MetroSTOR containers for food scraps

Sources:
https://www.backyardcomposting.org/faq
https://timesofagriculture.org/what-is-the-cost-of-composting-in-towns.html

City of Stamford SWIFR
https://www.epa.gov/system/files/documents/2023-09/City%20of%20Stamford_SWIFR.pdf

Biocycle CT DEEP awards
https://www.biocycle.net/connecticut-deep-awards-15-million-for-waste-diversion-infrastructure/

Bridgeport compost
https://portal.nifa.usda.gov/web/crisprojectpages/1033534-bridgeport-compost-and-food-waste-reduction-pilot-project.html

West COG solid waste study report
https://westcog.org/wp-content/uploads/2021/07/WestCOG-Solid-Waste-Study-Report-FINAL-06302021.pdf

Darien's food scraper program
file:///C:/Users/wood.gracie/OneDrive%20-%20WESTON%20&%20SAMPSON%20ENGINEERS,%20Inc/Downloads/15641707710402.pdf

EPA CCAP estimation resource
file://wse03.local/WSInc/StrategicPlanning/Climate%20Action%20Planning/Technical%20Resources/EPA%20CPRG/Costs%20of%20Measures/Estimating%20Costs%20of%20CCAP%20Measures%20Resource%20(1).pdf

CTDEEP CMMS Amendment January 2021
https://portal.ct.gov/-/media/DEEP/waste_management_and_disposal/Solid_Waste_Management_Plan/January2023/CM

Measure: 5A	*SUSTAINABLE DEVELOPMENT & AGRICULTURE: leverage nature-based strategies to sequester atmospheric carbon and reduce emissions from land development and agricultural practices.*

Annual GHG Emissions Reduced/Sequestered in 2030	***39,032***	***MTCO2e***
Annual GHG Emissions Reduced/Sequestered in 2050	***80,998***	***MTCO2e***

Methodology Description: Quantified emissions reductions associated with sustainable development and agriculture include an increase in forested area for carbon sequestration, increased area of coastal wetlands, and the expanded use of no-till and cover-cropping agricultural practices.

5A i: Increase in Tree Carbon Sequestration

[value] **Deciduous Forest Area in MSA**
724,275,900 (sq m) Source: 2021 National Land

[input] **Evergreen Forest Area in MSA**
7,600,500 (sq m) Source: 2021 National Land

[input] **Mixed Forest Area in MSA**
130,226,400 (sq m) Source: 2021 National Land

[value] **Square Meter to Hectare Conversion**
0.0001 Hectare

[calc] **Total Baseline Forested Area for Carbon Sequestration**
86,210 Hectare

[value] **Carbon Sequestration Factor**
2.23 (Metric Ton C/Hectare/ Year) Source: EPA State Inventory Tools, Land-

[calc] **Carbon to Carbon Dioxide Equivalent**
3.667 Carbon Dioxide Equiv.

[calc] **Baseline Carbon Sequestration in 2022**
704,913 (MTCO2)

[input] **Percent Increase in Carbon Sequestering Land From Baseline**
2030 5% (Percent)
2050 10% (Percent)

[calc] **2030 Carbon Sequestration**
4,311 Total Additional Carbon Sequestering Land (Hectare)
35,246 Total Carbon Sequestration (MTCO2)

[Calc] **2050 Carbon Sequestration**

8,621	Total Additional Carbon Sequestering Land (Hectare)
70,491	Total Carbon Sequestration (MTCO2)

[FINAL] **Total Additional Carbon Sequestration**

2030	35,246	(MTCO2)
2050	70,491	(MTCO2)

5A ii: Increase in Coastal Wetland Carbon Sequestration

[value] **Total Wetlands in MSA**

27,084 (acres) *Source: 2021 National Land Cover Data*

[value] **Total Woody Wetlands in MSA**

25,225 (acres) *Source: 2021 National Land Cover Data*

[value] **Total Emerging Herbaceous Wetlands in MSA**

1,859 (acres) *Source: 2021 National Land Cover Data*

[value] **Conversion**

0.4047 (acre/hectare)

Carbon Sequestration Rates by Type for Calculating Averages

Source: MA Division of Ecological Restoration BlueCarbon - Wetland Calculator

[value] **Coastal Wetlands Sequestration Rate for Carbon**

0.91 (MT C/ha/yr) *Coastal wetlands have a higher sequestration rate and minimal methane production, compared to inland wetlands*

[value] **Increase in Land Area of Protected Wetland**

2% (%) *Assumption*

219 (hectare)

[value] **Number of Years**

2030	5	(years)
2050	25	(years)

[value] **Carbon to CO2 Conversion**

3.67

[value] **Annual Carbon Sequestration from Increased Land Area**

199 (MT C/ha/yr)

731 (MTCO2e/yr)

[FINAL] **Carbon Sequestration from Additional Protected Wetlands**

2030	3,657	(MTCO2)
2050	18,286	(MTCO2)

5A iii: Agriculture Practices that Reduce Emissions

[input] **CT Percent of Land of Reported Adopted Cover Crop**

15% (%)

Source: Regenerative Agriculture for New England: Sustaining Farmland Productivity in a Changing Climate Table 2 https://www.clf.org/wp-

[input] **CT Percent of Reported Adopted No-Till**

18% (percent) *Source: Same as above*

[value] **Statewide CT Total Cropland (Acres)**

148,609 (acre) *Source: Same as above*

[value] **Statewide CT Combined Annual GHG Mitigation (MTCO2e)**

11,300 (MTCO2e) *Source: Same as above*

0.08 (MTCO2e/acre)

[value] **Total Crop Land in MSA**

34,289 (acre) *Source: 2021 NLCD*

[calc] **Cover Crop and No Till Land Area in MSA**

5,143 (acre cover crop)

6,172 (acre no till)

[value, calc] **Increasing Cover Crop and No Till Acreage MSA Wide**

2030 15% (percent) *Assumption*

2030 772 (acre cover crop)

2030 926 (acre no till)

2050 75% (percent) *Assumption*

2050 3,858 (acre cover crop)

2050 4,629 (acre no till)

[calc] **2030 and 2050 Emission Reduction from Cover Crop and No-Till**

2030 59 (MTCO2e Cover Crop)

2030 70 (MTCO2e No-Till)

2050 293 (MTCO2e Cover Crop)

2050 352 (MTCO2e No-Till)

[FINAL] **2030 Emissions Reduction**

2030 129 (MTCO2e)

2050 645 (MTCO2e)

Costs for Measure

Part i

[value] **Consumer Price Index Conversion 2019 to 2025 Dollars**

2019	$	1.28	(conversion)	*Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[value] **Cost of Reforestation Per Hectare**

	$	697	*(2019 dollars)*	*Source: EPA CCAP Estimation Resource*
	$	892	(2025 dollars)	

[value] **2050 Inflation Cost Variables** *Source: Connecticut Department of Transportation 2024 Estimating Guidelines*

12.25	(years)	Number of years to midpoint
5%	(percent)	Percent inflation

[calc] **2050 Cost of Reforestation Per Hectare in MSA**

$	7,691,336	*(2025 dollars)*
$	12,402,280	*(2050 dollars)*

Part ii

[value] **Consumer Price Index Conversion 2019 to 2025 Dollars**

2015	$	1.38	(conversion)	*Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[input] **Cost Per Acre of Restoring and Preserving a New Wetland**

$	1,951	*(2015 dollar/ acre)*	*Source: USDA Targeting Investments To Cost Effectively Restore and Protect*
	2,692	*(2025 dollar/acre)*	

[calc] **Cost for Additional Acres of Coastal Wetland**

$	1,458,018	*(2025 dollars)*
$	2,351,054	*(2050 dollars)*

Part iii

[input] **Average Cost of Cover Crops Per Hectare**

		(2019 dollar/	
$	37	acre)	*Source: SARE cover crop costs*
$	47	(2025 dollars)	

[value] **Cost of Cover Crops Per Acre**

$	37	*(2019 dollars)*	*Source: EPA CCAP Estimation Resource*

[value] **2050 Inflation Cost Variables** *Source: CTDOT 2024 Estimating Guidelines*

12.25	(years)	Number of years to midpoint
5%	(percent)	Percent inflation

[calc] **2050 Cost of Cover Crops Per Acre in MSA**

$	182,693	*(2025 dollars)*

	$	294,593	*(2050 dollars)*

Total Cost			
[calc]		**Total Cost**	
	$	15,047,926	(2050 dollars)

Co-Pollutant Reductions					
Tree Co-Pollutant Reductions					
Town	**Baseline Co-Pollutant Reductions Per Year (lb/yr)**				
Town	Carbon Monoxide	Ozone	Nitrogen Dioxide	Sulfur Dioxide	PM 2.5
Bethel	1,896	48,895	6,180	1,767	2,045
Bridgeport	4,411	113,786	14,383	4,111	4,760
Bridgewater	3,573	322,409	19,128	8,345	3,632
Brookfield	11,558	298,173	37,687	10,773	12,471
Danbury	23,492	605,973	76,595	21,895	25,347
Darien	5,882	151,732	19,179	5,482	6,347
Easton	8,448	519,322	65,252	14,587	21,850
Fairfield	14,661	378,166	47,800	13,664	15,818
Greenwich	18,925	689,289	8,673	22,119	28,918
Monroe	16,707	430,959	54,474	15,572	18,027
New Canaan	13,356	344,521	43,555	12,451	14,411
New Fairfield	10,953	398,967	50,279	120,802	16,737
New Milford	664	50,967	4,817	1,100	600
Newtown	1,180	30,434	3,847	1,100	1,273
Norwalk	7,999	206,336	26,081	7,455	8,631
Redding	9,861	606,153	76,163	17,026	25,504
Ridgefield	4,204	108,446	13,708	3,918	4,536
Shelton	17,139	442,111	55,886	15,975	18,493
Sherman	7,109	437,024	54,907	12,276	18,383
Stamford	18,725	483,009	61,057	17,454	20,204
Stratford	5,895	152,073	19,222	5,495	6,361
TOTALS	**258,561**	**8,266,919**	**941,782**	**384,185**	**334,970**
TOTALS (Metric Tons/Year)	**117**	**3,750**	**427**	**174**	**152**

Source: OurTree by iTree https://ourtrees.itreetools.org/#/

Co-Pollutants	Carbon Monoxide	Ozone	Nitrogen dioxide	Sulfur dioxide	PM2.5
Metric tons per hectare	0.0014	0.0435	0.005	0.002	0.0018
Additional Co-Pollutants reduced 2030 (Metric Tons)	5.9	187.5	21.4	8.7	7.6
Additional Co pollutants reduced 2050 (Metric Tons)	11.7	375	42.7	17.4	15.2

[FINAL]	**Total Co-Pollutants Reduced**		
2030	231	(MTCO2e)	
2050	462	(MTCO2e)	

Agriculture Practice Co-Pollutant Reductions

[value] **Percent of Litchfield County Crop Lands in MSA**

10% (percent) *Source: 2021 NLCD*

[value, calc] **Agriculture Crops & Livestock Dust Tilling Co-Pollutant Baseline**

Fairfield			*Source: EPA National Emissions Inventory 2020*
	51.1	(tons)	
Litchfield (Total)	594.06	(tons)	
Litchfield (MSA)	57.07	(tons)	

[value] **Conversion from Ton to Metric Tons**

1.102

[calc] **Agriculture Crops & Livestock Dust Tilling Co-Pollutant Baseline**

Fairfield	46.37	(MT co-pollutants)
Litchfield (MSA)	51.79	(MT co-pollutants)
Total MSA	98.16	(MT co-pollutants)

[value] **Percent Reduction of Co-Pollutants from No Till**

35%

[calc] **Co-Pollutant Reduction From Increasing No Till**

2030	0.93	(MT co-pollutants)
2050	4.64	(MT co-pollutants)

Total Co-Pollutant Reductions

[calc] Total Co-Pollutant Reductions

2030	232	(MT co-pollutants)
2050	467	(MT co-pollutants)

Sources for cost:

US Bureau of Labor Statistics CPI Inflation Calculator
https://www.bls.gov/data/inflation_calculator.htm

Sare cover crop cost
https://www.sare.org/publications/cover-crop-economics/how-to-get-a-faster-return-from-cover-crops/creating-a-baseline-for-cover-crop-costs-and-returns/

EPA CCAP Estimation Resource accessed via TAF sharepoint

USDA Targeting Investments To Cost Effectively Restore and Protect Wetland Ecosystems: Some Economic Insights February 2015, Figure 2
https://ers.usda.gov/sites/default/files/_laserfiche/publications/45347/51895_err183.pdf?v=74517

Measure: 5B	RESILIENCE HUBS: public-serving facilities to provide climate action education, information/resources, and services
Annual GHG emissions reduced in 2030	97 MTCO2e
Annual GHG emissions reduced in 2050	292 MTCO2e

Methodology Description: It was assumed that by 2030, five resilience hubs would be established in net-zero buildings with on-site solar and battery storage. By 2050, it was assumed the region would have 15 resilience hubs. The baseline buildings were assumed to use natural gas based on EIA Commercial Buildings Energy Consumption Survey.

GHG Reduction

[input] **Municipal Building Size** *Assumption*

12,000 (square feet)

[value] **Average Municipal Building Size and Estimated Natural Gas Consumption**

29.8 (cf/square ft) *Sourc*

357,600 (cf/year)

3,576 (Ccf/year)

[calc] **Total MTCO2e Emission Factor for Natural Gas**

0.0054 Natural Gas (MTCO2e/Ccf) *Source: EPA Emission Factor Hub*

[calc] **Total MTCO2e Natural Gas for a Single Municipal Building**

19 (MTCO2e)

[input] **Estimated Number of Municipal Buildings Transitioned to a Local Resilience Hub**

2030	5	*Assumption*
2050	15	*ty*

[FINAL] **Emissions Reductions from Electrification of Resilience Hub Buildings**

2030	97	(MTCO2e)
2050	292	(MTCO2e)

Co-Pollutant

[value] **Emission Factors for Natural Gas Co-Pollutants**

NG (NO_x)	94	(lbs/Mmcf)	*Source: NESCA UM Estimati*
NG (SO_2)	0.6	(lbs/Mmcf)	

[value] **Conversion lbs to Metric Tons**

2,205 lbs/MT

[value] **2030 Annual Natural Gas Usage for Estimated Number of Resiliency Hubs**

17,880 (Ccf/year)
1.788 (MMcf)

[value] **2030 Estimated Co-Pollutants from Resiliency Hubs**

168.1 (lbs of Nox)
1.1 (lbs of SO_2)
0.0762 (MT of Nox)
0.0005 (MT of SO_2)
0.08 (MT Co-Pollutants)

[value] **2050 Annual Ccf for Estimated Number of Resiliency Hubs**

53,640 (Ccf/year)
5.364 (MMcf)

[value] **2050 Estimated Co-Pollutants from Resiliency Hubs**

504.2 (lbs of Nox)
3.2 (lbs of SO_2)
0.2287 (MT of Nox)
0.0015 (MT of SO_2)
0.23 (MT Co-Pollutants)

Cost of Measure

[value] **Consumer Price Index Conversion 2022 to 2025 Dollars**

2022 $ 1.15 (dollar conversion) *Source: US Bureau of Labor Statistics CPI Inflation Calculator*

[value] **Cost of Full Back Up Solar System with Storage Capacity for a 12,000 sq ft Building (260 kW system and 460 kWh battery)**

$ 670,000 *(2022 dollars)* *Source: Physicians, Scientists, and Engineers*
$ 770,500 (2025 dollars)

[value] **2050 Inflation Cost Variables** *Source: Connecticut Department of Transportation 2024 Estimating Guidelines*

12.25 (years) Number of years to midpoint
5% (percent) Percent inflation

[calc] **2050 Cost of full Solar Installation**

$ 11,557,500 *(2025 dollars)*
$ 18,636,469 *(2050 dollars)*

Co-Benefits

Resilience hubs offer a multitude of benefits, starting with a climate resilient building(s) to providing a communal space where awareness, action and local involvement can take place. Towns that adopt and transition existing buildings to a resilient hub, are providing an outlet for community

members to share opinions, make change, and further the town's environmental, energy, political, and economic goals. The outcome of a successful resilient hub can directly impact the local residents' overall quality of life, from being the seed of change where walkable pathways are built, to addressing urban heat island effects in areas of the town. In summary, a resilience hub can bring communities together to grow as a community and build resilience against current and future climate impacts through education, outreach, and action.

Sources:
Urban Sustainability Directors Network Guide to Resilience Hubs
https://resilience-hub.org/wp-content/uploads/2019/10/USDN_ResilienceHubsGuidance-1.pdf

"Resilience Hubs Can Help Communities Thrive—and Better Weather Disasters" 2020
https://www.pew.org/en/research-and-analysis/articles/2020/06/22/resilience-hubs-can-help-communities-thrive-and-better-weather-disasters

US Bureau of Labor Statistics CPI Inflation Calculator
https://www.bls.gov/data/inflation_calculator.htm

Physicians, Scientists, and Engineers for Healthy Energy (PSE Healthy Energy) Community Resilience Hubs
Solar + Storage Design Trade-Offs https://www.psehealthyenergy.org/wp-content/uploads/2022/01/Community-Resilience-Hub_SolarStorage-Tradeoffs.pdf

EIA Table C24. Natural gas consumption and expenditure intensities, 2018
https://www.eia.gov/consumption/commercial/data/2012/index.php?view=characteristics

Source: NESCAUM Estimating the Emissions Benefits of Switching to Heat Pumps for Residential Heating Table. 2
https://otcair.org/upload/Documents/Reports/nescaum-otc-emission-reduction-analysis-for-residential-heating-202106.pdf

Appendix V. Climate Action Plan Survey

Climate Action Plan Survey

📢 Southwest Connecticut Climate Action Survey

How should our communities adapt? Your voice matters.

Southwest Connecticut is developing a Comprehensive Climate Action Plan (CCAP) to reduce greenhouse gas emissions, improve public health, and enhance climate resilience. This plan builds on the Priority Climate Action Plan (PCAP) and focuses on real-world strategies that local municipalities could implement.

🌎 **Your input is essential! Your answers will directly inform how Southwest Connecticut towns and cities invest in transportation, energy, buildings, waste management, and climate resilience.**

📋 **Survey Length** ~ 10 Minutes Max. The survey length will be tailored to your responses.

🗓️ **Survey Closes** - June 1st, 2025

More info on the climate action planning process, visit: https://www.swctclimate.com/

* Indicates required question

Skip to question 1Skip to question 1

Demographics

These are optional demographics questions to help the project team understand the survey reach.

1. What is your zip code?

2. Which statement best describes your current financial situation? (Optional)

Mark only one oval.

- ◯ I struggle to cover basic living expenses and have significant financial stress
- ◯ I can meet most expenses but have limited room for additional savings or expenses
- ◯ I can easily cover my expenses and have disposable income for savings and spending
- ◯ I prefer not to say

3. If you would like to be informed about upcoming events related to the Comprehensive Climate Action Plan, please provide your email.

_____

Skip to question 4

Survey Type

4. Please select the survey that best fits you *

Mark only one oval.

- ◯ Resident *Skip to question 5*
- ◯ Business *Skip to question 40*

Resident

5. How long have you lived in Southwest CT?

Mark only one oval.

- ◯ Less than 1 year
- ◯ 1-5 years
- ◯ 6-10 years
- ◯ 11-15 years
- ◯ 16-20 years
- ◯ 20+ years

6. Do you rent or own your home? *

Mark only one oval.

- ◯ Rent *Skip to question 7*
- ◯ Own *Skip to question 13*

Renter

7. What type of home do you live in?

Mark only one oval.

- ◯ Single family
- ◯ Duplex
- ◯ Multifamily
- ◯ Townhouse
- ◯ Small apartment building (4-10 units)
- ◯ Large apartment building (10+ units)
- ◯ Other: _____

8. Is there a building management company?

Mark only one oval.

- Yes
- No

9. How familiar are you with the Energize CT Program? Please select the option that best aligns with your experience.

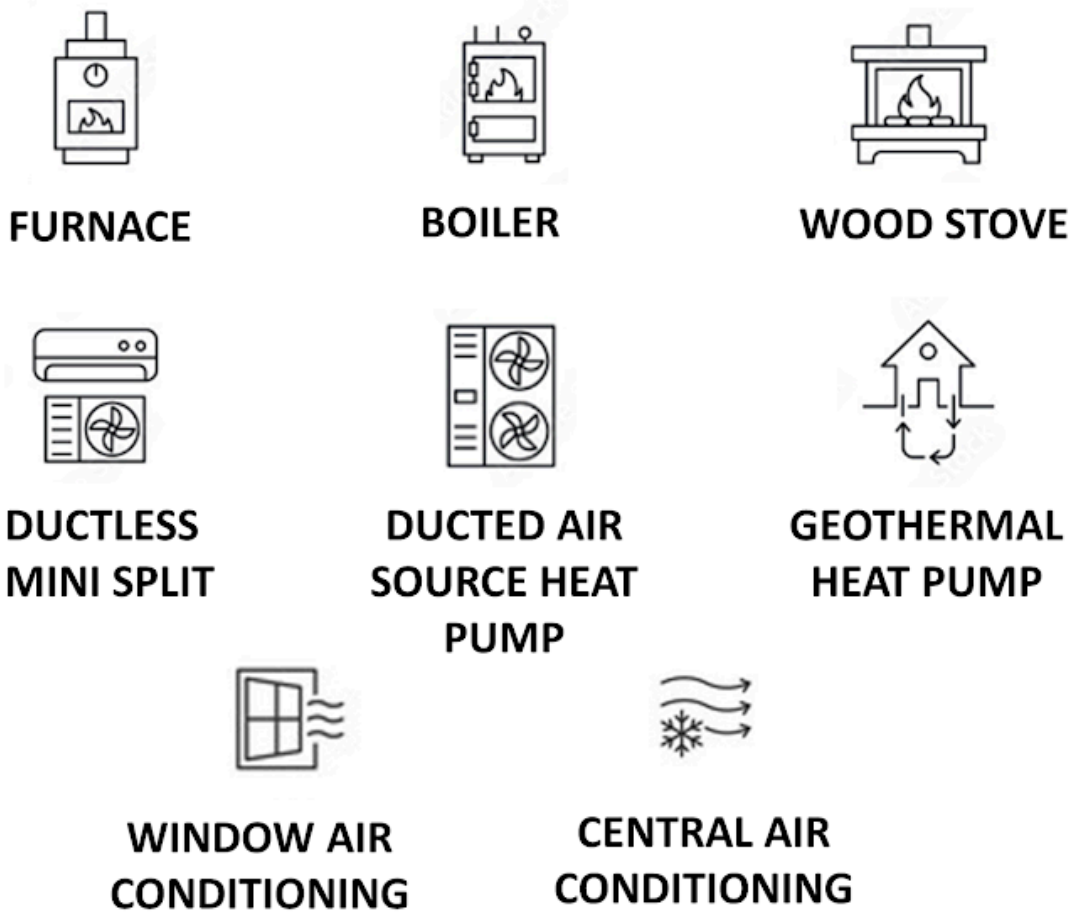
Energize Connecticut℠ is an initiative dedicated to empowering Connecticut to make smart energy choices, now and in the future.

"We provide Connecticut consumers, businesses, and communities the resources and information they need to make it easy to save energy and build a clean energy future for everyone in the state"

Mark only one oval.

- I have used Energize CT services, resources, incentives, etc.
- I have heard about Energize CT, but have not utilized their services
- I am not familiar with Energize CT

10. What type of heating and cooling systems do you have? Select all that apply.



Check all that apply.

- [ ] Furnace - Central Air (forced air)
- [ ] Boiler - Radiator (hot water/steam)
- [ ] Wood or pellet stove
- [ ] Electric baseboards
- [ ] Ductless mini split systems
- [ ] Ducted air source heat pump
- [ ] Geothermal heat pump
- [ ] Window air conditioning
- [ ] Central air conditioning
- [ ] I do not know
- [ ] Other: _____

11. Which utilities or energy sources do you receive the bill for directly? Select all that apply.

Check all that apply.

- [ ] Electricity
- [ ] Gas
- [ ] Oil
- [ ] Propane
- [ ] Water/sewer
- [ ] None
- [ ] Other: _____

12. Do you have any of the following types of solar? Select all that apply.

Check all that apply.

- [ ] I do not have solar
- [ ] Roof mounted solar
- [ ] Ground mounted solar
- [ ] Community solar (subscribed through a 3rd party)
- [ ] Solar hot water heating
- [ ] Other: _____

Skip to question 26

RESIDENTIAL AND COMMERCIAL BUILDING UPGRADES:

The Climate Action Plan currently proposes the strategy for municipalities to "Develop programs and resources that promote and aid the switch to energy efficient and renewable options for residential and commercial
buildings."

See questions below responding to this strategy.

13. What type of home do you live in?

Mark only one oval.

- ◯ Single family
- ◯ Duplex
- ◯ Multifamily
- ◯ Townhouse
- ◯ Small condominium/apartment building (4-10 units)
- ◯ Large condominium/apartment building (10+ units)
- ◯ Other: _____

14. When was your home built?

Mark only one oval.

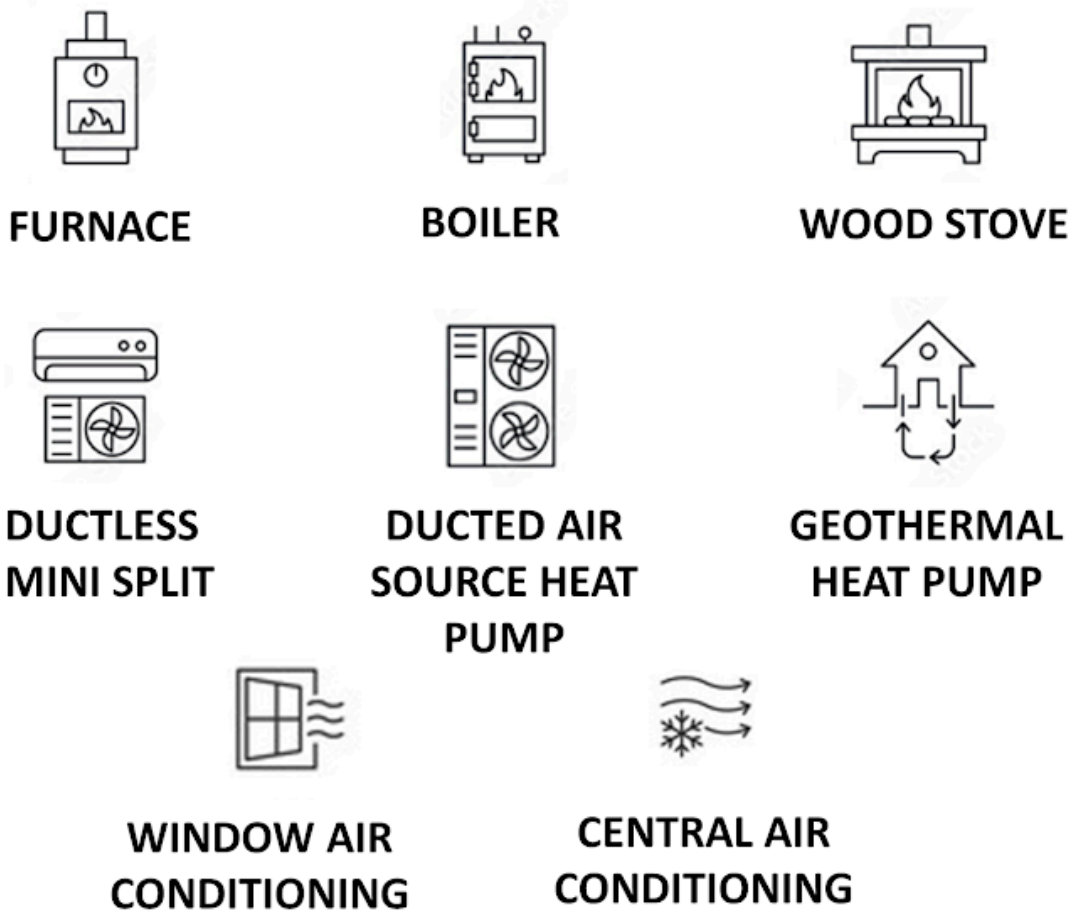
- ◯ Before 1985
- ◯ 1985-2000
- ◯ 2001-2010
- ◯ After 2010
- ◯ I don’t know

15. Have you made any of the following energy efficiency improvements in the last 5 years? Select all that apply.

Check all that apply.

- [ ] Conducted an energy efficiency audit
- [ ] Installed LED light bulbs
- [ ] Upgraded to efficient appliances
- [ ] Sealed gaps/weather proofing
- [ ] Added extra insulation
- [ ] New windows/doors
- [ ] Heating/cooling system upgrades
- [ ] Other: _____

16. What type of heating and cooling systems do you have? Select all that apply.



Check all that apply.

- [ ] Furnace - Central Air (forced air)
- [ ] Boiler - Radiator (hot water/steam)
- [ ] Wood or pellet stove
- [ ] Electric baseboards
- [ ] Ductless mini-split systems
- [ ] Ducted air source heat pump
- [ ] Geothermal heat pump
- [ ] Window air conditioning
- [ ] Central air conditioning
- [ ] I do not know
- [ ] Other: _____

17. Do you expect to replace heating or cooling equipment within the next 5 years?

Mark only one oval.

- ◯ Yes *Skip to question 18*
- ◯ No *Skip to question 19*

Heating or Cooling System Replacement

18. When you replace your heating or cooling system, are you planning to install an all-electric option (e.g., ductless mini-split, ducted air source heat pump, geothermal heat pump, etc.)?

Mark only one oval.

- ◯ Yes *Skip to question 20*
- ◯ No *Skip to question 19*

Heating or Cooling System Replacement Cont.

19. Select which of the following reasons why you would not or might not replace your heating or cooling system with an all-electric system.

Check all that apply.

- ☐ Cost
- ☐ Lack of information about all-electric options
- ☐ Would require major modifications to my current home structure
- ☐ Other: _____

Homeowner Cont.

20. Have you used the Energize CT Program?

Energize Connecticut℠ is an initiative dedicated to empowering Connecticut to make smart energy choices, now and in the future.

"We provide Connecticut consumers, businesses, and communities the resources and information they need to make it easy to save energy and build a clean energy future for everyone in the state"

Mark only one oval.

- ◯ Yes
- ◯ No

21. If "No", please describe in 1-2 sentences why you chose not to use this program.

_____

_____

_____

_____

_____

22. Which utilities or energy sources do you receive the bill for directly? Select all that apply.

Check all that apply.

- ☐ Electricity
- ☐ Gas
- ☐ Oil
- ☐ Propane
- ☐ Water/sewer
- ☐ None
- ☐ Other: _____

23. Do you have any of the following types of solar?

Mark only one oval.

- ◯ I do not have solar *Skip to question 25*
- ◯ Roof mounted solar *Skip to question 24*
- ◯ Ground mounted solar *Skip to question 24*
- ◯ Community solar (subscribed through a 3rd party) *Skip to question 24*
- ◯ Solar hot water heating *Skip to question 24*
- ◯ Other: _____

Solar Challenges

24. If you have solar, please describe any challenges you faced during the procurement or installation process.

_____

_____

_____

_____

_____

Skip to question 26

Solar Barriers

25. If you do not have solar, what barriers may prevent you from installing solar? Select all that apply.

Check all that apply.

- [ ] Cost
- [ ] Building orientation
- [ ] Building owned by multiple people / homeowners association (HOA) challenges
- [ ] Tree coverage
- [ ] No available roof or ground space
- [ ] Unpleasant aesthetics
- [ ] Roof need to be replaced
- [ ] Don't have time to obtain information and quotes, or facing challenges while doing so
- [ ] Confusion about the government/regulatory procedures
- [ ] Other: _____

Low Emission Transportation

The Climate Action Plan currently proposes the strategy for a transition to electric or other low-carbon fuel for both private and public sector vehicles

26. Do you currently drive an electric or hybrid vehicle?

Mark only one oval.

- ◯ Yes *Skip to question 27*
- ◯ No *Skip to question 28*

Electric Vehicle Owner

27. If you have a plug-in hybrid or electric vehicle, where do you charge it primarily?

Mark only one oval.

- ◯ Home
- ◯ Work
- ◯ Town/City owned charger
- ◯ Other public charger

Skip to question 29

Traditional Vehicle Owner

28. What would incentivize you to drive an Electric Vehicle?

Check all that apply.

- ☐ Financial Incentives/Tax Credits
- ☐ Improved Battery Range
- ☐ Ability to charge at home
- ☐ Improved Public Charging Network
- ☐ Greater Vehicle Choice and Availability
- ☐ Other: _____

EV Charging Barriers

29. What barriers may prevent you from installing EV charging infrastructure in your home? Select all that apply.

Check all that apply.

- [ ] Street parking
- [ ] Owned by multiple people / homeowners association (HOA) challeneges
- [ ] Cost
- [ ] Electric panel or service upgrades needed
- [ ] Not applicable - I already have EV charging at my residence
- [ ] Not applicable - when I purchase an EV, I will install charging at my residence
- [ ] Other: _____

30. Would reliance on a public charger disincentivize you to drive an EV?

Mark only one oval.

- ◯ Yes *Skip to question 31*
- ◯ No *Skip to question 32*
- ◯ I don't know *Skip to question 32*

Public EV Charging

31. If you answered "Yes" to the previous question, how far would you be willing to travel from home to charge an electric vehicle?

Mark only one oval.

- ◯ Less than 0.5 miles
- ◯ 0.5-1 mile
- ◯ 1+ miles
- ◯ Not Applicable

Sustainable Mobility

The Climate Action Plan currently proposes the strategy for municipalities to "Develop robust, reliable, and accessible mobility option to encourage and enable a shift from single occupancy vehicles towards zero emission modes such as walking and biking."

32. Do you travel around by bicycling or walking?

Mark only one oval.

- ◯ Yes, always *Skip to question 34*
- ◯ Yes, often *Skip to question 34*
- ◯ Yes, sometimes *Skip to question 34*
- ◯ I rarely walk or bike places *Skip to question 33*
- ◯ No *Skip to question 33*

Does Not Walk/Cycle Often

33. If "No", why not?

Check all that apply.

- ☐ Lack of Sidewalks and Bicycle Lanes
- ☐ Live far from potential destinations or there is a lack of destinations near me
- ☐ Do not feel safe using current infrastructure meant for walking and biking
- ☐ Prefer to use a vehicle for most trips
- ☐ Lack of bicycle storage, showers, or changing rooms to facilitate an active commute
- ☐ Other: _____

Skip to question 35

Walk and Cycle

34. If you answered "Yes..." to bicycling or walking, please describe where you go and how often.

Materials and Waste Management

The Climate Action Plan recommends that municipalities "Improve residential and commercial waste diversion rates by implementing new or enhancing existing waste programs."

35. Do you have an interest in composting? Select all that apply.

Check all that apply.

- [ ] Yes, I am already composting
- [ ] Yes, interested in a curbside pick up
- [ ] Yes, interested in a drop off composting location
- [ ] Yes, interested in backyard composting
- [ ] Not interested

Personal Climate Action and Government Support

36. Are there any climate actions that you would like to implement in your home or lifestyle?

37. What barriers do you face to further taking action to combat climate change? Select all that apply.

Check all that apply.

- [ ] Cost
- [ ] Limited control due to shared ownership/HOA
- [ ] Lack of information about sustainable options
- [ ] Alternative modes of transportation don't align with my schedule/responsibilities/physical abilities
- [ ] I don't feel like my individual actions can make a meaningful difference
- [ ] Other: _____

38. How can the Southwest CT better support you in transitioning to climate friendly/sustainable solutions? Select all that apply.

Check all that apply.

- [ ] Provide resources on technology for reducing fossil fuel usage and improving energy efficiency
- [ ] Provide resources to learn more about cost and incentives
- [ ] Provide local examples of successful solutions/efforts
- [ ] Connect you with local organizations focused on sustainable solutions
- [ ] Increase public access to sustainable options (e.g., EV charging, composting, community gardens, etc.)
- [ ] Other: _____

39. Would you be interested in getting involved in future community efforts related to sustainability, energy efficiency, climate resiliency, etc.?

Mark only one oval.

- ◯ Yes
- ◯ No

Business

40. What is the industry type of your business?

Mark only one oval.

- Agriculture
- Biotechnology/Pharmaceutical
- Construction
- Consulting
- Education
- Energy
- Financial Services
- Fitness, Art, Music or Entertainment
- Food/Restaurant
- Health Care
- Manufacturing
- Other Hospitality
- Retail
- Technology
- Other: _____

41. What is the size of the company?

Mark only one oval.

- 5 employees or fewer
- 5-25 employees
- 25-50 employees
- More than 50 employees

Commercial Buildings

42. Do you rent or own the space you use?

Mark only one oval.

- Own *Skip to question 43*
- Rent *Skip to question 44*

Commercial Building Owner

43. Is the space LEED certified, passive house, or equivalent?

Mark only one oval.

- Yes *Skip to question 46*
- No *Skip to question 47*
- I don't know *Skip to question 47*

Commercial Building Renter

44. Who is the building owned and/or managed by?

45. Is the space LEED certified, passive house, or equivalent?

Mark only one oval.

- Yes *Skip to question 46*
- No *Skip to question 47*
- I don't know *Skip to question 47*

Building Sustainability Certification

46. Please provide details on the building's sustainability certification.

Sustainability Strategies

47. Has your company implemented any of the following sustainability strategies? Select all that apply.

Check all that apply.

- [ ] Energy audit
- [ ] Energy efficiency/conservation strategies
- [ ] Electric vehicle charging
- [ ] Solar
- [ ] Oil/Gas free heating/cooling technology
- [ ] Recycling
- [ ] Composting
- [ ] Water conservation
- [ ] Reducing food waste
- [ ] I don't know
- [ ] Other: _____

48. Which of the following does the company track? Select all that apply.

Check all that apply.

- [ ] Electricity usage
- [ ] Heating fuel usage
- [ ] Process/equipment fuel usage
- [ ] Fleet vehicle fuel usage and/or mileage
- [ ] Water and/or sewer usage
- [ ] Waste disposal
- [ ] Carbon footprint/emissions
- [ ] Employee commuting modes and/or distance
- [ ] Business travel
- [ ] I don't know
- [ ] Other: _____

Utilities

49. Does the company pay their own utility bills?

Mark only one oval.

- ◯ Yes, pay all directly
- ◯ Yes, pay some but not all directly
- ◯ No, they are included in the rent
- ◯ I don't know
- ◯ Other: _____

50. Who is your electric utility provider?

Mark only one oval.

- ◯ Eversource
- ◯ United Illuminating
- ◯ Other: _____

51. Who is your gas utility provider?

Mark only one oval.

- ◯ Eversource
- ◯ Connecticut Natural Gas Corporation
- ◯ The Southern Connecticut Gas Company
- ◯ Other: _____

Transportation and Commuting

52. Do you incentivize the use of public transportation, biking, car pooling, walking etc. for commuting?

Mark only one oval.

- Yes
- No

53. How far do your employees travel to work on average?

Mark only one oval.

- Commute from town of work location
- Commute from adjacent town
- Commute farther than adjacent towns
- Not applicable

54. Do you offer remote working arrangements?

Mark only one oval.

- Yes
- No

55. If employees drive to work, where do they park?

Mark only one oval.

- ◯ Business parking lot
- ◯ Municipal lot
- ◯ Street parking
- ◯ Most or all employees do not drive to work
- ◯ Other: _____

56. On an average day, how many parking spaces are needed?

_____

57. Do employees have access to charge electric vehicles at or near your workplace?

Mark only one oval.

- ◯ Yes, on site
- ◯ Yes, nearby
- ◯ No
- ◯ I don't know

Waste Management

58. Which of the following types of waste has your business taken steps to reduce?

Check all that apply.

- [ ] Solid
- [ ] Hazardous
- [ ] Water
- [ ] Organics or food
- [ ] Have not taken steps to reduced waste
- [ ] I don't know

59. If the business has taken steps to reduce waste, please provide details on how you have done this for the types of waste selected above.

_____

_____

_____

_____

_____

60. If you have not taken steps to reduce waste, please select which of the following reasons why not.

Check all that apply.

- [ ] Limited knowledge about how to reduce waste
- [ ] Limited knowledge about alternative technology or operations
- [ ] Cost of changing operations
- [ ] Cost of alternative disposal
- [ ] Cost of hiring a vendor or consultant
- [ ] Already produce minimal waste
- [ ] I don't know
- [ ] Other: _____

Sustainability Initiatives

61. How do you address environmental impact with supplier deliveries and customer orders?

Mark only one oval.

- ◯ Do not address
- ◯ Address within contracts
- ◯ Have a supplier sustainability policy
- ◯ Other: _____

62. Are there any initiatives your company has implemented that we could feature as a success story that others could benefit from learning about?

_____

_____

_____

_____

_____

63. How do you measure progress of sustainability initiatives? Select all that apply.

Check all that apply.

- ☐ None
- ☐ Internal tracking
- ☐ Publish annual report
- ☐ Report to external organization
- ☐ Other: _____

64. Do you educate or train employees on sustainability?

Mark only one oval.

- Yes *Skip to question 65*
- No *Skip to question 66*

Skip to question 65

Employee Sustainability Education

65. If you answered "Yes" to the previous question, how do you educate employees?

Sustainability Support

66. What barriers does your company face to further implementing sustainability initiatives? Select all that apply.

Check all that apply.

- [ ] Cost of capital/loans
- [ ] Cost of operation for low carbon systems
- [ ] Staff capacity
- [ ] Limited familiarly with options
- [ ] Leadership uninterested
- [ ] Other:

67. How can Southwest CT better support your business in achieving sustainability and climate action goals? Select all that apply and suggest others.

Check all that apply.

- [ ] Provide consultation or educational opportunities
- [ ] Provide resource documents
- [ ] Provide case study examples for similar businesses
- [ ] Facilitate working groups with other businesses
- [ ] Connect businesses with experts
- [ ] Other: _____

68. Would your company be interested in meeting with other businesses and/or sharing resources with other businesses to meet community or business climate goals?

Mark only one oval.

- ◯ Yes
- ◯ No