IMPACT 2050

A Climate Action and Equity Plan for New Haven County

SCR COG | South Central Regional Council of Governments

NAUGATUCK VALLEY COUNCIL of GOVERNMENTS

This Comprehensive Climate Action Plan has been funded wholly through the Climate Pollution Reduction Grant (CPRG) program by the United States Environmental Protection Agency (EPA), under assistance agreement #00A01409 to the South Central Regional Council of Governments (SCRCOG).

The mitigation strategies outlined in this Plan are available to any entity in the New Haven-Milford Metropolitan Statistical Area (MSA) eligible for receiving funding under the EPA's CPRG program and other funding streams, as applicable.

ACKNOWLEDGEMENTS

Prepared by SLR Consulting

In coordination with,

GLOSSARY AND ACRONYMS

Glossary

Adaptation: Actions taken to address the impacts of climate change.

Afforestation: Introduction and planting of new trees to vacant areas, often including degraded agricultural land.

Agricultural Loss: Refers to the decline in farmland or agricultural output due to environmental, economic, or land use pressures. Agricultural losses can result from urban sprawl, soil degradation and erosion, flooding or natural disasters, extreme heat and droughts, and disinvestment in rural and farming communities.

Anchor institutions: Universities, hospitals, and other large, place-based organizations that invest in their communities as a way of doing business.

ARIMA: Autoregressive Integrated Moving Average with exogenous variables, a statistical forecasting model used for emissions projections.

Asthma: A chronic respiratory disease that can be worsened by exposure to ozone, diesel particulate matter (DPM), mold, and other air pollutants. Asthma prevalence is often elevated in LIDACs due to poor air quality and substandard housing conditions.

Benchmarking: The comparison of performance with respect to greenhouse gas emissions against peers.

Carbon sequestration: The absorption of carbon dioxide from the atmosphere with trees and soils serving as repositories for stored carbon.

Climate Emergency Mobilization Task Force: A 16-member group including city activists, architects, and academics assembled by New Haven to address climate issues.

Complete Streets: Streets that are designed and operated considering uses to include people of all ages and abilities, irrespective of their mode of transport such as drivers, pedestrians, bicyclists, or public transportation riders.

Coping with the Gridlock: One of three scenarios analyzed in the CCAP to test strategy robustness under different future conditions.

Diesel Particulate Matter (DPM): Fine particles emitted from diesel engines, especially from trucks, buses, and construction equipment. DPM is often linked to lung cancer, cardiovascular disease, and asthma. Since the source of DPM is from diesel engines, DPM rates are usually higher in areas near roadways and industrial sites.

Electrification: The process of replacing technologies that use fossil fuels with those that use electricity, particularly from clean energy sources.

Emissions: Release of greenhouse gases and other pollutants into the atmosphere.

Energy Burden: The percentage of household income spent on energy bills. Households with high energy burdens, typically over 6%, may be forced to choose between energy and other basic needs.

Flood Risk: The likelihood of flooding due to stormwater, sea level rise, or river overflow. LIDACs are often located in flood-prone areas due to historic disinvestment and exclusionary zoning.

Fossil Free Future: One of three scenarios analyzed in the CCAP representing a future with accelerated decarbonization.

Global Warming Potential: A measure of how much energy the emissions of 1 ton of a gas will absorb over a given period, relative to the emissions of 1 ton of carbon dioxide.

Green procurement: Purchase of goods and services that cause minimal adverse environmental impact.

Greenhouse Gas: Gases such as carbon dioxide, methane, and nitrous oxide that contribute to global warming.

Housing Burden: Defined as spending more than 30% of household income on housing costs, including rent or mortgage, and utilities. A high housing burden can indicate economic vulnerability and limit access to resources for adaptation and energy efficiency.

Low Income: Defined by federal guidelines, often as households earning below 200% of the federal poverty level. Low income is a primary criterion in identifying disadvantaged communities, particularly for prioritizing climate and infrastructure investments.

Low Income and Disadvantaged Communities: Census tracts that meet specific criteria for income levels and environmental justice concerns. A LIDAC is a community identified as low-income and facing multiple environmental, health, and socioeconomic burdens, such as high exposure to pollution, limited access to clean energy or mobility, and greater vulnerability to climate-related hazards.

Low Life Expectancy: Refers to communities where average life expectancy is significantly below the national or regional average. This is often due to a combination of pollution exposure, inadequate healthcare access, poverty, and chronic disease.

Metropolitan Statistical Area: Geographic area based on a county or group of counties with at least one urban area of at least 50,000 people to which adjacent counties have a high level of economic and social integration with that core urban area.

Microgrid: A localized group of electricity sources and loads that can disconnect from the traditional grid and operate autonomously.

Mitigation: Actions taken to reduce greenhouse gas emissions.

Municipal Emissions Reduction Playbook: A comprehensive guide for local governments to reduce greenhouse gas emissions.

Municipal solid waste: Waste that consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries.

Municipalities: Cities, towns, and other local governmental entities.

Net-zero: Achieving a balance between greenhouse gas emissions produced and emissions removed from the atmosphere.

New Haven-Milford CT Metropolitan Statistical Area: The geographic region encompassing New Haven County, which serves as the study area for this CCAP.

Nitrous Dioxide (NO_2): A criteria air pollutant (CAP) in the nitrogen oxides family (NO_x). NO_2 is released primarily from the combustion of fossil fuels, especially from cars, trucks, buses, power plants, and industrial facilities. It is a reddish-brown gas that contributes to the formation of ground-level ozone and particulate matter, and is associated with increased asthma incidence and severity, as well as an increased risk of respiratory infections.

Ozone: Ozone (O_3) is a criteria air pollutant (CAP) formed when nitrogen oxides (NO_x) and volatile organic compounds (VOCs) react in sunlight. Ground-level ozone contributes to smog, aggravates asthma, and can lead to respiratory illnesses. Ozone levels are often higher near roads and in urban areas, primarily due to the increased emissions of NOx and VOCs from cars, trucks, and buses in these areas.

Park and Ride: A system for reducing urban traffic congestion, in which drivers leave their cars in parking lots on the outskirts of a city and travel to the city center on public transportation.

Reforestation: Planting of trees on previously forested land.

Sector: A distinct area of economic or emissions activity, such as transportation, buildings, or electricity.

Traffic Proximity: A measure of how close a community is to major roads or highways, which increases exposure to air pollution and noise pollution. The EPA considers close traffic proximity to be the count of vehicles at major roads within 500 meters, divided by the distance in meters.

Transportation Sector: The area of the economy involving the movement of people and goods, identified as the largest source of emissions in the region.

Unit-based pricing: Pricing strategy where the cost of a product or service is determined by the quantity or units consumed, rather than a fixed or flat fee.

Urban Tree Canopy: The percentage of land area covered by tree canopy in urban areas.

Vehicle Miles Traveled: A measure of transportation activity and emissions.

Walkshed: Area within a quarter mile from transit.

Waste Management: The collection, transport, treatment, and disposal of waste materials.

Waste-to-energy incinerators: Plants that burn municipal solid waste, often called garbage or trash, to produce steam in a boiler, and the steam is used to power an electric generator turbine.

Acronyms

ACS	American Community Survey
BAU	Business as Usual
CCAP	Comprehensive Climate Action Plan
COG	Council of Governments
CPRG	Climate Pollution Reduction Grant
EFs	Emissions Factors
EIA	Energy Information Administration
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FLIGHT	Facility Level Information on Greenhouse gases Tool
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program
IRP	Integrated Resources Plan
LGGIT	Local Government Greenhouse Gas Inventory Tool
LIDAC	Low-income and disadvantaged community
MERP	The Municipal Emissions Reduction Playbook
MPG	Miles per Gallon
MSA	Metropolitan Statistical Area
NPDES	National Pollutant Discharge Elimination System
NVCOG	Naugatuck Valley Regional Council of Governments
PCAP	Priority Climate Action Plan
SCRCOG	South Central Regional Council of Governments
VMT	Vehicle Miles Travelled

The following tables include abbreviations and acronyms associated with funding agencies in the *Authority to Implement* and *Intersection with Other Funding Availability* chapters

Tactic Level	
Code	**Definition**
F	Federal
S	State
L	Local
R	Regional

Funding Agencies	
Code	**Definition**
CT DECD	CT Department of Economic Community Development
CT DEEP	CT Department of Energy and Environmental Protection
CT DOAG	CT Agricultural Department
CT DPH	CT Department of Health
CT OPM	CT Office of Policy and Management
CT DOE	CT State Department of Education
CTDOT	CT Department of Transportation
CTGB	CT Greenbank
CUFC	Connecticut Urban Forest Council
EPA	U.S. Environmental Protection Agency
FHWA	US Department of Transportation Federal Highway Administration
HUD	US Department of Housing and Urban Development
IRS	US Internal Revenue Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	USDA Natural Resources Conservation Services
US DOE	US Department of Energy
US DOT	U.S. Department of Transportation
US FTA	U.S. Federal Transit Authority
USDA	US Department of Agriculture
USFS	USDA Forest Services
VFA	Various Federal Agencies

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EXECUTIVE SUMMARY

INTRODUCTION

Overview

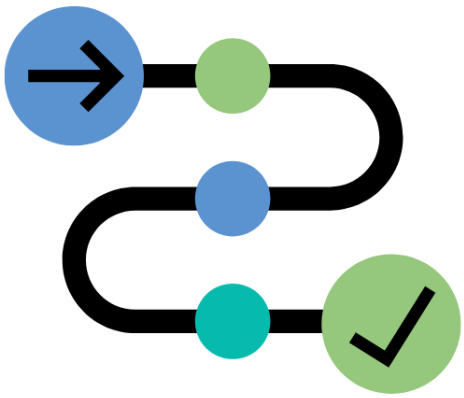
The New Haven-Milford MSA Comprehensive Climate Action Plan (CCAP), Impact 2050, is led by Connecticut's South Central Regional Council of Governments (SCRCOG), with support from the Naugatuck Valley Council of Governments (NVCOG). Developed under the Climate Pollution Reduction Grant (CPRG) program, this CCAP focuses on identifying and implementing measures that will achieve significant greenhouse gas (GHG) emissions reductions within the New Haven-Milford Metropolitan Statistical Area (MSA). Adaptation measures may be discussed where they serve as co-benefits of mitigation.

The CPRG program is a major federal initiative under the Inflation Reduction Act that enables metropolitan regions such as the New Haven-Milford MSA to plan and coordinate efforts to reduce GHG emissions through locally relevant actions. SCRCOG and NVCOG have collaborated with municipal and community partners to ensure an integrated and collaborative approach across New Haven County. The plan's success depends on the active involvement and collaboration of both Councils of Governments, regional agencies, and municipalities.

Purpose and Scope

The municipalities covered in this Plan include Ansonia, Beacon Falls, Bethany, Branford, Cheshire, Derby, East Haven, Guilford, Hamden, Madison, Meriden, Middlebury, Milford, Naugatuck, New Haven, North Branford, North Haven, Orange, Oxford, Prospect, Seymour, Southbury, Wallingford, Waterbury, West Haven, Wolcott, and Woodbridge.

This CCAP is designed to serve as a comprehensive resource and roadmap for municipalities, COGs, and other entities seeking to implement near-term, high-impact climate mitigation strategies. It aligns with the requirements established by the U.S. Environmental Protection Agency (EPA) for CCAPs under the CPRG program. The plan has been developed based on public feedback and extensive engagement with local stakeholders. The document in its current state represents a draft that will be submitted to EPA for review and approval. A finalized version will be published in December 2025.



The Need for a Comprehensive Climate Action Plan

Climate change results from the emission of greenhouse gases such as carbon dioxide and methane, generated by activities including electricity generation, transportation, residential and commercial energy use, industrial processes, and changes in land use. These gases accumulate in the atmosphere and intensify the greenhouse effect, leading to increased global temperatures.

The consequences of a changing climate include rising sea levels, more frequent and intense weather events, shifts in precipitation and temperature patterns, and disruptions to ecological systems. Human populations are increasingly exposed to impacts such as damage to property and infrastructure, crop loss, public health challenges, and reductions in overall well-being. Economic and political systems may also be affected, potentially leading to greater instability, displacement, and migration within and between regions.

While climate change is a global issue, effective solutions demand action at every level, including the municipal and regional scales. Cities and metropolitan areas are central to these efforts as they are both major sources of GHG emissions and home to populations most affected by climate hazards. The CPRG program equips MSAs like New Haven-Milford with the technical and financial resources needed to strategically plan for GHG emission reductions, build community resilience, and ensure that all residents can share in the benefits of a cleaner, more sustainable future.

Structure and Elements of the CCAP

Consistent with EPA guidance for Comprehensive Climate Action Plans, this CCAP includes the following key elements:

- ☑ **Inventory of greenhouse gas emissions** from all major sources and sectors, reported for each GHG in both metric tons and metric tons of carbon dioxide equivalent (MT CO2e).
- ☑ **Near-term and long-term GHG reduction targets**, including a discussion of base years and rationale consistent with EPA recommendations.
- ☑ **Business as usual (BAU) emission projections** for short-term and long-term planning horizons.
- ☑ **Quantified emission reduction measures**, organized sector by sector, with documented implementation authorities and responsibilities.
- ☑ **Analysis of benefits and potential disbenefits** associated with proposed measures, covering both GHG and co-pollutant reductions.
- ☑ **Identification of available or required funding sources** for implementation.
- ☑ **Evaluation of workforce needs and opportunities** created by climate action, including a focus on job creation in local disadvantaged communities.
- ☑ **A summary of meaningful engagement activities** undertaken within the communities.
- ☑ ***Optional:*** *Assessment of benefits to low-income and disadvantaged communities (LIDACs).*

The plan includes scenario analysis, applies expanded definitions to ensure that vulnerable populations are appropriately considered, and presents a robust engagement strategy to maximize public participation and transparency throughout the planning and implementation process.

Municipalities are the key stakeholders who will carry out the CCAP. To aid them with implementation, this Plan is accompanied by 27 unique Municipal Emissions Reduction Playbooks (MERPs) that prioritize CCAP measures for each community. The MERPs include both a narrative and a "dashboard" – an excel sheet to track and calculate the impact of each strategy under different scenarios. These resources will be made available on cprgct.org.

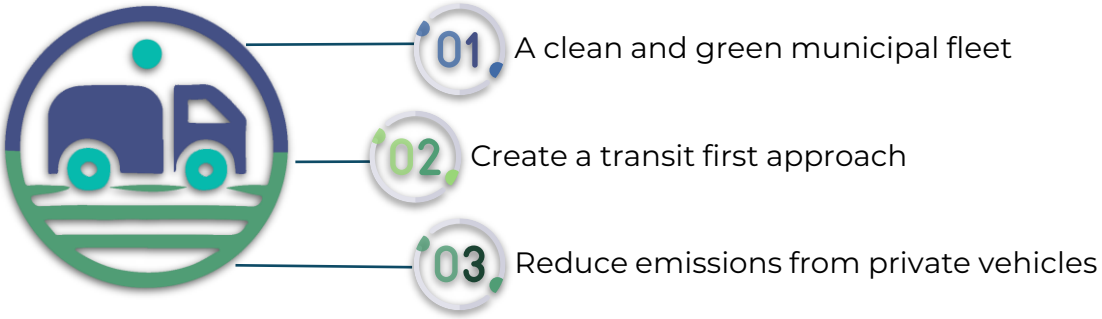
HOW TO USE THIS DOCUMENT

Each chapter of the CCAP is organized around the core requirements outlined by the EPA. Chapters address major components such as the inventory of greenhouse gas emissions, near-term and long-term reduction targets, business-as-usual (BAU) emission projections, and the suite of quantified reduction measures. Subsequent sections provide detailed analysis of the anticipated benefits and disbenefits of recommended actions, available and required funding sources, workforce planning and needs, as well as the documentation of public and stakeholder engagement.

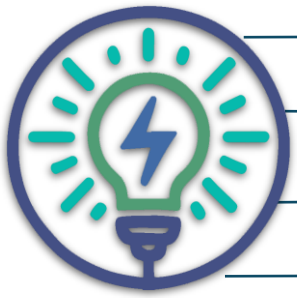
This structure is designed to present a logical and transparent progression, starting with the accounting of emissions and the establishment of targets, moving through scenario analyses and implementation strategies, and culminating in actionable measures and supporting analyses. Additional chapters cover the evaluation of benefits to low-income and disadvantaged communities, integration of funding and workforce strategies, and summaries of engagement activities undertaken throughout the planning process.

Each sector referenced throughout the plan contains a set of specific goals and strategies designed to achieve emission reduction targets. These sector-specific approaches recognize the different focus areas within the CCAP and offer clear pathways to advance overall emission reduction objectives. The sectors and their associated goals are shown below; a full table of the sectors, goals, and strategies is provided in Appendix A.

Transportation



Energy Production and Consumption



01. Reduce electricity consumption from fossil fuel sources in municipal buildings and services
02. Increase renewable energy production and consumption at the local scale
03. Prepare local economies for renewable energy transition
04. Cap methane emissions from hydroelectric facilites

Energy Efficiency in Buildings

01. Ensure energy efficiency and sustainability through building codes and regulations
02. Renewable heating access for low-income homes
03. Energy Efficient Building Materials and retrofits

Industrial

01. Improve emissions monitoring, accounting and reporting
02. Reduce emissions through low-carbon procurement and have clear decarbonization objectives.
03. Reduce emissions from the health care sector through public-private partnership

Waste Management

01. Divert waste via local and regional programs
02. Enact and expand statewide waste-reduction laws

Working Lands and Forestry

01 Preserve and support existing and potential forested lands

02 Increase urban tree canopy and agriculture (UTC)

Testing the Robustness of Recommended Strategies

Priority strategies were analyzed against these three possible scenarios to test their robustness. These scenarios included

Fossil Free Future

Coping with Gridlock

The Watershed Moment

You can learn more about the process, the analysis, and what each of these futures looks like on the project website, at cprgct.org.

Public Engagement

Public engagement is a key component of implementing successful CCAP strategies. This document includes a public engagement strategy and accompanying engagement materials that SCRCOG and its partners can use for ongoing outreach. The public engagement strategy has been shaped by EPA's latest guidance and guide implementers to work collaboratively with residents and stakeholders to identify needs, ensuring that mitigation strategies reflect regional priorities, especially for low-income and disadvantaged communities.

How can you engage?

This CCAP focuses on actionable steps at the municipal, regional, and state levels. Each sector chapter includes not only a list of strategies but also indicates the appropriate scale of implementation. Whether you are a concerned individual, a member of a community organization, local government, or a regional planning entity, this document provides specific strategies to advocate for, plan, or implement. Sector chapters also connect strategies to the needs and available resources within the region.

All CCAP public presentations are available on the website, at cprgct.org. You may find answers to your questions there or discover new information.

BACKGROUND

1.0 BACKGROUND

The Climate Pollution Reduction Grant Program

The Climate Pollution Reduction Grant program (CPRG), established under the Inflation Reduction Act, is a two-phase initiative that delivers $250 million for noncompetitive planning grants and approximately $4.6 billion for competitive implementation grants to states, local governments, tribes, and territories. This program promotes collaboration among recipients and stakeholders at the state, regional, and municipal levels to plan, adopt, and implement policies and programs aimed at reducing greenhouse gas (GHG) emissions.

The CPRG's planning and implementation phases require three major deliverables:

- The Priority Climate Action Plan (PCAP), completed and submitted on March 1, 2024. The final PCAP for the New Haven-Milford Metropolitan Statistical Area (MSA) is now available on the CPRG New Haven-Milford website, providing a foundation of priority mitigation strategies for the region.
- The Comprehensive Climate Action Plan (CCAP), due in 2025, building on the work of the PCAP to address all major sources of GHG emissions.
- A Status Report due in 2027, providing updates on progress and effectiveness.

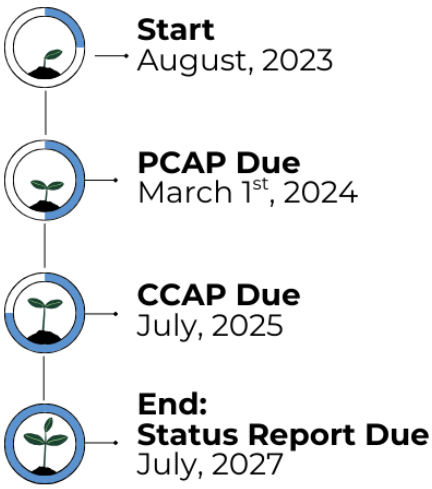


Figure 1-1: CPRG Timeline

This document, the CCAP, expands upon the PCAP and provides a focused list of near-term, high-priority, implementation-ready measures to reduce climate pollution from GHG emissions. The required components of the CCAP are:

- ☑ Inventory of current greenhouse gas emissions
- ☑ Near-term and long-term GHG reduction targets
- ☑ Business as usual (BAU) emission projections for short-term and long-term planning horizons
- ☑ Quantified emission reduction measures
- ☑ Analysis of benefits and potential disbenefits associated with measures
- ☑ Identification of available or required funding sources for implementation.
- ☑ Evaluation of workforce needs and opportunities created by climate action
- ☑ A summary of engagement activities undertaken within the communities.

The CCAP covers the entire geographic scope and population of the New Haven-Milford MSA, aligning with federal requirements and best practices for regional climate action planning.

National and State Context

Evolving Federal Framework

The CCAP is being developed within a significantly different national policy landscape than existed during the publication of the Priority Climate Action Plan (PCAP) in 2024. Since the PCAP's publication, the United States has transitioned to a new federal administration with markedly different approaches to climate policy and environmental regulation. This administration has signaled substantial departures from previous climate initiatives, including modifications to EPA priorities and funding mechanisms that previously supported state-level climate action efforts.

The regulatory landscape has also evolved considerably, with changes to federal requirements for Justice40 provisions and other climate equity mandates that shaped the original PCAP framework. Additionally, federal climate funding streams that were anticipated during PCAP development now face uncertainty or redirection, fundamentally altering the financial foundation upon which many proposed strategies were built.

Connecticut's Steadfast Commitment

Despite these federal policy shifts, Connecticut remains firmly committed to advancing climate action at the state and regional levels. State leadership continues to prioritize climate resilience, emission reductions, and environmental justice as core policy objectives. This commitment is reflected in continued state appropriations, regulatory frameworks, and partnerships that support the goals outlined in this CCAP.

Connecticut has demonstrated adaptability by pivoting strategies to accommodate emerging federal constraints while maintaining ambitious climate targets. The state recognizes that effective climate action requires flexibility in implementation approaches while preserving the fundamental objectives of emissions reduction and community resilience.

Funding Landscape Implications

The intersection of federal policy changes with state climate funding is comprehensively addressed in the accompanying funding chapter of this CCAP. That analysis reflects the current realities of reduced federal support and identifies alternative funding mechanisms, including state resources, regional partnerships, and private sector collaboration opportunities.

Moving Forward

The CCAP represents New Haven-Milford's commitment to climate leadership regardless of federal policy direction. By acknowledging current limitations while maintaining

ambitious goals, the region positions itself to capitalize on future opportunities while making meaningful progress with currently available resources. The CCAP has been structured to meet all grant requirements while acknowledging the practical constraints imposed by shifting federal priorities. The CCAP's approach emphasizes leveraging available resources strategically while building resilient funding frameworks that can withstand future policy fluctuations.

Connecticut Climate Action

Connecticut and its municipalities have made notable progress on climate action through policy commitments, legislative measures, and local programs. However, the state has also faced significant legislative setbacks and implementation challenges that have limited progress in key areas.

State of Connecticut Commitments to Climate Action

In 2018, Connecticut released "Building a Low Carbon Future for Connecticut" and passed Public Act No. 18-82, committing the state to binding greenhouse gas (GHG) emissions targets:

CONNECTICUT GHG EMISSIONS TARGETS

- ☑ **By 2020, a reduction of at least 10% from 1990 levels**
- ☐ **By 2030, a reduction of at least 45% from 2001 levels**
- ☐ **By 2050, a reduction of at least 80% from 2001 levels**

These commitments were strengthened in 2019 with new goals and an expanded mandate for the Governor's Council on Climate Change, formalized through Executive Order No. 1 (2019) and Executive Order No. 3 (2019). In 2020, Connecticut successfully met its first GHG emissions target under these commitments.

Equity became a core principle with the 2021 Phase 1 Report from the Governor's Council on Climate Change. That same year, Executive Order No. 21-3 established 23 climate-related actions across multiple sectors, including buildings, transportation, energy use, jobs, and environmental health impacts, and created the Clean Economy Council, an Equity and Environmental Justice Advisory Council, and an Office of Climate and Public Health.

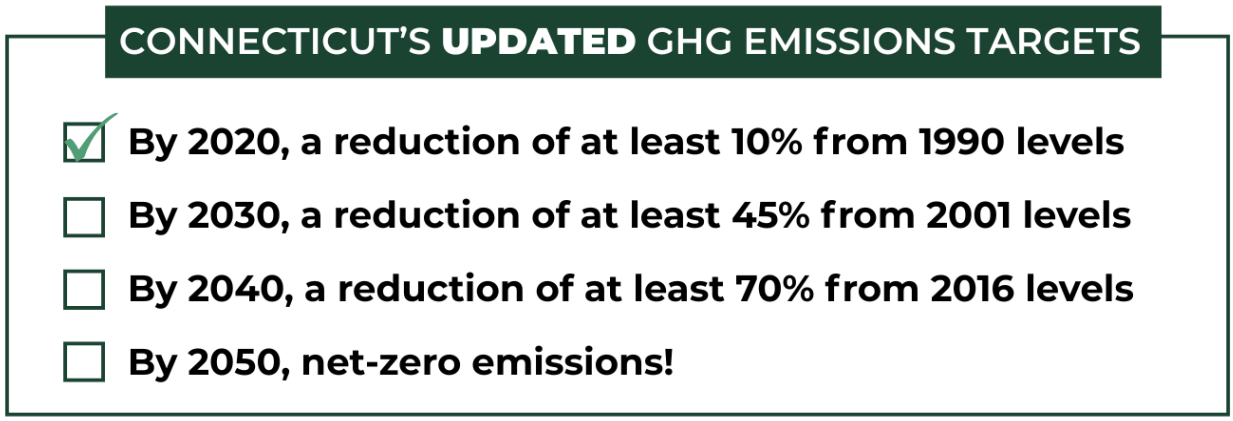
Connecticut has remained a national leader in enacting forward-looking climate policy and legislation:

- **Integrated Resources Plan (IRP):** Connecticut General Statutes §16a-3a requires DEEP prepare an IRP to assess future electric needs and plan to meet those future needs. The 2022 IRP included a schedule for future procurements of electricity supply.

- **Emission Reductions in Electric Sector:** Public Act No. 22-5 (2022) mandated zero carbon emissions from the electricity sector by 2040.
- **Shared Clean Energy Facilities:** Created by Public Act 18-50 (2018) and expanded by Public Act No. 22-14 (2022), this program requires electric utilities to purchase Renewable Energy Credits from eligible projects between 100-5,000 kW.
- **Energy Storage System Pilots:** Public Act No. 22-55 (2022) required energy companies to propose energy storage system pilots.
- **Electric Vehicle Infrastructure and Emission Mandates:** Public Act No. 22-25 (2022) established requirements for electric vehicle infrastructure, rebates, and emission standards for medium- and heavy-duty vehicles.

While several important climate bills failed to advance in 2023, including legislation to empower DEEP to set and enforce sector-specific GHG targets—a bill (SB 1147) allowing DEEP to deny permits for new polluting facilities or apply conditions to the expansion of existing facilities near environmental justice communities was enacted.

Recent years have seen even more ambitious actions. In 2025, Public Act No. 25-125 (House Bill 5004, "An Act Concerning the Protection of the Environment and the Development of the Renewable Energy Sources and Associated Jobs Sectors") updates the state's GHG reduction goals to require net-zero emissions by 2050, with an interim goal of a 70% reduction from 2016 levels by 2040. This new law expands incentives for solar canopies, energy-efficient heating and cooling, and green workforce development, and encourages nature-based solutions for shoreline protection and carbon sequestration.



Public Act No. 25-33, "An Act Concerning the Environment, Climate and Sustainable Municipal and State Planning, and the Use of Neonicotinoids and Second-generation Anticoagulant Rodenticides", addresses flood risks and infrastructure resilience. It mandates flood risk disclosure for new development in vulnerable coastal zones, establishes Resiliency Improvement Districts to help finance mitigation projects, and implements additional provisions to protect natural resources and public health.

Key State of Connecticut Climate Actions (2018-2025)

18 "Building a Low Carbon Future" Plan & GHG Targets

First legally binding reductions: 10% below 1990 by 2020; 45% below 2001 by 2030; 80% below 2002 by 2050.

19 Expanded Governor's Council on Climate Change

Set up office and essential technology.

20 First GHG target met

Demonstrated progress, informed new strategies

21 Phase 1 Climate Plan; Executive Order No. 21-3

Put equity at the center; Clean Economy Council; Equity and Environmental Justice Advisory Council; Office of Climate and Public Health.

22 Integrated Resources Plan (IRP) Procurement Plan Update; Clean Energy Laws

Zero-carbon electricity sector by 2040; expanded renewables access, energy storage pilot programs

24 Expanded Residential Renewable Energy Solutions (RRES)

Updated tariffs, inclusion of affordable housing, grid modernization investments

25 House Bill 5004 & Senate Bill 9

House Bill 5004 (Act Concerning the Protection of the Environment and the Development of the Renewable Energy Sources and Associated Jobs Sectors) - Net-zero by 2050, interim 70% reduction by 2040, incentives for renewables, building decarbonization, workforce and nature-based solutions.

Senate Bill 9 (Act Concerning Environment, Climate and Sustainable Municipal and State Planning, and the Use of Neonicotinoids and Second-generation Anticoagulant Rodenticides) - Infrastructure resilience, coastal construction standards, flood disclosure, new resilience funding tools

Legislative Setbacks and Recent Developments

Despite recent policy commitments, Connecticut has faced significant challenges in advancing comprehensive climate legislation. The state experienced consecutive years of legislative inaction on major climate bills with environmental advocates criticizing Connecticut for falling behind neighboring states. The state is currently not on track to meet its 2030 emissions reduction goals, and recent data shows emissions are trending upward in some sectors

2023 marked a period of stalled progress on climate legislation, particularly with the failure of a bill intended to grant DEEP expanded authority to set and enforce sectoral greenhouse gas (GHG) reduction targets, and the defeat of measures to require net-zero carbon for new schools, expand solar programs, and address building emissions; there have, however, been notable updates and continued debates in 2024 and 2025.

Updates to Environmental Justice Permit Law

In 2024, Connecticut's environmental justice law was amended to allow referendums in towns with populations up to 16,000 (previously 10,000) to override DEEP permit denials or approvals for polluting facilities in environmental justice communities. This change was intended to increase local input and oversight. However, the measure raised concerns among environmental advocates about potential unintended consequences and equity in enforcement.

In the 2025 legislative session, the Connecticut General Assembly passed Public Act No. 169 (HB 7004. “"An Act Authorizing Municipal Referenda to Challenge Certain Permit Approvals") that formally expanded these referendum powers. Despite the initial passage, Governor Lamont vetoed the bill in July 2025 due to concerns that local reversals of DEEP permitting decisions could undermine environmental protections, create regulatory uncertainty, and potentially weaken critical safeguards for environmental justice communities.

Broader Climate Policy Implications

Despite significant new climate legislation in 2025, climate advocates noted that new emissions targets, such as the net-zero by 2050 and 70 percent reduction by 2040, remain largely aspirational and lack clear enforcement mechanisms. Without statutory authority for DEEP to mandate sector-specific reductions, these goals serve as policy direction rather than enforceable mandates.

Connecticut also faced continued challenges in 2024 and 2025 to strengthen DEEP's regulatory authority. Some measures aimed at limiting the ability of citizens to intervene in land-use and environmental permitting processes did not advance after opposition from advocacy groups. This ongoing debate reflects uncertainty about the appropriate balance between public and agency involvement.

Efforts to strengthen waste reduction measures and ban single-use plastics, both intended to improve environmental justice outcomes, stalled at the close of the 2025 legislative session.

Recent Legislative Setbacks and Actions (2023-2025)

Recent legislative sessions in Connecticut have been characterized by incremental progress, efforts to expand or clarify environmental justice provisions, and setbacks in strengthening statutory authority for DEEP and establishing enforceable climate mandates.

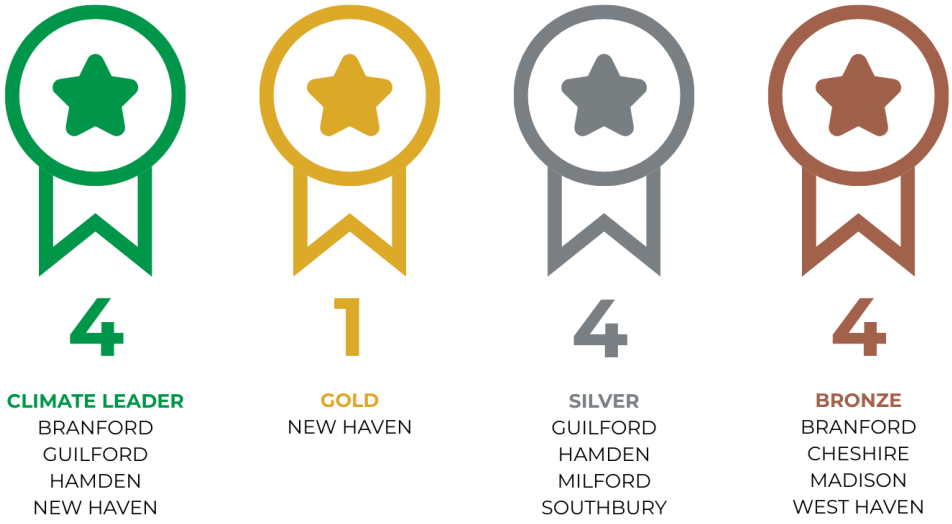
Sustainable CT

Sustainable CT is a non-profit organization launched by Connecticut municipalities in 2017 to promote sustainability, equity, and resilience across the state. The program offers a comprehensive menu of best practice actions and provides technical assistance and resources to help communities achieve their sustainability goals. Municipalities participating in Sustainable CT can earn Bronze, Silver, and Gold certifications by completing actions across various sustainability impact areas, including inclusive community engagement, energy, land stewardship, waste reduction, transportation, and more. Beyond these core certifications, towns that demonstrate outstanding achievement in greenhouse gas mitigation and climate adaptation are eligible for the Climate Leader designation.

Certification is voluntary and effective for three years, with municipalities able to build upon their accomplishments in each subsequent cycle. The Climate Leader designation recognizes communities that undertake a rigorous set of high-impact climate actions to

reduce emissions, strengthen resilience, improve public health, and build community capacity. It is required for Gold-level certification and can be pursued as an optional distinction for Bronze and Silver communities.

Sustainable CT continues to grow in participation and recognition across the state. As of the latest cycle, 23 New Haven County municipalities participate in the program. These communities represent all levels of certification, with several recognized as Climate Leaders based on their ongoing commitment and results in addressing climate challenges. For the most current roster of certified municipalities, including specific certifications, users should consult the Sustainable CT website, as certifications are periodically updated through twice-yearly review cycles.



Sustainable CT stands as a model for peer-driven, collaborative progress toward local and statewide sustainability goals. It provides Connecticut's cities and towns with tools and recognition to create thriving, equitable, and environmentally responsible communities now and for future generations.

Regional Context – New Haven County

In 1960, Connecticut abolished county governments. As a result, the term "New Haven County" is employed primarily to denote the geographic collection of towns and serves as a colloquial identifier for the New Haven-Milford CT Metropolitan Statistical Area (MSA). In this case, the boundaries of New Haven County align with those of the New Haven-Milford CT MSA. Since counties in Connecticut do not have any associated government structure, local governance and municipal services are the purview of individual towns.

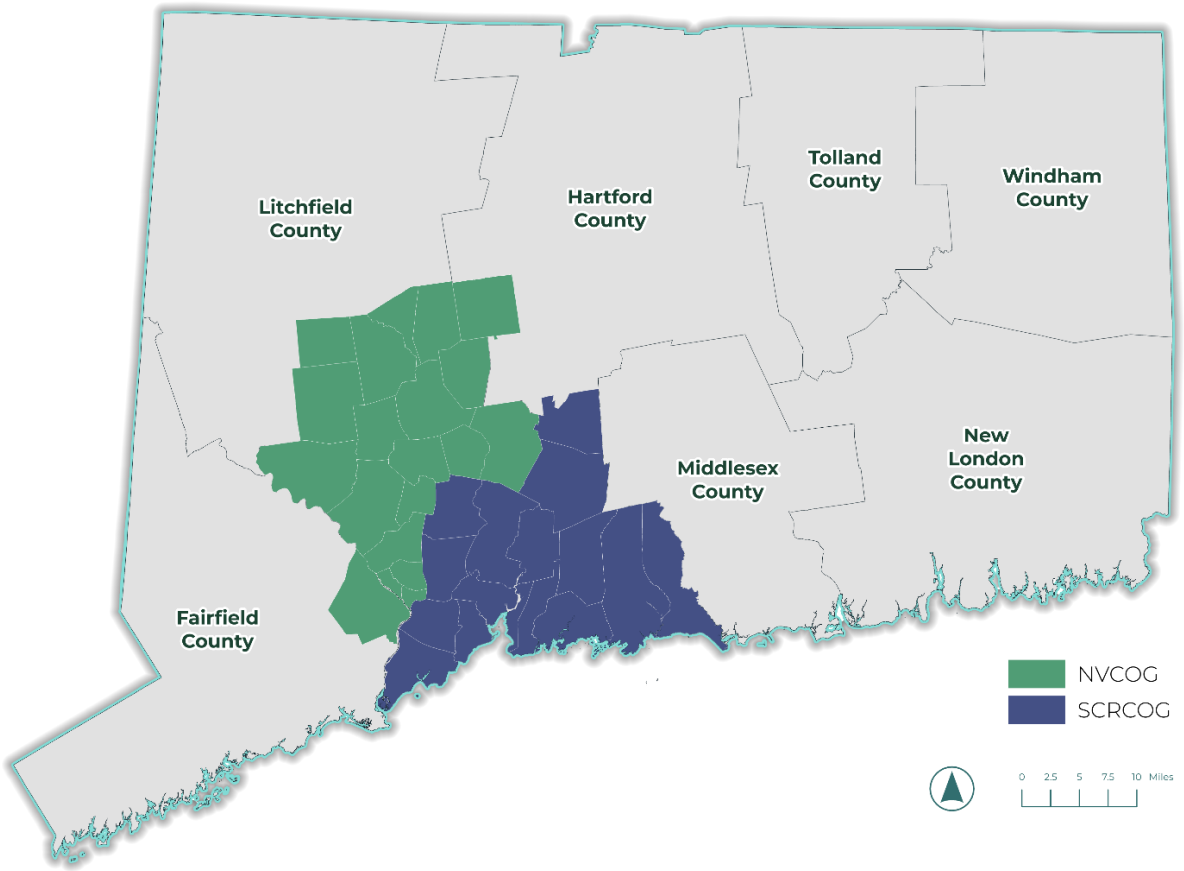
New Haven County, situated in South Central Connecticut, encompasses a collection of twenty-seven cities and towns that represent a diverse blend of urban, suburban, and rural character. The landscape is characterized by gentle low hills that span much of the region, gradually transitioning to flatter terrain in the south, where the county boundary is defined by the shores of the Long Island Sound. The areas around and including New Haven and Waterbury, both among Connecticut's largest cities, have the highest

population density in the county. According to the 2020 Census, the county had a population of 864,835, though recent estimates suggest the population has remained relatively stable at approximately 857,620 as of 2025.

As of 2022, the U.S. Census Bureau formally recognized Connecticut's nine councils of governments (COGs) as county equivalents. The COGs function as regional planning organizations, coordinating efforts throughout member municipalities in their jurisdiction, including pursuing grants and funding. However, COG authority is limited. New Haven County includes towns within both the South Central Regional Council of Governments (SCRCOG) and the Naugatuck Valley Council of Governments (NVCOG), which is why regional mitigation efforts under the CPRG programs will be a collaborative effort between the two agencies.

Map 1-1: Cities and Towns of New Haven County

Prominent employers in the county continue to include Yale University, the Yale New Haven Health System, and the Waterbury Board of Education, each employing between 5,000 and 9,999 individuals. In addition, the county is traversed by three major interstates (I-91, I-84, and I-95) and is serviced by north-south and east-west rail lines, facilitating transportation and connectivity within the region. Recent infrastructure improvements include enhanced wireless service along the New Haven Line, supported by a $6 million investment from AT&T, which has improved connectivity at more than 30 locations.



Map 1-2: Connecticut Counties in Relation to SCRCOG and NVCOG

Climate Change in New Haven County

While the impacts of climate change are felt globally, each region will face unique challenges. New Haven County is already experiencing increased flooding, more high heat events, and sea level rise along its coast. Recent data confirms that 2024 was the warmest year on record globally, highlighting the continued need for climate preparedness and resilience planning.

Temperature and Heat Events:

- There is high confidence that human-induced climate change is leading to higher mean and extreme temperatures in the state. Connecticut - State Climate Summaries 2022
- By 2050, New Haven is projected to experience approximately 32 days per year above 89.6°F, compared to about 7 days in 1990. New Haven, Connecticut Climate Change Risks and Hazards: Precipitation, Heat / ClimateCheck
- There is high confidence in continued and amplified warming over North America as a whole. Connecticut - State Climate Summaries 2022

Precipitation and Flooding:

- There has been an observed increase in precipitation events in the MSA region, with annual precipitation projected to increase from about 47 inches to 51 inches by 2050. New Haven, Connecticut Climate Change Risks and Hazards: Precipitation, Heat / ClimateCheck and Hicke et al., 2023
- The share of precipitation during extreme downpours is projected to increase from about 40% in 1990 to 46% by 2050. New Haven, Connecticut Climate Change Risks and Hazards: Precipitation, Heat / ClimateCheck
- There has been an increased frequency in heavy rainfall events, increased prevalence of mosquito-borne illnesses such as West Nile Virus and Eastern Equine Encephalitis, and increased federal disaster proclamations within the state. The Climate Challenge (Bozzi, 2020).

Photo: Naugatuck and Housatonic Rivers following the remnants of Hurricane Ida

Storm Systems and Hurricanes:

- There has been an observed increase in the proportion of hurricanes that strengthen to stronger category levels in the State, with high confidence this is associated with human-induced climate change. (Hicke et al., 2023)
- There is high confidence in the continued magnification of tropical cyclone impacts in in the State, specifically increased wind speeds and precipitation. (Hicke et al., 2023)

Sea Level Rise and Ocean Changes:

- There is high confidence that North Atlantic waters off the east coast of the United States are warming due to human activities. (Hicke et al., 2023)
- Sea level rise is expected to continue in the State, with buildings in New Haven facing ~64% chance of experiencing flood depths of approximately 2.8 feet over 30 years. The Climate Challenge
- Ocean temperatures in the North Atlantic are expected to increase, and there is high confidence that ocean acidification will increase along the eastern seaboard. (Hicke et al., 2023)

The region continues to face significant climate challenges, with storm surges and flooding becoming primary concerns due to rising sea levels. Infrastructure improvements are ongoing, including projects to use culverts and bioswales for flood management, and the Army Corps of Engineers is funding a project to use I-95 as a flood wall (How New Haven grapples with climate change - Yale Daily News). These impacts underscore the importance of continued climate resilience planning and infrastructure investment to protect communities throughout New Haven County.

MUNICIPAL EMISSIONS REDUCTION PLAYBOOKS

2.0 MUNICIPAL EMISSIONS REDUCTION PLAYBOOKS

Municipal Emissions Reduction Playbooks, also known as MERPs, are designed to make addressing climate change in an uncertain future a less burdensome process for municipal staff in New Haven County. They contain two components: an interactive dashboard and a static document. The MERPs identify the CCAP strategies for emissions reduction that are understood to be most effective at reducing greenhouse gas emissions in each individual municipality. These playbooks were created in partnership with the University of Massachusetts Amherst's Center for Resilient Metro Regions through the Department of Landscape Architecture and Regional Planning's Regional Planning Studio. The MERPs are accessible via the QR code provided at the top of the page.

The MERPs complement the Impact 2050 CCAP, which outlines federal, state and local-level methods for mitigation of greenhouse gases within New Haven County. Within each MERP document you will find strategy codes (e.g. "E.02" or "T.10"); each code is hyperlinked to the online version of each tactic where additional information may be found.

MERPs provide local governments with the ability to focus resources on strategies that reduce greenhouse gas emissions and improve quality of life for all residents. They do so by answering the following:

- Which sectors contribute the most to regional GHG emissions?
- Which strategies will provide the greatest benefits?
- How do local conditions determine relevant strategies?

Part of the prioritization method used in the MERPs considers equity. Strategies that have an explicit equity focus are identified in tables with blue dots. Such strategies are focused on low-income and disadvantaged communities, or LIDACs, which are EPA-defined Census areas that include all Environmental Justice Communities Census areas as well as others that meet broader criteria of economic need (U.S. Environmental Protection Agency, 2023).

Recommended strategies are limited to those that local governments have the authority to implement.

Planning for an uncertain future

The Impact 2050 website contains tools to help municipalities update MERPs over time and meaningfully engage with community members and stakeholders. Additionally, given evolving local, regional, and global forces that present new opportunities and challenges, the MERPs also mirror the CCAP's three future scenarios – Fossil Free Future, Watershed Moment, and Coping with Gridlock – as starting points to think about how the future might require revised strategies.

GHG ANALYSIS

3.0 GREENHOUSE GAS INVENTORY

Developing a regional greenhouse gas (GHG) emissions inventory and projecting reliable future trends under different scenarios are crucial components of climate action planning. Emissions data provides insights into the sources and environmental impact of human activities. At the same time, emissions projections could inform mitigation policies and strategies.

Data Methodology

Review Inventory Data

The Priority Climate Action Plan (PCAP) inventory data was reviewed, and research was conducted to find applicable updates for each sector. Only a few updates were found, including statewide distribution data updated to 2022 and electricity consumption data to 2023. Most of the data remained unchanged, so the previous inventory created in the PCAP was utilized to conduct further GHG analyses. For this inventory, calculations were made using 2021 as the base year, as it represents the year with the most complete data.

Table 3-1: Inventory sector, activity data, and their sources

Sector	Inputs	Year	Source
1. Mobile Combustion	Vehicle Miles Travelled (VMT)	1966-2022	Requested from CTDOT (2030 VMT Goals and Strategies, 2025)
	Statewide vehicle type distribution	2021 & 2022	FHWA, DOT (Policy and Governmental Affairs, 2024)
	Vehicle fuel efficiency (MPG)	2021	LGGIT Mobile Combustion Section (O. US EPA, 2017)
2. Electricity Consumption	Electricity consumption	2016-2023	Energize CT (CEC TownData, 2025)
3. Stationary Combustion	Household heating fuels consumption	2021	EIA (U.S. Energy Information Administration - EIA - Independent Statistics and Analysis, 2023)
	Number of households using different types of heating fuels	2010-2021	ACS (Bureau, 2025)

Sector	Inputs	Year	Source
	Commercial building footprint	No single year but relatively current	OSMnx (Getting Started - OSMnx 2.0.5 Documentation, 2025)
	Statewide commercial emissions	1990-2021	DEEP (CT Greenhouse Gas Inventory Reports,)
	Industrial facility emissions	2010-2022	FLIGHT (EPA Facility Level GHG Emissions Data)
4. Agriculture	Land area of fertilizer type	2017	USDA (USDA/NASS QuickStats Ad-Hoc Query Tool)
	Nitrogen content and lose	2021	LGGIT (US EPA, 2017)
	Statewide agricultural emissions	1990-2021	DEEP (CT Greenhouse Gas Inventory Reports)
5. Wastewater Treatment	Number of wastewater treatment facilities	2021	Connecticut NPDES Permits (R. 10 US EPA, 2016)
	Statewide wastewater emissions	1990-2021	DEEP (CT Greenhouse Gas Inventory Reports,
6. Forestry	Forest land area	2015	2015 Land Cover Number and Charts (University of Connecticut)(Bonsack, 2022)
	Carbon sequestration factor	No single year but relatively current	LGGIT (US EPA, 2017)

Greenhouse Gas Emissions Sources and Sinks

Figure 3-1 shows the GHG emissions sources and sinks across all sectors in the year 2021. The detailed methodology and relevant assumptions for GHG inventory calculation can be found in the New Haven Priority Climate Action Plan (ImpaCT 2050, 2024) provided in Appendix A.

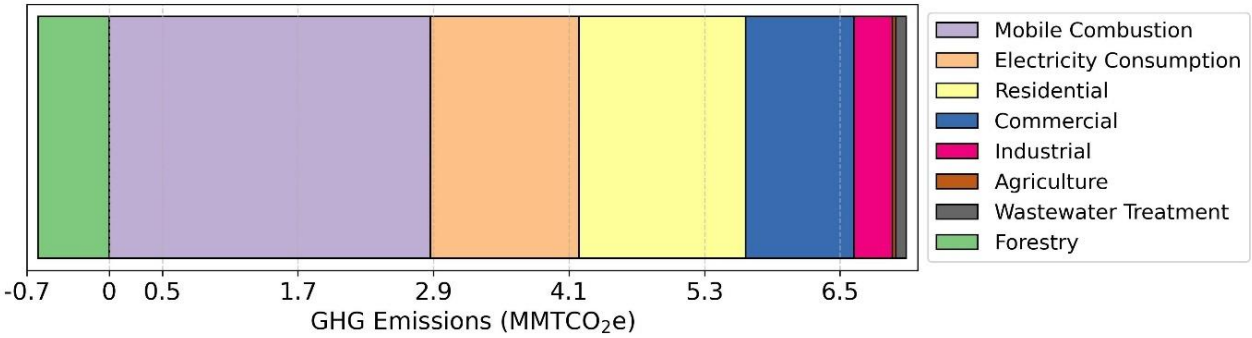


Figure 3-1: GHG emissions by sectors in 2021 (baseline year)

4.0 GHG BASELINE EMISSION PROJECTIONS

Modeling Framework

Figure 4-1 below summarizes the projection framework that was employed. For the commercial and industrial subsectors in stationary combustion, agriculture, and wastewater treatment. For the mobile combustion, electricity consumption, and residential subsectors, activity parameters (such as VMT, electricity consumption) were projected and the emissions were calculated from those projected parameters. The projection framework is based on the Autoregressive Integrated Moving Average (ARIMA) model, which requires historical data from the target variable (emissions, activity parameters). Several strategies (B.02, B.04, B.06, B.12, B.13, E.06, E.07, E.10, E.11, I.02, T.06, T.07a, T.09a,b,d, and T.12) were not included in the GHG projections because they are groundwork or enabling strategies that are qualitative in nature and do not yield directly quantifiable emission reductions within the projection timeframe. Solid waste projections were excluded because they are zero in the New Haven MSA due to the lack of active landfills for solid municipal waste. Instead, municipalities in New Haven MSA transport their solid waste either to other states or to waste-to-energy incinerators located outside of the MSA, which is where the emissions are attributed to. Additionally, the assumption that forestry contributions would not change significantly within the 25-year frame was made. The ARIMA model and its training and testing performance are presented in Appendix B.

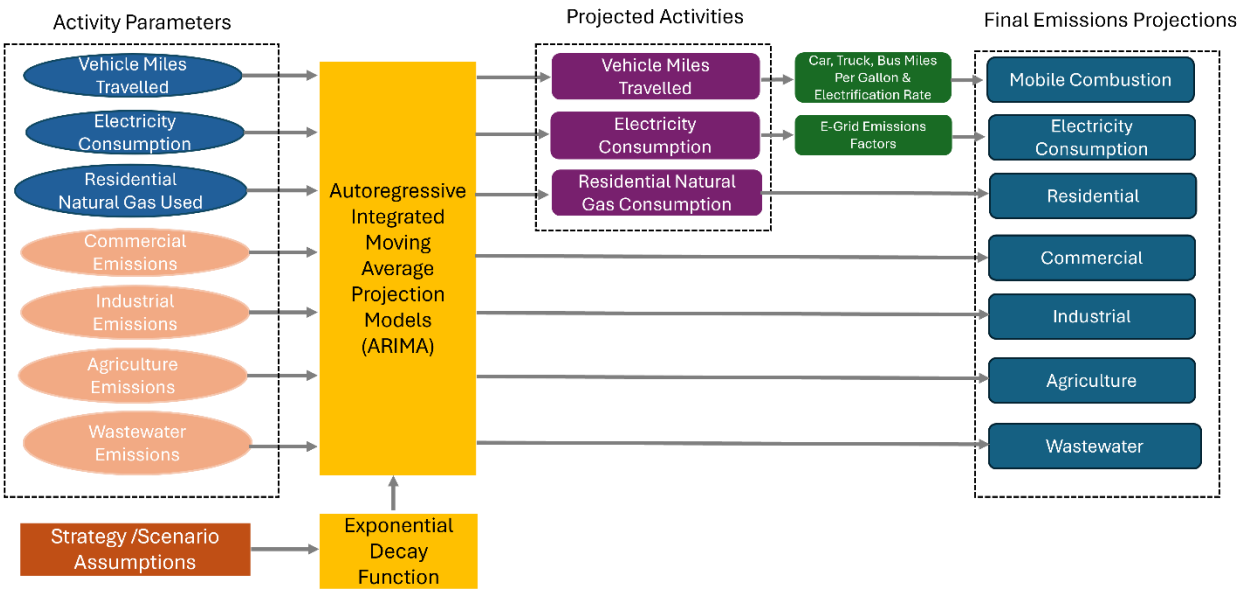


Figure 4-1: A framework illustrating methodology for developing sector-specific emission forecasts

Baseline Projections

Based on the above methods, the baseline or Do nothing scenario was calculated for the New Haven MSA. As shown in **Figure 4-2**, the total GHG emissions under this scenario are 7.34 million metric tons of carbon dioxide equivalent (MMTCO2e) in 2030, and 8.08 MMTCO2e in 2050, with a projected 4% increase in the near-term (by 2030) and 14% increase in the long-term (by 2050) absent any interventions. Mobile combustion (transportation) emissions have the largest emissions increase over those years. **Table 4-1** shows the changes in emissions in 2030 and 2050 relative to 2021. Emissions are projected to increase in all sectors except the industrial sector, which decreases by 10% in the long term.

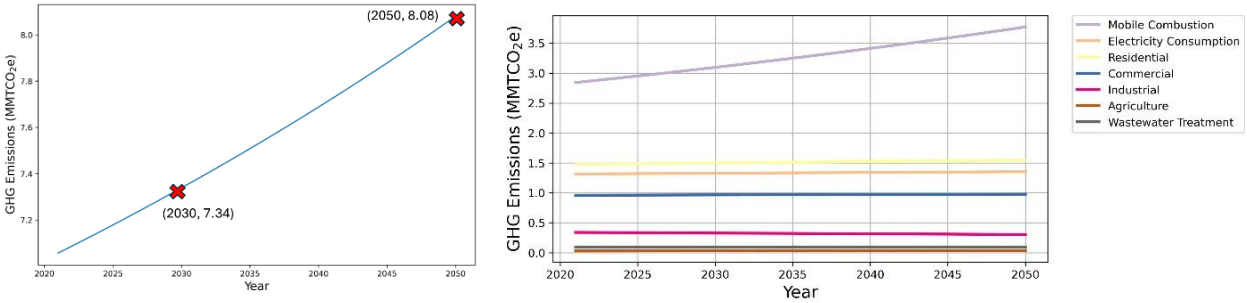


Figure 4-2: Forecasting model projections (Do Nothing): A. Total emissions. B. Sector emissions

Table 4-1: Summary of Emissions Changes in the short and long term

Sector	Emissions Change, % (2021-2030)	Emissions Change, % (2021-2050)
Mobile Combustion	8.91	32.65
Electricity Consumption	0.90	2.94
Residential	1.42	4.66
Commercial	0.51	1.67
Industrial	-3.39	-10.51
Agriculture	6.72	23.33
Wastewater Treatment	0.25	0.82

5.0 GHG EMISSION REDUCTION MEASURES

In this section, assumptions were made about the changes to each activity parameter in each sector under the implemented strategies. Based on these modified parameters, the emissions were calculated, as shown in **Table 5-1** and **Table 5-2**.

Assumption for Activity Parameters

The detailed calculation and assumed changes in each activity parameter for each reduction measure and strategy are available on the project website, at cprgct.org.

Table 5-1: Strategies and the Corresponding Strategy Codes

Sector	Strategy Code	Strategy
 **Energy Efficiency in Buildings**	B.01	Require building owners to annually benchmark and disclose their energy usage and efficiency ratings.
	B.03	Ensure all municipal operations rely on 100% renewable energy sources.
	B.05	Offer incentives and expedited permitting for projects that achieve green building certifications.
	B.07	Install solar heating systems on low-income housing units to provide renewable water heating for these properties.

Sector	Strategy Code	Strategy
 **Energy Efficiency in Buildings**	B.08	Integrate solar heating systems into community initiatives and reduce overall energy costs and reduce barriers to solar uptake.
	B.09	Install energy monitoring and management systems in low-income housing to track and control energy consumption.
	B.10	Require the use of sustainable building materials in the construction and building of low-income housing
	B.11	Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.
 **Electricity Production and Consumption**	E.01	Utilize on site renewables (i.e., rooftop solar) to power municipal operations.
	E.02	Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and/or invest in storage capabilities within the municipality.
	E.03	Increase procurement of renewable energy for municipal services.
	E.04	Pursue microgrid projects that integrate onsite renewables and electricity from the grid to power municipal services.
	E.05	Increase efficiency of wastewater treatment facilities, utilize onsite solar, or biogas to lower emissions at these facilities.
	E.08	Adopt clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.
	E.09	Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.
	E.12	"Develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project" (O'Neill, 2023).

Sector	Strategy Code	Strategy
 **Industrial**	I.01	Require utility companies, gas suppliers, and health care establishments to report emissions data.
	I.03	Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas.
 **Mobility and Transportation**	T.01	Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.
	T.02	Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.
	T.03	Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time.
	T.04	Offer discounted transit fare for LIDACs.
	T.05.a	Pilot pedestrianization, limited traffic (bus only lanes/streets) and use of active transportation downtown and in dense developments.
	T.05.c	Coordinate with transit providers to identify areas or opportunities that could be developed as Transit Oriented Developments
	T.07.b	Encourage denser housing in areas near existing economic zones.
	T.08	Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.
	T.09.c	In high-density development areas, implement requirements for new development to include EV charging stations.
	T.10	Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.
	T.11	Incentivize trip reduction programs in public offices and partner with private offices for the same: this requires an increase in work-from-home opportunities to reduce VMT during the work commute.
	T.13	Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.

Table 5-2: Assumed percentage changes in activity parameters (relative to Do Nothing in 2050) and their reference sources for each strategy

Strategy Code	Activity Parameter	Assumed Changes (%)	References
B.01	Electricity consumption	-4.00	Comprehensive evaluations across about 24 U.S. jurisdictions showed reductions in energy consumption or energy intensity between 3% and 8% over 2–4 years after benchmark/disclosure policies took effect. (*Evaluation of U.S. Building Energy Benchmarking and Transparency Programs: Attributes, Impacts, and Best Practices | Energy Markets & Policy*, 2017)
	Residential Natural Gas [Res. Nat. Gas]	-14.00	The behavioral-change scenario (e.g. lowering thermostat setpoints by ~1 °C) could reduce cold-season gas consumption by ~14% in a Massachusetts county, and about 20–40% reductions nationally under full adoption. (Mittakola, et. Al., 2024)
	Commercial Emissions [Comm. Emissions]	-17.00	By lowering energy consumption, benchmarking disclosure policies indirectly reduce GHG emissions. San Francisco's 17% emissions reduction is a standout example. (*Comparing Market Effects of Benchmarking and Disclosure Ordinances in 4 U.S. Cities | Better Buildings Initiative*, 2025)
B.03	Electricity consumption	-12.60	This municipal LED retrofit resulted in 80–90% energy savings, and 934 MWh/year electricity reduction — useful as a benchmark for larger retrofit programs. (*Delaware Valley Regional Planning Commission*; 2025) The municipal building footprint accounts for approximately 14% of the total building footprint in New Haven MSA, as calculated from OpenStreetMap data using Python. (Boeing, 2017; *Getting Started - OSMnx 2.0.5 Documentation*, 2025)

Strategy Code	Activity Parameter	Assumed Changes (%)	References
B.05	Electricity consumption	-20.00	Found 18–39% less energy use per square meter in 100 LEED-certified commercial buildings.(Newsham et al., 2009)
	Res. Nat. Gas	-25.00	DOE/ZERH and ENERGY STAR Homes show 20–50% reductions in residential gas-use through insulation, heat pumps, and sealing.(*ENERGY STAR Certification for Buildings | ENERGY STAR*, 2025)
	Comm. Emissions	-20.00	18–39% lower site energy use but noted not all buildings meet expectations in commercial building. (Amiri et al., 2019)
B.07	Electricity consumption	-15.60	In Dimbaza, South Africa, solar water heaters (SWHs) installed in low-income homes reduced electricity used for water heating by ~60%. (Peter et al., 2022)
	Res. Nat. Gas	-13.00	Community-scale solar thermal systems in Los Angeles County have been modelled to displace 20–90% of natural gas usage for water heating, depending on building type and density.(Commission, 2024)
B.08	Electricity consumption	-20.00	Although focusing on rooftop PV rather than thermal, data shows low-income affordable housing setups can reduce overall site energy use by ~35–47%, lowering both electricity and gas usage, and reducing GHG emissions by hundreds of tons annually. (Bell, 2025; Diamond, 2024); Low-income individuals make up 26% of the total population in the New Haven MSA. (*New Haven-Milford, CT MSA Situation & Outlook Report*, 2018)
	Res. Nat. Gas	-21.00	
B.09	Electricity consumption	-4.42	In Northern Ireland, replacing prepaid meters with advanced smart meters that provided real-time feedback led to an 11–17% reduction in electricity consumption in low-income households. (Gans et al., 2013; "Home Energy Monitor," 2025)
	Comm. Emissions	-7.80	For commercial buildings, broader energy management systems and demand-response strategies can yield up to ~30% reductions. (Jnat et al., 2020)

Strategy Code	Activity Parameter	Assumed Changes (%)	References
B.10	Electricity consumption	-2.86	A comparative study found that a steel-framed home used 10.7% more electricity in summer and 3.9% more gas in winter than a wood-framed equivalent, due to poorer thermal performance. ("Green Building and Wood," 2025)
	Res. Nat. Gas	-1.56	By improving insulation and airtightness through sustainable materials (e.g., recycled cellulose, wood fiber insulation, hempcrete), heat demand declines significantly. Materials like AAC (autoclaved aerated concrete) or bio-based insulation reduce gas usage for space heating by ~4–6% or more for residential building. (Usta & Zengin, 2021)
	Comm. Emissions	-7.80	Typical LCAs show that sustainable material use can reduce a commercial building's embodied carbon by 20–40%, and once operational emissions are also lowered via thermal improvements, total lifecycle GHG emissions drop by up to ~30%. (Cao, 2025)
B.11	Electricity consumption	-6.60	With over $1 billion deployed nationally to retrofit affordable housing, including heat pumps, insulation, window upgrades, and solar panels—HUD reports ~33% energy reductions in some properties. (*Apartments Get Final Round of Money for Better Heating Systems and Other Climate Improvements | AP News*, 2024)
	Res. Nat. Gas	-6.60	Retrofitted with cold-climate air-source heat pumps in residential buildings, resulting in 65% reduction in heating and cooling energy. ("How Utility Programs Can Drive Electrification and Energy Efficiency in Multifamily Affordable Housing," 2025)
E.01	Electricity consumption	-15.40	Wauwatosa, with its $30M municipal rooftop solar project, saw an estimated 11% reduction in electricity usage across city-owned buildings. (*Wisconsin Town Offsets 50% Of Municipal Energy Use With Rooftop Solar* , 2022)
	Comm. Emissions	-0.28	Washington, DC: proposed 10 MW municipal solar system expected to yield 12.9 million kWh/year, displacing ~12,300 tCO_2 (~2% of municipal emissions, ~0.1% of total city emissions). (Farrell, 2015)

Strategy Code	Activity Parameter	Assumed Changes (%)	References
E.02	Electricity consumption	-2.80	In simulations using municipal-level microgrid plus storage systems, electricity costs (proxy for usage management) decreased by ~20%, and emissions savings of ~6% were achieved via peak-shaving and load-shifting strategies. 2018)
	E-Grid emissions factors	-0.84	In smaller balancing areas, like SMUD (Sacramento), shifting 100% of municipal load to renewables can drive up to 4–6% reductions in localized grid emissions factors.
E.03	Electricity consumption	-12.60	This municipal LED retrofit resulted in 80–90% energy savings, and 934 MWh/year electricity reduction — useful as a benchmark for larger retrofit programs
E.04	Electricity consumption	-2.10	5–15% reductions in grid electricity consumption for municipal operations (*Home | Energy Markets & Policy*, 2025)
E.05	Wastewater Emissions [WW Emissions]	-30.00	Efficiency improvements (aeration optimization, motors, controls) can reduce electricity use by 20–40% in treatment plants. (Li & Wen, 2014)
E.08	Electricity consumption	-20.00	10–30% reduction in site electricity use
	E-Grid emissions factors	-3.00	1–3% grid carbon intensity reduction over 5–10 years, if widely adopted in urban areas
E.09	E-Grid emissions factors	-50.00	Proportional CO_2 emissions reductions of ~40–60%, depending on grid carbon intensity. (*(PDF) Net-Zero Energy Communities at Local Climate Zones*, 2011)
E.12	Industrial Emissions [Ind. Emissions]	-3.60	CH_4 emissions from hypolimnetic water withdrawal (turbine degassing) are significant, and can be mitigated (~90% reduction) by switching to shallower withdrawals (Beaulieu et al., 2014)

Strategy Code	Activity Parameter	Assumed Changes (%)	References
I.01	Ind. Emissions	-4.00	Phase 1 (2010–2014) of CRC mandatory emissions reporting by utilities, local authorities, etc., achieved 3–5% reductions in electricity and carbon emissions by 2012 (*CDP Reporting*, 2024)
I.03	Electricity consumption	-6.67	Energy consumption dropped by ~20% in retrofitted wards and operating theaters. (Rodríguez-Jiménez et al., 2023)
	Ind. Emissions	-7.50	A guide published by the Institute for Healthcare Improvement (IHI) (2025) outlines steps hospitals have taken: Facilities implementing clinical decarbonization measures (energy-efficient lighting, HVAC, anesthesia gas reformulation) saw 5–10% reductions in GHG per procedure. (*Getting Started with Clinical Decarbonization | Institute for Healthcare Improvement*, 2025)
T.01	Bus VMT	-10.00	EV share is approaching ~10% as of early 2025, including refuse trucks, Bolts, and enforcement vehicles. The city aims for full fleet electrification by 2030. (*With Trash Truck Approval, City Steps Electric*, 2025) Assume all the buses are municipal fleet in our dataset
	Bus Electrification Rate	10.00	EV adoption rate of fleet vehicles is ~10%, aligning with stated city commitment for electrification by 2030. (*Outreach and Feedback*, 2024)
	Electricity consumption	0.01	EV adoption rate of fleet vehicles is ~10%, aligning with stated city commitment for electrification by 2030. (*Outreach and Feedback*, 2024)
T.02	Car VMT	-5.00	In some freight operations, hydrogen trucks offer longer range and shorter refueling times vs battery-electric, enabling more trips per day with less downtime (e.g., port-haul scenarios) (*Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two*, 2020)
	Truck VMT	-10.00	
	E-Grid emissions factors	-20.00	e-Grid Emissions Factor: Potential reduction if hydrogen is green (up to 40%) (*Hydrogen*, 2024)

Strategy Code	Activity Parameter	Assumed Changes (%)	References
T.03	Car VMT	-2.00	VMT Minimal change; potential small reduction (~1–2%) due to traffic signal optimization (Desai et al., 1983)
	Truck VMT	-2.00	
	Bus VMT	-2.00	
	Car MPG	10.00	Miles Per Gallon (MPG) / Fuel Economy: Increases 5–15% with idling reduction, depending on vehicle type (*Argonne GREET R&D Model* O. US EPA, 2023)
	Truck MPG	10.00	
	Bus MPG	10.00	
T.04	Car VMT	-11.00	11% less car use, more subway/bus usage (Opportunity, 2025)
	Bus VMT	-15.00	Up to 15% VMT reduction in transit-rich low-income areas (*Center for Neighborhood Technology, 2019 Annual Report*, 2019)
	Car MPG	2.00	2–3% MPG improvement in smoother-flowing traffic. (*Rising Above the Gathering Storm, Revisited*, 2010)
	Truck MPG	2.00	
	Bus MPG	2.00	
T.05.a	Car VMT	-15.00	5–20% VMT reduction in the affected district, depending on scale. (Regmi, 2020)
	Truck VMT	-15.00	
	Bus VMT	-15.00	
T.05.c	Car VMT	-5.00	California Air Resources Board (CARB) TOD households drive ~44% fewer miles than average suburban households. (Zhang et al., 2025)
	Truck VMT	-5.00	
	Bus VMT	-5.00	
T.07.b	Car VMT	-5.00	Infill development can cut VMT by 40–60% vs sprawl
	Truck VMT	-5.00	
	Bus VMT	-5.00	
	Electricity consumption	-20.00	Compact development can reduce building energy consumption by ~20% per household (*NREL Researchers Reveal How Buildings Across United States Do—and Could—Use Energy | NREL*, 2023)
T.08	Car VMT	-15.00	10–30% decrease in per commuter (where used regularly) VMT
	Truck VMT	-15.00	
	Bus VMT	-15.00	

Strategy Code	Activity Parameter	Assumed Changes (%)	References
T.09.c	Car VMT	-30.00	2–5% decrease in VMT
	Truck VMT	-30.00	
	Bus VMT	-30.00	
	Car MPG	10.00	8–15% increases in MPG
	Truck MPG	10.00	
	Bus MPG	10.00	
	Car Electrification Rate	20.00	10–30% increase in EV adoption rate in areas with consistent access to charging
	Truck Electrification Rate	20.00	
	Bus Electrification Rate	20.00	
	Electricity consumption	5.00	5–10% increase in electricity consumption
	Comm. Emissions	-5.00	3–6% decreases in commercial emissions
T.10	Car VMT	-20.00	ICE Vehicle VMT decreased by 10-30%(*UC Davis*, 2017)
	Truck VMT	-20.00	
	Bus VMT	-20.00	
	Electricity consumption	10.00	Electricity Demand (TNC EVs) increased by 5–15% (*Union of Concerned Scientists*, 2025)
T.11	Car VMT	-25.00	WFH policies reduced VMT in urban areas by 20–30% during peak COVID years. (Barrero et al., 2021; Tao et al., 2023)
	Truck VMT	-25.00	
	Bus VMT	-25.00	
T.13	Car VMT	-15.00	VMT decreased by 10-20% while displacement by hydrogen vehicles (O. US EPA, 2025)
	Truck VMT	-15.00	
	Bus VMT	-15.00	
	Bus MPG	50.00	Fleet MPG increases by 50-100%, depending on the application (O. US EPA, 2015)

Projected Emissions Trajectories

The greenhouse gas emissions have been projected for 30 different mitigation strategies under three different scenarios, spanning four key sectors: Energy Efficiency in Buildings, Electricity Production and Consumption, Industrial, and Mobility and Transportation. Those three scenarios illustrate different possible futures for New Haven County: **Fossil Free Future** depicts a future where green infrastructure and industry is embraced; **Coping with Gridlock** reflects stalled government climate action despite increased business and public engagement on climate related issues; and **The Watershed Moment** displays a future where climate change sparks reform across the county's physical, social, political, and economic landscape, as outlined on cprgct.org.

Each sector displays different trends, which are shaped by interventions, implementation feasibility, and the pace of technological or behavioral change. The Do Nothing baseline serves as a reference against which all strategies are measured, which shows steadily increasing emissions across all sectors if no intervention or action is taken. As shown in **Figure 5-1**, under the Do Nothing scenario (dashed black line), emissions increase steadily from 7.06 $MMTCO_2e$ in 2021 to 8.08 $MMTCO_2e$ in 2050, driven by population growth and continued fossil fuel consumption (*ImpaCT 2050*, 2024; *New Haven-Milford, CT MSA Situation & Outlook Report*, 2018). Table 4-3 summarizes the total emissions in 2050 under each scenario and how they compare, in percentage terms, with the Do Nothing scenario.

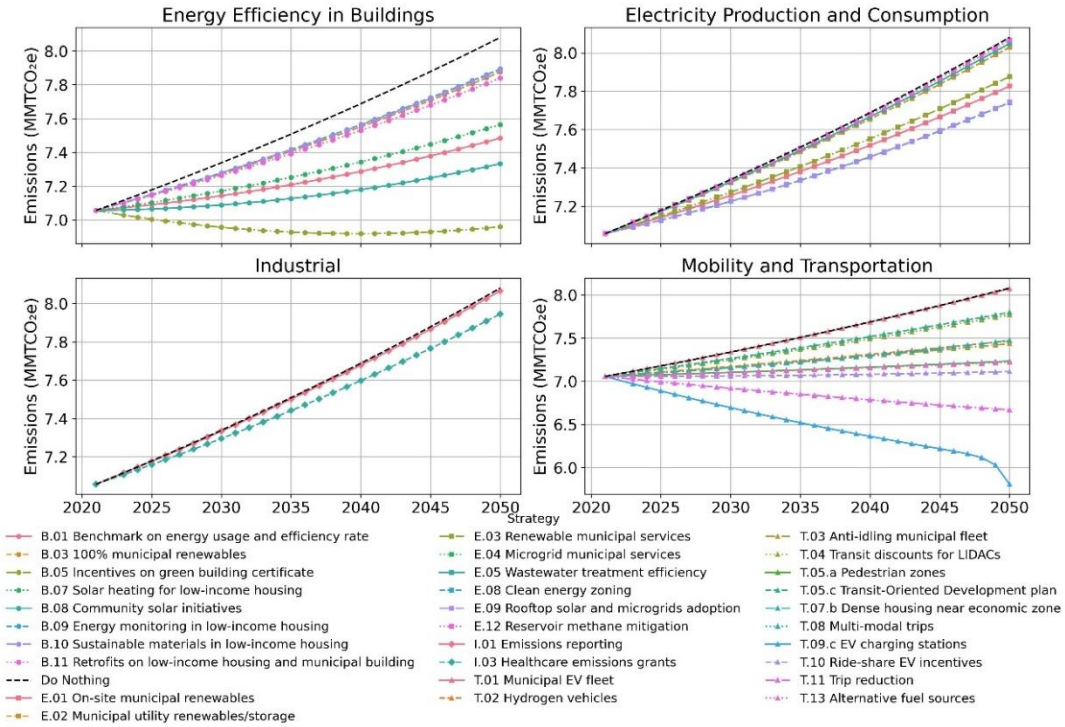


Figure 5-1: Projected emissions trajectory from 2021 to 2050 under the fossil free future scenario*

Note: Black dotted line indicates baseline "Do Nothing

Fossil Free Future Scenario

In a 'Fossil Free Future' the renewable sector grows in the New Haven MSA due to technological advances and investments which lower individual costs. However, individual consumption remains high as do transit disparities between rural and urban areas.

Energy Efficiency in Buildings: Several strategies show optimistic early-state reduction impacts. Specifically, measures such as incentivizing green building certificates (B.05) and initializing community scale solar rooftops (B.08) lead to greatest emissions reductions, followed by using solar for heating energy in low-income housing (B.07) and benchmarking energy usage (B.01). Converting traditional fossil fuel municipal operation into 100% renewables (B.03) and retrofits on low-income housing and municipal building (B.11) also proves effective. The success of those strategies is probably due to the benefits from the combination of localized energy production and efficiency gains. Moreover, with more awareness on energy consumption and behavioral shifts, energy monitoring in low-income housing (B.09) leads to a reduction of 2.5% compared with the Do Nothing scenario in 2050. This result is consistent with that from the ACEEE (Ehrhardt-Martinez & Donnelly, 2010), which highlights the benefits of real-time monitoring and feedback. Similarly, incorporating sustainable materials in low-income housing (B.10) yields comparable reductions. However, both strategies achieve significantly lower emissions savings compared to other measures, indicating that passive approaches or voluntary actions alone may be insufficient without stronger policy mandates or incentives.

Electricity Production and Consumption: Clean energy zoning (E.08) and rooftop solar with microgrid adoption (E.09) stand out as high-impact strategies, reducing emissions by 4.21% and 4.19%. These results reflect broader global trends, as reported by the IEA (2023), which notes that distributed solar systems and local energy storage can displace a significant portion of fossil fuel-based generation if properly scaled (https://www.iea.org/reports/renewables-2023). Additionally, providing more on-site renewable energy resources for municipal buildings, operations and services (E.01 and E.03) also achieve a significant emissions reduction of 3.15% and 2.53%, respectively, from the Do Nothing baseline in 2050. The remaining strategies in this sector are relatively weak in terms of emissions mitigation. Overall, electricity production and consumption strategies provide downstream benefits by enabling the decarbonization of other sectors, such as buildings and transportation.

Industrial: In contrast, this sector shows the lowest average amount of deviation from the Do Nothing baseline in 2050. Strategies such as emissions reporting (I.01) and grants for healthcare-related facilities (I.03) show only negligible reduction impacts. This aligns with the finding from IPCC's AR6 (*Chapter 8: Urban Systems and Other Settlements*, 2022), which points out that industrial decarbonization and emissions mitigation strategies are

some of the most difficult challenges due to process-related emissions and huge reliance on fossil fuels in materials mass-production. The current strategies in the projection appear too narrow in scope and passive to create meaningful changes, which highlights the need for new technologies such as green hydrogen, carbon capture, and low-emission industrial materials. It also speaks to the limits of municipal-level authority when it comes to regulating industry.

Mobility and Transportation: This sector shows large variability among strategies, with a few strategies proving highly effective and others resulting in only modest change. Building EV charging stations (T.09.c) shows the steepest decline in emissions, which indicates that long-term urban planning and behavioral shifts can contribute to substantial change. Electrification strategies, such as municipal EV fleets (T.01) and the expansion of EV charging stations (T.09c), also show gradual but meaningful emissions flattening, aligning with projections from BloombergNEF that predict rapid EV adoption post-2030 (nparker-nasi, 2025). Conversely, the rest of the strategies such as transit-oriented development planning (T.05.c) and transit discount for LIDACs (T.04) et al. have comparatively smaller impacts when implemented. This suggests a need for multimodal and integrated strategies that combine technology shift, infrastructure improvement, and policy change.

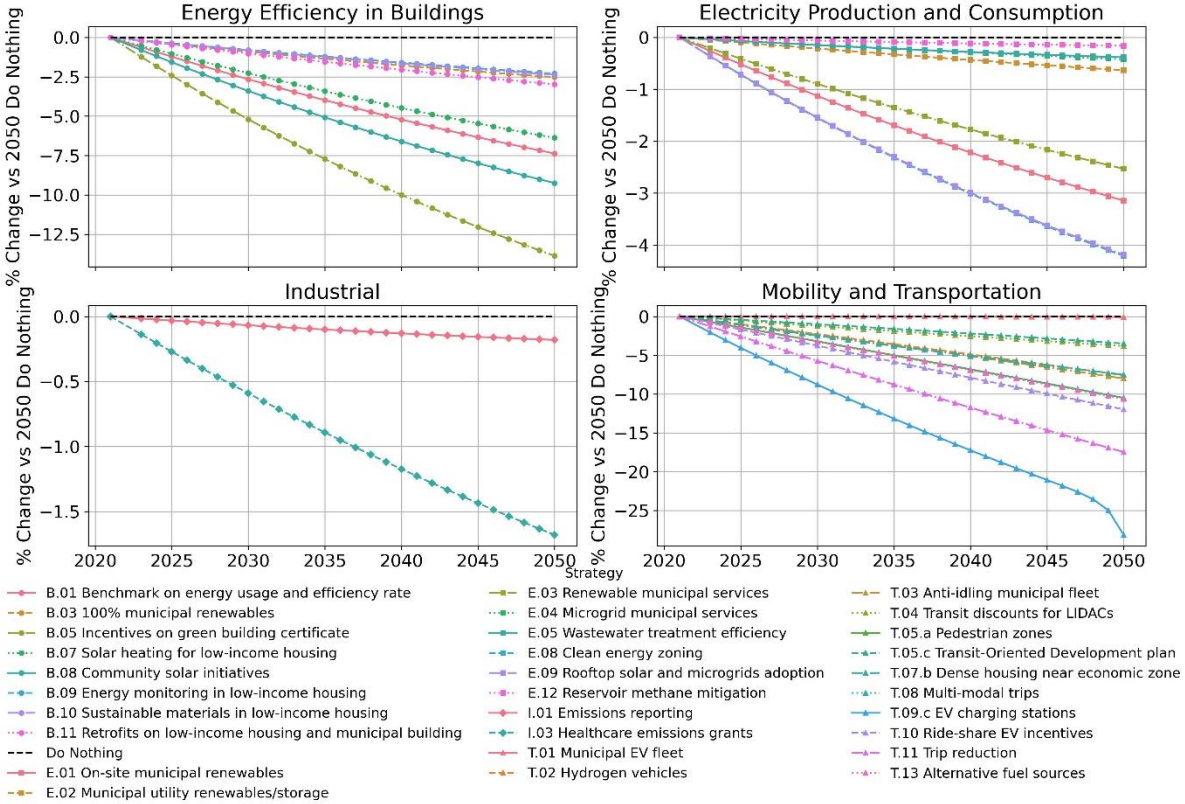


Figure 5-2: Projected percentage of emissions changes relatives to the Do Nothing baseline scenario under the fossil free future scenario

Note: Black dotted line indicates baseline Do Nothing

The Watershed Moment Scenario

In the 'Watershed Moment' scenario, ineffective policy efforts and financial support result in acceleration to a warmer and wetter future. This shift in climate prompts citizens to take individual action by modifying their consumption and living arrangements in ways that begin to address greenhouse gas emissions.

The trends in the Watershed Moment scenario show significantly weaker emissions reductions overall, indicating less aggressive strategies compared to the Fossil Free Future scenario.

Energy Efficiency in Building: There is a slight decline in the reduction of emissions from strategy B.05 Incentives on green building certificates, before rising near 2040. This strategy contributes to the highest reduction among all strategies in this sector. While other strategies result in a similar trend as those in the Fossil Free Future scenario, with a smaller impact in mitigation.

Electricity Production and Consumption: E.09 Rooftop solar and microgrid adoption remains the most effective strategy for emissions reduction, achieving a slight drop until the early 2030s before gradually increasing. This is less impactful than that in the Fossil Free Future scenario, where it maintained nearly flat emissions through 2050. Other strategies such as E.08 Clean energy zoning generate more moderate gains than their previous counterparts. This shows a more constrained version of renewable energy deployment for electricity production and regulation for its consumption.

Industrial: Strategies in this sector once again show very limited emissions mitigation potential, echoing the trend seen in the Fossil Free Future scenario.

Mobility and Transportation: Emissions rise more consistently than in the Fossil Free Future scenario. The most effective measure is still T.09.c, EV charging stations, which again achieves a late but steep drop in emissions beginning around 2045. However, the sharpness and timing of the decline appear slightly less aggressive than in the Fossil Free Future scenario.

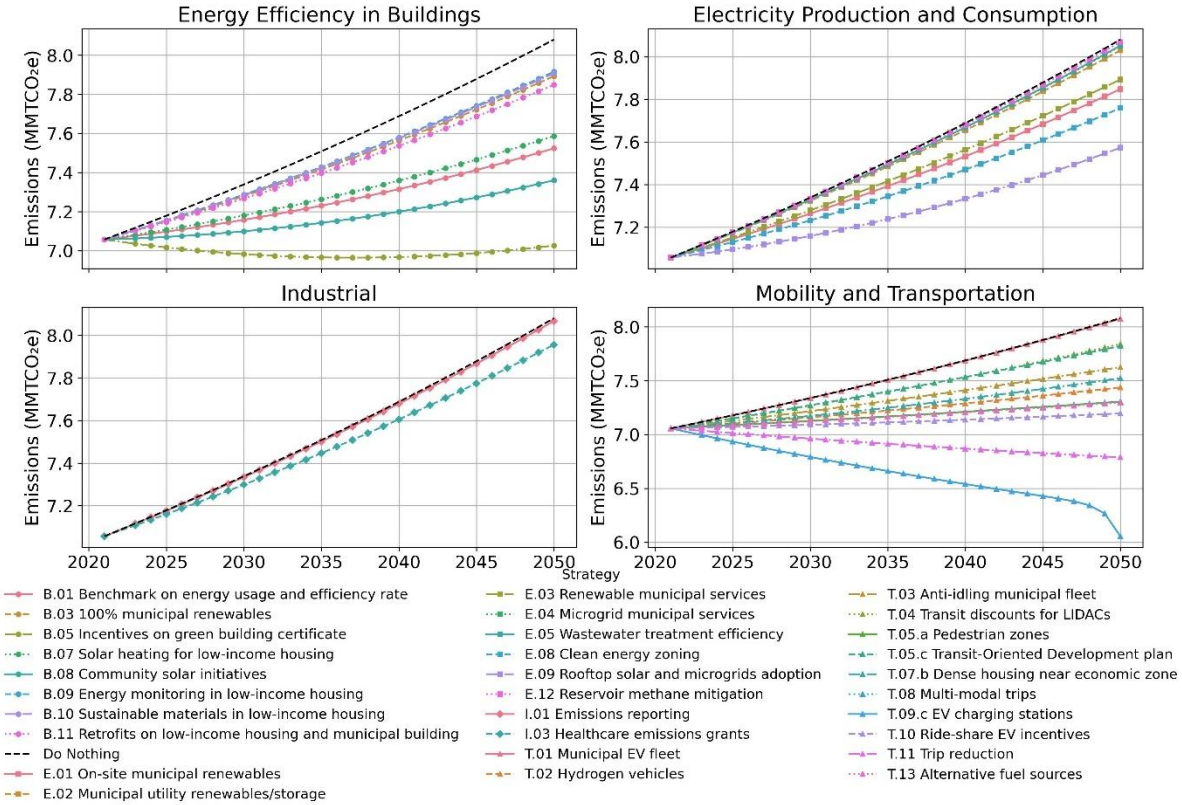


Figure 5-3: Projected emissions trajectory from 2021 to 2050 under the Watershed Moment scenario

Note: Black dotted line indicates baseline Do Nothing

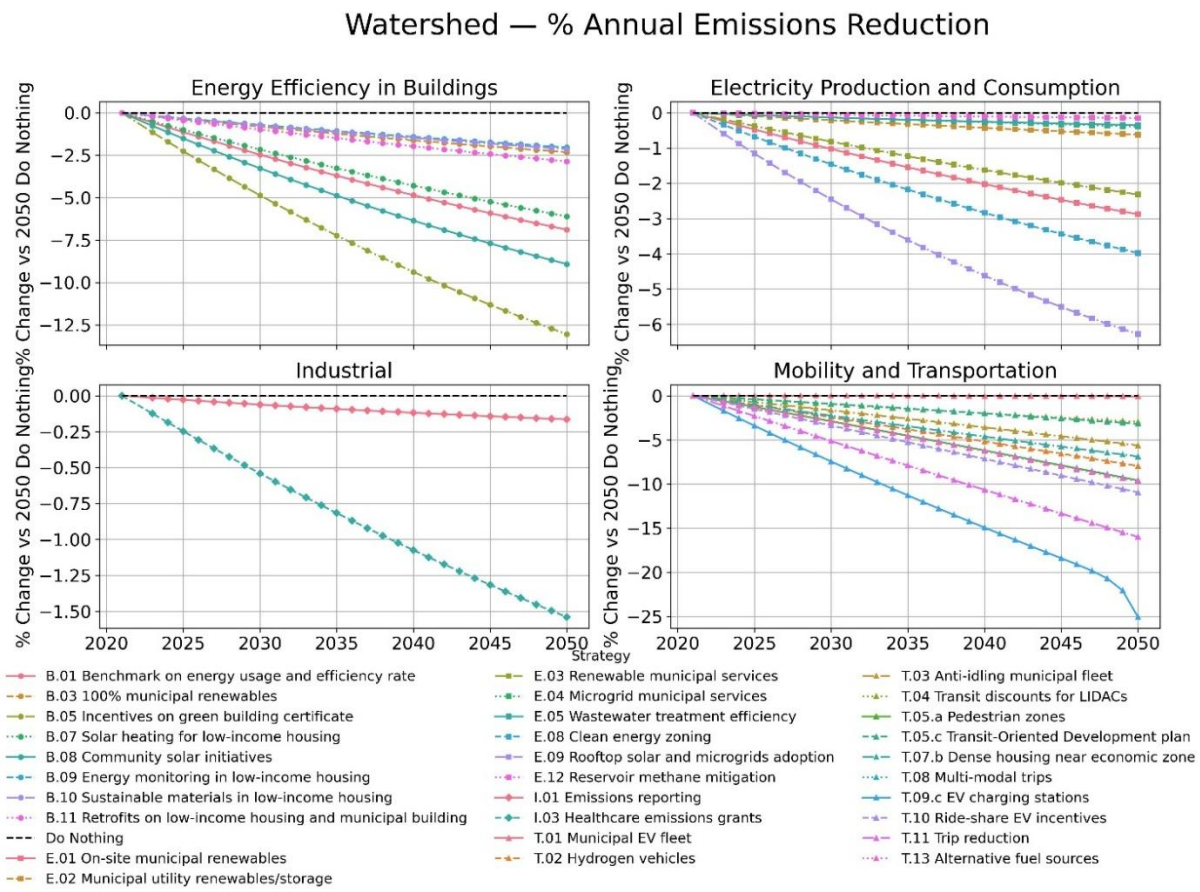


Figure 5-4: Projected percentage of emissions changes relatives to the Do Nothing baseline scenario under the watershed future scenario

Coping with Gridlock Scenario

Under the 'Coping with Gridlock' scenario, Federal and State governments become dysfunctional and unable to pass usable legislation to address climate change. Energy costs increase and the private sector fills some of the funding void as grassroots activism grows. In this scenario, local implementation of strategies becomes more important.

Energy Efficiency in Buildings: All strategies in this sector continue to rise steadily, at different rates; unlike in the Fossil Free Future scenario, where several strategies (B.05 and B.08) show slight declines in emissions. The projected emissions in this sector lack any downward trends but still result in emissions reduction compared with the baseline Do Nothing. This indicates more modest and slower-acting building sector strategies.

Electricity Production and Consumption: Performance is similar compared with the Watershed Moment scenario. This shows that electricity decarbonization is relatively resilient across all contexts, which suggests that there is strong economic momentum behind renewable energy technologies, such as solar photovoltaic, wind, and battery storage. Besides, there are still reduced emissions compared with baseline in year 2050 in this scenario. This is probably because most strategies in this sector such as rooftop solar, microgrid adoption, and clean zoning, are already in progress or supported by governments and companies, creating a path dependency that ensures continued implementation even under political gridlock. This is consistent with the findings that municipalities and states often take the lead in clean electricity deployment amongst the federal systems (Lutsey & Sperling, 2008).

Industrial: This sector once again shows a very limited mitigation impact, which is similar to the trend seen in the other scenarios.

Mobility and Transportation: T.09.c EV charging station remains a significant strategy, creating a sharp decline after 2045, although not as dramatic as the Fossil Free Future scenario, and continues to yield meaningful mitigation results, while other strategies only provide slight reductions. Overall, the transportation sector in this scenario shows a broader spread between high- and low-impact strategies, with continued reliance on long-term planning and technological transformation for meaningful reductions.

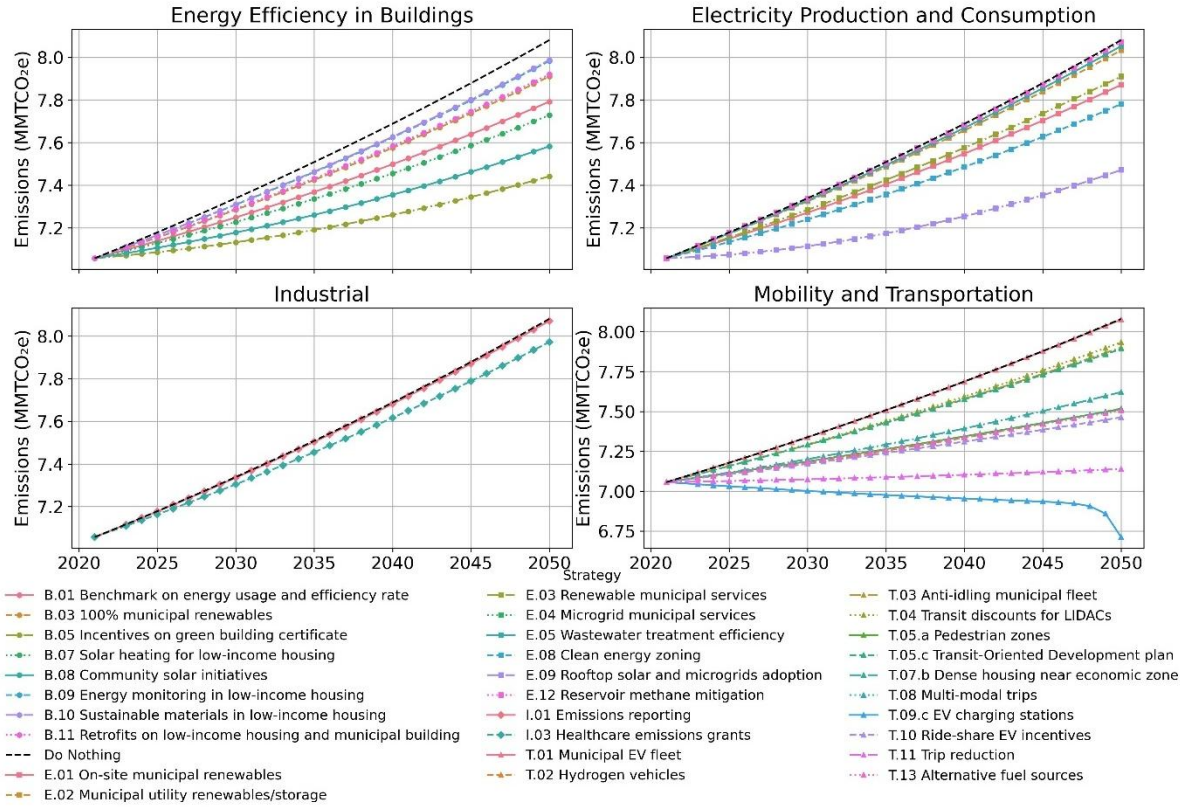


Figure 5-5: Projected emissions trajectory from 2021 to 2050 under the Coping with Gridlock scenario

Note: Black dotted line indicates baseline Do Nothing

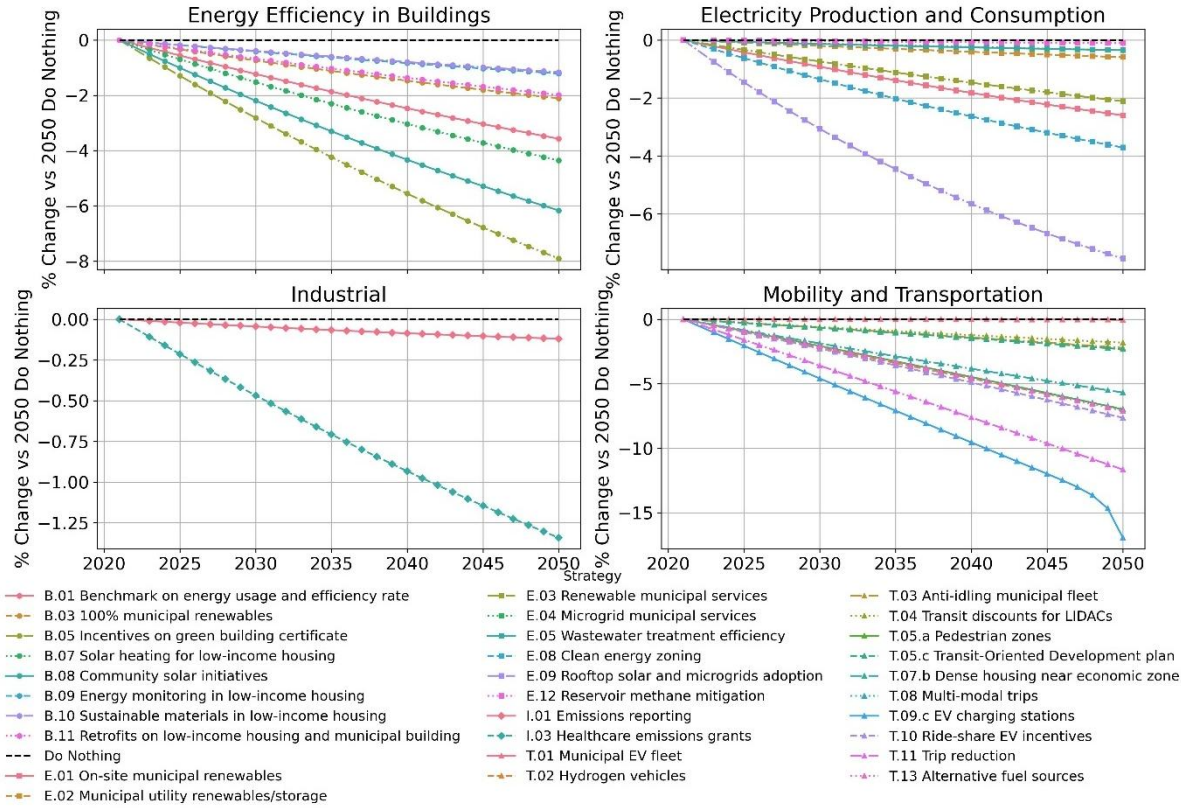


Figure 5-6: Projected percentage of emissions changes relative to the Do Nothing baseline scenario under the Coping with Gridlock scenario

Note: Black dotted line indicates baseline Do Nothing

Overall Summary

Table 5-3: Projected emissions in 2050 and cumulative emissions from 2021 to 2050 ($MMTCO_2e$) and emission change percentage (%) vs Do Nothing scenario 2050

Strategy	Fossil Free Future			The Watershed Moment			Coping with Gridlock		
	E2050	Cumulative E2021 2050	E2050 vs. Do Nothing 2050	E2050	Cumulative E2021-2050	E2050 vs. Do Nothing 2050	E2050	Cumulative E2021-2050	E2050 vs. Do Nothing 2050
	$MMTCO_2e$		%	$MMTCO_2e$		%	$MMTCO_2e$		%
1	7.48	210.01	-7.37	7.52	210.63	-6.89	7.79	214.81	-3.57
2	7.88	216.03	-2.53	7.89	216.30	-2.32	7.91	216.56	-2.11
3	6.96	201.63	-13.87	7.03	202.72	-13.05	7.44	209.40	-7.91
4	7.57	211.29	-6.37	7.59	211.63	-6.11	7.73	213.82	-4.36
5	7.33	207.57	-9.25	7.36	208.01	-8.91	7.58	211.55	-6.17
6	7.89	216.34	-2.30	7.92	216.66	-2.04	7.98	217.68	-1.21

Strategy	Fossil Free Future			The Watershed Moment			Coping with Gridlock		
	E2050	Cumulative E2021 2050	E2050 vs. Do Nothing 2050	E2050	Cumulative E2021-2050	E2050 vs. Do Nothing 2050	E2050	Cumulative E2021-2050	E2050 vs. Do Nothing 2050
	$MMTCO_2e$		%	$MMTCO_2e$		%	$MMTCO_2e$		%
7	7.89	216.25	-2.38	7.91	216.55	-2.14	7.99	217.75	-1.16
8	7.84	215.54	-2.97	7.85	215.68	-2.86	7.92	216.75	-1.99
9	7.83	215.25	-3.15	7.85	215.59	-2.88	7.87	215.95	-2.60
10	8.03	218.38	-0.63	8.03	218.40	-0.62	8.03	218.43	-0.59
11	7.88	216.03	-2.53	7.89	216.30	-2.32	7.91	216.56	-2.11
12	8.05	218.64	-0.42	8.05	218.68	-0.39	8.05	218.72	-0.35
13	8.05	218.65	-0.38	8.05	218.70	-0.35	8.05	218.70	-0.35
14	7.74	213.87	-4.21	7.76	214.17	-3.98	7.78	214.52	-3.71
15	7.74	213.90	-4.19	7.57	211.06	-6.28	7.47	209.26	-7.54
16	8.07	218.94	-0.16	8.07	218.96	-0.15	8.07	219.01	-0.11
17	8.07	218.92	-0.18	8.07	218.94	-0.17	8.07	218.99	-0.12
18	7.94	217.09	-1.68	7.96	217.26	-1.54	7.97	217.51	-1.34
22	8.07	219.09	-0.09	8.07	219.08	-0.08	8.08	219.11	-0.06
23	7.47	210.51	-7.58	7.44	209.99	-7.96	7.52	211.05	-6.95
24	7.43	210.08	-8.00	7.63	212.79	-5.63	7.90	216.64	-2.22
25	7.77	214.66	-3.82	7.84	215.64	-2.97	7.93	216.98	-1.82
26	7.23	207.10	-10.49	7.31	208.19	-9.59	7.52	211.23	-6.99
27	7.80	215.24	-3.49	7.82	215.58	-3.20	7.89	216.55	-2.33
28	7.47	210.22	-7.51	7.52	210.98	-6.89	7.62	212.39	-5.68
29	7.23	207.10	-10.49	7.31	208.19	-9.59	7.52	211.23	-6.99
30	5.81	188.42	-28.14	6.05	192.50	-25.07	6.71	202.02	-16.94
31	7.11	205.22	-11.98	7.20	206.51	-10.95	7.46	210.48	-7.64
32	6.67	198.45	-17.48	6.79	200.37	-16.00	7.14	205.71	-11.65
33	7.22	206.92	-10.63	7.30	208.04	-9.71	7.51	211.10	-7.10

6.0 GHG REDUCTION TARGETS

Connecticut Climate Targets

Under the current law, the State of Connecticut aims to achieve net-zero greenhouse gas emissions by 2050, a target that requires reducing direct emissions by at least 80% from 2001 levels. This includes two interim goals of (1) a reduction of at least 45% from 2001 levels by 2030, and (2) a reduction of 70% from 2016 levels by 2040.

For purposes of this CCAP, New Haven County will adopt the same standards as the State of Connecticut for greenhouse gas reduction targets.

NEW HAVEN COUNTY GHG EMISSIONS TARGETS

By 2030, a reduction of at least 45% from 2001 levels

By 2040, a reduction of at least 70% from 2016 levels

By 2050, a reduction of at least 80% from 2001 levels

This decision takes into account the political reality that most of the measures discussed in this plan are impacted by unilateral state-level actions. As an example, B.10 "Support the adoption of sustainable building materials in low-income housing construction and renovation," depends heavily on what is mandated through the State Building Code. Additionally, nearly all of the measures would benefit from grant funding or technical assistance that could only be effectively deployed by the State.

To achieve these ambitious targets by 2050, an integrated and multimodal approach comprised of strategies across multiple sectors is needed. The following sections describe the development of region-specific GHG reduction pathways for each target scenario.

Emission Outcomes Generation

From the emissions projection model, 16 dimensions of uncertainty were identified, and their upper and lower bounds were determined based on the Do Nothing scenario results for 2050, as shown in **Table 6-1**. Additionally, 16 uncertainty parameters representing the year in which each parameter reaches the value set as its target for 2050 were generated. Using Latin Hypercube sampling, two million states representing different combinations of uncertainties were generated across all dimensions. Each state was then evaluated in the emissions model to produce corresponding emissions futures. The distribution of emissions reduction outcomes across all futures is illustrated in **Figure 6-1** through histograms. As shown in Figure 6-1, the average emissions reduction among all future states (scenarios) is ~65%.

Table 6-1: Lower and Upper Bound for Parameter Changes (lower and upper bounds are represented as proportional change, *Year* = year the target was reached)

Parameter	Lower Bound	Upper Bound
Electricity consumption	-1	0.2
Res. Nat. Gas	-1	0.2
Comm. Emissions	-1	0.2
Ind. Emissions	-1	0.2
Agri. Emissions	-1	0.2
WW Emissions	-1	0.2
Car ICE VMT	-1	0.2
Truck VMT	-1	0.2
Bus VMT	-1	0.2
Car ICE MPG	0	1.5
Truck MPG	0	1.5
Bus MPG	0	1.5
E-Grid emissions factors	-1	0.2
Car Electrification Rate	0	1
Truck Electrification Rate	0	1
Bus Electrification Rate	0	1
Electricity consumption (Year)	2022	2050
Res. Nat. Gas (Year)	2022	2050
Comm. Emissions (Year)	2022	2050
Ind. Emissions (Year)	2022	2050
Agri. Emissions (Year)	2022	2050
WW Emissions (Year)	2022	2050
Car ICE VMT (Year)	2022	2050
Truck VMT (Year)	2022	2050
Bus VMT (Year)	2022	2050
Car ICE MPG (Year)	2022	2050
Truck MPG (Year)	2022	2050
Bus MPG (Year)	2022	2050
E-Grid emissions factors (Year)	2022	2050
Car Electrification Rate (Year)	2022	2050
Truck Electrification Rate (Year)	2022	2050
Bus Electrification Rate (Year)	2022	2050

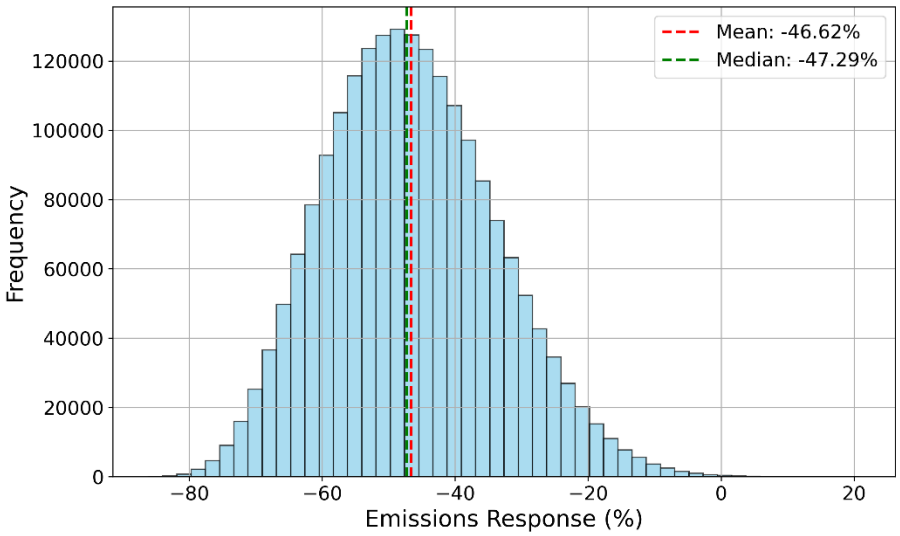


Figure 6-1: Histogram of Emissions Reduction (%) for all generated future emissions (scenarios)

Decarbonization Pathways Discovery

A Gaussian Mixture Model (GMM) clustering algorithm was then applied to all future emissions outcomes, grouping them based on two key metrics: Emissions Percentage Change in 2050 relative to 2021, and Cumulative Emissions Percentage Change of Yearly Emissions vs Do Nothing. Four clusters were obtained after comparing the performance metrics through Akaike Information Criterion, Bayesian Information Criterion, and Log-likelihood. The projected emissions trajectories for all future outcomes (grouped into four different cluster types) from 2022 to 2050 are shown in **Figure 6-2**.

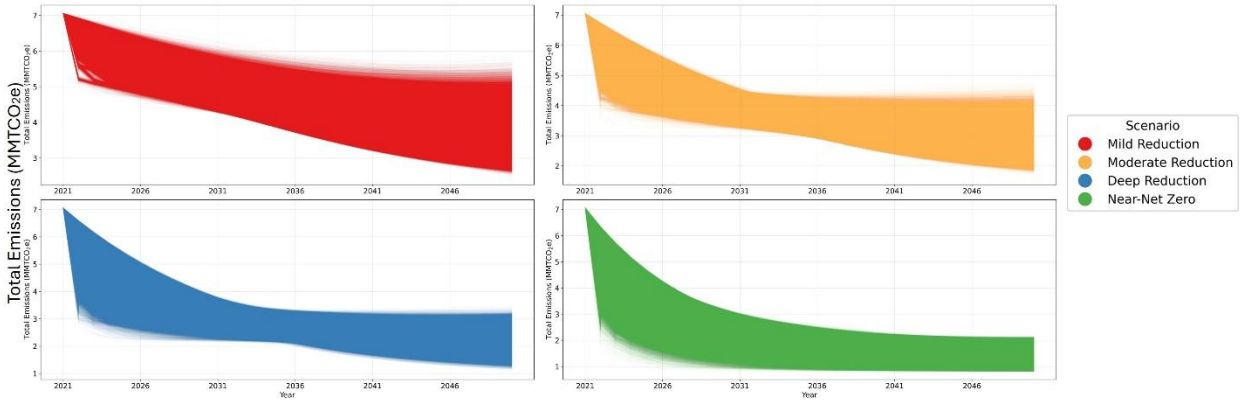


Figure 6-2: Scatter plot of all future states grouped into four data-driven scenarios by GMM model.

The scatter plot of all future states, grouped into four cluster types (data-driven scenarios), is shown in **Figure 6-3**. This plot illustrates the long-term effectiveness of different climate mitigation strategies by comparing their percentage change in emissions between 2050 and 2021, and the cumulative emissions percentage change against the Do Nothing baseline. There is a clear correlation between the aggressiveness of the reduction strategies and the total emissions reduction achieved. The Mild Reduction has only a minimal influence, while the Near-Net Zero pathways result in the most significant reduction from the Do Nothing baseline.

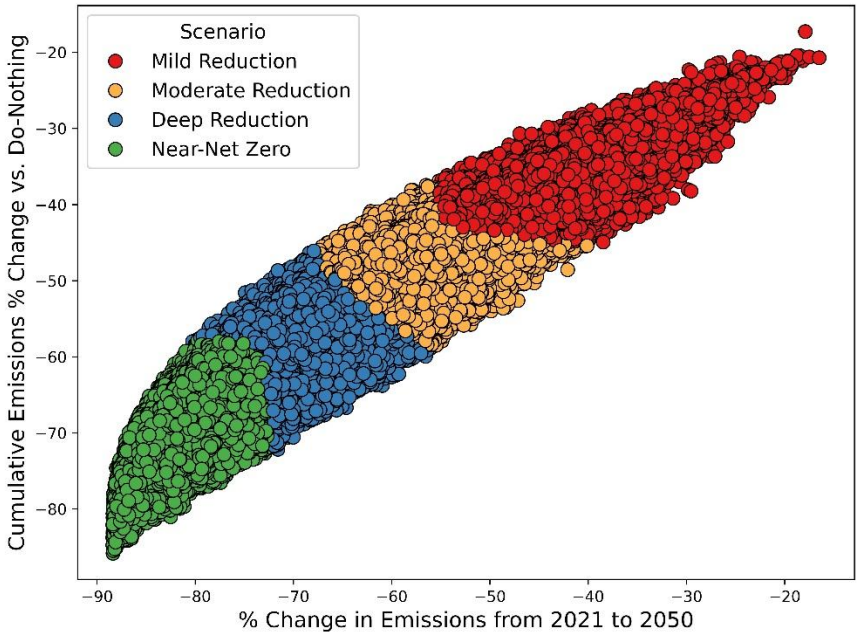


Figure 6-3: Scatter plot of all future states grouped into four data-driven scenarios by GMM model.

Figure 6-4 compares those four data-driven scenarios across key emissions metrics: Total Emissions ($MMTCO_2e$), Cumulative Yearly Emissions ($MMTCO_2e$), Emissions Percentage Change in 2050 relative to 2021, and Cumulative Emissions Percentage Change of Yearly Emissions vs Do Nothing. The results show a clear trend: Mild Reduction presents the smallest change from the baseline, while Near-Net Zero represents the most significant departure, highlighting the impact that aggressive action can have on reducing long-term cumulative emissions.

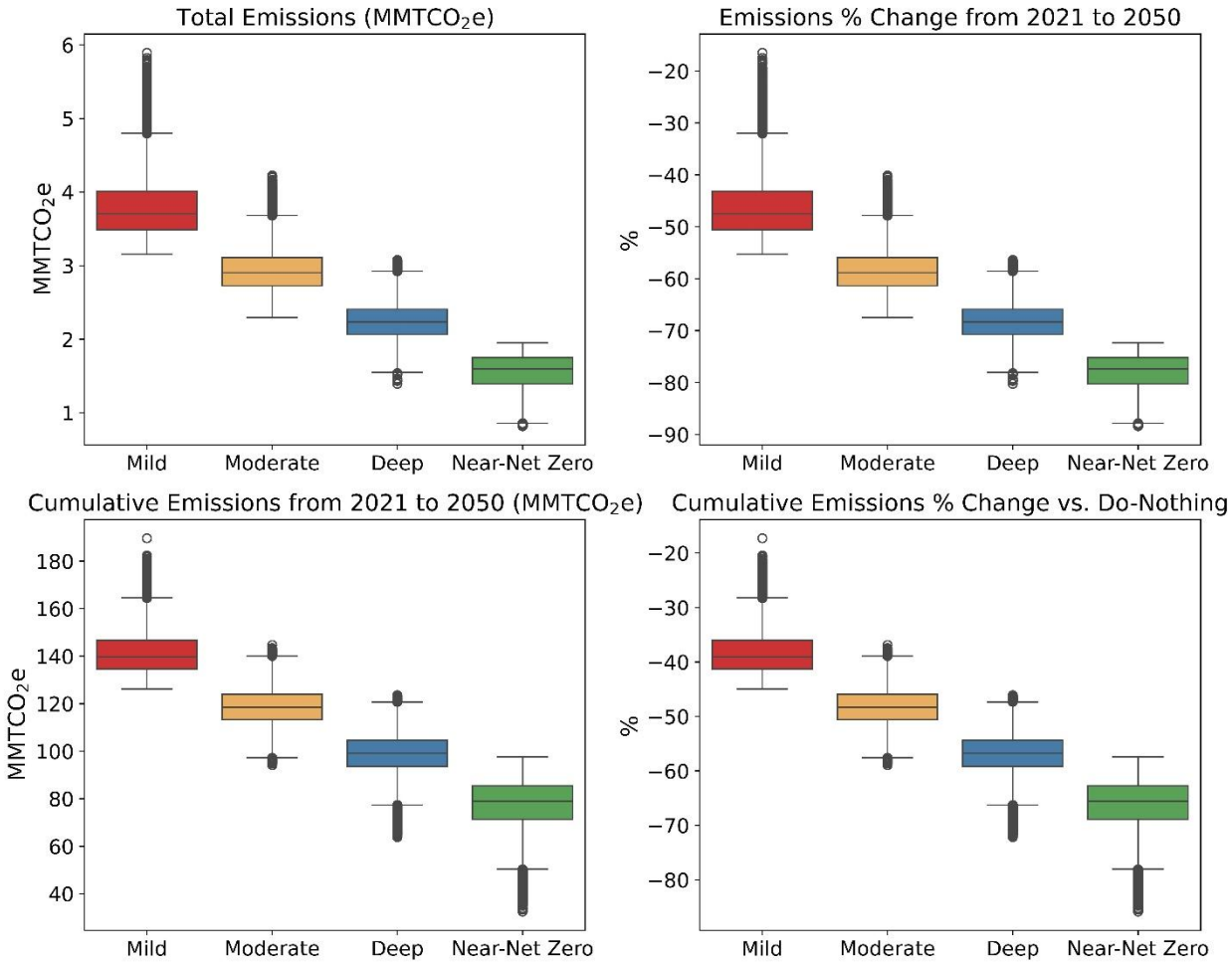
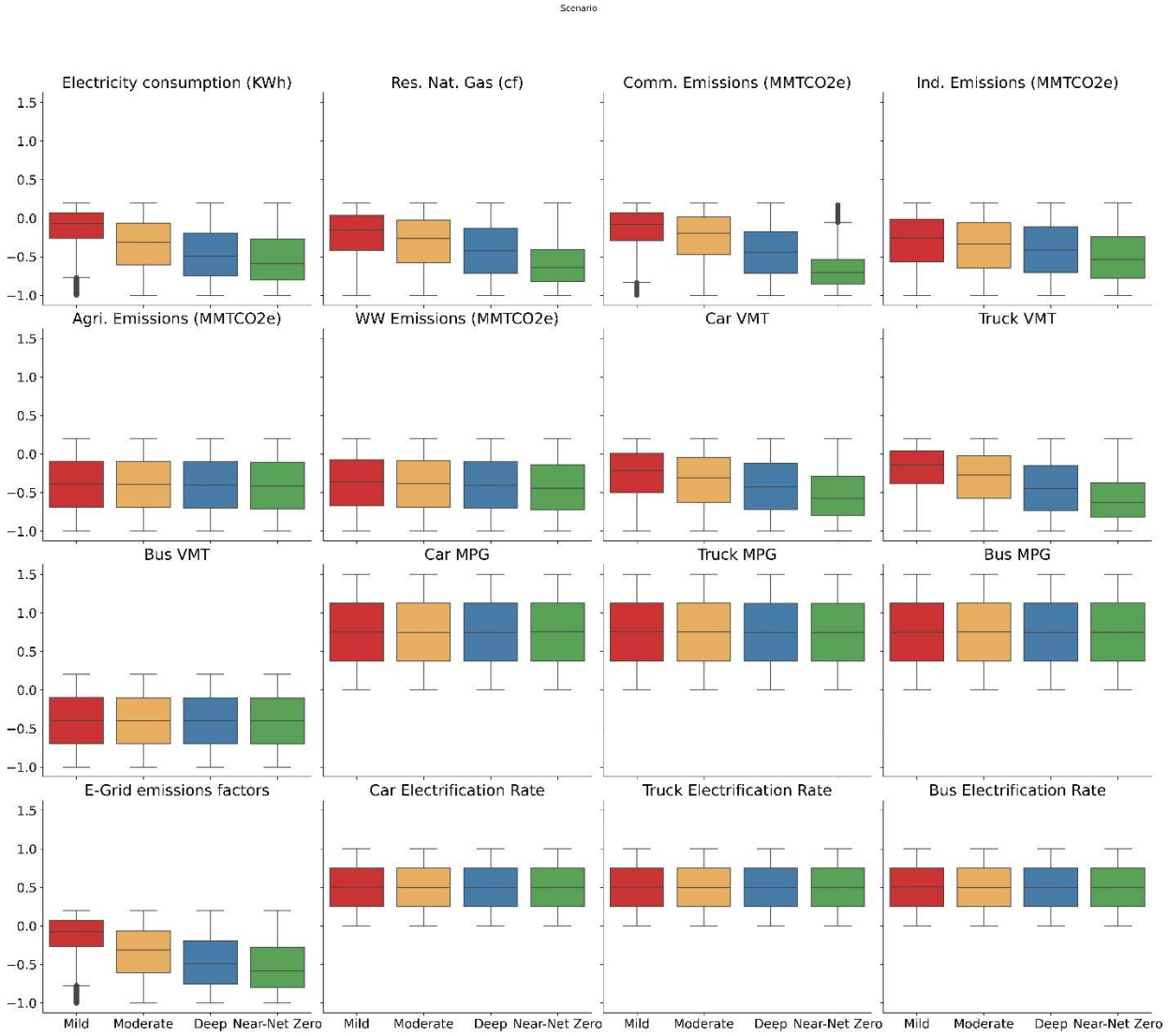


Figure 6-4. Bar plot of each emissions metrics by four data-driven scenarios (*Mild Reduction*, *Moderate Reduction*, *Deep Reduction*, and *Near-Net Zero*).

Figure 6-5 shows bar plots of activity parameters and their target years (32 in total) across four different data-driven scenario types. This illustrates how activity parameters differ across scenarios. For example, Near-Net Zero cases are characterized by stronger reductions in sectoral emissions (industrial, commercial), lower residential gas consumption, lower vehicle miles travel (VMT), and cleaner electricity grids relative to the Mild and Moderate Reduction. Additionally, the timing of these transitions also differs among different scenarios. Near-Net Zero generally require earlier action across sectors, with significant shifts in residential natural gas consumption, commercial and industrial emissions, as well as truck and car VMT reduction occurring closer to 2030–2035. In contrast, Mild Reduction pathways show the most changes in later decades, often closer to 2035–2040. The distribution of the timing further emphasizes that both pace and scale of the activity parameters change differentiate the four data-driven scenarios.


Scenario
Electricity consumption (KWh)
Res. Nat. Gas (cf)
Comm. Emissions (MMTCO2e)
Ind. Emissions (MMTCO2e)
Agri. Emissions (MMTCO2e)
WW Emissions (MMTCO2e)
Car VMT
Truck VMT
Bus VMT
Car MPG
Truck MPG
Bus MPG
E-Grid emissions factors
Car Electrification Rate
Truck Electrification Rate
Bus Electrification Rate
1.5
1.0
0.5
0.0
−0.5
−1.0
Mild
Moderate
Deep
Near-Net Zero

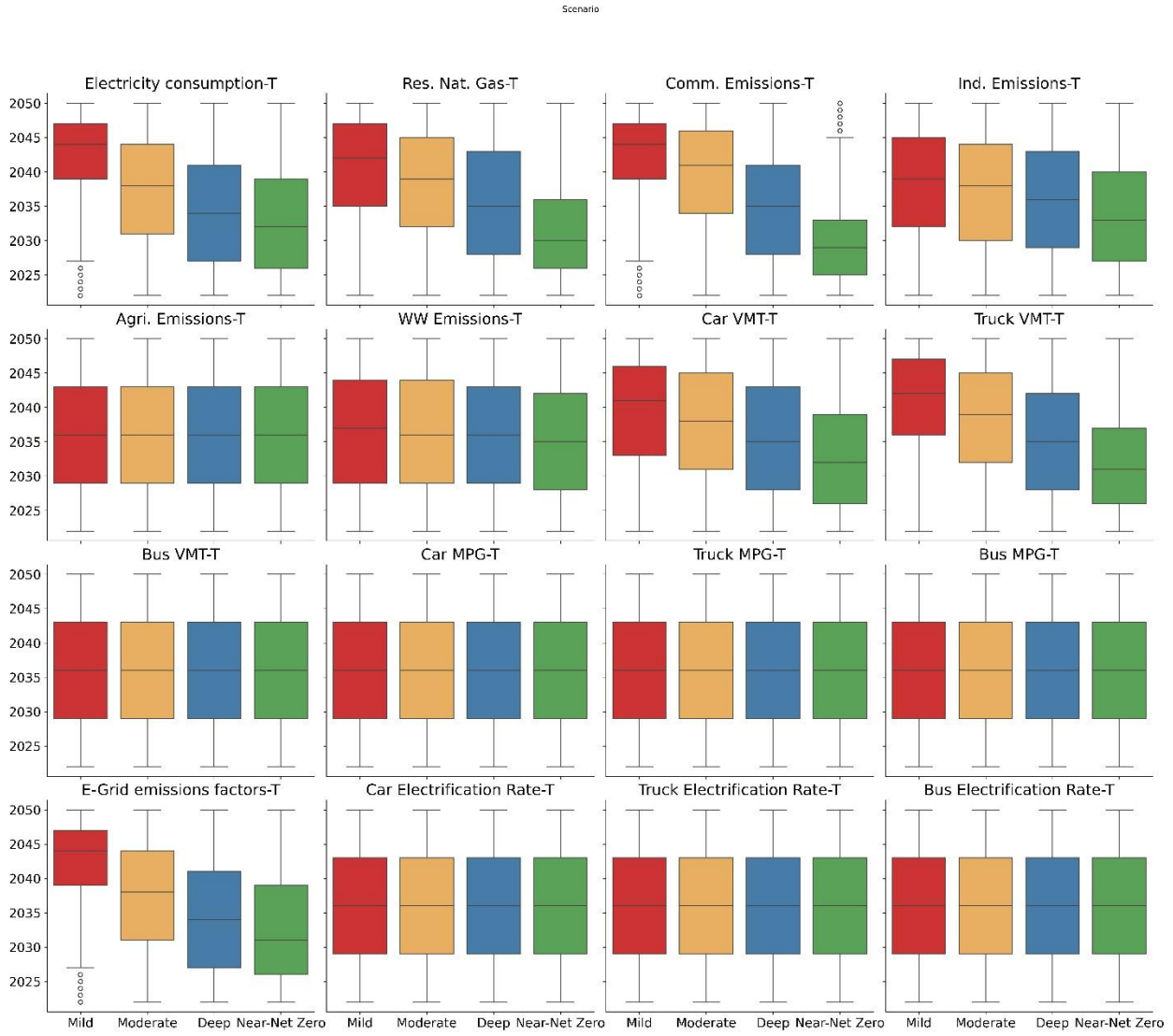


Figure 6-5. Bar plot of each activity parameter and its target year (τ) for four data-driven scenario types.

In **Figure 6-6**, the decarbonization pathways comprising multi-sectoral contributions are shown across four data-driven scenario types. The left panel shows the relative influence of each activity parameter on emissions outcomes across scenarios, highlighting which factors drive reductions (negative values) or increases (positive values). For example, higher electrification rates, improved fuel economy (MPG), reduced truck VMT, and commercial emissions as well as e-Grid emissions factors are strongly associated with Deep Reduction and Near-Net Zero. The right panel displays the timing of parameter changes hitting the target value set in 2050, indicating when each factor becomes significant within the different scenario. Near-Net Zero requires earlier and more aggressive transformations across most sectors, particularly in transportation electrification, industrial emissions, and e-Grid decarbonization. In contrast, Mild Reduction reflects delayed or less ambitious changes, with relatively modest parameter shifts by mid-century. **Table 6-2** shows the mean value for each

activity parameter by scenario type. The results illustrate that a successful decarbonization pathway requires not only sector-specific action but also cross-cutting coordination, investment, and equity-focused implementation.

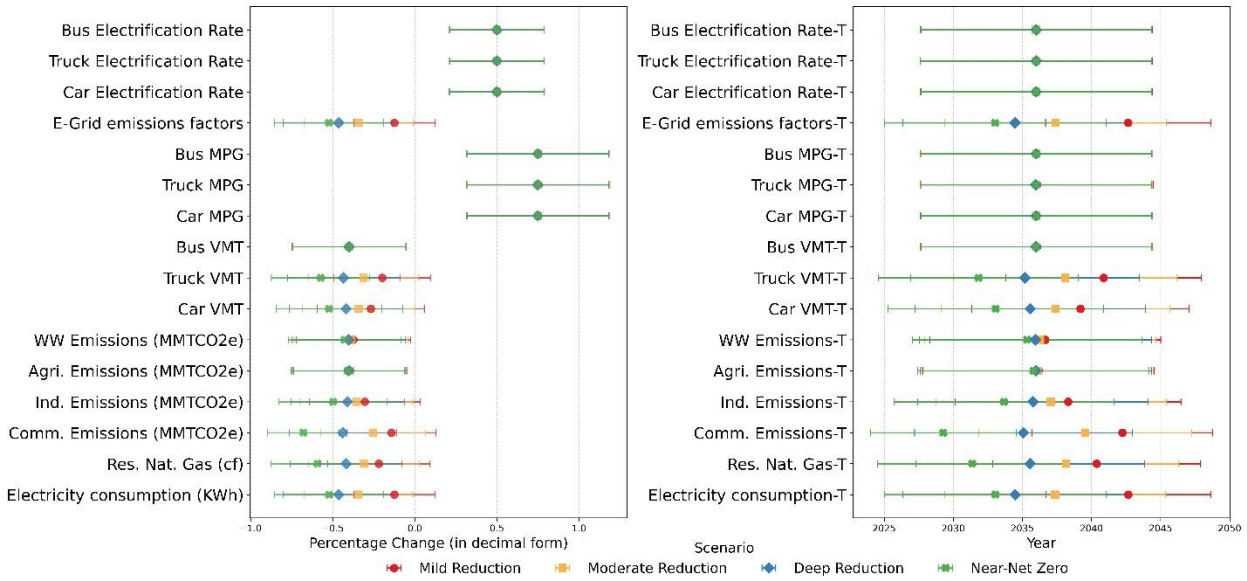


Figure 6-6. The decarbonization pathways (the numbers indicate the average value and standard deviation of each activity parameter in this pathway.)

Table 6-2: The average activity target for each data-driven scenario (activity targets are represented as proportional change, *Year* = year the target was reached)

Cluster	Mild Reduction	Moderate Reduction	Deep Reduction	Near-Net Zero
Electricity consumption	-0.12	-0.34	-0.46	-0.52
Res. Nat. Gas	-0.22	-0.31	-0.42	-0.59
Comm. Emissions	-0.14	-0.25	-0.44	-0.68
Ind. Emissions	-0.30	-0.36	-0.41	-0.50
Agri. Emissions	-0.39	-0.40	-0.40	-0.41
WW Emissions	-0.37	-0.39	-0.40	-0.43
Car VMT	-0.27	-0.34	-0.42	-0.52
Truck VMT	-0.20	-0.31	-0.43	-0.57
Bus VMT	-0.40	-0.40	-0.40	-0.40
Car MPG	0.75	0.75	0.75	0.75
Truck MPG	0.75	0.75	0.75	0.75

Cluster	Mild Reduction	Moderate Reduction	Deep Reduction	Near-Net Zero
Bus MPG	0.75	0.75	0.75	0.75
E-Grid emissions factors	-0.12	-0.34	-0.46	-0.52
Car Electrification Rate	0.50	0.50	0.50	0.50
Truck Electrification Rate	0.50	0.50	0.50	0.50
Bus Electrification Rate	0.50	0.50	0.50	0.50
Electricity Consumption-T (Year)	2043	2037	2034	2033
Res. Nat. Gas-T (Year)	2040	2038	2036	2031
Comm. Emissions-T (Year)	2042	2040	2035	2029
Ind. Emissions-T (Year)	2038	2037	2036	2034
Agri. Emissions-T (Year)	2036	2036	2036	2036
WW Emissions-T (Year)	2037	2036	2036	2035
Car VMT-T (Year)	2039	2037	2036	2033
Truck VMT-T (Year)	2041	2038	2035	2032
Bus VMT-T (Year)	2036	2036	2036	2036
Car MPG-T (Year)	2036	2036	2036	2036
Truck MPG-T (Year)	2036	2036	2036	2036
Bus MPG-T (Year)	2036	2036	2036	2036
E-Grid emissions factors-T (Year)	2043	2037	2034	2033
Car Electrification Rate-T (Year)	2036	2036	2036	2036
Truck Electrification Rate-T (Year)	2036	2036	2036	2036
Bus Electrification Rate-T (Year)	2036	2036	2036	2036

Main Parameters behind Emissions Change

Using 32 activity parameters and their target year (shown in Table 6-1) as input, an Extreme Gradient Boosting (XGBoost) model was fitted to predict and explain emissions reduction outcomes

In this case, the target variable was emissions percentage change in 2050 relative to 2021. The relevant indicators for predicting emissions reduction were analyzed using the SHapley Additive exPlanations (SHAP) framework, which measures the influence of a feature on the model outcome for each individual data point. As shown in **Figure 6-7**, each point on the plot represents the SHAP value for a specific instance, indicating how much that feature pushes the prediction up or down. The color gradient from blue to pink encodes the feature values, with higher values generally having a more significant positive impact on the model's output. The SHAP plot (Figure 6-7 A) shows that commercial emissions, industrial emissions, and residential natural gas consumption are the most influential drivers for emissions reduction for all future emissions states. SHAP values were plotted by each data-driven scenario to investigate if there were any differences in the ranking of the activity parameters among the top five in each type (as shown in Figure 6-7 B to E). Overall, all five top activity parameters are consistent across scenario types, with only minor differences in their ranking.

If the changes in activity parameters cannot be implemented simultaneously due to budget constraints, the results suggest prioritizing reducing truck VMT in the Near-Net Zero, Deep and Moderate Reduction, as truck VMT is the dominant emissions drivers (exacerbating). However, for the Mild Reduction, the E-Grid emissions factor plays the most significant role. Meanwhile, commercial emissions and E-Grid emission factors are among the largest contributors to Near-Net Zero and Deep Reduction, indicating the importance of targeted energy management and low-carbon electricity sources.

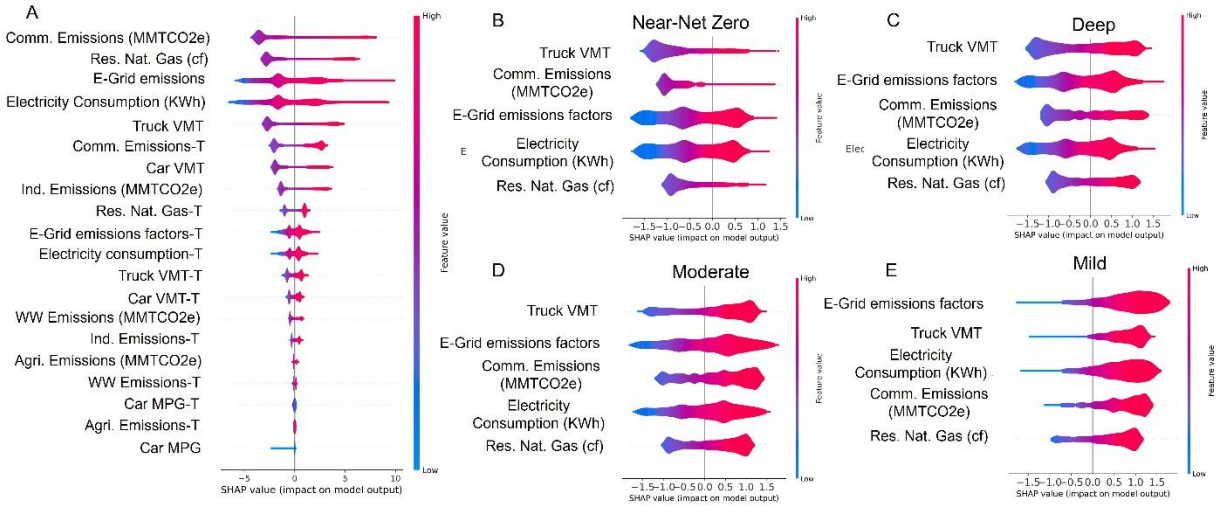


Figure 6-7. Indicators relevant to emission percentage change prediction ranked based on SHAP values from most to least important: (A) violin plots of the top 20 indicators across all future states and data-driven scenario types; (B)–(E) violin plots of the top 5 indicators for each data-driven scenario.

BENEFITS ANALYSIS

7.0 BENEFITS ANALYSIS

As part of the Environmental Protection Agency's (EPA) requirements for the Climate Pollution Reduction Grant (CPRG), the CCAP must include an analysis of co-pollutants, as well as community benefits and disbenefits.

Co-pollutants are air pollutants that are often emitted alongside greenhouse gases (GHGs) and are harmful to human health and the environment. Co-pollutants include Criteria Air Pollutants (CAPs) and Hazardous Air Pollutants (HAPs). Both CAPs and HAPs are regulatorily defined by the EPA. CAPs include ozone (O3), particulate matter (PM), carbon monoxide (CO), lead (PB), sulfur dioxide (SO2), and nitrogen dioxide (NO2). HAPs include 188 chemicals. Examples of HAPs include benzene, perchloroethylene, methylene chloride, dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

Reduction measures, which focus on reducing GHG emissions, often also reduce co-pollutants. However, there are some unique circumstances where co-pollutants can increase while GHG emissions decrease. The following sections will establish a baseline estimate of co-pollutants, project emissions based on planned reduction measures, and quantitatively and qualitatively describe the benefits and disbenefits of reduction measure implementation, along with tracking metrics and a methodology for measuring benefits.

Preliminary Base Year Estimate of Co-Pollutants

While 2021 was selected as the baseline year to align with the GHG inventory, co-pollutant estimates are from the EPA's 2020 National Emissions Inventory (NEI), the most complete dataset currently available. This approach ensures the use of the best available data, and the one-year difference is not expected to significantly affect analysis outcomes.

Table 7-1 and Table 7-2 outline the baseline emissions for CAPs and HAPs in New Haven County.

Table 7-1: 2020 CAPs Emissions

Chemical Name	Abbreviated Name	Emissions (Tons)
Ammonia	NH_3	839.2
Carbon Monoxide	CO	60,459.6
Nitrogen Oxides	NO_X	7,638.8
PM Condensable	PM-CON	763.1
PM2.5 Filterable	PM2.5-FIL	1,457.1
PM2.5 Primary	PM2.5-PRI	2,488.5
PM10 Filterable	PM10-FIL	3,595.5
PM10 Primary	PM10-PRI	4,890.7
Sulfur Dioxide	SO_2	89.0
Volatile Organic Compounds	VOC	17,978.1
Total Emissions		**73,646.3**

Table 7-2: 2020 HAPs Emissions

Chemical Name	Emissions (Tons)
1- Methylnaphthalene	0.619
1-Methylpehnanthrene	0.130
1,1,2-Trichloroethane	0.000
1,1,2,2-Tetrachloroethane	0.000
1,2,4-Trichlorobenzene	0.00160
1,3-Butadiene	22.850
1,3-Dichloropropene	0.000
1,4-Dichlorobenzene	0.00363
2-Methylanpthalene	0.878
2-Methylphenanthrene	0.109
2,2,4-Trimethylpentane	172.147
2,4-Dichlorophenoxy Acetic Acid	0.0308
2,4-Dinitrtoluene	0.000890
2,4-Toulene Diisocyanate	0.13935
3-Methylcholanthrene	0.000
7,12-Dimethylbenze[a]Anthracene	0.000
Acenaphthene	0.275
Acenaphthylene	1.575

Chemical Name	Emissions (Tons)
Acetaldehyde	207.838
Acetamide	0.294
Acetonitrile	0.0543
Acetophenone	0.228
Acrolein	7.580
Acrylamide	0.000
Acrylic Acid	0.294
Acrylonitrile	0.373
Allyl Chloride	0.00036
Anthracene	0.309
Antimony	0.00312
Arsenic	0.0562
Benz[a]Anthracene	0.0599
Benzene	114.262
Benzo[a]Fluoranthene	0.00778
Benzo(c)phenanthrene	0.000690
Benzo(g,h,i)Fluoranthene	0.00417
Benzo[a]Pyrene	0.119
Benzo[b]Fluoranthene	0.0480
Benzo[e]Pyrene	0.0139
Benzo[g,h,i]Perylene	0.144
Benzo[k]Fluoranthene	0.0452
Benzofluoranthenes	0.000910
Beryllium	0.0195
Biphenyl	0.00139
Bis(2-Ethylhex)Phthalate	0.000
Cadmium	0.0224
Captan	0.185
Carbaryl	0.0101
Carbon Disulfide	0.0931
Carbon Tetrachloride	0.0207
Catechol	18.222
Chlorine	0.000

Chemical Name	Emissions (Tons)
Chlorobenzene	0.00891
Chloroform	0.1290
Chloroprene	0.000440
Chromium (VI)	0.00322
Chromium III	0.0164
Chrysene	0.0509
Cobalt	0.000
Cresol/Cresylic Acid	27.427
Cumene	0.478
Dibenzo(a,h)Anthracene	0.00118
Dibutyl Phthalate	46.689
Diethanolamine	2.337
Dimethyl Phthalate	0.0352
Ethyl Acrylate	0.000
Ethyl Benzene	82.359
Ethyl Chloride	0.0121
Ethylene Dibromide	0.000
Ethylene Dichloride	0.378
Ethylene Glycol	201.517
Ethylene Oxide	0.00410
Ethylidene Dichloride	0.000
Fluoranthene	0.368
Fluorene	0.550
Formaldehyde	220.442
Glycol Ethers	40.683
Hexane	108.923
Hydrochloric Acid	0.901
Hydrogen Fluoride	0.00217
Hydroquinone	1.005
Indenol[1,2,3-c,d]Pyrene	0.0620
m-Xylene	21.084
Maleic Anhydride	0.000
Manganese	0.135

Chemical Name	Emissions (Tons)
Mercury	0.0344
Methanol	380.803
Methyl Chloride	0.0265
Methyl Chloroform	1.337
Methyl Isobutyl Ketone	7.980
Methyl Methacrylate	0.703
Methyl Tert-Butyl Ether	0.00118
Methylanthracene	0.00146
Methylbenzopyrene	0.00053
Methylene Chloride	7.532
N,N-Dimethylaniline	0.00594
Naphthalene	19.746
Nickel	0.336
o-Cresol	0.246
o-Xylene	22.171
p-Dioxane	0.00033
p-Xylene	6.592
PAH, total	0.000
PAH/POM – Unspecified	0.000
Perylene	0.00338
Phenanthrene	1.623
Phenol	30.800
Phenyl Cellosolve	2.206
Phosphorus	0.000
Phthalic Anhydride	0.327
Polychlorinated Biphenyls	0.000
Polycyclic aromatic compounds	14.485
Propionaldehyde	24.754
Propylene Dichloride	0.000
Propylene Oxide	0.135
Pyrene	0.335
Selenium	0.0995
Styrene	30.475

Chemical Name	Emissions (Tons)
Tetrachloroethylene	4.519
Toluene	555.037
Trichloroethylene	1.373
Triethylamine	0.200
Vinyl Acetate	1.002
Vinyl Chloride	0.366
Vinylidene Chloride	0.00781
Xylenes (Mixed Isomers)	315.535
Total Emissions	**3,510.530**

Co-Pollutant Emission Projections

The following sections are evaluations of co-pollutant emissions. Each co-pollutant evaluation will be projected out to 2050. The implemented actions follow three different scenarios: Fossil Free Future, The Watershed Moment, and Coping with Gridlock. Each scenario represents no fossil fuels, an even split of fossil fuels and renewables, and limited renewables, respectively. NEI CAP projections were utilized to determine business-as-usual (BAU) conditions. Because NEI emissions only project out to the year 2038, estimations for 2050 were determined by identifying reduction trends and forecasting to 2050.

For the three different scenarios, percent reductions derived from each strategy were utilized and applied to the baseline figures for 2021. The AVoided Emissions and geneRation Tool (AVERT), developed by the EPA, was utilized for estimating NOx, PM2.5, SO2, and VOCs. While not all CAPs and HAPs are estimated, the air pollutants calculated are the primary chemicals associated with respiratory illness and disease and will therefore provide the most insight into co-benefits.

Table 7-3: Co-Pollutant 2050 Scenarios

Emission	2050 Fossil Free Future (Tons)	2050 The Watershed Moment (Tons)	2050 Coping with Gridlock (Tons)
NO_X	-64	-19	-1
$PM_{2.5}$	-15	-3	-1
SO_2	-6	-4	-15
VOCs	-131	-25	-0.2
NH_3	-46	-8	-0.3
Total	**-262**	**-59**	**-17.5**

COMMUNITY BENEFITS AND DISBENEFITS FROM REDUCTION MEASURES

Along with changes in co-pollutants, implemented actions may also have broader community impacts. The community benefits and disbenefits are delineated by sector and action and have been evaluated qualitatively through a causal analysis and quantitatively through the EPA's Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA). The qualitative benefits will remain the same for all three scenarios; however, the quantitative benefits will vary in magnitude based on the co-pollutant emission reductions.

Quantitative Benefits

Table 7-4: COBRA Results

Metric	Fossil Free Future (Annual Reductions)	The Watershed Moment (Annual Reductions)	Coping with Gridlock (Annual Reductions)
Mortality Reduction	0.135	0.0455	0.0075
Hospital Admittance Reduction	0.0098	0.0032	0.00048
Asthma Onset Reduction	0.37	0.11	0.013
Asthma Symptoms	60	19	2.3
Reduction of School Loss Days	21	5.9	0.27
Reduction of Work Loss Days	8	2.8	0.58
Total Monetary Value of benefits	**$2,100,000**	**$690,000**	**$113,500**

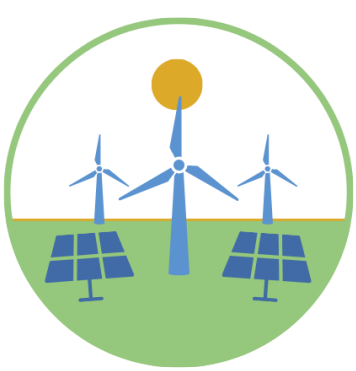
The COBRA analysis reveals that targeted emission reduction strategies in the county can offer more than just climate benefits. The GHG reductions can generate measurable improvements in public health and economic productivity. Across the three modeled scenarios, health outcomes improve.

While the modest numbers may seem inconsequential, they carry significant weight at the local scale. For example, the 0.135 avoided premature deaths per year under the Fossil Free Future scenario translates to approximately one fewer death every ten years. While that may appear minor in absolute terms, each premature death saved represents a family spared from loss and a community spared the ripple effects of a life taken too soon. Over the course of a decade, this impact compounds, potentially saving several lives while also improving overall population health conditions.

Asthma-related benefits are also significant in the county. Reductions in asthma onset and asthma symptoms could ease the health burden of dozens of families. Reducing asthma symptoms can lead to fewer hospital admissions, fewer days missed at school and work, and an improved quality of life for both children and adults who enjoy being active and spending time outdoors.

Economically, these benefits are far from negligible. The $113,500 to $2.1 million in annual monetary value associated with the three scenarios reflects not only healthcare savings, but also preserved productivity, improved attendance in schools and workplaces, and reduced economic losses due to illness and death. This demonstrates that any movement toward cleaner air and lower emissions pays off, both literally and figuratively.

TOTAL MONETARY VALUE OF BENEFITS



Fossil Free Future

$2,100,000

Coping with Gridlock

$690,000

The Watershed Moment

$113,500

The COBRA results indicate that emissions reduction strategies are a high-return investment in public health and equity. They support the county's climate goals, as well as its broader commitments to community well-being, resilience, and environmental justice.

Qualitative Benefits

Energy Efficiency in Buildings

Actions for Energy Efficiency in Buildings include Building Benchmarking, Green Building Incentives, Solar Heating for Low-Income Housing, Solar Heating for Community Initiatives, Energy Monitoring and Management for Low-Income Housing, Sustainable Building Materials, and City-Wide Retrofit Programs.

Table 7-5: Energy Efficiency in Buildings Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Promotes energy awareness and competition	May burden small building owners
Enables Smarter Upgrades	Limited immediate emissions reductions
Supports long-term energy savings	Potential for high upfront costs
Improves indoor air quality	Potential for inequity if incentives favor high-income developers
Improves occupant comfort	May require additional education and engagement
Lowers energy costs	Potential for tenant displacement risk
Promote market transformation	Energy and heating reliability and consistency concerns
Empower tenants	
Lower energy burden on low-income housing	
Reduce embodied carbon	
Support local supply chains and material manufacturers	
Set leadership example	
Reduce air pollution	
Stabilize long term energy costs	
Reduce heating bills	
Lowers exposure to gas combustion	
Reduce community-wide energy costs	

Electricity Production and Consumption

Electricity Production and Consumption include Municipal Operations use 100% Renewable Energy, On-Site Renewables for Municipal Operations, Municipal Electricity Production and Storage, Renewable Procurement, Municipal Microgrids, Wastewater Treatment Efficiency, Clean Energy Zoning, Rooftop Solar and Community Microgrids, and Methane Reduction from Two Reservoirs Connected to the Federal Hydroelectric Project.

Table 7-6: Electricity Production and Consumption Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Reduces air pollutants	Could increase procurement complexity
Stabilizes long-term energy costs	May introduce reliability concerns if not paired with energy storage
Promotes energy independence	Requires large upfront investment
Increases energy infrastructure resilience	May face community opposition
Supports emergency energy deployment	
Promotes grid stability	
Reduces operating costs for the city and community	
Reduces fossil fuel price volatility	

Industrial

Actions include Utility Emissions Reporting and Healthcare Emission Incentives.

Table 7-7: Industrial Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Promotes transparency	Limited impact without follow-up or policy enforcement
Promotes utility decarbonization	May require procurement or energy sourcing practices
Improves air quality	
Encourages climate smart decision making	
Aligns health and climate goals	

Working Lands and Forestry

Working Lands and Forestry actions include Afforestation and Reforestation, Conservation of Forested Lands, and Increase of the Urban Canopy.

Table 7-8: Working Lands and Forestry Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Increases long-term carbon sequestration	Requires green zone planning
Creates habitat	Requires forestry maintenance
Decrease flooding risk	Lengthy time requirements for trees and forests to mature
Promotes biodiversity and ecosystem services	
Improves air quality	
Reduces urban heat island effect	
Increases natural beauty and mental health	

Mobility and Transportation

Mobility and Transportation actions include Municipal Electric Vehicles, Municipal Alternative Fuels, Municipal Idle Time Reduction, Pedestrianization, Transit Oriented Development, Increase Housing Density, Park and Ride Options, Electric Vehicle Charging, Corporate Ride Share Incentives, Trip Reduction Incentives, and Community Alternative Fuels.

Table 7-9: Mobility and Transportation Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Reduces municipal costs	High upfront cost for vehicles and charging infrastructure
Reduces air pollutant emissions	Requires a potentially challenging behavioral shift
Improves resident health	May result in community resistance if managed improperly
Reduces urban sprawl	
Supports mixed-income housing	
Reduces traffic congestion	
Supports low-income access to mobility	
Supports remote work and trip reduction	

Waste Management

Waste Management actions include Food Scrap Collection and Education, Creating a Regional Waste Management Authority, and Community-Based Food Waste Programs.

Table 7-10: Waste Management Qualitative Analysis

Qualitative Benefits	Qualitative Disbenefits
Reduces methane production	May require additional workforce training
Builds food resiliency	May require infrastructure investment
Increases the availability of organic soil additives	Requires education and resident behavioral shift
Increases waste system efficiency	

BENEFIT & DISBENEFIT TRACKING

Understanding and communicating the full impact of climate action requires tracking not only GHG emissions but also the co-benefits as well. Below is a sector-based framework for tracking co-benefit impacts in the region.

Energy Efficiency in Buildings

Energy Efficiency in Buildings is expected to promote energy savings, cost savings, and indoor air quality improvements.

Primary co-benefits to track:

- Energy Savings (kWh) using utility billing data or regional usage data
- Cost savings using average utility bill reduction
- Indoor air quality improvement by tracking ventilation upgrades or health proxies in housing data
- Green buildings using the number of certified buildings using programs such as LEED, WELL, Living Building Challenge, Green Globes, or others.

Ways to track:

- Regional utility data from energy providers
- Health Proxies in housing data from EPA, HUD, or EIA
- Green building certification bodies such as USGBC, Living Future, and Green Building Initiative

Electricity Production and Consumption

Electricity Production and Consumption is expected to reduce energy costs, promote energy resiliency, and reduce regional air pollutant emissions.

Primary co-benefits to track:

- Renewable energy generation (MW installed or MWh produced)
- Co-pollutant reductions (CAPs and HAPs)
- Resilience Metrics (grid uptime, outages, outage recovery times)

Ways to track:

- Regional utility data from energy providers and developers
- EPA NEI data
- Utility outage records

Industrial

Industrial actions may promote localized air quality improvements, modernized infrastructure, and improved climate-related health benefits.

Primary co-benefits to track:

- Energy production sources
- Co-pollutant reductions
- Reporting utilities and hospitals
- Health improvements

Ways to track:

- Regional energy reports
- EPA eGRID data
- EPA NEI data
- Number of utilities and hospitals reporting emissions data
- Number of climate-related hospitalizations

Working Lands and Forestry

Actions in Working Lands and Forestry have co-benefits that include flood mitigation, heat mitigation, and biodiversity improvements.

Primary co-benefits to track:

- Carbon Sequestration (CO2e/year)
- Tree canopy and forested land (acres)
- Heat-related illnesses

Ways to track:

- Tree canopy analysis using GIS data and canopy mapping tools
- Land conservation easement databases
- Hospitalization records for heat-borne illnesses

Mobility and Transportation

Mobility and Transportation co-benefits include lower commuting costs, reduced traffic congestion, improved resident health, reduced co-pollutant emissions, and greater access to safe and equitable transportation.

Primary co-benefits to track:

- Vehicle miles traveled (VMT)
- City fleet conversion
- Resident health
- Bicycle and walking path miles

Ways to track:

- Metropolitan Planning Organization travel models
- Local or regional transportation department vehicle fleet procurement
- EPA NEI data
- Hospitalization data for cardiovascular illnesses
- Municipal data or GIS for bike path or walking path miles

Waste Management

Waste Management co-benefits include job creation in composting and waste reduction.

Primary co-benefits to track:

- Organic waste diversion (Tons)
- Food scrap participation rates

Ways to track:

- Solid waste authority diversion reports
- Methane capture rates from landfills
- Food scrap program participation metrics

LIDAC ANALYSIS

8.0 LIDAC ANALYSIS

While all people are affected by climate change, those living in low-income disadvantaged communities (LIDAC) often face the most significant environmental and social burdens. LIDACs may include low-income neighborhoods, communities of color, tribal communities, and historically marginalized populations. LIDACs are often disproportionately affected by the impacts of climate change, including climatic hazards, energy burdens, and adverse health effects associated with poor air quality. Heatwaves, flooding, severe storms, and other potentially traumatic weather events can be challenging to adapt to or reconcile with in the aftermath, especially when community support and funding are scarce. Additionally, LIDACs often experience higher exposure to air pollution and limited access to clean energy and transportation options, leading to decreased public health outcomes.

In many cases, LIDACs face compounded vulnerabilities. For example, households may lack the financial resources to invest in energy efficiency upgrades, live in older housing with poor indoor air quality, or reside in areas that are more susceptible to urban heat or flooding. These communities may also be underrepresented in decision-making processes that shape climate and infrastructure investments.

The LIDAC Benefits Analysis offers insights into the most significant steps New Haven County could take to reduce LIDACs' exposure to Criteria Air Pollutants (CAPs) and Hazardous Air Pollutants (HAPs) in New Haven County. The Strategy section of this chapter can be used to prioritize actions that will have the most significant impact on improving air quality in LIDACs. CAPs and HAPs were used as indicators because higher levels of these toxic pollutants are associated with various adverse health impacts, including reduced lung function, asthma, cardiac problems, emergency department visits, hospital admissions, and increased mortality rates. Considering the LIDAC outcomes in all proposed climate strategies promotes inclusive, just, and community-informed climate reduction outcomes.

LIDAC Mapping in New Haven County

The Climate and Economic Justice Screening Tool (CEJST) (Council on Environmental Quality 2022) was used to identify LIDACs in New Haven County (*see Figure 4-1*). CEJST can identify census tracts that have a higher-than-average rate for several factors used to identify LIDACs, including low income, access to healthcare, education, transportation, exposure to environmental hazards, and disproportionate exposure to negative climatic impacts.

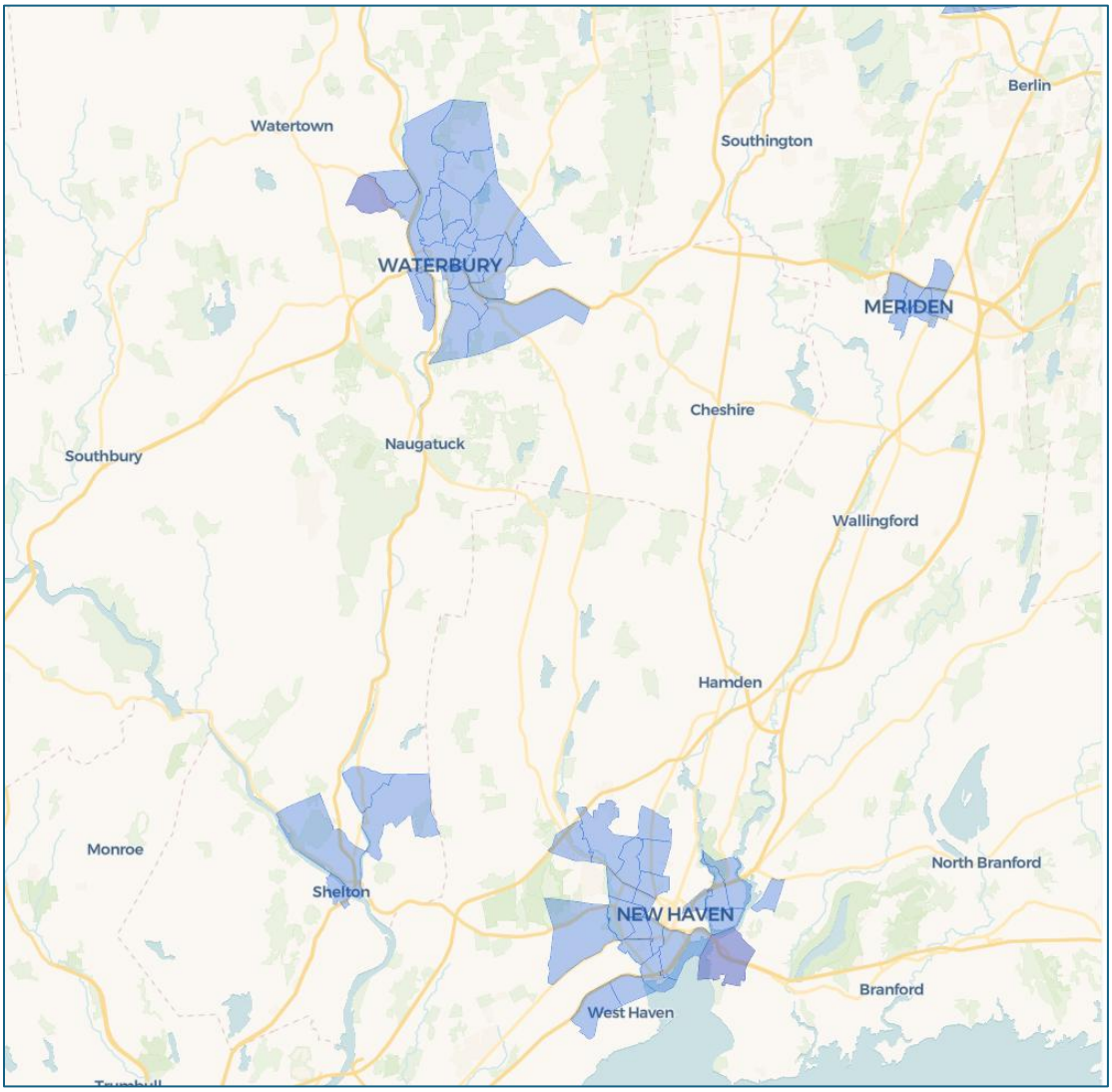


Figure 8-1: LIDACs (blue) in New Haven County as identified through CEJST. Council on Environmental Quality 2022

LIDACs were additionally evaluated using the Environmental Justice Screening Tool (EJScreen) (US EPA 2024). EJScreen provides data on a multitude of factors, including exposure to Particulate Matter (PM), Nitrogen Dioxide (NO_2), Ozone, and Diesel Particulate Matter (DPM). These air pollutants have been linked to increased rates of respiratory illnesses and diseases, as well as other harmful health outcomes.

An example of relative ozone levels in the county, as shown through the EJScreen, can be seen in **Figure 8-2**.

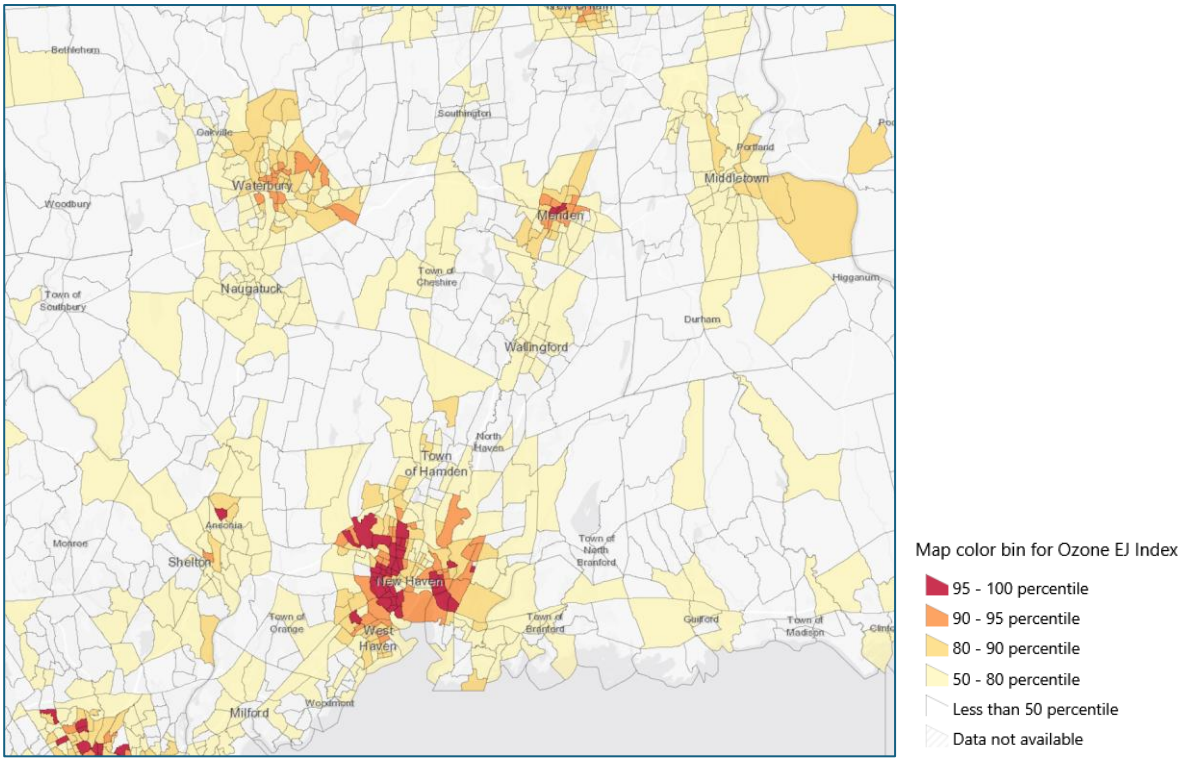


Figure 8-2: Relative ozone levels in New Haven County using EJScreen, 2022

LIDAC Challenges

In New Haven County, 55 census tracts have been identified as disadvantaged by the CEJST tool. Environmental burdens present in the County were identified by both CEJST and EJScreen and include ozone, nitrogen dioxide (NO_2), Diesel Particulate Matter (DPM), traffic proximity, energy burden, housing burden, asthma, low life expectancy, and flood risk. Definitions for burdens can be found in the glossary at the end of the section.

The most prominent burdens in the county are the presence of ozone and NO_2, as well as proximity to traffic. All 55 census tracts in New Haven County experience a greater-than-average burden compared to the rest of the nation. The least prominent burdens are flood risk and low life expectancy, with 2 and 4 census tracts experiencing a greater-than-average burden, respectively. **Table 8-1** below lists all 55 census tracts, the associated city, the number of people, and the burdens faced.

Table 8-1: LIDAC Census Tracts and Burdens in New Haven County

Census Tract	Nearest City	Total Population	Localized Burdens
9009120200	Derby	6,248	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009125200	Ansonia	5,686	ozone, NO_2, DPM, traffic proximity
9009125400	Ansonia	3,493	energy burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140200	New Haven	642	flood risk, energy burden, housing burden, asthma, low life expectancy, ozone, NO_2, DPM, traffic proximity
9009140300	New Haven	2,539	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140400	New Haven	3,433	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140500	New Haven	3,581	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140600	New Haven	5,068	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140700	New Haven	3,874	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140800	New Haven	3,798	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009140900	New Haven	4,733	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009141200	New Haven	4,730	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009141300	New Haven	6,685	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009141400	New Haven	4,943	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009141500	New Haven	7,304	energy burden, housing burden, asthma, low life expectancy, ozone, NO_2, DPM, traffic proximity
9009141600	New Haven	5,149	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009142100	New Haven	1,503	housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009142300	New Haven	5,460	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity

Census Tract	Nearest City	Total Population	Localized Burdens
9009142400	New Haven	6,003	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009142500	New Haven	5,891	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009142603	New Haven	4,104	asthma, ozone, NO_2, DPM, traffic proximity
9009142700	New Haven	7,296	ozone, NO_2, DPM, traffic proximity
9009154100	West Haven	8,089	ozone, NO_2, DPM, traffic proximity
9009154500	West Haven	4,295	ozone, NO_2, DPM, traffic proximity
9009154600	West Haven	4,647	ozone, NO_2, DPM, traffic proximity
9009165500	New Haven	4,733	energy burden, asthma, ozone, NO_2, DPM, traffic proximity
9009170100	Meriden	1,504	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009170200	Meriden	1,095	ozone, NO_2, DPM, traffic proximity
9009170300	Meriden	2,023	asthma, ozone, NO_2, DPM, traffic proximity
9009170900	Meriden	2,405	flood risk, asthma, ozone, NO_2, DPM, traffic proximity
9009171000	Meriden	1,568	asthma, ozone, NO_2, DPM, traffic proximity
9009171400	Meriden	1,646	ozone, NO_2, DPM, traffic proximity
9009171500	Meriden	3,017	asthma, ozone, NO_2, DPM, traffic proximity
9009350100	Waterbury	3,809	energy burden, housing burden, asthma, low life expectancy, ozone, NO_2, DPM, traffic proximity
9009350200	Waterbury	2,884	energy burden, housing burden, asthma, low life expectancy, ozone, NO_2, DPM, traffic proximity
9009350300	Waterbury	1,873	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009350400	Waterbury	2,346	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009350500	Waterbury	2,279	housing burden, asthma, ozone, NO_2, traffic proximity
9009350800	Waterbury	5,989	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity

Census Tract	Nearest City	Total Population	Localized Burdens
9009350900	Waterbury	2,219	ozone, NO_2, DPM, traffic proximity
9009351000	Waterbury	3,883	ozone, NO_2, DPM, traffic proximity
9009351100	Waterbury	3,788	agriculture loss, energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009351200	Waterbury	4,001	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009351300	Waterbury	5,420	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009351400	Waterbury	4,229	energy burden, housing burden, asthma, ozone, NO_2, DPM, traffic proximity
9009351500	Waterbury	4,951	energy burden, asthma, ozone, NO_2, traffic proximity
9009351601	Waterbury	3,066	energy burden, ozone, NO_2, traffic proximity
9009351700	Waterbury	3,100	energy burden, housing burden, asthma, ozone, NO_2, traffic proximity
9009352100	Waterbury	4,259	NO_2, traffic proximity
9009352200	Waterbury	2,711	energy burden, housing burden, asthma, ozone, NO_2, traffic proximity
9009352300	Waterbury	2,621	energy burden, housing burden, asthma, ozone, NO_2, traffic proximity
9009352400	Waterbury	3,777	agriculture loss, energy burden, asthma, ozone, NO_2, traffic proximity
9009352500	Waterbury	3,332	asthma, ozone, NO_2, traffic proximity
9009352600	Waterbury	5,067	energy burden, housing burden, asthma, ozone, NO_2, traffic proximity
9009352800	Waterbury	6,241	asthma, ozone, NO_2, traffic proximity

Table 8-2 lists all the environmentally induced burdens and the number of census tracts affected.

Table 8-21: Burdens vs. Census Tracts in New Haven County

Burden	Number of Census Tracts Affected
Energy Burden	31
Housing Burden	33
Asthma	44
Ozone	55
NO2	55
DPM	44
Traffic Proximity	55
Low Life Expectancy	4
Flood Risk	2
Agricultural Loss	2

CCAP Benefits

Current Emissions

In New Haven County, the largest emitters of both HAPs and CAPs are mobile on-road and non-road sources. On-road sources account for 525 tons of HAPs and 34,369 tons of CAPs. Non-road sources account for 533 tons of HAPs and 27,102 tons of CAPs.

On-road mobile sources include vehicles that operate on public roadways and highways. These include passenger vehicles, commercial trucks, transit and school buses, motorcycles and mopeds, emergency response vehicles, municipal fleets, ride-sharing vehicles, and delivery vehicles.

Non-road sources include vehicles and equipment that are not typically used on public roads. These include a variety of machines, such as construction equipment, agricultural machinery, rail locomotives, marine vessels, portable generators, and recreational vehicles (including ATVs, dirt bikes, snowmobiles, etc.).

Strategy Implementation

Many of the strategies outlined in the CCAP will directly reduce regional emissions, thereby improving health and quality of life in LIDAC communities. The sections below outline the goals within the CCAP that are expected to create the most significant air quality improvements for LIDACs, as well as the potential qualitative impact.

Energy Efficiency in Buildings

Ensure energy efficiency and sustainability through building codes and regulations

Improving building codes can reduce energy usage and effectively decrease fossil fuel combustion, both at power plants and in local equipment such as furnaces and water heaters. Fossil fuel combustion has been linked to the emission of air pollutants that can increase susceptibility to various health issues. Reducing energy usage and fossil fuel combustion will help reduce the following burdens in LIDACs:

- Energy Burden
- Asthma
- Ozone
- NO_2
- Low Life Expectancy

Renewable heating access for low-income homes

Creating pathways to increase renewable heating options can displace the use of natural gas, fuel oil, or wood combustion in homes. The burning of fossil fuels is linked to adverse health effects, such as asthma and lung cancer. When low-income households are given the tools to access renewable heating options, the following burdens can be improved:

- Energy Burden
- Asthma
- Ozone
- NO_2
- Low Life Expectancy

Energy-efficient building materials for low income homes

By improving building efficiency, homes will require less heating and cooling to maintain comfortable temperatures. In turn, this will reduce the need for electricity generated by fossil-fuel-burning power plants. Additionally, sustainable materials tend to have lower volatile organic compounds (VOCs) associated with off-gassing. These reductions in fossil fuel-related emissions and VOCs can benefit LIDACs by reducing the following:

- Energy Burden
- Asthma
- Ozone
- NO_2
- Low Life Expectancy

Electricity Production and Consumption

Reduce electricity consumption from fossil fuel sources in municipal buildings and services

By increasing efficiency and reducing electricity use in municipal buildings and services, municipalities can directly lower demand for fossil fuel power generation. This reduces emissions that may have negative effects on communities in the region. Fewer public dollars spent on municipal energy usage also results in a decreased tax burden. Significant local air quality and economic benefits may be available to LIDACs by reducing:

- Energy Burden
- Asthma
- Ozone
- NO_2
- Diesel PM
- Low Life Expectancy

Increase renewable energy production and consumption at the local scale

Locally sourced renewable energy, such as solar, wind, or geothermal, displaces electricity from fossil fuel power plants. When deployed equitably, renewable projects can reduce emissions in the region while creating local economic and resilience benefits. Increased local renewable energy production and consumption may benefit LIDACs by reducing:

- Energy Burden
- Asthma
- Ozone
- NO_2
- Low Life Expectancy

Industrial

Reduce emissions from health care sector through public-private partnership

Hospitals and medical campuses are major energy users and often rely on backup diesel generators and fossil-fuel-powered infrastructure. Emission reductions through increased retrofits, switching to renewables, and improved operations can benefit LIDACs that are disproportionately exposed to harmful emissions. Reduction in harmful emissions from the health care sector may benefit LIDACs by reducing:

- Diesel PM
- NO_2
- Ozone

- Asthma
- Low Life Expectancy

Working Lands and Forestry

Increase urban tree canopy and agriculture

Expanding tree cover and local agriculture can provide shade, soil stability, and local food sources. This can reduce urban heat island effects, improve localized air quality, and manage stormwater, all of which disproportionately affect LIDACs. Trees also absorb air pollutants and carbon dioxide, thereby improving the overall livability of the neighborhood. Increasing tree cover and local agriculture may benefit LIDACs by reducing:

- Energy Burden
- Flood Risk
- Asthma
- Ozone
- Low Life Expectancy
- Agricultural Loss

Mobility and Transportation

A clean and green municipal fleet

Transitioning city-owned vehicles to electric or low-emission alternatives reduces diesel and gasoline emissions, particularly in communities near city yards, transit routes, or facilities. Clean fleets also set a precedent for broader adoption and can help reduce risks in overburdened neighborhoods. Transitioning to low-emission municipal vehicles may benefit LIDACs by reducing:

- Diesel PM
- NO_2
- Ozone
- Asthma
- Traffic Proximity
- Low Life Expectancy

Create a transit first approach and reduce spatial misalignment

Prioritizing public transit and improving land use to align housing, jobs, and services can reduce personal vehicle dependence. This can help lower transportation-related emissions, support access to opportunities, and improve equity outcomes for residents in LIDACs. Creating a transit first approach may benefit LIDACs by reducing:

- Traffic Proximity

- NO_2
- Ozone
- Asthma
- Energy Burden
- Improved Affordability and Access
- Traffic Proximity
- Low Life Expectancy

Reduce emissions from private vehicles

Programs that reduce reliance on personal vehicles, such as active transportation infrastructure and pricing reforms, can decrease air pollution from emissions. LIDACs located near roadways or in high-traffic areas may experience substantial improvements in local air quality. Decreased private vehicle use may benefit LIDACs by reducing:

- Traffic Proximity
- Diesel PM
- NO_2
- Ozone
- Asthma
- Low Life Expectancy

Waste Management

Divert waste with local and regional programs

Landfills and incinerators can emit HAPs and CAPs. Diverting waste through composting, recycling, and reuse can lower emissions associated with waste disposal and reduce impacts on nearby LIDACs, which are often located near waste facilities. Waste management programs may benefit LIDACs by reducing:

- Ozone
- Asthma
- NO_2
- Low Life Expectancy

Strategies Benefitting LIDACs

Key climate actions are highlighted in Table 8-3 to identify how specific strategies may affect low-income and disadvantaged communities across key dimensions of equity. The table includes a description of each climate strategy, followed by assessments of its potential benefits across economic, social, and health dimensions. Each of these impact areas is further broken down into specific criteria, such as income, employment, race,

chronic illness, literacy, and language access, to ensure a comprehensive understanding of how different populations may be affected. This structure provides a clear and organized way to assess the equity implications of each action and supports transparent, community-informed decision-making as part of the climate action planning process.

Table 8-3: LIDAC Strategies and Benefits

Strategy B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and reduce barriers to solar uptake. Strategy B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties.		
LIDAC Benefit: Reduces household energy burden; builds local workforce skills in clean energy, lower utility costs.		
Economic	**Social**	**Health**
Reduces utility costs for low-income renters and homeowners; Opportunity to create green jobs in installation and maintenance.	Community solar can increase access for marginalized racial/ethnic groups often excluded from traditional ownership models.	Reduced indoor heat/cold stress benefits seniors, people with chronic illness, and those with mental health conditions.
Strategy B.03: Ensure all municipal operations rely on 100% renewable energy sources.		
LIDAC Benefit: Reduces emissions from government buildings and fleets, improving air quality in overburdened areas.		
Economic	**Social**	**Health**
Municipal cost savings can be reallocated to services for low-income residents; job creation in renewable energy industry, including installation and maintenance.	Helps reduce exposure to pollutants for communities of color living near municipal facilities.	Improved air quality reduces asthma and chronic illness in vulnerable populations.
Strategy T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: this requires an increase in work-from-home opportunities to reduce VMT during the work commute		
LIDAC Benefit: Reduces commuting costs for low-income workers; expands job access for those without vehicles or flexible work conditions.		
Economic	**Social**	**Health**
Supports employment opportunities in the region, including individuals who may be unemployed or underemployed.	Promotes flexible work for caregivers and single-parent households	Less commuting stress and reduced exposure to air pollution; employment opportunities for individuals with limited access to transportation or mobility limitations.

Strategy T.07b: Encourage denser housing in areas near existing economic zones.		
LIDAC Benefit: Reduces vehicle miles traveled and supports transit access; supports economic development.		
Economic	**Social**	**Health**
Can reduce housing costs near jobs; increases access to employment for low-income populations.	Generates housing opportunities for single parent households and historically marginalized communities.	Reduces air pollution from car dependence; may improve mental health via reduced commute stress.
Strategy B.11: Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.		
LIDAC Benefit: Reduces energy burden; creates jobs in energy retrofitting and HVAC.		
Economic	**Social**	**Health**
Reduces utility costs; creates opportunities for green job training and employment.	Focus on renters, seniors, and BIPOC communities who may be most burdened by inefficient utilities and associated costs.	Improved indoor air quality and thermal comfort; heat pumps reduce exposure to combustion pollutants.
Strategy B.11: Require the use of sustainable building materials in the construction and building of low-income housing		
LIDAC Benefit: Reduces embodied carbon; supports a sustainable construction industry.		
Economic	**Social**	**Health**
May reduce long-term building maintenance costs for low-income housing.	Promotes healthier living environments and investments for underserved communities.	Reduces exposure to toxins or pollutants often found in traditional building materials.
Strategy B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.		
LIDAC Benefit: Encourages behavioral change; enables data-driven decision-making for further retrofits.		
Economic	**Social**	**Health**
Empowers tenants and homeowners to manage energy consumption and save on utility costs.	Addresses inequities in energy literacy and empower frontline communities.	Better temperature and energy control improves physical comfort and reduces heat/cold-related illness.

Strategy B.05: Offer incentives and expedited permitting for projects that achieve green building certifications.		
LIDAC Benefit: Encourages higher environmental performance in buildings; promotes innovation in sustainable design.		
Economic	**Social**	**Health**
Can reduce long-term utility costs for tenants/owners in green buildings. May increase costs if not paired with affordable housing mandates. opportunities to connect with job training and employment in green building industry.	May unintentionally exclude BIPOC developers or tenants unless targeted to equitable development.	Green buildings reduce exposure to toxins, improve indoor air quality, and support better mental health.
Strategy T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.		
LIDAC Benefit: Reduces emissions and demonstrates municipal climate leadership; improves public health		
Economic	**Social**	**Health**
Benefits transit-dependent households, especially those with children or older adults relying on school buses or senior transport.	Focuses public investment on equitable mobility; clean buses especially benefit communities of color often overburdened by diesel routes.	Major health benefit for children and asthma sufferers from reduced diesel exposure.
Strategy T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles		
LIDAC Benefit: Reduces transportation emissions; can improve fleet standards citywide.		
Economic	**Social**	**Health**
May benefit gig workers if paired with EV purchase support; could exclude low-income users without access to shared mobility.	May unintentionally reinforce inequity if shared mobility services do not adequately serve disadvantaged communities.	Reduces pollutant exposure from rideshare fleets, especially in high-traffic corridors.

These climate action strategies can create significant educational opportunities to empower LIDACs and support their active participation in the energy transition. Many strategies offer the potential for workforce development, which can provide LIDAC residents with valuable job training in emerging green industries like solar energy and building retrofitting. To support community-wide engagement, educational materials and public awareness campaigns about clean energy and cost-saving programs can be made available and provided in multiple languages and formats to reach all residents. By improving energy literacy and creating pathways to green jobs, these initiatives may foster a deeper, shared understanding of climate solutions and help ensure the benefits of a clean economy are distributed equitably.

Example Projects Benefitting LIDACs

Projects represent impactful and equitable opportunities for New Haven County municipalities to deliver climate and health benefits in disadvantaged neighborhoods and were selected based on community need, health impact, greenhouse gas and co-pollutant reductions, cost-effectiveness, and readiness for funding.

Zero-Emission School Buses for LIDAC Routes: Cleaner air for children, reducing asthma triggers near schools, savings for taxpayers over the vehicles' lifetimes

Healthy Homes Weatherization & Electrification Program: Reduce energy bills; safer, more comfortable housing with insulation, efficient appliances, and heat pumps.

Diesel Pollution Hotspot Reduction: Cleaner air by targeting truck idling, port equipment upgrades, and traffic management in freight corridors.

Community Resilience Hubs: Safe, powered spaces during heat waves, storms, and outages, with solar and battery backup, cooling, and charging stations.

Urban Heat Island Relief: Trees and Cool Surfaces: Cooler streets shaded bus stops, pollutant filtration, and improved public health during heat waves.

Solar Access for Affordable Housing: Lower utility costs and resilience benefits by adding rooftop or community solar to multifamily housing.

Zero-Emission Municipal Fleet in LIDAC Areas: Cleaner operations by electrifying garbage trucks, light-duty fleets, and city vans.

Green & Safe Streets Program: Safe, low-emission streetscapes with bike/pedestrian improvements, EV charging hubs, and anti-idling enforcement.

Hospital and Health Facilities Clean Energy Upgrades: Reduced emissions from diesel generators, cleaner backup systems, and improved local air quality near vulnerable populations.

Community Workforce Development for Clean Energy Jobs: Training programs for residents in heat pump installation, EV maintenance, solar, and urban forestry.

The CCAP climate action strategies form the foundation for healthier, more resilient, and more affordable communities. They are designed to create immediate wins such as cleaner buses, cooler neighborhoods, lower bills, and safer housing, while laying the groundwork for long-term transformation. The CCAP is intended to guide local decision-making by highlighting who benefits from each strategy, where additional outreach or program design may be needed, and how to maximize co-benefits for vulnerable populations. This helps ensure that implementation strategies do not unintentionally widen disparities but instead contribute to a more just and inclusive climate transition.

Metrics & Accountability

Achieving a climate-ready and equitable New Haven County requires not only setting ambitious goals, but also measuring progress. Table 8-4 below lays out the indicators that could be used to guide implementation of the CCAP and ensure that benefits reach the LIDACs most impacted by climate change and environmental burdens. Tracking outcomes in air quality, housing affordability, health, resilience, and community engagement can show where climate work is delivering results, identify gaps, and adjust course.

Table 8-4: Key indicators supporting LIDACs

Category	Indicator	Why it Matters
Air Quality	Annual average nitrogen dioxide (NO_2) levels in disadvantaged tracts near major roadways	Improves respiratory health, especially in asthma-prone neighborhoods.
	Diesel particulate matter (DPM) exposure index	Reduces a key pollutant linked to truck and bus traffic.
Energy & Housing	Average household energy burden (% of income spent on energy) in LIDAC tracts	Lower energy bills mean more affordable, stable housing.
	Number of low-income households receiving weatherization + electrification upgrades	Ensures programs deliver direct financial and comfort benefits.
Health Outcomes	Asthma-related emergency department visits per 10,000 residents in high-burden tracts	Tracks health improvements from cleaner air.
Urban Heat & Resilience	Tree canopy coverage in EJ-designated tracts	Expands shade and lowers extreme heat risk.
	Number of shaded/cool bus stops installed in high-heat tracts	Provides comfort and safety for transit-dependent residents.
Transportation	Percentage of municipal and school buses serving LIDAC tracts that are zero-emission	Cuts diesel exhaust exposure near schools and neighborhoods.
Waste Reduction	Tons of waste diverted to composting or recycling facilities; delta in waste tonnage year over year	Less litter in communities and reduced air pollution and emissions from incinerators.
Community Voice	Number of engagement events held in LIDAC neighborhoods each year	Ensures that community members shape decisions and share in the benefits.

AUTHORITY TO IMPLEMENT

9.0 UNDERSTANDING THE AUTHORITY TO IMPLEMENT

Connecticut is a Home Rule state meaning that any authority not explicitly reserved by the state belongs to municipalities. Empowering every individual community can make regional collaboration difficult as different towns have different priorities. Connecticut's Councils of Government, or COGs, can advise and bring member towns together for discussion, but there is a lack authority to drive policy or enforce compliance at the COG level.

Ultimately, the implementation of most strategies in the CCAP will fall to individual municipalities - but the negative effects of climate change do not respect municipal boundaries. Regional governance structures like the COGs are vital to coordinate activities between municipalities and to equip them with knowledge and tools to continue reducing emissions. Meanwhile, state and national governance can support strategy implementation at the municipal level. In this way, every level of governance can contribute to reducing emissions. This document will explore the different levels of governance in Connecticut.

The Authority to Implement has been determined for the existing (29) goals and (58) strategies identified in the Priority Climate Action Plan (PCAP) and the appropriate level of government intervention required to implement a given strategy (federal, regional, state, and/or local), recommended tactic(s) for implementation, and whether or not the entity has the authority to implement a given tactic. If the prescribed level of government does not have the authority to implement the prescribed tactic, a schedule of milestones is provided to achieve authority. Such milestones are divided into the following categories: "Short term", less than five-year timeline of projected implementation and "Long term", more than five-year timelines of projected implementation. The Authority to Implement document includes potential funding agencies to support strategies and associated tactics, as opposed to specific grants, as grant opportunities are subject to change. Additionally, each strategy is examined under three scenarios to identify how authority might change in future circumstances. Through scenario planning, the authority to implement can remain useful far into the future.

Scenario Overview

The three scenarios identified for this work are Fossil Free Future, Coping with Gridlock and the Watershed moment.

In a **'Fossil Free Future'** the renewable sector grows in the New Haven MSA due to technological advances and investments which lower individual costs. However, individual consumption remains high as do transit disparities between rural and urban areas.

Under the **'Coping with Gridlock'** scenario, Federal and State governments become dysfunctional and unable to pass usable legislation to address climate change. Energy costs increase and the private sector fills some of the funding void as grassroots activism grows. In this scenario, local implementation of strategies becomes more important.

In the **'Watershed Moment'** scenario, ineffective policy efforts and financial support result in acceleration to a warmer and wetter future. This shift in climate prompts citizens to take individual action by modifying their consumption and living arrangements in ways that begin to address greenhouse gas emissions.

After each goal and strategy set, the potential impacts on authority to implement will be identified under each scenario. The next section will examine greenhouse gas emissions mitigation strategies across six sectors identified in the PCAP in the context of authority to implement.

Groundwork Overview

For select strategies the authority to implement tables include an identification of a "groundwork strategy", a complementary strategy, or set of strategies that work best if implemented first. For authority to implement, groundwork strategies may have legal barriers of their own to clear before their primary strategies can be implemented.

State PCAP

The New Haven-Milford MSA Priority Climate Action Plan, EPA Climate Pollution Reduction Grant Planning Grant First Deliverable: A Priority Climate Action Plan identified 58 strategies to address emissions reduction, designed to fit the particular needs of the New Haven-Milford MSA (CTDEEP, 2024). In early 2024 a statewide PCAP was released identifying 14 priority strategies. The statewide PCAP list was compared to the New-Haven-Milford Strategy list, and the two sets of strategies overlap considerably. Addressing in some way, all six sectors identified above, while not specifically called out in this document, authority to implement data tables provide a list of the strategies in the State PCAP and their corresponding strategies in the New Haven-Milford MSA PCAP.

TRANSPORTATION SECTOR

The Priority Climate Action Plan identified transportation sources as contributing the largest share of emissions within the New Haven-Milford MSA with trucks and personal automobiles as the largest single source of emissions.

"...emissions from trucks alone comprising over 25 percent of the county's [The New-Haven Milford MSA and New Haven County share the same borders] total emissions (Figure 7). Emissions from buses and motorcycles comprise a negligible amount of the County's total emissions. At the per capita level, vehicle miles traveled (VMT) were found to be positively correlated with increasing emissions. This suggests that centering policies that reduce VMT and the usage of gas- and diesel-powered vehicles at the individual level will be important for reducing emissions in this sector. This is further exemplified by the high levels of vehicle ownership present in the County" (Fall 2023 Regional Planning Studio, 2024, p. 38).

The PCAP connected transportation emissions to unequal burdens. The PCAP LIDAC analysis identified that asthma burdens were correlated with major roadways in the MSA. High traffic areas in urban areas also receive a disproportionate impact from air pollution. These patterns culminate in air pollution causing more deaths in Connecticut than other states in New England (Fall 2023 Regional Planning Studio, 2024, p. 42).

Based on the analysis performed in the PCAP, strategies addressing emissions from the transportation sector are an important part of addressing greenhouse gas emissions and public health. Three goals were defined in the PCAP for this sector.

Goal 1: A Clean and Green Municipal Fleet

Municipal fleets are critical to enabling local governments to fulfill their responsibilities. These fleets can include emergency response vehicles such as police cars and fire trucks, vehicles for inspectors, traffic enforcement officers and specialized vehicles for public works functions such as sewer and stormwater maintenance, snow removal and road repair. This can also include transit vehicles such as municipal buses. To address greenhouse gas emissions in the transit sector, communities should be encouraging the use of public transit while also converting those vehicles to electric and alternative fuel sources. Transit design decisions can reduce the amount of time vehicles sit idle, running inefficiently and burning more fossil fuels, as outlined in a series of strategies for creating a cleaner and greener municipal fleet.

Strategy T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses

Goal 1: A Clean and Green Municipal Fleet			
Tactic		**Tactic Level**	**Funding Agency**
T-G.1-T.01.1: Legislature can provide funds for infrastructure investments and rebates for vehicles. Can set requirements for EV adoption, provide vouchers for vehicle procurement and support the purchase of electric school buses as in Connecticut General Statutes §14-164o, §22a-201e, §22a-201d(d) and §16a-14f.		S	CT DEEP US DOT
Authority:	Has legal authority		
T-G.1-T.01.2: Municipal departments, school boards and fire districts can propose replacing existing vehicles with EVs as part of their annual budget proposal. School boards can apply to green fleet subsidy programs; prioritizing schools located in LIDAC communities. School boards have authority under Connecticut General Statutes §10-241.		L	CT DEEP US DOT
Authority:	Has legal authority		

Strategy T.02: Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.

Goal 1: A Clean and Green Municipal Fleet			
Tactic		**Tactic Level**	**Funding Agency**
T-G.1-T.02.1: Legislature can provide funds, rebates for vehicles, and infrastructure. Following the recommendations of the Connecticut Clean Hydrogen Roadmap will require that the state obtain authority in multiple areas. Rebates for hydrogen fuel cell vehicles exist as part of the states CHEAPR program under §22a-202(b) and (d). To implement other parts of the roadmap, authority must be obtained.		S	CT DEEP US DOT EPA
Authority:	Must obtain legal authority		
Schedule to Obtain Authority			
Short Term	**Long Term**		
Follow short term steps of the Hydrogen Roadmap including passing a law which provides a workable definition of clean hydrogen and create funding to transition heavy vehicles to the alternative fuel.	Create additional funding sources for Hydrogen and through policy promote the growth of Hydrogen Clusters and workforce development.		
T-G.1-T.02.2: Town departments, boards and councils can propose replacing existing vehicles with Alternative Fuel Vehicles and propose the construction of relevant infrastructure as part of their annual budget proposal. Municipalities have this authority under home rule, defined in Connecticut General Statutes §7.		L	CT DEEP US DOT EPA
Authority:	Has legal authority		

Strategy T.03: Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time.

Goal 1: A Clean and Green Municipal Fleet			
Tactic		**Tactic Level**	**Funding Agency**
T-G.1-T.03.1: CTDOT: Redesign state roads and commit funding for town road improvements that conform to a reduced idling standard. CTDOT has the ability to reconfigure roadways under Connecticut General Statutes §13a-23(a) through (d)		S	CTDOT US DOT
Authority:	Has legal authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, long-term investments in green energy at the federal and state levels begin delivering returns and are compounded by incremental benefits from new and innovative technologies. Access to alternative fuel technologies is greater than ever resulting in more ubiquitous infrastructure and lower barriers to entry which make the transition away from fossil-fuel based technologies highly attractive for municipalities. Municipalities maintain their authority to implement the purchase of alternative fuel vehicles.

In the 'Coping with Gridlock' scenario, the failures of the federal and state governments to act result in overall reduction in available funding as budgets aren't passed and existing programs lapse. Municipalities pick up the slack and will have to find new sources of funding. With initiatives competing for precious resources, the development of a green municipal fleet may be more difficult to achieve. Municipalities maintain their authority to implement the purchase of alternative fuel vehicles, but the state loses authority to create idle reduction-friendly infrastructure and to provide funding for transition fleets to cleaner energy sources.

In the 'Watershed Moment' scenario, delayed federal, state and local responses to mitigate climate change result in significant impacts to the built environment such as the creation of heat islands in LIDAC communities and property damage near waterways. These drastic changes will require municipalities to focus efforts on repairing damaged infrastructure and less on investing in green fleets. Municipalities maintain their authority to implement the purchase of alternative fuel vehicles.

Goal 2: Create a transit-first approach

The PCAP identified that personal vehicles produced over a third of all emissions (Fall 2023 Regional Planning Studio, 2024, p. 42). Reducing usage of personal vehicles by encouraging residents to take advantage of transit is a practical approach to reducing emissions. However, the PCAP also identified that LIDAC tracts are travel burdened, meaning commutes by residents of these tracts involve excess time and may be expensive. This lack of access to convenient transit is a serious challenge to equity and to transitioning the region towards public transit and out of personal vehicles (2024, p. 43). The PCAP identified several strategies to shift the region to a transit-first approach.

Strategy T.04: Offer discounted transit fare for low- and moderate-income populations living in LIDACs.

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.04.1: Amtrak can adopt a reduced fare scheme for passengers boarding stations in New Haven which contains many LIDAC tracts.		F	US FTA
Authority:	Has legal authority		
T-G.2-T.04.2: CTDOT: Can subsidize transit operators in LIDAC communities, so that they can charge the same basic fares as are charged in the cities of Hartford, New Haven and Stamford, as per Connecticut General Statutes §13b-34(a).		S	US FTA
Authority:	Has legal authority		

Strategy T.05: Create a transit-first approach (including mass transit)

Strategy T.05.a: Pilot pedestrianization, limited traffic (bus only lanes/streets) and use of active transportation downtown and in dense developments.

This Strategy has the following groundwork: T.09.d

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.05.a.1: US DOT: Can modify the Manual on Uniform Traffic Control Devices (MUTCD) and relax certain rules to encourage pedestrian focused road design and alternatives to typical road construction.		F	USDOT CT DECD CTDOT
Authority:	Has legal authority		
T-G.2-T.05.a.2: CT Division of Highway Design: Manages, directs, and coordinates all of the design activities for highways performed in accordance with State and Federal requirements. Manages the administration of contracts with consulting engineers and towns for the design of highway and bridge improvements on State highways and town roads. Also responsible for Project Development, new product evaluation, Highway Standard Drawings and the Highway Design Manual.		S	USDOT CTDOT CT DECD
Authority:	Has legal authority		
T-G.2-T.05.a.3: Local DPW reviews, approves, and builds any configured local roadways.		L	US DOT CTDOT CTDEC
Authority:	Has legal authority		

Strategy T.05.b: Ensure federally designated Opportunity Zones are completely accessible by transit.

This is a groundwork strategy for: T.05.c, T.07.b

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.05.b.1: CTDOT redesign transit routes to access block groups within opportunity zones of LIDAC communities. CTDOT has the ability to reconfigure roadways under Connecticut General Statutes §13a-23(a)-(d).		S	US FTA CTDOT
Authority:	Has legal authority		
T-G.2-T.05.b.2: Local DPW prioritize road infrastructure investments that improve transit access in Opportunity Zones.		L	US FTA CTDOT
Authority:	Has legal authority		

Strategy T.05.c: Advocate for transit plans that incentivize new development in areas that will allow for transit, walking, and bike use.

This Strategy has the following groundwork: T.05.b

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.05.c.1: Connecticut Bicycle and Pedestrian Advisory Board: The duties of the board shall include, but not be limited to, examining the need for bicycle and pedestrian transportation, promoting programs and facilities for bicycles and pedestrians in this state, and advising appropriate agencies of the state on policies, programs and facilities for bicycles and pedestrians.		S	USDOT CTDOT
Authority:	Has legal authority		
T-G.2-T.05.c.2: Update Plan of Conservation and Development (POCD) to reflect zones for transit-oriented development. Utilize Complete Streets approach.		L	USDOT CTDOT
Authority:	Has legal authority		

Strategy T.06: Partner with micro-transit companies to enable cross-town trips for smaller towns nearby.

This is a groundwork strategy for: T.08, T.11

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.06.1: Provide funding for microtransit in areas with limited access to existing transit networks. The Milford Micro, Ride New Haven, Valley Transit District 2GO, and XtraMile microtransit services were created as part of a two-year state pilot program starting in 2024 and can act as partners. CTDOT has the authority to contract with any entity under Connecticut General Statutes §13b-34 including microtransit companies.		S	CTDOT
Authority:	Has Legal Authority		
T-G.2-T.06.2: Towns can partner with microtransit companies and centers in need of services like assisted living centers and nursing homes for the elderly.		L	CTDOT
Authority:	Has Legal Authority		

Strategy T.07: Reduce spatial misalignment through changes in land-use

Strategy T.07.a: Conduct feasibility studies for creating economic zones in areas with high commute times.

This is a groundwork strategy for: T.08

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.07.a.1: CT Department of Economic and Community Development: Conduct or commission a statewide study to identify areas with excessive commute times, and to analyze how jobs can be brought to that area through economic development.		S	VFA
Authority:	Has Legal Authority		
T-G.2-T.07.a.2: COGs: Partner with communities to identify areas of greatest potential for focused economic zones.		R	CT DPH CT OPM CTDOT
Authority:	Has Legal Authority		
T-G.2-T.07.a.3: Planning Board or other local government designee can utilize existing, or future, revenue to develop feasibility study.		L	CT DPH CT OPM CTDOT
Authority:	Has Legal Authority		

Strategy T.07.b: Encourage denser housing in areas near existing economic zones.

This strategy has the following groundwork: T.05.b

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.07.b.1: Financially incentivize developers who build high-density and centrally-located housing.		S	USDOT CT DECD CT DPH CT OPM US FTA
Authority:	Must Obtain Legal Authority		
Schedule to Obtain Authority			
Short Term	**Long Term**		
Pass a bill providing statewide density bonuses and credits for developers who site projects in housing adjacent to existing amenities and in urban centers	Require that municipalities direct development towards existing developed centers as part of their POCD.		
T-G.2-T.07.b.2: The Planning Board modifies existing zoning code to realign land uses while zoning boards can ensure the codes are enforced.		L	US DOT CT DECD CT DPH CT OPM US FTA
Authority:	Has Legal Authority		

Strategy T.08: Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.

This strategy has the following groundwork: T.06, T.07.a

Goal 2: Create a transit-first approach			
Tactic		**Tactic Level**	**Funding Agency**
T-G.2-T.08.1: Expand scope of CT Rides to increase subsidy for utilization of mass transit for commuting and recreational purposes.		S	CTDOT FHWA
Authority:	Must Obtain Legal Authority		
Schedule to Obtain Authority			
Short Term:	Provide funding to CT Rides to further incentivize carpooling and mass transit usage.		
T-G.2-T.08.2: The Planning Board modifies existing zoning code to realign land uses while zoning boards can ensure the codes are enforced.		L	CTDOT FHWA
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario long-term investments in green energy at the federal and state levels begin delivering returns and are compounded by incremental benefits from new and innovative technologies. The improved access and lower cost to alternate fuels causes many to forgo behavioral changes required to densify population centers, choosing instead to maintain their current vehicle-centric lifestyles. So, while improvements in technology provide the opportunity to significantly impact transportation-based emissions, some opportunity is left on the table. Municipalities maintain their authority to adjust zoning and land use planning to encourage transit usage and to reduce vehicle miles traveled.

In the 'Coping with Gridlock' scenario the failures of the federal and state governments to act results in overall reduction in available funding as budgets aren't passed and existing programs lapse. Municipalities pick up the slack and will have to find new sources of funding. Dysfunction at the state level will make it difficult to redesign the mass transit systems necessary to jump start the transition to a transit-first community unless the state transfers the authority to implement system wide changes to regional Councils of Governments and local municipalities. Municipalities maintain their authority to adjust zoning and land use planning to encourage transit usage and to reduce vehicle miles traveled.

In the 'Watershed Moment' scenario delayed federal, state and local responses to mitigate climate change result in significant impacts to the built environment such as the creation of heat islands in LIDAC communities and property damage near waterways. These drastic changes will require municipalities to focus efforts on repairing and replacing damaged infrastructure. Compounded by shifting populations trying to outrun climate disaster, municipalities will redefine their physical infrastructure more than they have in generations. This presents opportunities for municipalities to realign land uses to better accommodate green transit options. Municipalities maintain their authority to adjust zoning and land use planning to encourage transit usage and to reduce vehicle miles traveled.

Goal 3: Reduce emissions from private vehicles

Even if communities adopt a transit-first approach and make municipal vehicles cleaner, some residents will still choose to operate their own personal vehicles on a regular basis. Fortunately, advances in technology provide opportunities to reduce the emissions of these vehicles. The PCAP identifies a positive trend in the usage of EVs and hybrid vehicles statewide, and a number of charging stations were identified. Simultaneously with this trend, the State of Connecticut has adopted higher vehicle emissions standards. While low and zero emission vehicles are effective at reducing greenhouse gas emissions, they may come with a high upfront cost, making it difficult for low-income residents to transition to them (Fall 2023 Regional Planning Studio, 2024, p. 44).

Fortunately, the PCAP identified a number of strategies capable of addressing emissions from private vehicles. This goal also seeks to reduce usage of private vehicles through strategies such as expanding broadband access, enabling telework in more places at lower costs, and through programs that reduce vehicle miles traveled and number of trips.

Strategy T.09: Increase the overall Electric Vehicle adoption and create infrastructure to support this:

Strategy T.09.a: Communicate the benefits of CHEAPR to low and middle-income communities and have limited time offers of higher Rebate to encourage the buying of EVs in the short-term.

This is a groundwork strategy for: T.10

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.09.a.1: CT DEEP: Provide funds for towns to advertise CHEAPR rebates. The state is empowered to operate CHEAPR under Connecticut General Statute §22a-201e		S	CT DEEP
Authority:	Must Obtain Legal Authority		
Schedule to Obtain Authority			
Short Term:	Amend existing legislation to expand CHEAPR Program to provide funding to towns for outreach, and advertisement.		
T-G.3-T.09.a.2: Advertise CHEAPR through town documentation sewer/water bills and town websites. Create a town committee to encourage and plan events pointing people to these programs and to generate enthusiasm.		L	CT DEEP
Authority:	Has Legal Authority		

Strategy T.09.b: Encourage car owners in rural communities to set up at-home EV charging by taking advantage of Federal Tax credits.

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.09.b.1: IRS: Expand and advertise existing rebates for EV infrastructure.		F	IRS
Authority:	Has Legal Authority		
T-G.3-T.09.b.2: Create a town committee to encourage and plan events pointing people to federal programs and to generate enthusiasm.		L	IRS CT DEEP
Authority:	Has Legal Authority		

Strategy T.09.c: In high-density development areas, implement requirements for new development to include EV charging stations.

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.09.c.1: State law requires this for larger residential and commercial buildings. State could expand this requirement to more building types.		S	US DOT
Authority:	Has Legal Authority		
T-G.3-T.09.c.2: Pass zoning ordinance requiring new construction in high density residential zones include EV chargers.		L	IRS
Authority:	Has Legal Authority		

Strategy T.09.d: Communicate the benefits of the eBikes incentive program and advocate for increased funding for it, especially encouraging the growth of the Voucher+ offer for LIDACs.

This is a groundwork strategy for: T.05.a

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.09.d.1: Create a town committee to encourage and plan events pointing people to federal programs and to generate enthusiasm. Target events and outreach to LIDAC tracts in town.		L	CTDOT
Authority:	Has Legal Authority		

Strategy T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.

This strategy has the following groundwork: T.09.a

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.10.1: Include rideshare drivers in the CHEAPR rebate program. Create additional rebates for renting and buying vehicles for rideshare purposes. CT Deep currently has the authority to provide EV purchase incentives to drivers under Connecticut General Statute §22a-202(b) but this could be expanded to accommodate leased vehicles and vehicles explicitly for rideshare use.		S	CTDOT CT DEEP
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Short Term	**Long Term**		
Expand CHEAPR to provide rebates for those who lease or buy an EV to be used for ridesharing.	Provide infrastructure funding for dedicated EV rideshare parking and drop-off structures in public facilities.		

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.10.2: Pass ordinance requiring that large new developments provide drop-off areas and dedicated parking for shared-mobility vehicles only if they are EVs.		L	CTDOT US DOT
Authority:	Has Legal Authority		

Strategy T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: this requires an increase in work-from-home opportunities to reduce VMT during the work commute.

This strategy has the following groundwork: T.06, T.12

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.11.1: Legislature: Require employers in compatible industries to require some work from home for employees. Require employers with large parking lots to implement trip reduction behaviors.		S	EPA
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Short Term	**Long Term**		
Pass a bill to fund a study of which industries are most compatible with working from home. Identify appropriate industries and identify potential impacts of requiring working from home.	Pass a bill that requires that employers in select industries allow work for home for eligible employees.		
T-G.3-T.11.2: Continue to support CT Rides to boost interest in carpooling services statewide, amplify their Drive Less CT Challenge by providing additional funding allocation. CTDOT: Expand carpool lanes and provide monetary incentives for carpooling, subsidize fares		S	US DOT
Authority:	Has Legal Authority		
T-G.3-T.11.3: Partner with CT Rides to boost interest in carpooling services, encourage residents to participate in Drive Less CT. Create a local carpooling program among local community groups.		L	CT RIDES CTDOT
Authority:	Has Legal Authority		

Strategy T.12: Improve broadband access (with at least 1GBPS) state-wide.

This is a groundwork strategy for: T.11

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.12.1: Continue to expand broadband access.		S	CT DEEP
Authority:	Has Legal Authority		
T-G.3-T.12.2: Subsidize broadband in LIDAC communities.		S	CT DEEP
Authority:	Must Obtain Legal Authority		
Schedule to Obtain Authority			
Short Term:	Pass a bill subsidizing or covering the costs of broadband for eligible communities.		

Strategy T.13: Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.

Goal 3: Reduce emissions from private vehicles			
Tactic		**Tactic Level**	**Funding Agency**
T-G.3-T.13.1: Follow recommendations of CT Hydrogen Roadmap and develop renewably produced hydrogen resources. Including the creation of financial incentives for hydrogen vehicle and infrastructure adoption. CT Deep currently has the authority to provide fuel cell vehicle purchase incentives to drivers under Connecticut General Statute §22a-202(b).		S	US DOE
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Short Term	**Long Term**		
Follow short term steps of the Hydrogen Roadmap including passing a law which provides a workable definition of clean hydrogen and create funding to transition heavy vehicles to the alternative fuel.	Create additional funding sources for Hydrogen and through policy promotes the growth of Hydrogen Clusters and workforce development.		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario long-term investments in green energy at the federal and state levels begin delivering returns and are compounded by incremental benefits from new and innovative technologies. The improved access and lower cost to alternate fuels causes many to forgo behavioral changes required to densify population centers, choosing instead to maintain their current vehicle-centric lifestyles. So, while

improvements in technology provide the opportunity to significantly impact transportation based emissions, some opportunity is left on the table, including transitioning people to using public transit. Municipalities maintain their authority to adjust zoning and land use planning but lose authority to encourage behaviors like carpooling as electric and alternative fuel personal vehicles become commonplace in lieu of transit. The state will lose authority if private market hydrogen developments make implementation of a hydrogen fuel network and the acquiring of hydrogen fuel vehicles easy at the local level without state intervention.

In the 'Coping with Gridlock' scenario the failures of the federal and state governments to act results in overall reduction in available funding as budgets aren't passed and existing programs lapse. Municipalities pick up the slack and will have to find new sources of funding. Dysfunction at the state level will make it difficult to provide needed subsidies to develop a more robust alternative fuel network or fund research into new fuel sources. Many consumers will choose not to make the shift to alternative fuel vehicles due to the lack of a convenient fueling network and declining or weak government subsidies. Municipalities maintain their authority to adjust zoning and land use planning, but the state gives up its authority to reduce trips by continuing to support the expansion of internet access and to provide credits for electric and alternative fuel vehicles as it fails to pass funding for these programs.

In the 'Watershed Moment' scenario, intensifying climate disasters motivate people to begin transitioning to lower emissions lifestyles. Residents may be more motivated to take transit, to carpool, to move to a place with more transit options or to purchase an electric vehicle. However, climate change has put more pressure on existing transit systems and has damaged infrastructure while driving people in-land. Municipalities maintain their authority.

ELECTRICITY PRODUCTION AND CONSUMPTION SECTOR

The electricity production and consumption sector is a significant contributor to greenhouse gas (GHG) emissions in Connecticut, accounting for approximately 9 percent of the state's total emissions, as outlined in the Priority Climate Action Plan (PCAP). Emissions in this sector primarily arise from the combustion of fossil fuels, including natural gas, oil, and coal, used to generate electricity. These processes release carbon dioxide (CO2) as the dominant GHG, but they also contribute smaller quantities of methane (CH4) and nitrous oxide (N2O), both of which have higher global warming potentials (Fall 2023 Regional Planning Studio, 2024, p. 55).

In the New Haven-Milford Metropolitan Statistical Area (MSA), the sector plays a critical role in powering residential, commercial, and industrial activities. However, the reliance on fossil fuel-based electricity generation remains a major barrier to achieving Connecticut's climate goals. The PCAP emphasizes that transitioning the electricity grid

to renewable energy sources, such as solar, wind, and hydropower, is essential for reducing emissions while ensuring a reliable energy supply.

Connecticut has made progress in modernizing its electricity system, including investments in renewable energy infrastructure and the promotion of distributed energy resources such as rooftop solar and battery storage. However, challenges persist, particularly in scaling up renewable energy adoption, integrating these resources into the grid, and addressing disparities in energy access and affordability. Low-income and disadvantaged communities (LIDACs) often face higher energy burdens, making equity an essential consideration in planning and implementation (2024, pp. 59–60).

The electricity sector's transformation presents a significant opportunity to decarbonize other sectors, including transportation and buildings, through electrification. By leveraging renewable energy sources and improving energy efficiency, the sector can play a central role in achieving Connecticut's net-zero emissions target. As outlined in the PCAP, coordinated efforts across federal, state, regional, and local levels will be critical to achieving this vision (2024, p. 56).

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services

Goal E-G.1 focuses on reducing electricity consumption from fossil fuel sources in municipal buildings and services. This effort aims to transition municipal energy use toward renewable and clean energy sources, thereby lowering greenhouse gas (GHG) emissions and decreasing dependency on fossil fuels. Municipal buildings and services, including town halls, schools, libraries, and essential services like water treatment facilities, often account for a significant share of local government energy consumption.

The Priority Climate Action Plan (PCAP) emphasizes that reducing electricity use in municipal operations not only decreases emissions but also sets an example for the broader community. This transition can be achieved through measures such as retrofitting municipal buildings, integrating renewable energy sources like solar or wind, and improving energy efficiency in heating, cooling, and lighting systems. It also provides opportunities for cost savings over time, particularly as energy prices fluctuate and renewable technologies become more affordable.

Achieving this goal aligns with Connecticut's overarching climate objectives, including net-zero emissions by 2050. However, successful implementation requires coordinated action across federal, state, and local levels, adequate funding, and legislative support to overcome barriers such as municipal aggregation challenges and outdated energy systems.

Strategy E.01: Utilize on-site renewables (e.g., rooftop solar) to power municipal operations

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services			
Tactic		**Tactic Level**	**Funding Agency**
E-G.1-E.01.1: Connecticut can take advantage of inflation reduction act direct payments to offset the cost of purchasing panels, as well as the additional Energy Communities credit that New Haven County receives.		S	CTGB VFA
Authority:	Has Legal Authority		
E-G.1-E.01.2: Municipalities can take advantage of direct payments to offset the cost of purchasing panels, as well as the additional Energy Communities credit that New Haven County receives.		L	CTBG
Authority:	Has Legal Authority		

Strategy E.02: Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and invest in storage capabilities

This strategy has the following groundwork: E.06

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services			
Tactic		**Tactic Level**	**Funding Agency**
E-G.1-E.02.1: Towns can guarantee long-term purchasing agreements for clean energy from any newly formed zero emissions municipal production sites. Municipalities have this authority under home rule, defined in Connecticut General Statutes §7		L	CTGB
Authority:	Has Legal Authority		
E-G.1-E.02.2: Municipalities can take advantage of direct payments to purchase battery storage infrastructure.		L	CTGB VFA
Authority:	Has Legal Authority		

Strategy E.03: Increase procurement of renewable energy for municipal services

This strategy has the following groundwork: E.06

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services			
Tactic		**Tactic Level**	**Funding Agency**
E-G.1-E.03.1: Municipalities can form municipal aggregation cooperatives with neighboring towns to procure and promote renewable energy.		L	CTGB
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Short Term:	Enabling legislation H.B. 5360 must pass to allow for the formation of municipal aggregation companies. CT Gen Statute §16-245. (2023) currently prohibits municipalities from forming municipal utilities without approval from state bodies.		

Strategy E.04: Pursue microgrid projects that integrate on-site renewables and grid power to power municipal services

This strategy has the following groundwork: E.06

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services			
Tactic		**Tactic Level**	**Funding Agency**
E-G.1-E.04.1: CT DEEP: Apply and implement Microgrid based projects. Authority was renewed under Connecticut General Statutes §16-243y in 2023.		L	CT DEEP
Authority:	Has Legal Authority		

Strategy E.05: Increase efficiency of wastewater treatment facilities using on-site solar or biogas

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services			
Tactic		**Tactic Level**	**Funding Agency**
E-G.1-E.05.1: GNHPCWA and other regional water management authorities may require that wastewater treatment sites within their jurisdiction pursue efficiency strategies.		R	CT DEEP CTGB
Authority:	Has Legal Authority		
E-G.1-E.05.2: Municipalities can require that wastewater contracts are only with companies that use low emission practices.		L	EPA
Authority:	Has Legal Authority		
E-G.1-E.05.3: Municipalities can upgrade public wastewater treatment with efficiency improvements.		L	CT DEEP EPA USDA CT DPH
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, Federal and state support for renewable energy remains robust, facilitating the transition away from fossil fuels in municipal operations. Municipalities continue to access grants and incentives for energy efficiency projects, while legislative mandates at the state level provide additional support for renewable energy integration. This scenario accelerates the shift to clean energy, with streamlined permitting processes and technological advancements enabling widespread adoption. There will be no change in the authority to implement this goal.

In the 'Coping with Gridlock' scenario, municipalities face significant challenges in implementing this goal. Federal funding under the Bipartisan Infrastructure Law (BIL) is not renewed, limiting resources for energy transition projects. State-level legislative efforts, such as H.B. 5360, fail to pass, maintaining restrictive regulations like 16-245 that

make municipal aggregation difficult. This restricts municipalities' ability to procure clean energy at competitive rates. Funding and general support become scarce, hindering implementation. Additionally, approving new legislation that restricts economic activity may face political resistance, further delaying progress toward reducing fossil fuel consumption in municipal buildings. The state and municipalities lose authority to implement strategies under this goal.

In the 'Watershed Moment' scenario, Federal, State, and municipal collaboration continues to support energy transition initiatives, maintaining existing funding levels and legislative backing. Municipalities leverage available resources to improve energy efficiency and integrate renewable energy in their operations. This scenario emphasizes steady progress toward achieving emissions reductions, with municipalities continuing to implement best practices and benefit from a favorable policy environment. There will be no change in authority at any level.

Goal 2: Increase renewable energy production and 2 consumption at the local scale

Goal E-G.2 focuses on increasing the production and consumption of renewable energy at the local level to reduce greenhouse gas (GHG) emissions and promote energy independence. This goal seeks to empower municipalities to adopt and expand renewable energy initiatives such as community solar programs, wind farms, and geothermal systems. Additionally, it encourages the integration of renewable energy into affordable housing, commercial buildings, and municipal facilities to create more sustainable and resilient communities.

The Priority Climate Action Plan (PCAP) highlights the critical need for local-scale renewable energy development to meet Connecticut's climate goals, including achieving net-zero emissions by 2050. Local governments are uniquely positioned to implement community-based projects that address specific energy needs while ensuring equitable access to clean energy for disadvantaged populations. Programs like Solar for All and renewable energy zoning are central to this goal's success. However, these initiatives require strong financial incentives, supportive policies, and collaboration across federal, state, and municipal levels.

Achieving this goal not only helps mitigate climate change but also reduces energy costs, increases local job opportunities in the renewable energy sector, and enhances community resilience to extreme weather events.

Strategy E.06: Set up outreach programs that communicate state and federal level financing programs supporting on-site renewable generation

This is a groundwork strategy for: E.02, E.03, E.04

Goal 2: Increase renewable energy production and 2 consumption at the local scale			
Tactic		**Tactic Level**	**Funding Agency**
E-G.2-E.06.1: Municipalities can communicate financial benefits of Residential Renewable Energy Solutions (RRES) Program to building owners who sell solar power generated on-site back into the local electric grid		L	EPA CT DEEP
Authority:	Has Legal Authority		
E-G.2-E.06.2: Municipalities can promote partnerships with entities such as CT Green Bank established as part of Connecticut Public Act No. 16-212, accelerating green energy adoption in CT to bring onsite renewable to commercial and non-profit owned properties		L	EPA
Authority:	Has Legal Authority		

Strategy E.07: Evaluate the potential of siting renewable energy projects on vacant, underutilized land

Goal 2: Increase renewable energy production and 2 consumption at the local scale			
Tactic		**Tactic Level**	**Funding Agency**
Municipalities can fund a study to inventory and update ownership status and existing use of vacant land. Municipalities are encouraged to promote brownfield reuse but ultimately land owned privately and unable to be acquired by the city may be unavailable for siting renewable energy projects.		L	EPA
Authority:	Has Legal Authority		

Strategy E.08: Adopt clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.

Goal 2: Increase renewable energy production and 2 consumption at the local scale			
Tactic		**Tactic Level**	**Funding Agency**
Municipalities are in charge of their own zoning according to Connecticut General Statutes §8-2(a).		L	CTGB
Authority:	Has Legal Authority		

Strategy E.09: Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.

Goal 2: Increase renewable energy production and 2 consumption at the local scale			
Tactic		**Tactic Level**	**Funding Agency**
E-G.2-E.09.1: Local housing authorities can partner with developers to promote more affordable housing and partner with and apply for grants through the Sunbridge project to bring battery storage and onsite renewables to LIDAC communities.		L	CTGB EPA
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, federal mandates support renewable energy integration at all levels, including a requirement to incorporate renewable energy into affordable housing projects. This mandate, combined with robust state and municipal support, accelerates the transition to clean energy. Community solar programs and local wind and geothermal projects expand significantly, supported by technological advancements and streamlined permitting. However, rising housing costs may create challenges in balancing clean energy development with affordability, requiring careful policy design to ensure equity. There will be no change in authority to implement this goal under this scenario.

In the 'Coping with Gridlock' scenario, municipalities face significant obstacles in implementing this goal. Financial incentive programs, such as those provided through the Green Bank, are weakened or eliminated as the legislature disbands or reduces its authority. Federal funding for programs like Justice40 and Solar for All also ceases, leaving municipalities with limited resources to support renewable energy projects. Additionally, legislative barriers may restrict municipalities' ability to evaluate and repurpose abandoned brownfields for renewable energy development. Rising housing costs and a lack of support for clean energy zoning further hinder progress, leaving municipalities unable to meet renewable energy targets. Under this scenario, municipalities lose authority.

In the 'Watershed Moment' scenario, federal funding and programs like Justice40 continue to provide critical support, enabling municipalities to develop renewable energy projects on a local scale. Zoning changes and renewable energy mandates align with state and municipal goals, supporting the integration of renewable energy into housing and commercial developments. However, rising housing costs may make some initiatives politically challenging, requiring balanced approaches to ensure affordability and sustainability. Overall, municipalities are able to steadily expand renewable energy production and consumption under favorable conditions. There will be no change in authority across federal, state, or municipal levels.

Goal 3: Prepare local economies for renewable energy transition

Goal E-G.3 emphasizes the need to prepare local economies for the transition to renewable energy by fostering workforce development, promoting economic growth, and aligning municipal plans with the demands of a clean energy future. As renewable energy industries expand, communities must ensure that their economies are ready to adapt to the shift from fossil fuels to clean energy sources like solar, wind, and geothermal. This includes creating training programs for workers, supporting local businesses to participate in the renewable energy supply chain, and leveraging economic development planning to attract investments in clean energy infrastructure.

The Priority Climate Action Plan (PCAP) highlights that renewable energy presents a transformative opportunity for Connecticut's economy. The renewable energy transition can create high-quality jobs, particularly in sectors like offshore wind energy, solar installation, and energy-efficient building retrofits. However, the transition also requires careful planning to address potential challenges, such as funding gaps for workforce development programs, equitable access to new opportunities, and ensuring that small towns and disadvantaged communities are not left behind.

Preparing local economies for this transition aligns with Connecticut's goals of achieving net-zero emissions by 2050 while building economic resilience. Municipalities play a critical role in supporting training programs, incentivizing clean energy businesses, and collaborating with state and regional entities to create a thriving renewable energy economy.

Strategy E.10: Prepare economic development plans around offshore wind energy

Goal 3: Prepare local economies for renewable energy transition			
Tactic		**Tactic Level**	**Funding Agency**
E-G.3-E.10.1: Connecticut Department of Economic and Community Development has already included Connecticut Innovations, a venture capital firm to encourage renewable energy. In addition to this the state should prepare a specific economic development plan around this growing sector		S	CT DEEP EPA
Authority:	Has Legal Authority		
E-G.3-E.10.2: Municipalities can prepare economic development plans, especially those near offshore wind sites		L	CT DEEP EPA CT DECD
Authority:	Has Legal Authority		

Strategy E.11: Partner with local workforce development centers and union chapters to prepare workforce in key renewable energy sectors

Goal 3: Prepare local economies for renewable energy transition			
Tactic		**Tactic Level**	**Funding Agency**
E-G.3-E.11.1: CT Labor: can encourage and support regional groups to develop robust training programs and further develop their own programs		S	CTGB
Authority:	Has Legal Authority		
E-G.3-E.11.2: The Connecticut Clean Economy Council is currently working on an assessment around economic and workforce development; this is a department underneath the governor's workforce council		S	CT DECD CT DOE
Authority:	Has Legal Authority		
E-G.3-E.11.3: Local workforce development like BROWN and South Central Workforce alliance create and recruit participants for programs focusing on clean energy jobs		R	CT DECD CT DOE
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, the renewable energy sector becomes a cornerstone of the national economy, driving rapid growth in workforce needs and workforce development programs. Federal and state funding remains robust, enabling municipalities to support training programs and attract investments in renewable energy infrastructure. Workforce development programs expand to meet the growing demand for skilled labor in sectors like offshore wind and solar energy. Additional funding is allocated to ensure equitable access to these opportunities, allowing all communities to benefit from the transition. There will be no change in the authority to implement this goal.

In the 'Coping with Gridlock' scenario, significant challenges arise due to declining federal involvement in renewable energy programs. Without state-level approval, progress on economic development planning for offshore wind and other renewable energy projects stalls. Municipalities are forced to bear a larger share of the costs associated with workforce development, as federal funding dries up. State-level funding barriers further exacerbate these challenges, leaving local groups to seek non-governmental support to sustain economic transition efforts. The lack of coordination and resources slows progress, leaving communities less prepared for the renewable energy economy. Under this scenario, the state loses authority to implement.

In the 'Watershed Moment' scenario, this goal becomes critically important as the renewable energy sector takes on a significant role in the national economy. The need for workforce development and funding becomes more urgent, with municipalities playing a leading role in preparing their local economies for the transition. Federal and state

funding levels remain stable, allowing municipalities to establish and expand training programs and create partnerships with renewable energy businesses. Workforce development programs grow rapidly, and municipalities work collaboratively to ensure that disadvantaged communities can access these economic opportunities. There will be no change in the authority to implement this goal.

Goal 4: Cap methane emissions from hydroelectric facilities

Goal E-G.4 aims to address methane emissions from hydroelectric facilities as part of Connecticut's broader efforts to reduce greenhouse gas (GHG) emissions. While hydroelectricity is often considered a clean energy source, reservoirs created for hydroelectric facilities can release methane due to the decomposition of organic matter in submerged areas. Methane is a potent greenhouse gas with a global warming potential significantly higher than that of carbon dioxide over a 20-year period, making it critical to mitigate emissions from these sources.

The Priority Climate Action Plan (PCAP) highlights the need to cap methane emissions from hydroelectric facilities as part of the state's strategy to achieve net-zero emissions by 2050. This involves monitoring methane emissions, developing regulatory caps, and implementing best practices to reduce methane generation, such as improved reservoir management and vegetation removal before flooding. While Connecticut's reliance on hydroelectric power is relatively modest compared to other energy sources, addressing methane emissions ensures the environmental benefits of hydroelectricity are maximized (Fall 2023 Regional Planning Studio, 2024, pp. 62–63).

By targeting these emissions, this goal complements broader renewable energy strategies and reinforces Connecticut's leadership in clean energy innovation and sustainability. Effective implementation requires collaboration among federal, state, and local stakeholders, as well as engagement with hydroelectric facility operators.

Strategy E.12: Cap methane emissions from hydroelectric facilities (develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project. (O'Neill, 2023).)

Goal 4: Cap methane emissions from hydroelectric facilities			
Tactic		**Tactic Level**	**Funding Agency**
E-G.4-E.12.1: Federal Energy Regulatory Commission (FERC) has regulatory power over hydroelectricity and may require dams to meet standards within their permitting process		F	US DOE
Authority:	Has Legal Authority		
E-G.4-E.12.2: Municipalities that own their dams may require emissions caps on their dams		L	EPA CT DEEP US DOE
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, federal and state policies supporting renewable energy transitions remain stable, allowing methane capping measures to proceed without interruption. Hydroelectric facilities implement advanced monitoring technologies and best practices, ensuring methane emissions are minimized as part of Connecticut's clean energy strategy. The fossil-free transition reinforces the importance of addressing emissions from all energy sources, including hydroelectricity, as part of a comprehensive climate plan. There will be no change in authority to implement this goal.

In the 'Coping with Gridlock' scenario, existing federal and state regulations remain in place, allowing continued implementation of methane capping measures at hydroelectric facilities. However, limited progress may occur due to funding constraints and a lack of federal leadership in advancing clean energy technologies. Facility operators rely on state guidance to implement low-cost methane reduction practices, ensuring compliance but potentially slowing innovation and widespread adoption of advanced technologies. There is no change in authority under this scenario.

In the 'Watershed Moment' scenario, federal, state, and municipal collaboration continues to support methane reduction at hydroelectric facilities, with stable funding and regulatory oversight. This scenario emphasizes the integration of methane capping measures as part of a larger strategy to optimize the environmental performance of all renewable energy sources. Operators adopt best practices and collaborate with state agencies to achieve compliance, ensuring steady progress toward emissions reductions. We anticipate no change in authority to implement this goal.

ENERGY EFFICIENCY IN BUILDINGS SECTOR

The building sector is one of the most significant contributors to greenhouse gas emissions in the New Haven-Milford Metropolitan Statistical Area (MSA). Energy use in buildings accounts for emissions both directly, from on-site combustion of fuels such as natural gas, heating oil, and propane, and indirectly, through electricity consumption. These emissions arise from activities such as space and water heating, cooling, and powering appliances and lighting.

In New Haven County, residential and commercial buildings combined are responsible for approximately 33 percent of the region's total greenhouse gas emissions, making it a key sector for climate mitigation efforts. Within the state, heating oil and natural gas are the predominant energy sources for space heating, contributing substantially to emissions. The reliance on older, less energy-efficient buildings further amplifies the sector's impact. Many structures in the area predate modern building codes that

emphasize energy efficiency, resulting in higher energy consumption and greater emissions (Fall 2023 Regional Planning Studio, 2024, p. 65).

This sector's emissions profile also includes indirect contributions from refrigerants, which are potent greenhouse gases with high global warming potential (GWP). While these emissions are smaller in scale compared to CO2, they can have an outsized impact on the climate due to their GWP (2024, p. 152).

Energy efficiency in buildings not only represents an opportunity to reduce emissions but also delivers significant co-benefits. These include reduced energy costs, improved indoor air quality, and enhanced resilience to climate impacts. For low-income and disadvantaged communities (LIDACs), energy efficiency improvements can address disproportionate energy burdens, which arise from high utility costs relative to income (Fall 2023 Regional Planning Studio, 2024, pp. 65–66).

Addressing emissions in this sector requires a combination of strategies, including retrofitting existing buildings, implementing energy-efficient building codes, transitioning to renewable energy sources for heating and cooling, and integrating advanced technologies like smart energy systems. Together, these measures can significantly curtail emissions while improving the region's overall quality of life.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations

Goal B-G.1 focuses on achieving energy efficiency and sustainability in the built environment by strengthening building codes and regulations. The aim is to ensure that new construction and major renovations align with stringent energy performance standards, including net-zero energy targets and climate resilience measures. These codes encompass requirements for insulation, HVAC systems, lighting efficiency, renewable energy integration, and sustainable materials. Mandating these standards not only reduces greenhouse gas emissions but also enhances energy efficiency, promotes resilience, and supports equity in housing and infrastructure.

The Priority Climate Action Plan identifies building codes and regulations as a cornerstone of effective climate action. Strong codes help reduce the long-term energy demand of buildings, which account for a significant share of regional greenhouse gas emissions. Moreover, they address the needs of low-income and disadvantaged communities by improving energy affordability and building resilience to extreme weather (Fall 2023 Regional Planning Studio, 2024, p. 64). Implementation requires collaboration among federal, state, regional, and local entities, as well as public engagement to ensure compliance and buy-in.

Strategy B.01: Require building owners to annually benchmark and disclose their energy usage and efficiency ratings

<table>
<tr><th colspan="4">Goal 1: Ensure energy efficiency and sustainability through building codes and regulations</th></tr>
<tr><th colspan="3">Tactic</th><th>Tactic Level</th><th>Funding Agency</th></tr>
<tr><td colspan="3">B-G.1-B.01.1: Federal entities can incentivize benchmarking through federal grants for sustainable practices.</td><td rowspan="2">F</td><td rowspan="2">EPA</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.01.2: Pass legislation requiring energy usage disclosure and have CT DEEP regulate reporting.</td><td rowspan="5">S</td><td rowspan="5">US DOE
CT DEEP</td></tr>
<tr><td>Authority:</td><td colspan="2">Must Obtain Legal Authority</td></tr>
<tr><td colspan="3">Schedule to Obtain Authority</td></tr>
<tr><td>Short Term</td><td colspan="2">Long Term</td></tr>
<tr><td>Introduce legislation requiring mandatory benchmarking for commercial and multifamily buildings, beginning with buildings over a certain square footage (e.g., 50,000 sq ft).</td><td colspan="2">Over time, expand to include a wider scope of buildings, introduce digital reporting requirements, and allocate enforcement resources for improved compliance.</td></tr>
<tr><td colspan="3">B-G.1-B.01.3: Councils of Government (COGs) can facilitate regional data-sharing initiatives for benchmarking.</td><td rowspan="2">R</td><td rowspan="2">US DOE</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.01.4: Municipalities can enforce compliance, manage data submissions, and implement existing benchmarking platforms like ENERGY STAR Portfolio Manager. Legislative authority under Connecticut General Statutes §7-148(7)(A)(ii) and (H)(xi) support the regulation of building energy performance, enabling municipalities to establish ordinances for annual energy benchmarking and disclosure</td><td rowspan="2">L</td><td rowspan="2">US DOE
CT DEEP</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.01.5: Create outreach programs to educate building owners on benchmarking standards. Municipalities have this authority under home rule, defined in Connecticut General Statutes §7.</td><td rowspan="2">L</td><td rowspan="2">US DOE
CT DEEP</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
</table>

Strategy B.02: Provide educational resources and support to building owners on improving energy performance

This is a groundwork strategy for: B.01, B.10

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations			
Tactic		**Tactic Level**	**Funding Agency**
B-G.1-B.02.1: DEEP and CT Green Bank to coordinate and expand educational programs on energy efficiency, leveraging platforms like Energize CT, which is already funded in part by DEEP and serves as a key resource. Utilizing statutory authority under Connecticut General Statutes §16-245m and §16-245n, the state can integrate and enhance existing programs to reach broader audiences.		S	CT DEEP CTGB
Authority:	Has Legal Authority		
B-G.1-B.02.2: COGs to organize region-wide education programs on best practices for energy efficiency		R	None Identified
Authority:	Has Legal Authority		
B-G.1-B.02.3: Local governments to host workshops, provide resources, and build community awareness on energy performance improvements.		L	US DOE
Authority:	Has Legal Authority		
B-G.1-B.02.4: Develop and distribute educational materials on energy performance standards and benefits.		L	US DOE
Authority:	Has Legal Authority		

Strategy B.03: Ensure all municipal operations rely on 100 percent renewable energy sources

This strategy has the following groundwork: B.04, B.06

<table>
<tr><th colspan="4">Goal 1: Ensure energy efficiency and sustainability through building codes and regulations</th></tr>
<tr><th colspan="3">Tactic</th><th>Tactic Level</th><th>Funding Agency</th></tr>
<tr><td colspan="3">B-G.1-B.03.1: Federal grants to support municipal renewables transition, with DOE oversight on renewable energy standards.</td><td rowspan="2">F</td><td rowspan="2">EPA
USDA</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.03.2: CT DEEP: establish mandates or incentives for municipalities to improve their renewable energy mix, Connecticut General Statute §16a-38b empower CT DEEP and the Department of Administrative Services to meet energy savings goals; CT Green Bank, established as part of Connecticut Public Act No. 16-212, can provide renewable energy financing.</td><td rowspan="5">S</td><td rowspan="5">CT DEEP
CTGB
EPA</td></tr>
<tr><td>Authority:</td><td colspan="2">Must obtain Legal Authority</td></tr>
<tr><td colspan="3">Schedule to Obtain Authority</td></tr>
<tr><td>Short Term</td><td colspan="2">Long Term</td></tr>
<tr><td>Propose and advocate for state-level policy mandating a percentage of renewable energy in municipal operations, beginning with incentives.</td><td colspan="2">Work towards a statewide mandate for 100 percent renewable energy in municipal operations by a specified deadline, backed by grants for infrastructure.</td></tr>
<tr><td colspan="3">B-G.1-B.01.3: Support collaborative purchasing of renewable energy for municipal operations across towns. COGs can facilitate initial agreements for group energy purchases among willing towns, focusing on power from existing renewable resources like solar farms. This can become a regional green energy cooperative to facilitate large-scale renewable energy purchases, creating cost efficiencies for all participating towns.</td><td rowspan="2">R</td><td rowspan="2">None Identified</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.03.4: Procure renewable energy through power purchase agreements (PPAs) with green energy providers, leveraging local authority to contract and manage municipal energy procurement effectively.</td><td rowspan="2">L</td><td rowspan="2">US DOE</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.03.5: Require new municipal projects incorporate renewable energy sources, leveraging state and federal grants as needed.</td><td rowspan="2">L</td><td rowspan="2">None Identified</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
</table>

Strategy B.04: Advocate for strict building codes and achieve net zero energy usage

This strategy has the following groundwork: B.04, B.06

<table>
<tr><th colspan="4">Goal 1: Ensure energy efficiency and sustainability through building codes and regulations</th></tr>
<tr><th colspan="3">Tactic</th><th>Tactic Level</th><th>Funding Agency</th></tr>
<tr><td colspan="3">B-G.1-B.04.1: Offer federal incentives for jurisdictions adopting net zero energy codes and stringent building standards.</td><td rowspan="2">F</td><td rowspan="2">US DOE</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.04.2: State legislature to implement high-performance building codes with DEEP enforcement, as established under the Connecticut State Building Code (SBC) under Connecticut General Statutes §29-252</td><td rowspan="2">S</td><td rowspan="2">CT DEEP</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
<tr><td colspan="3">B-G.1-B.01.3: COGs: align regional building code initiatives for consistency across municipalities.</td><td rowspan="4">R</td><td rowspan="4">US DOE</td></tr>
<tr><td>Authority:</td><td colspan="2">Must obtain Legal Authority</td></tr>
<tr><td colspan="3">Schedule to Obtain Authority</td></tr>
<tr><td>Short Term</td><td colspan="2">Long Term</td></tr>
<tr><td>Advocate for legislation supporting COG review of member town building codes for consistency and emissions reduction. Initiate collaboration among municipalities to develop a shared model for building codes, which can later be adopted by multiple towns. A state bill would need to be passed empowering the COGs to review building codes in the same way they review land use.</td><td colspan="2">Implement regional energy efficiency standards, with COGs monitoring adherence and coordinating updates to remain current with technology and climate goals.</td></tr>
<tr><td colspan="3">B-G.1-B.01.4: Local building departments to enforce updated codes in new construction and renovations, working within the framework of the Connecticut State Building Code. Municipalities can advocate for stricter energy efficiency standards through collaboration with developers and state-level coordination to influence code updates</td><td rowspan="5">L</td><td rowspan="5">None Identified</td></tr>
<tr><td>Authority:</td><td colspan="2">Must obtain Legal Authority</td></tr>
<tr><td colspan="3">Schedule to Obtain Authority</td></tr>
<tr><td>Short Term</td><td colspan="2">Long Term</td></tr>
<tr><td>Begin by adopting energy efficiency guidelines for all new public buildings; seek support from city council to implement these standards more widely.</td><td colspan="2">Develop and enforce comprehensive building code regulations that align with state or regional net zero goals, with stringent compliance measures.</td></tr>
<tr><td colspan="3">B-G.1-B.04.5: Establish incentives for developers who meet or exceed energy efficiency standards.</td><td rowspan="2">Local</td><td rowspan="2">IRS</td></tr>
<tr><td>Authority:</td><td colspan="2">Has Legal Authority</td></tr>
</table>

Strategy B.05: Offer incentives and expedited permitting for projects that achieve green building certifications

This is a groundwork strategy for: B.06, B.12

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations			
Tactic		**Tactic Level**	**Funding Agency**
B-G.1-B.05.1: Provide federal grants or tax credits for green building projects		F	US DOE
Authority:	Has Legal Authority		
B-G.1-B.05.2: Reinstate and enhance tax incentives for projects that achieve high-performance building standards, such as LEED Gold or higher, as per Connecticut General Statutes §12-217mm. Additionally, implement expedited review processes for these projects to encourage sustainable development. This approach would require legislative action to amend existing statutes or introduce new legislation, thereby promoting green building practices across the state.		S	None Identified
Authority:	Has Legal Authority		
B-G.1-B.05.3: COGs to promote green certification and energy-efficient projects across municipalities by convening stakeholders, facilitating knowledge-sharing, and recommending streamlined policies that encourage adoption. COGs are established under Connecticut General Statutes §4-124j and §4-124u.		R	None Identified
Authority:	Has Legal Authority		
B-G.1-B.05.4: Utilize flexible development ordinances to provide property tax reductions and expedited permitting for projects achieving green building certifications, ensuring alignment with municipal sustainability goals. Property tax reductions could resemble those offered in Connecticut General Statutes §12-81, which provides for tax exemptions for things like air pollution control structures and equipment. Municipal control over permitting resides in Connecticut General Statutes §8-2.		L	US DOE
Authority:	Has Legal Authority		

Strategy B.06: Create a Building Energy Committee and draft Energy Plan focused on building efficiency

This is a groundwork strategy for: B.01, B.03, B.05, B.07, B.08, B.09, B.10, B.11

Goal:			
Tactic		**Tactic Level**	**Funding Agency**
B-G.1-B.06.1: CT DEEP to provide guidelines and incentives for communities to implement energy plans.		F	CT DEEP EPA
Authority:	Has Legal Authority		

Goal:			
Tactic		**Tactic Level**	**Funding Agency**
B-G.1-B.06.2: COGs to coordinate between local energy committees.		S	USDA
Authority:	Has Legal Authority		
B-G.1-B.06.3: Local governments can create a committee and request that they develop an energy plan.		R	HUD
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, federal incentives encourage early adoption of energy-efficient building codes. State funding and mandates ensure strict enforcement of net-zero energy targets, supporting developers and municipalities in achieving compliance. Regional coordination flourishes, with COGs facilitating cross-municipal workshops and sharing resources to implement building codes effectively. Municipalities benefit from enhanced reporting requirements and streamlined permitting processes, making it easier to integrate renewable energy and efficiency measures. Educational campaigns are tailored to various demographics, ensuring that stakeholders at all levels are engaged and informed. No change in authority occurs.

In the 'Coping with Gridlock' scenario, federal authority erodes, reducing grants and support for energy efficiency programs. States face funding constraints, limiting their ability to enforce building codes, especially in areas with local resistance. Regional collaboration diminishes, with municipalities focusing on isolated priorities rather than coordinated efforts. Municipalities struggle to meet reporting and compliance requirements without adequate funding. Outreach declines due to budget cuts, leaving stakeholders under informed and unprepared to adopt updated building standards. Developers face fewer incentives, which slows the transition to energy-efficient and sustainable practices. Both state and federal levels of governance lose authority.

In the 'Watershed Moment' scenario, Federal grants increase significantly, providing municipalities and states with the resources to enforce and expand building efficiency standards. Enhanced state funding supports stricter code enforcement, with regional collaboration helping to track energy use and benchmark progress. Councils of Governments (COGs) develop regional energy use databases and provide municipalities with implementation resources. Outreach campaigns expand to educate homeowners and developers on resilience and climate impacts, fostering widespread adoption of energy-efficient practices. No change occurs in the authority.

Goal 2: Renewable heating access for low-income homes

Goal B-G.2 seeks to provide equitable access to renewable heating systems for low-income households, reducing energy costs and greenhouse gas emissions while

improving energy resilience. This initiative prioritizes the adoption of solar and other renewable heating technologies in vulnerable communities, addressing the disproportionate energy burden faced by low-income residents. By transitioning from fossil fuel-based heating systems to renewable alternatives, this goal aligns with broader efforts to enhance climate resilience and achieve regional net-zero objectives.

Strategy B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties.

This strategy has the following groundwork: B.06, B.13

Goal 2: Renewable heating access for low-income homes			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.07.1: Provide federal tax credits or grants for renewable heating systems in low-income housing.		F	US DOE
Authority:	Has Legal Authority		
B-G.2-B.07.2: State legislature to strengthen incentives for solar heating installations in low-income housing, leveraging existing property tax exemptions under Connecticut General Statutes §12-81(57) and §12-81(63). CT Green Bank to manage funding and program execution, ensuring streamlined access for eligible residents		S	US DOE
Authority:	Has Legal Authority		
B-G.2-B.07.3: COGs to coordinate regional incentives and assistance for low-income solar initiatives such as a regional solar initiative to share resources and contractors across municipalities, focusing initially on high-impact areas. Develop a shared framework for regional solar heating projects in low-income housing, integrating funding and technical resources among towns.		R	US DOE
Authority:	Has Legal Authority		
B-G.2-B.07.4: Municipal housing agencies can ensure local compliance and support for solar installations in low-income neighborhoods.		L	US DOE
Authority:	Has Legal Authority		
B-G.2-B.07.5: Streamline permitting processes for solar heating installations in low-income residential buildings. In time this can evolve into streamlined permitting for solar installations across all housing types to enhance accessibility and promote renewable adoption.		L	None Identified
Authority:	Has Legal Authority		

Strategy B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and reduce barriers to solar uptake.

This strategy has the following groundwork: B.06, B.13

Goal 2: Renewable heating access for low-income homes			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.08.1: Offer federal funding for community solar initiatives, particularly in underserved areas.		F	None Identified
Authority:	Has Legal Authority		
B-G.2-B.08.2: DEEP to oversee community-based solar heating programs; CT Green Bank to support financing for community solar.		S	USDA
Authority:	Has Legal Authority		
B-G.2-B.08.3: COGs facilitate multi-town community solar programs with shared resources to lower the cost of installations for each municipality. Such a program can develop into a regional solar program with shared resources, contractor pools, and funding for solar heating installations across communities.		R	None Identified
Authority:	Has Legal Authority		
B-G.2-B.08.4: Municipalities to promote solar heating as part of community development initiatives		L	US DOE
Authority:	Has Legal Authority		
B-G.2-B.08.5: Create local incentives (e.g., grants or rebates) for residential solar heating system installations.		L	None Identified
Authority:	Has Legal Authority		

Strategy B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.

This strategy has the following groundwork: B.06, B.13

Goal 2: Renewable heating access for low-income homes			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.09.1: Provide federal grants or tax credits for energy monitoring systems in affordable housing.		F	US DOE
Authority:	Has Legal Authority		
B-G.2-B.09.2: DEEP to establish guidelines and privacy standards for energy monitoring in residential buildings.		S	USDA
Authority:	Has Legal Authority		
B-G.2-B.09.3: Develop a regional energy monitoring initiative to standardize systems and reduce costs with shared vendor contracts and technical support.		R	None Identified
Authority:	Has Legal Authority		

Goal 2: Renewable heating access for low-income homes			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.09.4: Partner with local utility companies to provide subsidized or free energy monitoring systems to residents.		L	None Identified
Authority:	Has Legal Authority		
B-G.2-B.09.5: Local housing authorities to manage installation and use of energy management systems. Local housing authorities have the authority to improve the housing they manage under Connecticut General Statutes §8-44.		L	None Identified
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario federal funding expands to prioritize low-income and energy-vulnerable regions. State mandates and funding ensure widespread implementation of solar and other renewable heating systems. COGs facilitate regional solar heating programs, sharing resources and expertise across municipalities. Municipalities adopt comprehensive programs for renewable heating in low-income housing, supported by fast-tracked permitting and streamlined documentation. Enhanced rebates and grants target multi-family and community-owned systems, enabling broad adoption and significant energy cost reductions. No change in authority occurs.

In the 'Coping with Gridlock' scenario, federal authority diminishes, shifting grants to competitive programs that target the most impactful projects, often leaving smaller communities underserved. State support declines, resulting in minimal funding and limited adoption of renewable heating systems. Regional collaboration weakens, with municipalities operating independently and unable to scale initiatives effectively. Municipal resources are constrained, focusing only on essential installations with minimal outreach. Permitting processes are limited to critical projects, further slowing the pace of renewable heating adoption. Implementation of these strategies is slowed but no change in authority occurs.

In the 'Watershed Moment' scenario federal and state governments allocate significant funds for renewable heating installations in critical areas. Resilience-focused renewable energy funding prioritizes high-risk, low-income neighborhoods, enabling widespread adoption. Regional collaboration strengthens, with councils of governments (COGs) coordinating large-scale, cross-town programs to maximize efficiency and impact. Municipalities focus on fast-tracking installations in climate-sensitive zones, supported by added resources for permitting and community engagement. No change in authority occurs.

Goal 3: Energy efficient building materials and retrofits

Goal B-G.3 emphasizes the adoption of energy-efficient building materials and retrofitting existing structures to reduce greenhouse gas (GHG) emissions, enhance resilience, and lower energy costs. This initiative targets improvements in building envelopes, such as insulation, windows, and roofing, alongside mechanical upgrades like HVAC systems and renewable energy integration. Retrofitting ensures that existing buildings, especially in low-income and vulnerable areas, meet modern energy standards, contributing to sustainability and climate adaptation efforts.

The Priority Climate Action Plan (PCAP) highlights the critical role of retrofits and sustainable materials in addressing the energy inefficiencies of older buildings. These interventions can significantly lower energy demand and associated emissions while improving indoor air quality and thermal comfort. Furthermore, this goal aligns with broader state and federal objectives to reduce energy inequities by prioritizing low-income and climate-vulnerable housing for retrofits and material upgrades (Fall 2023 Regional Planning Studio, 2024, pp. 76–78).

Successful implementation requires robust funding from federal, state, and regional sources, incentives for material adoption, and strong partnerships with utilities. Outreach and education programs also play a key role in ensuring widespread awareness and participation.

Strategy B.10: Support the adoption of sustainable building materials in low income housing construction and renovation.

This strategy has the following groundwork: B.02, B.04, B.06, B.12

Goal 3: Energy efficient building materials and retrofits			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.10.1: Provide federal tax credits or grants for renewable heating systems in low-income housing.		F	IRS
Authority:	Has Legal Authority		
B-G.2-B.10.2: Enact State legislature to promote or require sustainable materials in low-income housing. CT Green Bank and government agencies can provide financial support.		S	HUD US DOE CTGB
Authority:	Has Legal Authority		
B-G.2-B.10.3: COGs: advocate for sustainable material use in regional housing projects by facilitating bulk purchasing of sustainable materials to reduce costs across multiple municipalities.		R	EPA
Authority:	Has Legal Authority		
B-G.2-B.10.4: Municipal housing authorities incorporate sustainable materials in low-income housing projects. Connecticut General Statutes §8-44 gives housing authorities control over construction.		L	HUD
Authority:	Has Legal Authority		
B-G.2-B.10.5: Create local tax incentives or rebates for developers using sustainable materials in affordable housing.		L	CT DEEP HUD
Authority:	Has Legal Authority		

Strategy B.11: Establish a city-wide retrofit program focused on low income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.

This strategy has the following groundwork: B.06, B.13

Goal 3: Energy efficient building materials and retrofits			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.11.1: Provide federal grants or tax credits for retrofitting low-income housing and municipal buildings.		F	IRS US DOE
Authority:	Has Legal Authority		
B-G.2-B.11.2: State legislature and CT DEEP to fund and support city-wide retrofits in low-income housing and municipal buildings.		S	US DOE
Authority:	Has Legal Authority		
B-G.2-B.11.3: COGs: coordinate an inter-town retrofit program by identifying existing retrofit resources including grants. Program could focus on coordinated funding and shared resources for low-income housing retrofits.		R	EPA
Authority:	Has Legal Authority		

Goal 3: Energy efficient building materials and retrofits			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.11.4: Local government agencies to implement and manage retrofitting projects on municipal buildings. Municipalities can support their housing authorities in making these modifications.		L	US DOE
Authority:	Has Legal Authority		
B-G.2-B.11.5: Partner with local utility companies to incentivize energy-efficient retrofits.		L	US DOE
Authority:	Has Legal Authority		

Strategy B.12: Monitor and report the energy and cost savings resulting from retrofitting and sustainable materials to demonstrate their impact and encourage further investment.

This strategy has the following groundwork: B.05, B.10

Goal 3: Energy efficient building materials and retrofits			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.12.1: DOE: offer federal grants or incentives to municipalities for monitoring and transparency in retrofitting programs.		F	US DOE
Authority:	Has Legal Authority		
B-G.2-B.12.2: Provide state-level guidelines and incentives for tracking and reporting retrofit performance.		S	US DOE
Authority:	Has Legal Authority		
B-G.2-B.12.3: Implement a regional dashboard to consolidate retrofit data from all municipalities under the COG's umbrella		R	EPA
Authority:	Has Legal Authority		
B-G.2-B.12.4: Develop a tracking and reporting system to monitor retrofit savings in municipal buildings and low-income housing. Establish a local ordinance for periodic reporting on retrofit performance and savings		L	EPA
Authority:	Has Legal Authority		

Strategy B.13: Set up outreach programs targeting low-to-moderate income (LMI) households for heat pump installations and energy efficiency upgrades

This is a groundwork strategy for: B.07, B.08, B.09, B.11

Goal 3: Energy efficient building materials and retrofits			
Tactic		**Tactic Level**	**Funding Agency**
B-G.2-B.13.1: Implement federal tax incentives for LMI residents who participate in energy efficiency programs.		F	EPA IRS
Authority:	Has Legal Authority		
B-G.2-B.13.2: CT DEEP: review Conservation and Load Management Plans and can require the inclusion in the plan of provisions for the purchases of energy efficient appliances such as heat pumps as stated in Connecticut General Statute §16-245m(d)(5). State government can support outreach programs and fund energy efficiency education for LMI households, as well as directly fund programs to fund heat pump and energy efficiency purchases under Connecticut General Statute §8-240a(c)).		S	USDA US DOE HUD CT DEEP
Authority:	Has Legal Authority		
B-G.2-B.13.3: Coordinate with COGs to promote and support energy efficiency in LMI communities across municipalities. Establish a shared regional initiative to communicate incentives and benefits of energy efficiency upgrades to LMI residents in multiple towns. Implement a regional energy efficiency task force within the COG to facilitate and manage large-scale program coordination and information sharing.		R	USDA US DOE HUD
Authority:	Has Legal Authority		
B-G.2-B.13.4: Develop outreach materials to inform LMI households about heat pump installation programs.		L	USDA US DOE HUD
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, expanded federal funding is provided, prioritizing long-term material resilience and innovation. Sustainable materials are mandated for all low-income housing projects, supported by statewide funding and incentives. Regional retrofitting programs are enhanced, with COGs facilitating inter-municipal coordination to ensure resilience-focused retrofits. Municipalities implement comprehensive retrofitting programs targeting the most vulnerable housing, supported by extensive rebates and incentives provided by utilities. Outreach programs are robust and widespread, promoting awareness of heat pump adoption, efficiency upgrades, and the benefits of energy-efficient materials, ensuring high levels of community participation. No change in authority occurs.

In the 'Coping with Gridlock' scenario, states are pushed to fill the financial gap for retrofitting programs. Budget constraints limit the use of sustainable materials and slow the adoption of retrofits, particularly in low-income housing. Regional collaboration is minimal, leaving municipalities to implement retrofits independently with limited

resources. Local funding limitations result in reduced retrofitting programs and minimal progress in adopting energy-efficient materials. Partnerships with utilities are underfunded, further restricting the availability of rebates and incentives. Outreach is significantly constrained, with limited education efforts reaching low-income and marginalized communities. The federal government loses authority but other levels of governance see no change, despite increased funding and political challenges.

In the 'Watershed Moment' scenario, federal funding focuses on climate-resilient materials and retrofitting efforts in flood-prone and high-risk areas. Sustainable materials are prioritized for vulnerable housing, supported by state and regional collaboration. Councils of governments (COGs) promote the adoption of sustainable materials across municipalities by pooling resources and providing technical expertise. Local retrofitting programs target high-risk areas, with incentives prioritizing developments in zones facing significant climate risks. Utilities focus on retrofits in areas with the highest potential for energy savings, supported by robust federal guidelines for energy monitoring and reporting. No change occurs in authority to implement retrofitting programs.

INDUSTRIAL SECTOR

The Priority Climate Action Plan (PCAP) identified the industrial sector as a major source of greenhouse gas emissions, accounting for 10 percent of Connecticut's statewide emissions and five percent of the New Haven County MSA's emissions. The GHG emissions in this sector are driven by large facilities including hospitals, power plants, manufacturing, and other large commercial emitters. While this sector is a small share of overall emissions, these emission sources are more likely to emit highly potent greenhouse gases such as methane. These greenhouse gases have a disproportionate impact and a small reduction in their production can have an outsized impact. (Fall 2023 Regional Planning Studio, 2024, pp. 83–84)

The PCAP identified three goals containing a total of three strategies for reducing greenhouse gases in the industrial sector. The following will break down these goals and strategies in terms of authority to implement.

Goal 1: Improve emissions monitoring, accounting and reporting

Improving emissions monitoring, accounting, and reporting can make it easier to hold industrial greenhouse gas emitters accountable while providing a benchmark on progress towards emissions goals. The EPA currently requires reporting of emissions for large emitters unless they provide a valid reason not to report. In the New Haven County MSA there are nine large emitters. These sources of greenhouse gases are primarily power plants and facilities related to the energy industry as well as New Haven Medical Center. Together these nine emitters produced over 3.8 million metric tons of CO2 equivalent emissions in 2023.(Environmental Protection Agency, 2024) Extending this reporting to

smaller emitters will provide a clearer picture of regional emissions than is currently available.

Goal 2: Reduce emissions through low-carbon procurement and have clear decarbonization objectives.

Governments at all levels can incentivize emissions reduction in the industrial sector by prioritizing contracts with suppliers of goods and services who are already reporting and tracking their greenhouse gas emissions impact. This goal produces a best practice that will permanently alter how governments at different levels engage in contracting, ensuring a lower emission future for all public projects.

Strategy I.01: Require any large industrial manufacturing facilities and healthcare establishments to report emissions data.

Goal 1: Improve emissions monitoring, accounting and reporting			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-I.1.1: EPA: expand reporting to other sources as they already require reporting for large sources, 8,000 in total nationwide.		F	EPA
Authority:	Has Legal Authority		
I-G.2-I.1.2: CT DEEP: Make existing emissions inventory work more accessible and expand reporting requirements beyond the current level.		S	EPA
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, funding will likely be maintained and emissions reporting will be less burdensome as new technologies result in accessible renewable energy and decreased emissions. While reporting will become easier, there will be no change in the authority to implement at the federal and state levels.

In the 'Coping with Gridlock' scenario legislation fails to pass, to fund, or continue to support existing emissions reporting programs. The authority then falls on grassroots organizations and private entities to take on the increased burden of fundraising in order to circumvent the stalemate in the highest levels of government. While the government incentive structure to report emissions dissipates, the EPA cannot require reporting or fund its publication, though some intrinsic motivation to report remains. The federal and state government will lose the authority to implement as

In the 'Watershed Moment' scenario at both the federal and state level as funding is maintained. However, an increase of funding may be required in the coming years to compensate for neglected emissions reporting in the past. There is no change in authority at either level of governance for this goal.

Strategy I.02: Embed a purchasing criterion in public projects that states a preference for suppliers or service providers who have a transparent and standardized GHG inventory

This is a groundwork strategy for: I.03

Goal 2: Reduce emissions through low-carbon procurement and have clear decarbonization objectives.			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-I.02.1: Implement a supervisory committee to oversee GHG emissions reporting in public projects at federal level.		F	US DOE EPA
Authority:	Has Legal Authority		
I-G.2-I.02.2: Require departments/agencies to contract with firms that identify their GHG emissions.		F	US DOE EPA
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Long Term:	Pass legislation requiring departments/agencies to contract with firms that identify their GHG emissions.		
I-G.2-I.02.3: Condition grant opportunities on using suppliers/service providers with GHG emission reporting habits.		F	US DOE EPA
Authority:	Has Legal Authority		
I-G.2-I0.2.4: Implement a supervisory committee to oversee GHG emissions reporting in public projects at state level.		S	US DOE EPA
Authority:	Has Legal Authority		
I-G.02-I.02.5: Require departments/agencies to contract with firms that identify their GHG emissions.		S	US DOE EPA
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Long Term:	Pass legislation requiring departments/agencies to contract with firms that identify their GHG emissions.		
I-G.02-I.02.6: Condition grant opportunities on using suppliers/service providers with GHG emission reporting habits.		S	US DOE EPA
Authority:	Has Legal Authority		
I-G.02-I.02.7: COGs: Create stewardship organization across towns, led by COGs, encouraging member towns to contract with firms that identify their GHG emissions, while clarifying the cost of reporting and making payments more equitable. Example: If New Haven has a large emitter with large reporting costs, the cost of that could be regionalized.		R	US DOE EPA
Authority:	Has Legal Authority		
I-G.02-I.02.8: Pass ordinance requiring departments to contract with firms that identify their GHG emissions. (Home rule enables this under CT General Statute §7)		L	US DOE EPA
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In a 'Fossil-Free' Future funding will likely be maintained and emissions reporting will be less burdensome as new technologies result in accessible renewable energy and decreased emissions. This will not change the authority to implement although it may

make implementation easier. There will be no change in the authority to implement at the federal and state levels

In the 'Coping with Gridlock' scenario funding will shift with the possibility of grassroots entities organizing at a regional level. The authority to implement these strategies will be lost at the federal and state levels.

In the 'Watershed Moment' scenario there will likely be strong grass roots advocacy for policies surrounding emissions reduction through low carbon procurement and clear decarbonized objectives. The authority to implement will go unchanged.

Goal 3: Reduce emissions from the healthcare sector through public-private partnership

The healthcare sector is a major source of greenhouse gas emissions. Hospitals and other medical facilities are vital to communities but use large amounts of energy and generate substantial waste. The PCAP identified that the healthcare sector in particular has many unique greenhouse gas emission sources such as inhalers and anesthetic gasses which can have an impact on the climate. Yale New Haven Medical Center is the largest hospital in the region, but every community is connected with healthcare facilities in some way. Partnering with these facilities to reduce emissions is an effective mitigation strategy that can be implemented at nearly every level of government. (Fall 2023 Regional Planning Studio, 2024, p. 84)

Strategy I.03: Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas.

This strategy has the following groundwork: I.02

Goal 3: Reduce emissions from the healthcare sector through public-private partnership			
Tactic		**Tactic Level**	**Funding Agency**
I-G.3-I.03.1: Provide and expand funding programs for GHG emission reduction in the healthcare sector, encourage public/private partnerships.		F	EPA IRS USDA
Authority:	Has Legal Authority		
I-G.3-I.03.2: Provide and expand funding programs for GHG emission reduction in the healthcare sector, encourage public/private partnerships.		S	EPA IRS USDA
Authority:	Has Legal Authority		
I-G.3-I.03.3: COGs: Regionalize Healthcare efficiency practices across towns and identify best practices, coordinate with health networks which operate across multiple towns		R	EPA IRS USDA
Authority:	Has Legal Authority		
I-G.3-I.03.4: Town governments can engage in public/private partnerships with local healthcare facilities. Town grant coordinators can connect healthcare facilities with funding opportunities. Towns can provide in-kind services such as shuttle services which can reduce emissions.		L	EPA IRS USDA

Goal 3: Reduce emissions from the healthcare sector through public-private partnership			
Tactic		**Tactic Level**	**Funding Agency**
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil Free Future' scenario the technologies used to implement emissions reduction in the healthcare sector may change, and reductions overall may become easier, there is no indication that there would be a change in authority under this scenario. There will be no change to authority under this scenario.

In the 'Coping with Gridlock' scenario there is a lack of funding, particularly from federal sources but also from the state. There will be a lack of grant money and credits to incentivize healthcare firms to make emissions, reducing choices. In this scenario, private firms will take on more of the burden of reducing emissions. At the local level, there will still be authority to require or encourage emissions improvements, but public-private partnerships developed under the level two tactic will be more challenging as the public sector will have fewer resources to bring to the table. Similarly, regional organizations, particularly local councils of government, will have less to offer member communities to encourage their cooperation. An emphasis will need to be placed on the cost-saving benefits of emissions reductions strategies. For example, improvements to combined heating and power systems (CHP) can reduce energy usage and increase the reliability of hospital physical plant systems while also reducing emissions. This scenario will remove the state and local authority to implement.

In the 'Watershed Moment' scenario at all three levels of implementation, federal, state and local, there will be capacity to fund, organize and convene resources around healthcare-based emissions reduction. There will be no change in authority for implementing these policies.

WASTE SECTOR

While waste is a small contributor to greenhouse gas emissions, it offers a key area where residents and municipalities can make a significant impact. Reducing waste provides environmental, economic, and public health benefits, including lower pollution from nitrogen, plastics, and toxins, and promoting reductions across the supply chain. Repairing, reusing, and reclaiming materials also creates economic opportunities. Reducing food waste is especially impactful, as the EPA estimates it accounts for 58 percent of landfill emissions. Waste reduction strategies can also address waste management capacity and costs, while cutting air pollution from incinerators and carbon emissions from waste transportation. (Fall 2023 Regional Planning Studio, 2024, p. 75)

Connecticut currently sends about 60 percent of its municipal solid waste (MSW) to in-state incinerators, many located in or near environmental justice communities. However, these incinerators are being phased out as they age, with one major facility closing in 2022. As a result, roughly 40 percent of MSW is now being transported to out-of-state landfills, raising costs for municipalities. With landfill space dwindling nationally, disposal fees are expected to increase five-fold by 2050. Connecticut aims to achieve waste self-sufficiency, and diverting materials from landfills and incinerators is key to this goal. Currently, about 35 percent of the state's waste is diverted—28 percent through recycling and seven percent through composting—while the rest, roughly 260 million tons annually, enters the MSW stream. Of this, 41.4 percent is compostable organics, including food waste (22.3 percent) and yard waste (11.1 percent) (Fall 2023 Regional Planning Studio, 2024, pp. 75–76).

Sustainable waste management strategies are a key lever for Connecticut to reduce greenhouse gas emissions, improve environmental health, and meet ambitious climate goals. By focusing on alternative methods like recycling, composting, and waste-to-energy through regionalization, unit-based pricing with food scrap collection and infrastructure investment, the state can minimize waste-related emissions, promote a circular economy, and create new opportunities for economic growth, all while protecting public health and the environment.

Goal 1: Divert waste with local and regional programs

Alternative waste management solutions aim to reduce municipal solid waste, cut greenhouse gas emissions from organic waste, and help Connecticut achieve waste management self-sufficiency. Regionalization of waste management practices can create economies of scale for waste reduction and food scrap diversion, saving municipalities money and supporting the development of waste infrastructure.

Strategy W.01: Establish a county-wide unit-based pricing program with food scrap collection.

Goal 1: Divert waste with local and regional programs			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-W.01.1: Enact enabling legislation that funds 'Recycling Coordinator' positions to oversee recycling programs, educate and inform communities on waste management/diversion programs, and ensure programs comply with community ordinances.		S	None Identified
Authority:	Has Legal Authority		
I-G.2- W.01.2: CT DEEP: Incentivize unit-based pricing, or "pay-as-you-throw" programs in all municipalities. Subsidize waste disposal bag costs and tabletop compost bins. CT DEEP is tasked with creating a statewide waste management plan under Connecticut General Statute §22a-241a		S	EPA
Authority:	Has Legal Authority		
I-G.2- W.01.3: Develop practical partnerships across COGs to review waste hauling contracts and consider cost/benefit analysis of hauling vs unit-based pricing.		L	EPA
Authority:	Has Legal Authority		

Strategy W.02: Establish a regional waste management authority in New Haven County

Goal 1: Divert waste with local and regional programs			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-W.02.1: COGs: Partner with CT DEEP to develop a regional governing structure with an elected/appointed public, quasi-public body (ex. Sanitation Commission) with oversight and enforcement powers to negotiate master contracts to ensure fairness and equity among member communities as a springboard for future regionalization of WM practices.		R	CT DEEP
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Long Term:	CT DEEP: Develop and provide funding for a Regional Sanitary Disposal District, ensuring equity and transparency in waste management, disposal, and diversion tactics.		
I-G.2- W.02.2: City/town councils, advocacy groups work with local delegation to advocate to CT state legislature to enact enabling legislation for creation of specified commission.		Local	CT DEEP
Authority:	Has Legal Authority		

Strategy W.03: Expand and continue community-based food waste reduction programs.

Goal 1: Divert waste with local and regional programs			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-W.03.1: Evaluate existing programs for expansion opportunities. COGs employ program evaluation measures that test effectiveness of identified waste management programs across localities.		R	CT DEEP
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, long-term investments in green energy at the federal and state levels begin delivering returns and are compounded by incremental benefits from new and innovative technologies. Nonetheless, residential waste issues persist as consumption remains unchanged. State and federal funding is maintained for waste management/diversion programs, putting pressure on local governments to force collaborative waste efforts despite divergent attitudes towards consumption and social tension. Municipalities maintain their authority.

In the 'Coping with Gridlock' scenario, the failures of the federal and state governments to act results in overall reduction in available funding as budgets aren't passed and existing programs lapse. Difficulties in convening county/COG wide collaboration and divergent interests cause regional efforts to fail. Municipalities maintain their authority to continue to develop practical partnerships across municipalities. Authority falls on advocacy groups. Citizens work as municipal ambassadors alongside public servants to continue to develop waste diversion programs. The state and federal government lose their authority.

In the 'Watershed Moment' scenario, significant climate change events cause a major disruption to the built environment, the economy, and public health. Values shift in favor of aggressive climate action, land use, and transportation changes. The rural, suburban, and urban divide lessens as connectivity between communities increases, making regionalization of initiatives less difficult. These drastic changes will require grassroots advocacy groups to focus efforts on tackling climate change through aggressive mitigation efforts, at the regional level. Waste diversion and management strategies are supported and implemented across municipalities. Municipalities maintain their authority to implement unit-based pricing or "pay-as-you-throw" programs.

Goal 2: Enact and expand statewide waste reduction laws

Expanding statewide waste reduction laws would be a low-cost initiative that would produce a myriad of benefits, including reducing greenhouse gas emissions, diverting organic waste from landfills, cost-savings for municipalities, and moderate workforce development. Expansion may take the form of advocacy for Connecticut's existing Commercial Organics Law to include a wider array of organizations and geographic areas, and/or broadening extended producer responsibility for packaging to reduce waste and positively affect municipal finances.

Strategy W.04: Advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations.

Goal 2: Enact and expand statewide waste reduction laws			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-W.04.1: CT DEEP: Require manufacturing facilities to turn organics into compost products, clean energy, animal feed, and liquid organic fertilizer. Maintain existing radius requirement and weight minimum, not to cause increased transit emissions in disposal.		S	CT DEEP
Authority:	Must obtain Legal Authority		
Schedule to Obtain Authority			
Long Term:	CT General Assembly can enact legislation to include the identified manufacturing facilities within the commercial organics waste program.		

Strategy W.05: Advocate for extended producer responsibility (EPR) program for packaging to reduce waste by 196,000 tons per year, saving municipalities $50 million per year.

Goal 2: Enact and expand statewide waste reduction laws			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-W.05.1: CT DEEP: Create an Office of Inspector General position to enforce EPR for packaging (such as gas cylinders, tires, plastic beverage containers, paint, mattresses, e-waste).		S	None Identified
Authority:	Has Legal Authority		
I-G.2-W.05.2: Localities: Expand education campaigns to promote statewide messaging of appropriate and applicable recycling and composting regulations, restrictions, and opportunities. (Ex. Household Hazardous Waste Day). Municipalities have this authority under home rule, defined in Connecticut General Statutes §7.		L	None Identified
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In the 'Fossil-Free Future' scenario, long-term investments in green energy at the federal and state levels begin delivering returns and are compounded by incremental benefits from new and innovative technologies. Nonetheless, residential waste issues persist as consumption remains unchanged. Funding from state governments and technical support from regional councils of government realize strategies. Municipalities maintain authority to advocate for expanded statewide waste reduction laws through education that focuses on altering consumer behaviors.

In the 'Coping with Gridlock' scenario, the failures of the federal and state governments to act results in overall reduction in available funding as budgets aren't passed and existing programs lapse. State interests shift from waste management/diversion priorities; thus, community behavior remains unchanged, and accountability structures for compliance of waste management initiatives are compromised/weakened. Lack of

funding at the state level. Municipalities maintain authority, of which advisory and advocacy groups must implement local education programs through a bottom-up approach.

In the 'Watershed Moment' scenario, significant climate change events cause a major disruption to the built environment, the economy, and public health. Values shift in favor of aggressive climate action, land use, and transportation changes. Connectivity between communities increases. At the state level, authority must be obtained in order to advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations. This requires state representatives to draft, support, and pass legislation that includes identified manufacturing facilities within the commercial organics waste program. Municipalities maintain authority to promote legislation and are supported by community organizations.

LAND SECTOR

The Priority Climate Action Plan (PCAP) identified the working lands and forestry sector, not as a major source of greenhouse gas emissions, but rather as a carbon offset that can offer ecological, economic, and social benefits. Healthy forests play pivotal roles in addressing greenhouse gas emissions through carbon sequestration and storage measures.

While this sector has only a small impact on overall emissions, working lands and forestry has been identified because of its potential to combat emissions produced by the other five sectors. The carbon sink function of urban forests has invaluable impacts on greenhouse gas emissions reductions.(Fall 2023 Regional Planning Studio, 2024, pp. 91–92)

The PCAP identified two goals containing a total of four strategies for reducing greenhouse gases in the working lands and forestry sector. The following will break down these goals and strategies in terms of authority to implement.

Goal 1: Preserve and Support Existing and Potential Forested Lands

The preservation and continued support of both existing and potentially forested lands allows for more forested land to exist and be maintained. Effective management of forests, through practices like reforestation and afforestation, are imperative for maximizing carbon sequestration and storage which yields co-benefits such as increased wildlife habitat, water quality protection, biodiversity, recreational opportunities, and overall ecosystem resilience. Additionally, partnering with local land trusts to identify potential properties for conservation easements and protection will increase the amount of protected forest, which will help amplify the effect of carbon sequestration performed by these urban forests.

Strategy L.01: Pursue Afforestation and Reforestation Throughout County

Goal 1: Preserve and Support Existing and Potential Forested Lands			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-L.01.1: The CT Department of Energy and Environmental Protection (CT DEEP) Forestry Division and CT state foresters can help pursue afforestation and reforestation throughout the county. CT DEEP offers Forestry Grants to help finance this strategy. Guided by Connecticut's Forest Practices Act, the state can preserve and support existing and potential forested lands.		S	CT DEEP
Authority:	Has Legal Authority		
I-G.2- L.01.2: COGs can connect towns with groups like the Connecticut Urban Forest Council which promotes forestry programs throughout Connecticut. Can identify properties in need of conservation and communities with forest land under threat from development. According to the Connecticut General Statutes §7-131 and §7-131a, towns and cities can vote to establish a municipal forest and develop a conservation commission to preserve existing and potential forested lands.		R	CUFC USDA USFS NOAA
Authority:	Has Legal Authority		

Strategy L.02: Partner with local land trusts to identify potential properties for conservation easements or protection.

Goal 1: Preserve and Support Existing and Potential Forested Lands			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-L.02.1: The Division of Forestry has the authority to support current efforts and management strategies to maintain existing forests on public and private lands at the state level. The state can also partner with The US Forest Service's Forest Legacy and Community Forest Program to protect land in Connecticut. The Forest Program can also provide funding.		S	USFS USDA NRCS CT DEEP
Authority:	Has Legal Authority		
I-G.2- L.02.2: COGs can connect towns in their region with land trust and existing grants for forest and land protection.		R	USFS USDA NRCS CT DEEP
Authority:	Has Legal Authority		
I-G.2- L.02.3: Towns can partner with local land trusts to find funding for land conservation and can connect private owners with land trusts in the area if public funding is not available. According to the Connecticut General Statutes §7-131a, 131b and 131d, towns can vote to establish conservation commissions that can vote on conservation easements, receive funding through the Charter Oak, and can vote to protect and conserve open space.		L	USFS USDA NRCS CT DEEP
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In a 'Fossil-Free Future' scenario funding will likely be maintained, but the pursuit of conservation efforts will fall disproportionately to local organizations as working lands and forestry will not be prioritized. There will be no change in the authority to implement at the federal and state levels.

In the 'Coping with Gridlock' scenario legislation fails to pass, to fund, or continue to support existing conservation programs. The authority then falls on grassroots organizations, private entities, and community advocates to form a coalition or committee to support private and public forestry to take on the increased burden of fundraising in order to circumvent the stalemate in the highest levels of government. While the government incentive structure to support conservation practices dissipates, the EPA is no longer able to require financial support for conservation efforts. The federal and state government will lose the authority to implement.

In the 'Watershed Moment' scenario there will be an increased demand for land conservation as residents recognize the severity of climate impacts, and this may cause increased competition for state and federal funding. Despite these shifts, there will be no change in the authority to implement at the federal and state levels.

Goal 2: Increase Urban Tree Canopy and Agriculture (UTC)

Focusing efforts on increasing urban tree canopy and agricultural practices helps mitigate the impact of the urban heat island effect through the cooling properties of trees and increasing carbon sequestration. Additionally, these strategies have co-benefits including improving air quality, ecosystem resilience, public health, beautification, and reduced noise pollution. These benefits are particularly important in the context of disadvantaged communities who are disproportionately exposed to the urban heat island effect and face economic vulnerability in relation to increasing energy prices (Fall 2023 Regional Planning Studio, 2024, p. 94).

Strategy L.03: Increase Urban Tree Canopy in Low-Income Disadvantaged Communities

Goal 2: Increase Urban Tree Canopy and Agriculture (UTC)			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-L.03.1: On state roads the CT DOT is responsible for tree planting. On municipal roads the tree warden is responsible for tree planting. The CT DEEP can support tree planting through programs like the Urban Forest Equity Grant Program to financially support local and state initiatives to increase tree canopy in disadvantaged communities. Increasing Tree Canopy in LIDAC is a goal of the state as identified in Connecticut Public Act No. 23-206 which requires increasing LIDAC tree canopy by five percent if forest is less than 40 percent of the LIDAC's land area. The General Assembly File No. 244 Substitute Senate Bill No. 979 also states that Connecticut has a goal of identifying more LIDAC communities throughout the state and increasing the tree canopy in said communities to over 5 percent of their total area.		S	USFS CT DEEP
Authority:	Has Legal Authority		

Goal 2: Increase Urban Tree Canopy and Agriculture (UTC)			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2- L.03.2: Can acquire funding from state and federal sources to fund the planting of additional trees throughout the community. Can connect residents to non-profits like the Urban Resource Initiative in New Haven which support tree cultivation in the community. According to the Connecticut General Statutes §7-131, the legislative body of any town may vote to assign to its forest commission or to a shade tree commission the supervision of public shade trees within such town not under the supervision of the Commissioner of Transportation or the town tree warden and the supervision of the town tree warden's work.		L	USFS CT DEEP
Authority:	Has Legal Authority		

Strategy L.04: Support Farming Initiatives Across Urban, Rural, and Suburban Typologies

Goal 2: Increase Urban Tree Canopy and Agriculture (UTC)			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2-L.04.1: The CT Department of Agriculture offers several grants to support farmers in CT. The USDA NRCS Agricultural Management Assistance program can help agricultural producers manage financial risk through diversification, marketing or natural resource conservation practices. Public Act 490 and the Connecticut General Statutes §12-107a through 107f acts to preserve agricultural land by assessing these lands at their use value, not its market value. The Community Investment Act also works to preserve farmland.		S	CT DOAG USDA NRCS
Authority:	Has Legal Authority		
I-G.2- L.04.2: Conservation Districts, Farm Service Agency County Committees, and CSA's can support local farming initiatives by creating and buying from local farmers markets. Additionally, the USDA Regional Conservation Partnership Program can help support agricultural initiatives. The USDA NRCS Agricultural Management Assistance program can help agricultural producers manage financial risk through diversification, marketing or natural resource conservation practices. COGs can connect farmers with these programs. According to the Connecticut General Statutes §7-131v, municipal bodies can vote in regional agricultural councils to identify grant sources for farmers and municipalities and support local, regional and state vocational agricultural programs concerning agricultural matters to create a climate that supports the economic viability of agriculture in the municipality.		R	USDA NRCS
Authority:	Has Legal Authority		

Goal 2: Increase Urban Tree Canopy and Agriculture (UTC)			
Tactic		**Tactic Level**	**Funding Agency**
I-G.2- L.04.3: Local Conservation Districts, Farm Service Agency County Committees, and local Community Supported Agriculture (CSA's) can support local farming initiatives by creating and shopping from local farmers markets. According to the Connecticut General Statutes §7-131v, municipal bodies can vote in local agricultural councils to identify grant sources for farmers and municipalities and support local, regional and state vocational agricultural programs concerning agricultural matters to create a climate that supports the economic viability of agriculture in the municipality.		L	CT DOAG
Authority:	Has Legal Authority		

WHAT MIGHT THIS LOOK LIKE IN A CHANGING FUTURE?

In a 'Fossil-Free Future' scenario funding will likely be maintained, but the pursuit of increasing tree canopy and supporting agricultural practices will fall to local organizations as working lands and forestry will not be a prioritized sector. There will be no change in the authority to implement at the federal and state levels.

In the 'Coping with Gridlock' scenario legislation fails to pass, to fund, or continue to support existing tree planting and stewardship, as well as agricultural practice programs. The authority then falls on grassroots organizations, private entities, and community advocates to take on the increased burden of fundraising in order to circumvent the stalemate in the highest levels of government. While the government incentive structure to support tree canopy and agricultural practices dissipates, the EPA is no longer able to fund its programs though some intrinsic motivation for support still remains. The federal and state government will lose the authority to implement in this scenario.

In the 'Watershed Moment' scenario there will be an increased demand for increased tree canopy due to the worsening impacts of climate change, and this may cause increased competition for state and federal funding. There will be no change in the authority to implement at the federal and state levels.

CONCULSION

The New Haven-Milford MSA PCAP identified a diverse set of strategies for reducing emissions across six sectors. Across all levels of authority to implement – federal, state, regional and local – there is a robust set of strategies to be implemented to begin reducing carbon emissions in the region. Authority to implement faces the least barriers at the local level, where Connecticut's home rule policies allow municipalities great flexibility in tackling emissions reduction. Authority is more constrained at higher levels of governance, where in many cases a law needs to be passed expanding the state or regional government's ability to act.

The 2024 Regional Planning Studio, through Authority to Implement, has identified what can be done to have a positive impact on reducing emissions in the New Haven-Milford

MSA. Through other parts of the studio's work, this authority to implement can be sorted and prioritized to identify the next best steps for a town to take and tools are available to continue making the case to residents of the region that emissions reduction is important, possible and easy. Authority to implement will remain an important reference into the future, as changing events shape authority to implement.

INTERSECTION WITH FUNDING AVAILABILITY

10.0 INTERSECTION WITH OTHER FUNDING AVAILABILITY

The successful implementation of this CCAP relies on the availability of diverse funding sources to support its strategies and initiatives. A comprehensive table of potential funding opportunities with associated CCAP strategies is provided in the main *Funding Source List* below. More detailed information on each grant opportunity by CCAP strategy is presented in the following *Funding Source Detail* tables. All grants reflect those identified during the CCAP development. It is recognized that the availability of grants listed in this table may change in the future and new grants may become available following the publication of this CCAP.

It is important to note that while many federal funding programs have historically supported climate and environmental initiatives, the current funding landscape at the time of this CCAP development is marked by significant uncertainty. Recent actions by the federal government have resulted in the cancellation, reduction, or suspension of several major federal grant programs. Additionally, other key programs and grants are currently frozen or under legal challenge, and some programs are proposed for elimination or have been suspended.

These changes introduce a high degree of unpredictability regarding the future availability of federal support. To acknowledge this, federal funding sources with uncertain or at-risk status are listed separately at the bottom of the main *Funding Source List* table, with accompanying notes on their current status as of the date of this report. Should these federal programs be discontinued or de-funded, it may significantly impact the ability of municipalities and partners to fully implement the CCAP as envisioned. Ongoing monitoring of funding availability and flexibility in adapting strategies will be necessary to respond to these evolving circumstances.

Connecticut Green Bank: Financing for Climate-Friendly Projects

The Connecticut Green Bank is the nation's first green bank, established to accelerate clean energy and climate resilience projects across the state. While primarily offering financing solutions, such as low-interest loans and on-bill repayment programs, rather than grants, the Green Bank supports a wide range of climate-friendly projects for homeowners, businesses, nonprofits, and municipalities. Their programs include:

- **Smart-E Loans:** Flexible, low-interest loans for home energy efficiency, solar, battery storage, and climate resilience upgrades.
- **C-PACE:** Commercial Property Assessed Clean Energy financing for energy efficiency, renewable energy, and resilience improvements in commercial, nonprofit, and multifamily buildings.
- **Environmental Infrastructure Financing:** Support for water, waste, climate adaptation, and nature-based solutions.
- **Investment Solutions:** Opportunities for community members to invest in local clean energy projects.

These financing options can be leveraged to advance CCAP strategies—such as energy efficiency retrofits (B.11), on-site renewables (E.1), microgrid deployment (E.4), and climate resilience in affordable housing (E.9)—by making climate-friendly investments more accessible and affordable for both private and public sector projects. Learn more at www.ctgreenbank.com.

CONNECTICUT GREEN BANK SM

Table 10-1: Funding Source List

Funding Source	Funding Details	CCAP Strategies
CIRCA Climate and Equity Grant Program	**Grant Agency**: Connecticut Institute for Resilience and Climate Adaptation (CIRCA) Type of Grant: State **Amount Range:** Up to $250,000 per project, depending on project scope. **Time Frame/Dates to Submit:** The program is expected to continue into 2025 and beyond as part of CIRCA's ongoing initiatives to support climate adaptation and equity-focused projects. Deadlines vary; check CIRCA's website or announcements for specific dates.	T.5, T.7, T.8, T.9, T.10, T.12, E.6, E.7, E.9, W.2, W.3, L.3, L.4
CT DPH Climate and Health Pilot Grant Program	**Grant Agency:** Connecticut Department of Public Health (DPH) Type of Grant: State **Amount Range:** Up to $50,000 per project, depending on scope **Time Frame/Dates to Submit:** The program is expected to continue into 2025 based on ongoing climate-health initiatives; specific deadlines should be confirmed through DPH's website or announcements	T.3, T.5, T.7, T.8, E.9, B.7, B.13, L.3, L.4
Small Town Economic Assistance Program (STEAP)	**Grant Agency:** Connecticut Office of Policy and Management (OPM), State Bond Commission Type of Grant: State **Amount Range:** Up to $1,000,000 per municipality, a municipal match commitment is required with 20% of total project amount preferred **Time Frame/Dates to Submit:** Offered annually based on State Bond Commission funds; application typically due in February	T.5, T.8, E.1, E.4, E.5, E.7, B3, B.4, B.11, W.1, W.2, L.1, L.2, L.3, L.4
Community Investment Fund 2030	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Varies based on project scope; awards typically range from $1- $10 million. **Time Frame/Dates to Submit**: The grant application process occurs biannually with deadlines typically in January and July each year.	T.4, T.5, T.6, T.7, T.8, T.9, T.10, T.11, T.12, T.13, E.6, E.7, E.9, B.1, B.3, B.4, B.5, B.6, B.7, B.9, B.11, B.13, L.3, L.4

Funding Source	Funding Details	CCAP Strategies
Urban Act Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Varies based on project scope; typically, large-scale infrastructure projects. **Time Frame/Dates to Submit**: Applications are accepted on a rolling basis, but specific deadlines should be confirmed through DECD's website.	T.5, T.7, T.8, T.9, T.10, T.12, E.7, E.9, B.4, B.5, B.6
CT DEEP Open Space and Watershed Land Acquisition (OSWA) Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $1 million per project, depending on project scope. **Time Frame/Dates to Submit**: The grant application period typically opens annually. The deadline for submission is expected around March 2025, but specific dates should be confirmed through DEEP's website or announcements.	E.6, E.7, E.9, W.2, W.3, W.4, W.5, L.1, L.2, L.3, L.4
CT DEEP Trees for Communities Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Various grants **Time Frame/Dates to Submit**: Expected to re-open in Summer 2025	L.1, L.2, L.3
CT DEEP Urban and Community Forestry Planning Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $2,500-$65,000 with a requested match 50:50 **Eligible Applicants**: Local government organizations and non-profit organizations. **Time Frame/Dates to Submit**: The grant application period typically opens annually with deadlines in January and grant monies awarded in May, but specific dates should be confirmed through DEEP's website or announcements	E.6, L.1, L.2, L.3, L.4
CT DEEP Urban Forest Equity Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $250,000 per project, depending on project scope. **Time Frame/Dates to Submit:** The grant application period typically opens annually with deadlines around March 2025, but specific dates should be confirmed through DEEP's website or announcements.	B.13, W.2, W.3, L.3, L.4

Funding Source	Funding Details	CCAP Strategies
CT DEEP Urban Forest Resilience Grant Program (UFR)	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $250,000 per project, depending on project scope. **Time Frame/Dates to Submit**: The grant application period typically opens annually with deadlines around **March 2025**, but specific dates should be confirmed through DEEP's website or announcements.	L.1, L.2, L.3, L.4
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $250,000 per project, depending on project scope. **Time Frame/Dates to Submit**: The grant application period typically opens annually with deadlines around March 2025, but specific dates should be confirmed through DEEP's website or announcements.	E.6, E.7, E.9, W.2, W.3, L.1, L.2, L.3, L.4
CT DEEP Urban Green and Community Garden Grant Program	**Grant Agency**: Connecticut Department of Economic and Community Development (DECD) Type of Grant: State **Amount Range**: Up to $1 million per project, depending on project scope. **Time Frame/Dates to Submit**: The grant application period typically opens annually. The deadline for submission is expected around March 2025, but specific dates should be confirmed through DEEP's website or announcements.	E.7, E.9, B.13, W.3, L.3, L.4
CT DEEP Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR)	**Grant Agency**: Connecticut Department of Energy and Environmental Protection (CT DEEP) Type of Grant: State **Amount Range**: Rebates up to $5,000 on vehicle purchases **Time Frame/Dates to Submit**: Ongoing, apply for rebate voucher online	T.2, T.9, T.10
Greater New Haven Green Fund	**Grant Agency**: Greater New Haven Green Fund Type of Grant: Local **Amount Range**: Up to $10,000 per project (Microgrants are considered on a rolling basis throughout the calendar year with a grant limit of $1,000) **Time Frame/Dates to Submit**: Applications are typically due annually around January; check the Greater New Haven Green Fund website for exact deadlines.	E.6, B.2, W.2, W.3, L.4

Funding Source	Funding Details	CCAP Strategies
New England Grassroots Environment Fund	**Grant Agency**: New England Grassroots Fund Type of Grant: Local Amount range: $500-1,000 **Time Frame/Dates to Submit:** Annual with rolling deadline	E.9, B.7, B.9, B.10, B.11, W.1, W.3, L.3, L.4
Sustainable CT Community Match Fund	**Grant Agency**: Sustainable CT Type of Grant: Local **Amount range:** 1-to-1 match for crowd-sourced fundraising up to $7.5K Time Frame/Dates to Submit: Various application dates	T.5, T.6, T.9, E.6, E.7, E.9, E.11, B.2, B.6, B.7, B.8, B.9, B.10, B.11, B.12, B.13, W.1, W.2, W.3, L.1, L.2, L.3, L.4
Brownfields Remediation Grant Program	**Grant Agency**: U.S. Environmental Protection Agency (EPA) Type of Grant: Federal **Amount Range:** Up to $10 million per project. **Time Frame/Dates to Submit:** Annual funding cycles expected through 2026; check website timeline	E.2, E.6, E.7, E.8, E.9, L.1
NVCOG Revolving Loan Fund	**Grant Agency**: U.S. Environmental Protection Agency (EPA) administered through NVCOG Type of Grant: Federal **Amount Range:** Varies based on project scope & available funds **Time Frame/Dates to Submit:** Rolling/ongoing applications	E.7, E.8, E.12
The following federal funding sources below are at risk from de-funding, cancellation, and/or discretionary cuts		
DOE Grid Resilience State/Tribal Grant Program	**Grant Agency**: U.S. Department of Energy (DOE) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	E.2, E.4, E.5
Atlantic Coastal Fish Habitat Partnership (ACFHP) Habitat Conservation Grants	**Grant Agency**: Atlantic Coastal Fish Habitat Partnership (ACFHP) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant.	L.4

Funding Source	Funding Details	CCAP Strategies
Natural Resources Conservation Service Programs & Initiatives (USDA)	**Grant Agency**: U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	L.1, L.2, L.3, L.4
Long Island Sound Community Impact Fund 2025 RFA (LISCIF)	**Grant Agency**: National Fish and Wildlife Foundation (NFWF) in partnership with EPA. Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	W.1, W.2, W.3, W.4, W.5, L.1, L.2, L.3, L.4
USDA Water Grants and Loans Available to Water and Wastewater Utilities	**Grant Agency**: U.S. Department of Agriculture (USDA) Type of Grant/Loan Program: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	E.5
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	**Grant Agency**: U.S. Department of Transportation (USDOT) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	T.1, T.2, T.3, T.4, T.5, T.6, T.7, T.8, T.9, T.10, T.11, T.12, T.13, E.6, E.7, E.9
Building Resilience Against Climate Effects (BRACE) Framework	**Grant Agency:** Centers for Disease Control and Prevention (CDC) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	T.5, T.7, T.8, B13, W.2, W.3, L.3, L.4
DOE Weatherization Assistance Program	**Grant Agency**: U.S. Department of Energy (DOE) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	B.7, B.9, B.11, B.13
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation Discretionary Grant Program (PROTECT)	**Grant Agency**: Federal Highway Administration (FHWA) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	T.4, T.5, T.6, T.7, T.8, T.12

Funding Source	Funding Details	CCAP Strategies
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	**Grant Agency:** U.S. Department of Energy (DOE) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	B.1, B.3, B.5, B.6, B.11
Water Infrastructure Finance and Innovation Act (WIFIA)	**Grant Agency**: U.S. Environmental Protection Agency (EPA) Type of Loan Program: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	B.3
CT DEEP State Energy Program	**Grant Agency**: Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by the U.S. Department of Energy (DOE) **Type of Grant**: Federal funding administered at the state level **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	E.1, E.2, E.4, E.5, E.6, E.7, E.9, B.4, B.5, B.6, B.11
Solar For All	**Grant Agency**: U.S. Environmental Protection Agency (EPA) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	E.6, E.7, E.9
Clean School Bus Program Rebates | US EPA	**Grant Agency:** U.S. Environmental Protection Agency (EPA) Type of Grant: Federal **Amount Range/Time Frame/Dates to Submit**: Funding uncertain, check on website for updates on grant	T.1, T.2, T.3, E.3, E.4

MOBILITY AND TRANSPORTATION SECTOR

Goal 1: A Clean and Green Municipal Fleet

Strategy T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.

Goal 1: A Clean and Green Municipal Fleet	
Funding Source Name	**Funding Agency**
Clean School Bus Rebate Program	US EPA
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Various Electric Vehicle and Charging Equipment Incentives	Connecticut Department of Energy and Environmental Protection (CT DEEP)

Strategy T.02: Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.

Goal 1: A Clean and Green Municipal Fleet	
Funding Source Name	**Funding Agency**
Clean School Bus Rebate Program	US EPA
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Incentives/Rebates through Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR)	Connecticut Department of Energy and Environmental Protection (CT DEEP)

Strategy T.03: Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time

Goal 1: A Clean and Green Municipal Fleet	
Funding Source Name	**Funding Agency**
Clean School Bus Rebate Program	US EPA
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)

Goal 2: Create a transit-first approach and reduce spatial misalignment

Strategy T.04: Offer discounted transit fare for LIDACs.

Goal 2: Create a transit-first approach and reduce spatial misalignment	
Funding Source Name	**Funding Agency**
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	Federal Highway Administration (FHWA)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)

Strategy T.05: Create a transit-first approach.

Goal 2: Create a transit-first approach and reduce spatial misalignment	
Funding Source Name	**Funding Agency**
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	Federal Highway Administration (FHWA)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
Sustainable CT Community Match Fund	Sustainable CT

Strategy T.06: Partner with micro-transit companies to enable cross-town trips for smaller towns nearby.

Goal 2: Create a transit-first approach and reduce spatial misalignment	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	Federal Highway Administration (FHWA)
Sustainable CT Community Match Fund	Sustainable CT

Strategy T.07: Reduce spatial misalignment through changes in land-use.

Goal 2: Create a transit-first approach and reduce spatial misalignment	
Funding Source Name	**Funding Agency**
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	FHWA
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)

Strategy T.08: Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.

Goal 2: Create a transit-first approach and reduce spatial misalignment	
Funding Source Name	**Funding Agency**
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	FHWA
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)

Goal 3: Reduce emissions from private vehicles

Strategy T.09: Increase the overall Electric Vehicle adoption and create infrastructure.

Goal 3: Reduce emissions from private vehicles	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Sustainable CT Community Match Fund	Sustainable CT
Incentives/Rebates through Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR)	Connecticut Department of Energy and Environmental Protection (CT DEEP)

Strategy T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.

Goal 3: Reduce emissions from private vehicles	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Incentives/Rebates through Connecticut Hydrogen and Electric Automobile Purchase Rebate (CHEAPR)	Connecticut Department of Energy and Environmental Protection (CT DEEP)

Strategy T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: increase work-from-home opportunities to reduce VMT during the work commute.

Goal 3: Reduce emissions from private vehicles	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT

Strategy T.12: Improve broadband access (with at least 1GBPS) state-wide.

Goal 3: Reduce emissions from private vehicles	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Discretionary Grant Program	FHWA

Strategy T.13: Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.

Goal 3: Reduce emissions from private vehicles	
Funding Source Name	**Funding Agency**
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT

ELECTRICITY PRODUCTION AND CONSUMPTION

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services

Strategy E.01: Utilize onsite renewables (e.g., rooftop solar) to power municipal operations

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	
Funding Source Name	**Funding Agency**
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission

Strategy E.02: Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and/or invest in storage capabilities within the municipality

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
DOE Grid Resilience State/Tribal Grant Program	U.S. Department of Energy (DOE)

Strategy E.03: Increase procurement of renewable energy for municipal services.

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	
Funding Source Name	**Funding Agency**
Clean School Bus Rebate Program	US EPA

Strategy E.04: Pursue microgrid projects that integrate onsite renewables and electricity from the grid to power municipal services.

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	
Funding Source Name	**Funding Agency**
Clean School Bus Rebate Program	U.S. Environmental Protection Agency (EPA)
DOE Grid Resilience State/Tribal Grant Program	U.S. Department of Energy (DOE)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission

Strategy E.05: Increase efficiency of wastewater treatment facilities, utilize onsite solar, or biogas to lower emissions at these facilities.

Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	
Funding Source Name	**Funding Agency**
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
DOE Grid Resilience State/Tribal Grant Program	U.S. Department of Energy (DOE)
USDA Water Grants and Loans Available to Water and Wastewater Utilities	U.S. Department of Agriculture (USDA)

Goal 2: Increase renewable energy production and consumption at the local scale

Strategy E.06: Set up outreach programs that communicate state and federal financing programs that support onsite renewable generation to consumers

Goal 2: Increase renewable energy production and consumption at the local scale	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Greater New Haven Green Fund	Greater New Haven Green Fund

Goal 2: Increase renewable energy production and consumption at the local scale	
Funding Source Name	**Funding Agency**
Solar for All (Project SunBridge)	US EPA
New England Grassroots Fund Seed Grant Programs	New England Grassroots Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy E.07: Evaluate the potential of siting renewable energy projects on vacant, underutilized land/combine with open space planning

Goal 2: Increase renewable energy production and consumption at the local scale	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Urban and Community Forestry Planning Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Solar for All (Project SunBridge)	US EPA
Sustainable CT Community Match Fund	Sustainable CT
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)

Strategy E.08: Consider adopting clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.

Goal 2: Increase renewable energy production and consumption at the local scale	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)

Strategy E.09: Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.

Goal 2: Increase renewable energy production and consumption at the local scale	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program	USDOT
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Solar for All (Project SunBridge)	US EPA
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Goal 3: Prepare local economies for renewable energy transition

Strategy E.10: Prepare economic development plans around offshore wind energy.

Goal 3: Prepare local economies for renewable energy transition
Grant funding is not applicable for this strategy, as it is intended to be carried out through regulatory or legislative action.

Strategy E.11: Partner with local workforce development centers and union chapters to prepare workforce in key renewable energy sectors, such as offshore wind energy and solar installations

Goal 3: Prepare local economies for renewable energy transition	
Funding Source Name	**Funding Agency**
Sustainable CT Community Match Fund	Sustainable CT

Goal 4: Cap methane emissions from hydroelectric facilities

Strategy E.12: Develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project.

Goal 4: Cap methane emissions from hydroelectric facilities	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
Naugatuck Valley Council of Governments (NVCOG) Revolving Loan Fund	U.S. Environmental Protection Agency (EPA)

ENERGY EFFICENCY IN BUILDINGS

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations

Strategy B.01: Require building owners to annually benchmark and disclose their energy usage and efficiency ratings.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	
Funding Source Name	**Funding Agency**
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)

Strategy B.02: Provide educational resources and support to building owners on improving energy performance in their buildings.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	
Funding Source Name	**Funding Agency**
Greater New Haven Green Fund	Greater New Haven Green Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.03: Ensure all municipal operations rely on 100% renewable energy sources.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Water Infrastructure Finance and Innovation Act (WIFIA)	US EPA

Strategy B.04: Advocate for strict building codes and achieve net zero energy usage.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations
Grant funding is not applicable for this strategy, as it is intended to be carried out through regulatory or legislative action.

Strategy B.05: Offer incentives and expedited permitting for projects that achieve green building certifications.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	
Funding Source Name	**Funding Agency**
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	U.S. Department of Energy (DOE)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)

Strategy B.06: Support climate-friendly land use.

Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	
Funding Source Name	**Funding Agency**
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	U.S. Department of Energy (DOE)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Urban Act Grant Program	Connecticut Department of Economic and Community Development (DECD)
Sustainable CT Community Match Fund	Sustainable CT

Goal 2: Renewable heating access for low-income homes

Strategy B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties

Goal 2: Renewable heating access for low-income homes	
Funding Source Name	**Funding Agency**
DOE Weatherization Assistance Program	U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and barriers to solar uptake.

Goal 2: Renewable heating access for low-income homes	
Funding Source Name	**Funding Agency**
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.

Goal 2: Renewable heating access for low-income homes	
Funding Source Name	**Funding Agency**
DOE Weatherization Assistance Program	U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Goal 3: Energy-efficient building materials and retrofits

Strategy B.10: Support the adoption of sustainable building materials in low-income housing construction and renovation

Goal 3: Energy-efficient building materials and retrofits	
Funding Source Name	**Funding Agency**
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.11: Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.

Goal 3: Energy-efficient building materials and retrofits	
Funding Source Name	**Funding Agency**
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	U.S. Department of Energy (DOE)
CT DEEP State Energy Program	Connecticut Department of Energy and Environmental Protection (CT DEEP), funded by U.S. Department of Energy (DOE)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
DOE Weatherization Assistance Program	U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)

Goal 3: Energy-efficient building materials and retrofits	
Funding Source Name	**Funding Agency**
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.12: Monitor and report the energy and cost savings resulting from retrofitting and sustainable materials to demonstrate their impact and encourage further investment.

Goal 3: Energy-efficient building materials and retrofits	
Funding Source Name	**Funding Agency**
Sustainable CT Community Match Fund	Sustainable CT

Strategy B.13: Set up outreach programs at the regional or local level that target LMI households for heat pump installations and energy efficiency upgrades.

Goal 3: Energy-efficient building materials and retrofits	
Funding Source Name	**Funding Agency**
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Equity Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
DOE Weatherization Assistance Program	U.S. Department of Energy (DOE)
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Sustainable CT Community Match Fund	Sustainable CT

WASTE MANAGEMENT

Goal 1: Divert waste with local and regional programs

Strategy W.01: Establish a county-wide unit-based pricing program with food-scrap collection and public education

Goal 1: Divert waste with local and regional programs	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy W.02: Establish a regional waste management authority in New Haven County; implement waste diversion infrastructure and programs.

Goal 1: Divert waste with local and regional programs	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Equity Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
Greater New Haven Green Fund	Greater New Haven Green Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy W.03: Expand and continue community-based food waste reduction programs, such as CET's assistance for food waste reduction in businesses, schools, and institutions

Goal 1: Divert waste with local and regional programs	
Funding Source Name	**Funding Agency**
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Equity Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
Greater New Haven Green Fund	Greater New Haven Green Fund
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Goal 2: Enact and expand statewide waste reduction laws

Strategy W.04: Advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations.

Goal 2: Enact and expand statewide waste reduction laws	
Funding Source Name	**Funding Agency**
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA

Strategy W.05: Advocate for extended producer responsibility (EPR) program for packaging to reduce waste by 190,000 tons per year, saving municipalities $50 million per year.

Goal 2: Enact and expand statewide waste reduction laws	
Funding Source Name	**Funding Agency**
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA

INDUSTRIAL

Goal 1: Goal 1: Improve Emissions Monitoring, Accounting, and Reporting

Strategy I.01: Require utility companies, gas suppliers, and health care establishments to report emissions data.

Goal 1: Improve Emissions Monitoring, Accounting, and Reporting
Grant funding is not applicable for this strategy, as it is intended to be carried out through regulatory or legislative action. However, utility companies, suppliers, and health care establishments can explore energy efficiency resources via Energy Star industrial partners and may be eligible for rebates available for commercial or industrial work through Energize CT. In addition, financing through Connecticut Green Bank programs may also be available.

Goal 2: Reduce emissions through low-carbon procurement

Strategy I.02: Embed a purchasing criterion in public projects that states a preference for suppliers or service providers who have a transparent and standardized GHG inventory.

Goal 2: Reduce emissions through low-carbon procurement
Grant funding is not applicable for this strategy, as it is intended to be carried out through regulatory or legislative action. However, suppliers and service providers can explore energy efficiency resources via Energy Star industrial partners and may be eligible for rebates available for commercial or industrial work through Energize CT. In addition, financing through Connecticut Green Bank programs may also be available.

Goal 3: Reduce emissions from the health care sector through public-private partnership

Strategy I.03: Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas. Partner with major healthcare providers to establish a preferential purchasing system, prioritizing suppliers or service providers who disclose their carbon footprint and have clear decarbonization objectives.

Goal 3: Reduce emissions from the health care sector through public-private partnership
While this strategy is primarily implemented through regulatory or legislative action, available grant funding may be available through the Connecticut Department of Economic and Community Development (DECD) Community Investment Fund as well Connecticut Green Bank programs financing.

WORKING LANDS AND FORESTRY

Goal 1: Preserve and support existing and potential forested lands

Strategy L.01: Pursue afforestation and reforestation throughout the county.

Goal 1: Preserve and support existing and potential forested lands	
Funding Source Name	**Funding Agency**
Brownfields Remediation Grant Program	U.S. Environmental Protection Agency (EPA)
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Trees for Communities Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban and Community Forestry Planning Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Resilience Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
Natural Resources Conservation Service Programs & Initiatives (USDA)	U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS)
Sustainable CT Community Match Fund	Sustainable CT

Strategy L.02: Support current efforts and management strategies to maintain existing forests on both private and public property.

Goal 1: Preserve and support existing and potential forested lands	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Trees for Communities Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban and Community Forestry Planning Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Resilience Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
Natural Resources Conservation Service Programs & Initiatives (USDA)	U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS)
Sustainable CT Community Match Fund	Sustainable CT

Goal 2: Increase urban tree canopy and agriculture (UTC)

Strategy L.03: Increase urban tree canopy in low-income disadvantaged communities.

Goal 2: Increase urban tree canopy and agriculture (UTC)	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Trees for Communities Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban and Community Forestry Planning Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Equity Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Resilience Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Natural Resources Conservation Service Programs & Initiatives (USDA)	U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT

Strategy L.04: Support farming initiatives across urban, rural, and suburban typologies.

Goal 2: Increase urban tree canopy and agriculture (UTC)	
Funding Source Name	**Funding Agency**
Small Town Economic Assistance Program (STEAP)	Connecticut Office of Policy and Management (OPM), State Bond Commission
CT DEEP Urban Green and Community Garden Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Open Space and Watershed Land Acquisition Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban and Community Forestry Planning Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Equity Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forest Resilience Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
CT DEEP Urban Forested Natural Areas and Riparian Corridor Restoration Grant Program	Connecticut Department of Energy and Environmental Protection (CT DEEP)
Long Island Sound Community Impact Fund (LISCIF) 2025 RFA	National Fish and Wildlife Foundation (NFWF) in partnership with EPA
Community Investment Fund 2030	Connecticut Department of Economic and Community Development (DECD)
Natural Resources Conservation Service Programs & Initiatives (USDA)	U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS)
CIRCA Climate and Equity Grant Program	Connecticut Institute for Resilience & Climate Adaptation (CIRCA)
Building Resilience Against Climate Effects (BRACE) Framework Grants	Centers for Disease Control and Prevention (CDC)
CT DPH Climate and Health Pilot Grant Program	Connecticut Department of Public Health (DPH)
Greater New Haven Green Fund	Greater New Haven Green Fund
New England Grassroots Fund Seed Grant Programs	New England Grassroots Environment Fund
Sustainable CT Community Match Fund	Sustainable CT
Atlantic Coastal Fish Habitat Partnership (ACFHP) Habitat Conservation Grants	ACFHP

WORKFORCE PLANNING

11.0 WORKFORCE PLANNING ANALYSIS

Economic and Demographic Overview: Labor Market Area

The Labor Market Area used in this analysis is comprised of the New Haven Metropolitan Statistical Area (MSA) which is coterminous with the South Central Regional Council of Governments (SCRCOG), and the Waterbury-Shelton MSA which is coterminous with the Naugatuck Valley Council of Governments (NVCOG).[1] The Labor Market Area is the geography at which robust economic data are available and realistically represents the commute-shed for the major employment centers in the CCAP region.

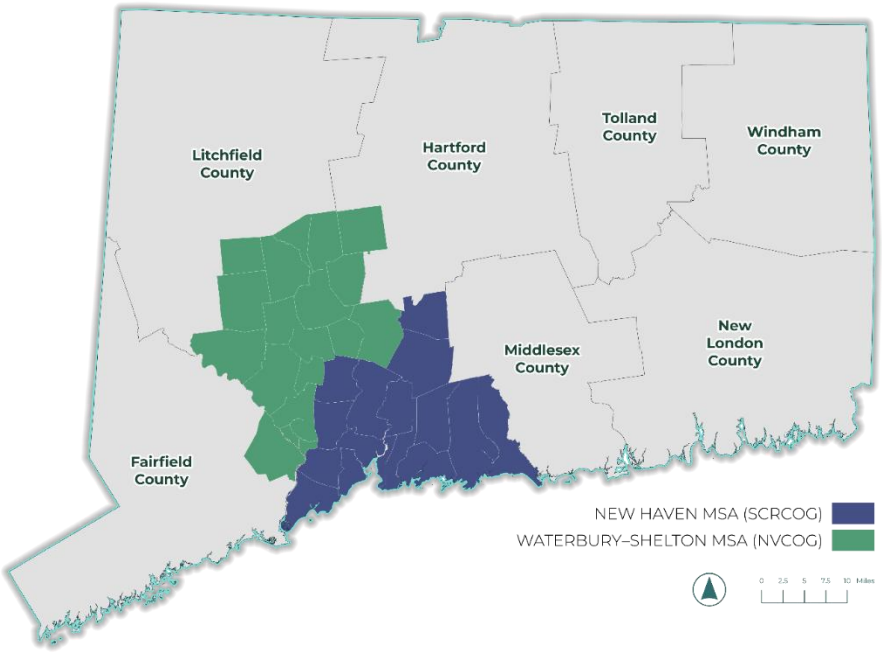


Figure 11-1: Labor Market Area

The total population of the Labor Market Area is approximately 1 million. The Labor Market Area will be used, when data are available, to discuss the characteristics of the potential workforce for the CCAP region. In other sections of this analysis, the CCAP region (New Haven County) will be used either because of data availability, or to show the existing industries, establishments, and employment in the CCAP region.

This analysis uses the most recent data available at the appropriate geographies from the U.S. Census American Community Survey (ACS) and the United States Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages and Occupational and Wage Statistics Survey datasets. Please note that in 2023, Connecticut's MSA boundaries changed to reflect Connecticut's nine Planning Regions (Councils of Governments). This change is reflected in the 2023 ACS data and the 2024 BLS data. This change limits the ability to analyze trends over time for the same region. Data are presented for New Haven

[1] The Labor Market Area for this analysis is larger than the CCAP region (former New Haven County/New Haven-Milford MSA) in that it includes the additional municipalities of Bristol, Plymouth, Bethlehem, Woodbury, Thomaston, Watertown, and Shelton

County or the New Haven MSA (SCRCOG) and the Waterbury-Shelton MSA (NVCOG) as available and appropriate.

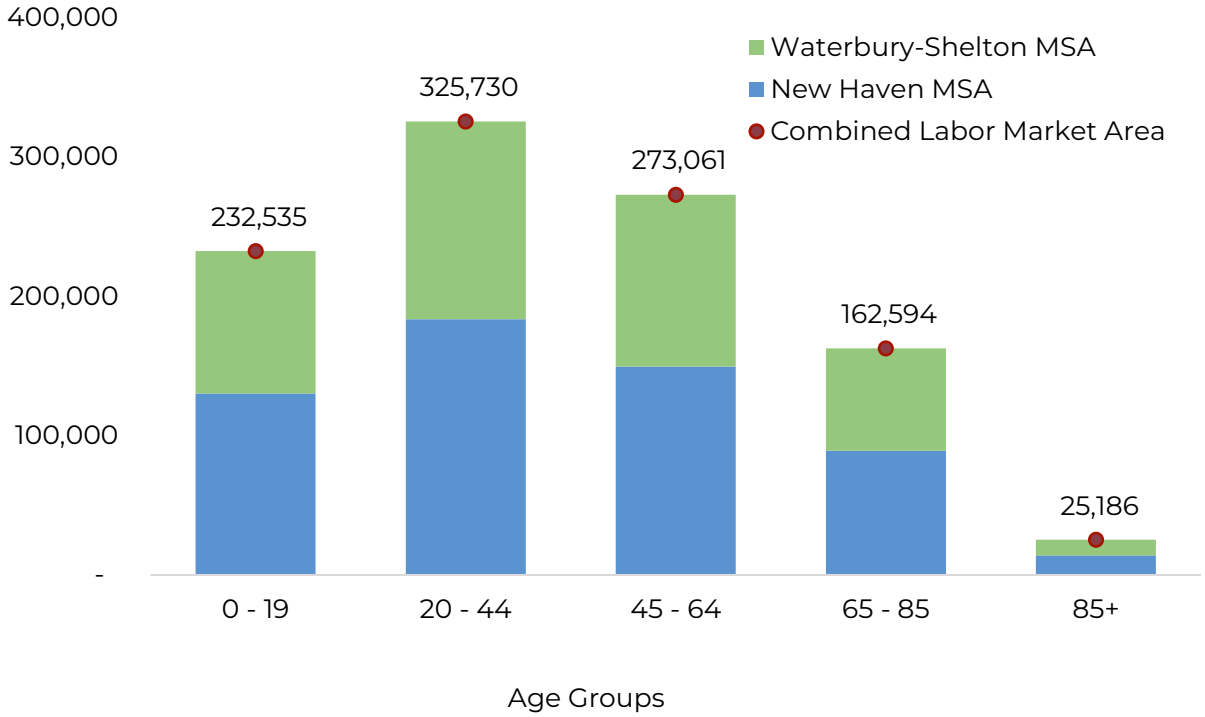


Figure 11-2: Population and Age, Labor Market Area

Source: 2023 ACS 5-YearEstimates (DP05)

Of the Labor Market Area population aged 25 or older, 38 percent have a bachelor's degree or higher; 25 percent have some college or an associate's degree; and 29 percent attained a high school diploma or equivalent as their highest degree.

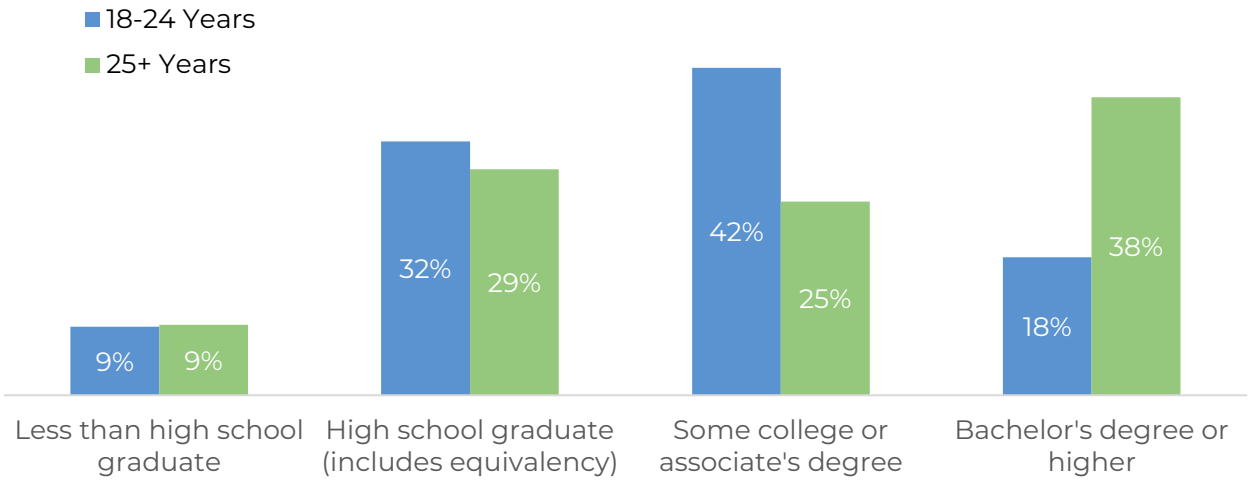


Figure 11-3: Educational Attainment, Labor Market Area

Unemployment in the Labor Market Area is low at 3.2 percent for the New Haven MSA and 3.6 percent for the Waterbury-Shelton MSA. Unemployment has steadily declined from high unemployment in 2020 due to the impacts of the COVID-19 pandemic. Despite very low unemployment, workforce development professionals in the region observe that many residents are still underemployed and are looking for more consistent, full-time, and higher paying jobs with access to benefits.

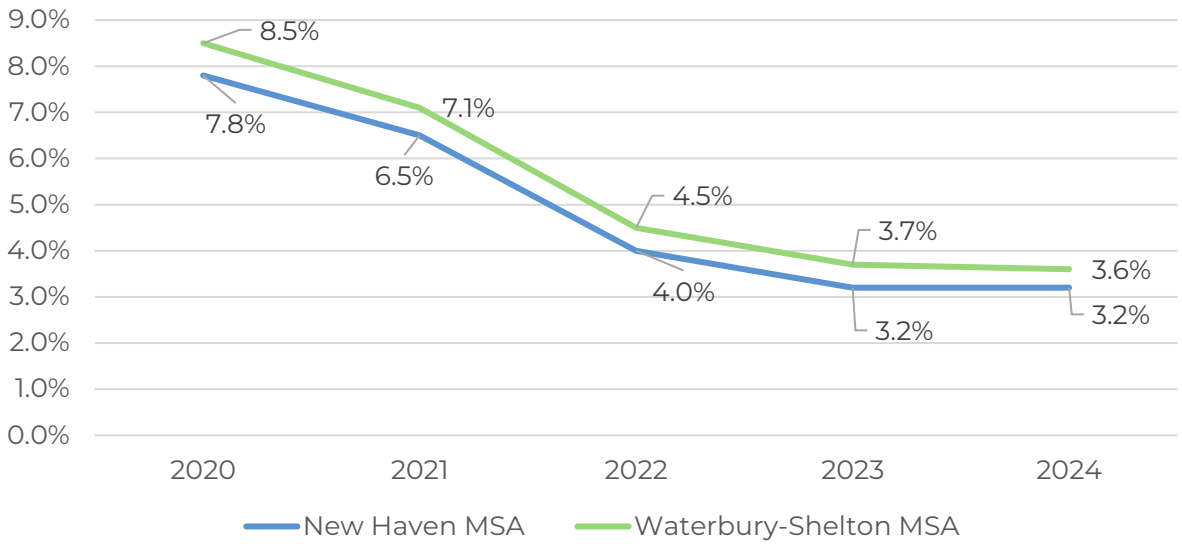
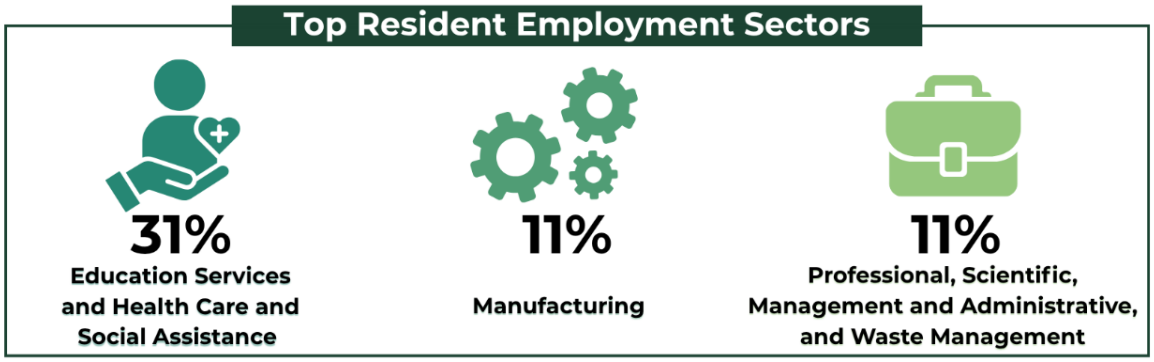


Figure 11-4: Annual Average Unemployment Rate

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics, Annual Averages

As of the 2024 BLS Local Area Unemployment Statistics, the total labor force for the Labor Market Area was 557,522. Of this total labor force 538,777 are employed and 18,745 are unemployed.[2]

The top sector that Labor Market Area residents work in is Education Services and Health Care and Social Assistance, with 31 percent of residents employed in this sector. The next two top resident employment sectors are Manufacturing and Professional, Scientific, Management and Administrative, and Waste Management, each representing 11 percent of the employed resident population.



[2] Bureau of Labor Statistics, Local Area Unemployment Statistics 2024

Table 11-1: Top 5 Employment Industries for Labor Market Area Residents

Industry	Share of Total Civil Employed Population 16+
Educational Services & Health Care and Social Assistance	31%
Manufacturing	11%
Professional, Scientific, Management and Administrative and Waste Management Services	11%
Retail Trade	10%
Arts, Entertainment, Recreation and Accommodations and Food Services	8%
All Other Industries	29%
Civilian Employed Labor Force	**100%**

Source: 2023 ACS 5-Year Estimates (DP03)

Workforce Development Resources

The CCAP region is served by three Workforce Development Boards which receive and distribute funds for workforce development in their respective local workforce delivery areas. The Workforce Development Boards coordinate with state and regional agencies and local organizations to increase employment, job retention, and earnings and help individuals earn industry credentials. The Workforce Development Boards serving the CCAP region are:

- Workforce Alliance: The Workforce Alliance is the Workforce Development Board for 30 municipalities in South Central Connecticut, including the 15 municipalities of the South Central Regional COG.
- The WorkPlace: The WorkPlace is the Workforce Development Board for 20 towns in Southwestern Connecticut, including Ansonia, Beacon Falls, Derby, Oxford, Seymour, and Shelton.
- The Northwest Regional Workforce Investment Board serves the Greater Waterbury, Danbury, and Torrington regions, including Wolcott, Waterbury, Middlebury, Naugatuck, Prospect, and Cheshire, which fall within the CCAP region.

The Workforce Development Boards work with the American Job Centers in their areas which provide services for job seekers. American Job Centers in the CCAP region are located in:

- New Haven
- Meriden
- Hamden
- Ansonia
- Derby
- Waterbury

The Labor Market Area also hosts several non-profits, technical high schools, and colleges that provide technical training in the trades.

Potential Impacts of CCAP Strategies on Workforce

If implemented, the CCAP Strategies will positively impact the regional economy through investment or incentivization of certain economic activities, such as building electrification, energy efficiency upgrades, construction and installation of renewable energy systems, tree planting, transit improvements, construction of transit-oriented development, expansion of organic waste collection, and the administration of various programs to support the implementation of these strategies. **Table 11-2** shows the industries and occupations that will likely be impacted by CCAP strategies. Each industry and occupation have an associated North American Industry Classification System (NAICS) code. Some industries or occupations will experience increased demand while others may require workforce training as systems transition to more sustainable practices and technologies.

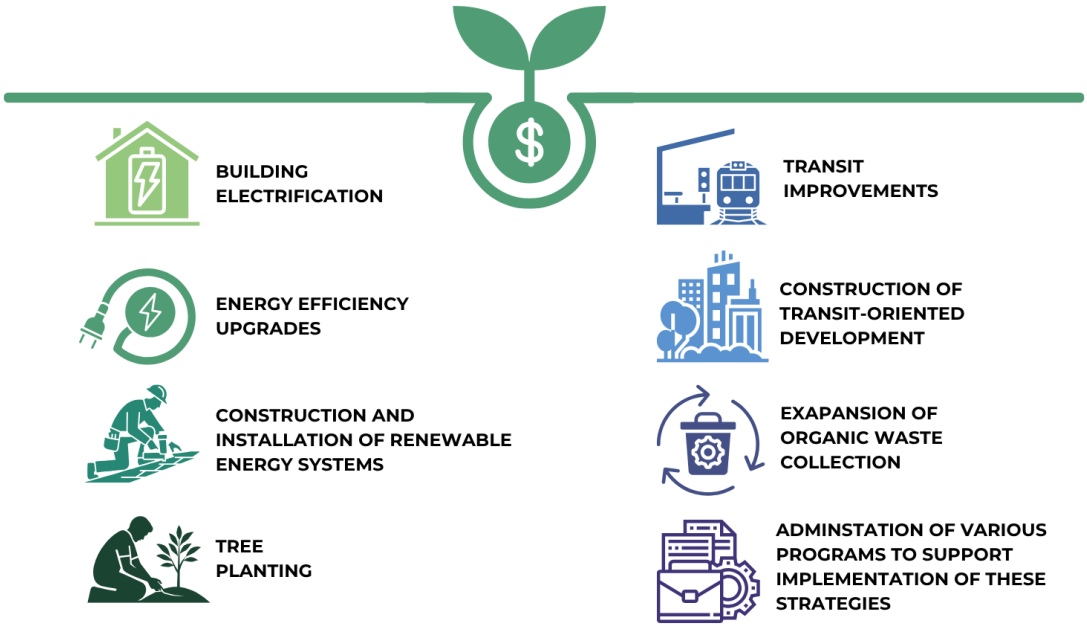


Table 11-2: Industries and Occupations Potentially Impacted by CCAP Strategies

Strategy Category	Industries with associated NAICS Codes	Occupations with Associated NAICS Codes
 **Energy Efficiency in Buildings**	541: Professional, Scientific, and Technical Services 238: Specialty Trade Contractors 221: Utilities 236: Construction of Buildings	47-4011: Construction and Building Inspectors 21-1099: Community and Social Service Specialists, All Other 47-2111: Electricians 49-9021: Heating, Air Conditioning, and Refrigeration Mechanics and Installers 47-2152: Plumbers, Pipefitters, and Steamfitters 47-2131: Insulation Workers, Floor, Ceiling, and Wall 17-2071: Electrical Engineers 49-9051: Electrical Power-Line Installers and Repairers 11-9021: Construction Managers 19-3051: Urban and Regional Planners 11-9141: Property, Real Estate, and Community Association Managers 49-9071: Maintenance and Repair Workers, General
 **Electricity Production and Consumption**	238: Specialty Trade Contractors 237: Heavy and Civil Engineering Construction 221: Utilities 541: Professional, Scientific, and Technical Services 926: Administration of Economic Programs 813: Religious, Grantmaking, Civic, Professional, and Similar Organizations	47-2231: Solar Photovoltaic Installers 47-2111: Electricians 19-3051: Urban and Regional Planners 17-2051: Civil Engineers 17-2071: Electrical Engineers 17-2081: Environmental Engineers 17-2112: Industrial Engineers 25-1194: Career/Technical Education Teachers, Postsecondary 47-4011: Construction and Building Inspectors 21-1099: Community and Social Service Specialists, All Other 49-9071: Maintenance and Repair Workers, General

Strategy Category	Industries with associated NAICS Codes	Occupations with Associated NAICS Codes
 **Industrial**	541: Professional, Scientific, and Technical Services	47-4011: Construction and Building Inspectors 13-1041: Compliance Officers 11-3013: Facilities Managers 11-3051: Industrial Production Managers 11-9111: Medical and Health Services Managers 17-2131: Materials Engineers
 **Working Lands and Forestry**	115: Support Activities for Agriculture and Forestry 813: Religious, Grantmaking, Civic, Professional, and Similar Organizations 561: Other Administrative and Support Services 111: Crop Production 112: Animal Production and Aquaculture	45-2092: Farmworkers and Laborers, Crop, Nursery, and Greenhouse 19-2041: Environmental Scientists and Specialists, Including Health 19-3051: Urban and Regional Planners
 **Mobility and Transportation**	441: Motor Vehicle and Parts Dealers 541: Professional, Scientific, and Technical Services 485: Transit and Ground Passenger Transportation 236: Construction of Buildings 237: Heavy and Civil Engineering Construction 423: Merchant Wholesalers, Durable Goods 336: Transportation Equipment Manufacturing 517: Telecommunications	19-3051: Urban and Regional Planners 17-2199: Engineers, All Other 17-2051: Civil Engineers 41-9099: Sales and Related Workers, All Other 47-2111: Electricians 49-2022: Telecommunications Equipment Installers and Repairers, Except Line Installers 49-9052: Telecommunications Line Installers and Repairers 49-9071: Maintenance and Repair Workers, General
	562: Waste Management and Remediation Services	53-7081: Refuse and Recyclable Material Collectors

Strategy Category	Industries with associated NAICS Codes	Occupations with Associated NAICS Codes
 **Waste Management**	926: Administration of Economic Programs 541: Professional, Scientific, and Technical Services	53-3032: Heavy and Tractor-Trailer Truck Drivers 53-3033: Light Truck Drivers 19-2041: Environmental Scientists and Specialists, Including Health 17-2131: Materials Engineers 49-9041: Industrial Machinery Mechanics 49-9043: Maintenance Workers, Machinery

Source: SLR Consulting, 2025; North American Industry Classification System 2025

Several strategies will rely on increased electrification which will increase demand for utility workers, electricians, and other skilled tradespeople such as heating, ventilation, and air conditioning (HVAC) technicians. Building electrification, transition to renewable energy, and vehicle electrification will all increase the demand for some or all occupations, represented in **Table 11-2** as 47-2111 Electricians, 49-9051 Electrical Power-Line Installers and Repairers, and 49-9021 Heating, Air Conditioning, and Refrigeration Mechanics and Installers. Based on outreach and input from workforce development organizations and employers, the occupations likely to experience shortages that could impact the ability of the region to meet its climate goals are utility line workers and electricians.

Industry Trends

Table 11-3 shows trends in the potentially impacted industries in New Haven County from 2018 to 2023, for private sector industries. Between 2018 and 2023, the Crop Production industry, Heavy and Civil Engineering Construction industry, Professional, Scientific, and Technical Services industry, and Utilities industry experienced the largest percentage increases in employment among the potentially impacted industries.

Crop Production saw the most significant growth with a 29.0 percent increase in employment and a 25.7 percent increase in establishments, indicating an expansion of this industry in the region. This growth indicates that regional efforts to support local and urban agriculture and to connect consumers with local food options through farmers markets and community-supported agriculture have been successful. The growth in crop production in the region aligns with statewide trends which saw an increase in greenhouse, nursery, floriculture, and fruit and vegetable production.[3]

Employment in Heavy and Civil Engineering Construction grew by 11.7 percent, while the number of establishments decreased by 3.6 percent, suggesting business consolidation. The Professional, Scientific, and Technical Services industry experienced an 8.8 percent increase in employment and a 39.1 percent increase in establishments, suggesting a rise in smaller or more automated operations. The Utilities industry also expanded in the

[3] RR-09-Economic-Impacts-of-2022-CT-Ag-Industry_2024.pdf

Region, with a 7.4 percent increase in employment and a 25.9 percent increase in establishments, likely driven by infrastructure investments.

In contrast, the Religious, Grantmaking, Civic, Professional, and Similar Organizations industry, which may be impacted by potential collaboration with labor unions for workforce development initiatives, saw the largest percent decrease in employment, with an 11.5 percent decrease since 2018, yet the number of establishments rose by 13.3 percent. This may indicate a rise in smaller or volunteer-based operations.

The Transit and Ground Passenger Transportation industry along with the Transportation Equipment Manufacturing industry experienced declines in both employment and the number of establishments, indicating broader declines in this industry. However, it should be noted that employment in Transit and Ground Passenger Transportation supported or created by the CCAP strategies would likely be in the public sector.

Table 11-3: Industry Trends, Potentially Impacted Industries 2018 to 2023, New Haven County, Private Sector

NACIS Code	Industry Name	Total Establishments 2023	Total Employees 2023	Historical Establishment Trend (2018-2023)	Historical Employment Trend (2018-2023)
111	Crop Production	44	971	25.7%	29.0%
112	Animal Production and Aquaculture	3	NA	-25.0%	NA
115	Support Activities for Agriculture and Forestry	9	16	28.6%	0.0%
221	Utilities	34	1,641	25.9%	7.4%
236	Construction of Buildings	503	2,678	3.9%	1.9%
237	Heavy and Civil Engineering Construction	81	1,561	-3.6%	11.7%
238	Specialty Trade Contractors	1,466	10,482	5.0%	5.3%
336	Transportation Equipment Manufacturing	38	1,477	-5.0%	-4.3%
423	Merchant Wholesalers, Durable Goods	1,014	7,028	22.8%	1.0%

NACIS Code	Industry Name	Total Establishments 2023	Total Employees 2023	Historical Establishment Trend (2018-2023)	Historical Employment Trend (2018-2023)
441	Motor Vehicle and Parts Dealers	287	5,159	-2.4%	4.0%
485	Transit and Ground Passenger Transportation	67	3,054	-5.6%	-6.1%
517	Telecommunications	88	1,496	15.8%	2.7%
541	Professional, Scientific, and Technical Services	3,424	16,842	39.1%	8.8%
561	Other Administrative and Support Services	1,426	18,800	16.6%	-1.4%
562	Waste Management and Remediation Services	116	1,456	2.7%	5.3%
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	578	3,716	13.3%	-11.5%
926	Administration of Economic Programs	N/A	N/A	N/A	N/A

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), NAICS Sub-Sectors, New Haven County, Private Sector Annual Averages, 2018 and 2023.

Occupational Data for Anticipated Shortages

Table 11-4 shows the number of employees as of 2024 in the Labor Market Area who are in the occupations that may experience shortages – Electricians; Heating, Air Conditioning, and Refrigeration Mechanics and Installers; and Electrical Power-Line Installers and Repairers. Because some data are not available for these specific occupation codes, the broader occupation categories for these occupations are also shown. There are 1,860 Electricians in the Labor Market Area. Electricians are part of the broader occupation category of Construction and Extraction Occupations, which encompass 13,250 people employed in the Labor Market Area, 3 percent of total employment. There are 1,150 Heating, Air Conditioning, and Refrigeration Mechanics and Installers employed in the Labor Market Area. There is limited information available on Electrical Power Line Installers and Repairers, but as of 2023, there were 250 people employed in this occupation in the New Haven area. The broader category of Installation, Maintenance, and Repair Occupations includes 14,780 people, 3.3 percent of total employment in the Labor Market Area.

Table 11-4: Employment by Occupation, Potentially Impacted Occupations Labor Market Area, 2024

Occupation Code	Occupation Title	Total Employment (2024)	% of Total Employment	New Haven MSA Median Hourly Wage	Waterbury - Shelton MSA Median Hourly Wage
00-0000	All Occupations	442,450	100.0%	$27.69	$24.09
47-0000	Construction and Extraction Occupations	13,250	3.0%	$31.18	$29.79
47-2111	Electricians	1,860	0.4%	$36.40	$36.37
49-0000	Installation, Maintenance, and Repair Occupations	14,780	3.3%	$29.97	$29.49
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1,150	0.3%	$35.22	$35.10
49-9051**	Electrical Power-Line Installers and Repairers**	250**	-	$58.74**	-

Source: Bureau of Labor Statistics, Occupational Employment and Wage Statistics (OEWS) Survey, New Haven MSA and Waterbury-Shelton MSA, 2024.

**Employment is for 2023 New Haven MSA, which differs from the 2024 New Haven MSA geography. 2024 data are not available for this occupation for the New Haven MSA. No data are available for this occupation for the Waterbury-Shelton MSA.

Impact Multipliers for Job Creation

If the CCAP strategies are implemented, jobs may be created or supported in the region through increased investment or incentivization. The level of job creation is highly dependent on the dollar value of the investment or increased economic activity. To provide some context on the potential level of job creation that may occur with CCAP strategy implementation, economic multipliers from the input-output model, IMPLAN, for New Haven County are presented in **Table 11-5**, showing the estimated direct job creation that could occur for every $1,000,000 in increased economic activity (in 2025 dollars) in the potentially impacted industries. Jobs are shown in annual full- and part-time jobs. The IMPLAN model assumes the $1 million investment occurs in one year. The investment would need to recur annually for the estimated jobs to be maintained. Please note that the jobs shown in **Table 11-5** are gross jobs created or supported and do not consider job losses in other industries. For certain industries, like construction, where workers are employed throughout the year at various job sites, investment often supports existing employment, rather than creates new jobs. Actual job creation will depend on the level of investment, whether the investment or spending is net-new to the region, whether workers are transitioning from one job or industry to another within the region, and the level of local procurement in the supply chain.

Table 11-5: Job Creation per $1 million (2025 dollars) in Investment, by Industry

Sector	Economic Activity	NAICS Industry	Direct Jobs per $1 million Investment (Full- and Part-Time Jobs)[1]
Electricity Production and Consumption	Create Workforce Development Programs for renewable energy sectors, partner with labor unions and workforce development centers	813- Religious, Grantmaking, and Similar Organizations	9.4
Electricity Production and Consumption	Expand electricity production, invest in storage capabilities, construct micro-grids	237- Heavy and Civil Engineering Construction	6.9
Electricity Production and Consumption	Renewable energy procurement and generation	221- Utilities	1.2

Sector	Economic Activity	NAICS Industry	Direct Jobs per $1 million Investment (Full- and Part-Time Jobs)[1]
Energy Efficiency in Buildings; Electricity Production and Consumption	Building electrification, new green construction, installation of new green energy systems, HVAC installation and maintenance	238- Specialty Trade Contractors	5.9
Energy Efficiency in Buildings; Electricity Production and Consumption; Industrial; Mobility and Transportation; Waste Management	Purchase of professional services from engineers, architects, planners, or other technical services	541- Professional, Scientific, and Technical Services	4.9
Mobility and Transportation	Incentivize transit use, provide micro-transit services	485- Transit and Ground Passenger Transportation	13.7
Mobility and Transportation	Transit-oriented development	236- Construction of Buildings	5.4
Mobility and Transportation	Purchase of electric vehicles	441- Motor Vehicle and Parts Dealers	1.1
Mobility and Transportation	Purchase of electric vehicle charging stations	423- Merchant Wholesalers, Durable Goods	0.6
Mobility and Transportation	Expansion of broadband services	517- Telecommunications	0.2
Waste Management	Organic waste collection, waste reduction and diversion programs	562- Waste Management and Remediation Services	2.9
Waste Management	Administration of waste management programs	926- Administration of Economic Programs	1.9
Working Lands and Forestry	Reforestation and afforestation	115- Support Activities for Agriculture and Forestry	49.8
Working Lands and Forestry	Support farming initiatives	111- Crop Production	8.9

Sector	Economic Activity	NAICS Industry	Direct Jobs per $1 million Investment (Full- and Part-Time Jobs)[1]
Working Lands and Forestry	Increase urban tree canopy, tree planting	561- Other Administrative and Support Services	7.4
Working Lands and Forestry	Support farming initiatives	112- Animal Production and Aquaculture	3.0

Source: SLR Consulting, 2025; IMPLAN 2023 Model for New Haven County
Notes: 1. Direct jobs are those created by the initial investment and do not include jobs created through the supply chain or through induced spending.

Summary of Workforce Development Outreach

On May 22, 2025, SCRCOG, NVCOG, and SLR hosted the ImpaCT 2050 Workforce Development Workshop with workforce development leaders and employers in the region. Attendees included representatives from the Workforce Alliance, The WorkPlace, United Illuminating (Avangrid), and the Southern Connecticut University (SCSU) Office of Workforce and Lifelong Learning. The ImpaCT 2050 Workforce Development Workshop identified several key challenges to building a climate-resilient workforce in the New Haven-Milford region:

1. Workforce Gaps and Training Challenges

Participants highlighted a looming shortage of utility workers, particularly electricians and line workers, due to upcoming retirements. While training programs exist—such as SCSU's utility program and The WorkPlace's "EnergyWorks" initiative—there are significant barriers to entry.

A major issue mentioned is the required hiring ratios for electrician apprenticeships in Connecticut. The State's Department of Consumer Protection requires a 1:1 ratio of apprentices to journeymen for up to 3 apprentices at one company. After a company has hired 3 apprentices, any additional apprentices must be hired at a 1:3 ratio. This limitation

on apprenticeships, while intended to ensure proper staffing, safety, and training, makes it difficult for graduates of trade schools to secure apprenticeships.

Additionally, offshore wind training is not being pursued due to market and regulatory uncertainty.

2. Barriers to Access and Public Awareness

A recurring theme participants identified is the lack of public awareness about green job opportunities and career pathways. Many people, especially in low-income communities, are unaware of existing programs. Suggestions included starting outreach in middle schools, leveraging community events, and using existing infrastructure like Workforce Boards and American Job Centers. Participants also emphasized the need for a centralized online hub to share workforce information and opportunities.

3. Equity, Employer Engagement, and Funding Needs

The group stressed the importance of equity in workforce development—ensuring access for underemployed individuals and families. A critical component for equity is for employers to shift their mindset from hiring fully trained workers to investing in on-the-job training. Funding remains a critical issue; while some programs offer stipends, many do not, limiting participation. Creative partnerships and sustainable funding models were recommended to bridge these gaps and support long-term workforce development.

Strategies

1. **Strengthen Regional Collaboration**

   There is strong support for regional collaboration among the existing workforce development stakeholders in the region to overcome common barriers and challenges and work toward meeting climate goals. One strategy for regional coordination includes the formation of a working group focused on green job workforce development. The working group should bring together Workforce Development Boards, technical high schools, community colleges, non-profit partners, and employers to coordinate efforts and maximize resources.

2. **Leverage Existing Resources and Infrastructure**

   To prevent duplication of effort, any regional coordination involving workforce readiness for climate initiatives should utilize the Workforce Development Boards and the American Job Centers. These organizations have existing infrastructure for delivery of services and relationships with other organizations throughout the region.

3. **Support and Facilitate Employer-Sponsored Training and Coordination**

   The success of workforce development programs relies on cooperation and support from employers. Efforts at regional coordination should involve discussion and negotiation with employers to hire from local training programs, provide input on workforce needs, and invest in on-the-job training.

4. **Expand Awareness and Access**

   One key strategy for addressing workforce shortages is to expand awareness of and access to workforce development resources, with a focus on underserved, unemployed, and underemployed residents of the region. Actions under this strategy include:

   - Promoting flexible training programs such as hybrid and evening and weekend classes.
   - Direct funding or employer support toward stipends for those participating in training programs.
   - Provide programs for soft skills development and counseling for mental health support.
   - Create a centralized online hub for green jobs resources.

5. **Pursue Alternative Funding and Partnerships**

   With federal funding for green jobs uncertain, regional workforce development efforts should focus on pursuing alternative funding sources such as philanthropic organizations, employer sponsorships, and local and state grants.

6. **Advocate for Policy Change that Supports Green Jobs Development**

   Coordinate advocacy efforts in support of policies and funding that facilitate the development of the green economy and address workforce shortages. Advocate for policies at the federal, state, and local level that incentivize green development, energy efficiency and transition, sustainable waste management, sustainable transportation, transit-oriented development, and preservation and expansion of forested and agricultural lands. At the state level, participate in discussions aimed at addressing the issue of hiring ratios for electrician apprenticeships with the goal of creating more apprenticeship opportunities without compromising safety and training standards.

STAKEHOLDER ENGAGEMENT

12.0 STAKEHOLDER ENGAGEMENT

Building Climate Solutions Together

To ensure the CCAP reflects local needs and priorities, public engagement activities helped gather input from residents and community members across the region. Municipal and government representatives were engaged in targeted sessions to incorporate the views of local leaders, planners, and technical staff. This approach was intended to ensure the CCAP is both community-driven and practically implementable, fostering buy-in and addressing local priorities, challenges, and opportunities. By involving both the community and key decision-makers, the plan is better positioned to address the region's climate challenges and support ongoing collaboration as CCAP strategies move toward implementation.

Community Voices in Climate Action

An extensive public engagement process was carried out across the New Haven-Milford MSA region during CCAP development. The CCAP engagement built on the activities, lessons learned, and community priorities identified during the earlier PCAP engagement, refining previous approaches and developing new strategies and activities to better serve the climate planning goals of the New Haven-Milford MSA. Engagement activities were conducted at a variety of venues across the region, featuring an information table with interactive activities staffed by CCAP project representatives. The activities and games were specifically designed to engage target communities in meaningful discussions about climate impacts in their daily lives and to identify the actions and strategies most important to them.

Activities included:

Climate Change Trivia: Participants tested their knowledge of climate change and local emissions by answering trivia questions prepared by UMass and SLR staff. A spinning wheel determined the trivia category: transportation, waste, electricity, industry, agriculture, or climate.

Invest in Change: Participants allocated 10 tokens across six sectors – transportation, electricity, energy efficiency, industry, waste management, and land/forestry– to show where they'd prioritize climate investments.

Empowerment Cards: Participants reflected on how government climate actions could support personal change. Prompt cards (e.g., "If my city enhances recycling programs, I'll be empowered to...") encouraged individual commitments.

Comment Basket: Blank cards and a basket invited participants to leave additional ideas or feedback on climate action in their communities.

Online Survey: A QR code linked to a survey for participants to share further thoughts during or after the event.

Engagement activities were held at a variety of venues, including sustainability fairs, Earth Day events, public libraries, education centers, and farmers markets. These events drew participants from a broad cross-section of the community, including residents, students, families, library patrons, local government staff, and community advocates. Full reports for individual engagement events are provided in Appendix C.

Public Engagement events in the New Haven-Milford MSA Reion

Event	Main Audience	Activities Included	Activity Participants
Southbury Sustainability Fair	Residents, students	Trivia, Invest in Change, Empowerment Cards	18
Cheshire Sustainability Fair	Families, residents, students, visitors	Trivia, Invest in Change, Empowerment Cards	26
Ansonia Autumn Festival	Families, residents	Trivia, Invest in Change	25
Rock to Rock Green Fair, New Haven	Cyclists, families, climate advocates	Trivia, Invest in Change, Empowerment Cards	25
New Haven Elm Street Library	Diverse library patrons	Trivia, Invest in Change, Empowerment Cards	23
New Haven Mitchell Library	Families, library patrons	Trivia, Invest in Change, Empowerment Cards	11
Naugatuck Valley Community College (NVCC) (Waterbury)	Community college students	Invest in Change	30
Additional Tabling (Waterbury, Ansonia)	Library/farmers market visitors	Open comments, trivia, empowerment	--

What We Learned

The input received at the events highlighted some common priorities across the locales but also reflected the unique concerns of each community. Transportation, land/forestry, waste management, and energy efficiency consistently emerged as top areas for climate investment. For example, transportation was the leading priority in Southbury, Rock to Rock, New Haven Elm Street, and among NVCC students, reflecting widespread concern about the accessibility, efficiency, and environmental impact of transit systems. Land and forestry preservation was a dominant theme in Ansonia, Cheshire, and the Mitchell Library, with many participants emphasizing the need for more green space, tree planting, and protection of natural habitats. Waste management and recycling were especially prominent concerns in Cheshire and at several library events, with frequent calls to ban plastics and expand composting programs.

CCAP Sector Noted Priorities at Engagement Events

Event	1st Priority	2nd Priority	3rd Priority
Southbury Sustainability Fair	Transportation	Electricity	Energy Efficiency in Buildings
Cheshire Sustainability Fair	Land & Forestry	Waste Management	Transportation
Ansonia Autumn Festival	Land & Forestry	Energy Efficiency in Buildings	Transportation
Rock to Rock Green Fair	Transportation	Electricity	Land & Forestry
New Haven Elm Street Library	Transportation	Waste Management	Energy Efficiency in Buildings
New Haven Mitchell Library	Land & Forestry	Energy Efficiency	Transportation
Naugatuck Valley Community College (NVCC) (Waterbury)	Transportation	Electricity	Waste Management/ Energy Efficiency in Buildings/Land Use (tied)

Common concerns included the need for safer and more reliable public transit, more accessible renewable energy (especially solar), improved recycling and composting infrastructure, and the preservation of open space. Local differences were apparent: Cheshire and Ansonia residents were particularly vocal about plastic waste and land preservation, while New Haven participants often highlighted transit and urban green space needs. At NVCC, students prioritized transportation and energy efficiency, with a notable interest in climate solutions that also address affordability and access.

The following table summarizes the results of the "Invest in Change" activity at each public engagement event, showing how participants allocated their votes across different climate action sectors. This provides a snapshot of community investment priorities by location and helps highlight both common themes and local differences in climate action preferences.

"Invest in Change" Participant Votes at Each Public Engagement Event

Sector	Southbury	Cheshire	Ansonia	Rock to Rock	Elm Street Library	Mitchell Library	NVCC
Mobility & Transportation	25%	16%	20%	26%	24%	17%	31%
Electricity Production & Consumption	21%	15%	10%	20%	14%	16%	20%
Energy Efficiency in Buildings	16%	13%	21%	15%	15%	19%	13%
Industrial	14%	14%	8%	7%	13%	10%	13%
Waste Management	11%	19%	18%	15%	20%	13%	10%
Working Land and Forestry	13%	23%	23%	17%	14%	25%	13%

Online Survey Responses

Fifteen participants completed the online survey, with twelve indicating they both live and work in the New Haven-Milford MSA region. Nine respondents answered all survey questions. Most expressed concern about future climate change impacts, and many reported negative effects on their quality of life, finances, health, or the wellbeing of loved ones. Only a small number reported any positive impacts from climate change. The table below highlights the top-ranked climate action priorities identified by respondents.

Highest Ranked Choices by Survey Responses (9 respondents)

Survey Question	Highest Ranked	2nd Highest	3rd Highest
Most Important Emission Reduction Factors	Pollutant Reduction	Greenhouse Gas Reduction	Environmental Improvements
Emissions Sectors where reductions will provide the most personal benefit	Mobility & Transportation	Electricity Consumption & Production	Energy Efficiency in Buildings
Most Important Local Government Tools to advance climate action	Incentivize Individual Action	Legislate Individual Action	Incentivize Business Action
Most urgent Mobility & Transportation measures	Encourage Municipal Fleets to Low-Emission Vehicles	Expand and improve public transportation opportunities	Redesign roadways and traffic management to reduce idling.
Most urgent Electricity measures	Transition Municipal Facilities to Renewable Energy	Increase Renewable Energy Production/Storage	Support Local Governments in Clean Energy Purchasing
Most urgent Energy Efficiency in Buildings measures	Support Energy Efficiency in Low-Income Housing	Increase energy efficiency standards and enforcement within local building codes.	Retrofit municipal facilities to be more energy efficient.
Most urgent Waste Management measures	Discourage Food Waste	Support Composting Initiatives	Support Recycling Programs
Most urgent Industrial measures	Enact Purchasing Policies Favoring Low-Emission Companies	Improve Emissions Monitoring	Reduce Healthcare Sector Emissions
Most urgent Working Lands & Forestry measures	Preserve/Increase Forest Cover	Increase Urban Tree Canopies	Support Farming Initiatives

What We Heard

Feedback collected through Empowerment Cards, open comments, and conversations revealed a mix of agreement and diversity in perspectives. There was a strong consensus on the need for more education and outreach, particularly around recycling, composting, and energy options. Many participants expressed frustration with barriers to clean energy adoption (e.g., solar installation challenges, lack of incentives for renters and condo owners), and several called for regulatory changes to support climate action (e.g., mandates for recycling, incentives for energy efficiency, and improved permitting for solar). Concerns about equity, affordability, and access to programs were raised, especially in New Haven and among college students. Some unique suggestions included solar composting public toilets, solar-heated bus stops, and more park rangers.

Public Concerns and Suggestions

Common Concerns	Unique Community Concerns
Public transit access	Plastic waste (Cheshire, Ansonia)
Renewable energy barriers	Land preservation, open space (Ansonia)
Recycling/composting	Urban greening, vacant lots (New Haven)
Green space/tree planting	Solar permitting, condo/renter access
Education/outreach	Affordable electric vehicles (Ansonia, Waterbury)

Municipal Perspectives on Climate Action

Targeted engagement with municipal and government stakeholders was an integral part of the CCAP process. Activities included sector-specific forums, regional workshops, and collaborative planning sessions such as the ColleCTive Climate Action Forum (October 2024), the Climate Planning Workshop for the CCAP (April 2025), and the ImpaCT 2050 Workforce Development Workshop (May 2025). The ColleCTive Climate Action Forum was coordinated as a joint effort among multiple CT Councils of Governments (COGs), with participation open to stakeholders from across the state. These events brought together municipal leaders, planners, public works and facilities staff, regional agencies, workforce boards, utilities, and community partners. Activities were structured to facilitate in-depth discussion of emissions reduction strategies, workforce needs, regulatory barriers, and the unique challenges facing low-income and disadvantaged communities (LIDACs). Full reports for the municipal engagement events are provided in Appendix D. A link to the ColleCTive Climate Action Forum report can be found in the Shared Resources section on the Sustainable CT COG ColleCTive Climate Action Plans webpage.

Public Engagement Events in the New Haven-Milford MSA Region

Event	Audience	Focus Area	Participants
ColleCTive Climate Action Forum (Oct 2024)	Municipal staff, planners, COGs, NGOs	Sector strategy sessions, barriers, solutions	90
CCAP Climate Planning Workshop (Apr 2025)	Municipal leaders, planners, stakeholders	MERPs, LIDACs, workforce, implementation	28
ImpaCT 2050 Workforce Workshop (May 2025)	Workforce boards, utilities, colleges	Workforce gaps, training, funding, coordination	13

What We Learned

There was broad agreement among stakeholders on the need for coordinated, well-resourced climate action at the municipal level, with a range of local concerns and sector-specific challenges highlighted. Across sessions, participants emphasized:

- **Upgrading the electrical grid** is needed to support widespread electrification and renewable energy deployment. Municipalities noted that grid constraints can delay or limit the effectiveness of building and vehicle electrification efforts, and called for regional coordination and advocacy on infrastructure investment. Utilities argued that they could not upgrade the grid without financial and legislative support from the State.
- **Regional collaboration**, such as shared maintenance crews, technical assistance from COGs, coordination with state and municipal agencies, and resource hubs for project templates and funding information, is needed to help smaller towns and those with limited staff capacity advance climate action more effectively.

- **Workforce shortages and training gaps**, especially in HVAC, energy efficiency, waste management, and utility sectors, were cited as major barriers to scaling climate action. Municipalities called for expanded training, apprenticeships, and partnerships with community colleges and workforce boards.
- Municipalities face **regulatory challenges** with state building codes and permitting processes including the lack of municipal authority to mandate higher efficiency standards.
- **Financial barriers** were common, including the high upfront costs of upgrades, accessing funds to expand staff capacity and technical expertise, and needed support to navigate funding opportunities.
- Equity and LIDAC considerations were central, with stakeholders recommending strategies be tailored to address **affordability, housing diversity, health, and access to services** in vulnerable communities.

Municipal Stakeholder Concerns and Suggestions

Common Challenges	Unique Stakeholder Concerns
Workforce shortages, training gaps	Smaller towns lack staff for grant navigation
Funding instability, grant delays	Urban areas face unique housing/health needs
Complex permitting/codes	Some towns lack sustainability commissions
High upfront costs	Rural areas need more transit/EV infrastructure
Limited local authority	Varying capacity for public engagement

What We Heard

While there was broad consensus on the need for investment in workforce, energy efficiency, and public transit, responses varied by region and sector. Urban municipalities often cited the need for affordable housing, transit access, and waste diversion jobs, while suburban and rural communities focused on building code flexibility, local renewable energy, and land use. Some towns expressed frustration with state mandates that lacked funding, while others highlighted the value of regional technical assistance and shared service models.

Stakeholders consistently requested:

- More user-friendly, pre-packaged educational and technical resources.
- Clearer pathways for state and federal funding, especially as many grants have recently been frozen, delayed, or canceled.

Lessons for Future Climate Action Engagement Initiatives

Public and Community Engagement

Public engagement activities that were interactive and family-friendly, such as the "Invest in Change" coin exercise and Climate Change Trivia, proved most effective at drawing participation and sparking meaningful dialogue. Events with broader community appeal (fairs, festivals) generally saw higher attendance and m ore diverse input, while library and campus tabling offered opportunities for deeper conversations. Providing physical handouts, QR codes for surveys, and take-home materials increased engagement, especially for those unable to stay long. Empowerment Cards and open comment baskets worked best when actively facilitated.

For future climate action plan activities focused on public engagement, it is recommended to:

- Continue prioritizing interactive, high-traffic engagement at community events and campuses.
- Tailor outreach to address local priorities (e.g., plastics in Cheshire, transit in New Haven, open space in Ansonia).
- Lower barriers for participation by offering incentives, accessible feedback tools, targeted education, multilingual materials, and staff trained to actively facilitate engagement and communicate activities across multiple languages.
- Expand digital outreach and provide materials for later review.
- Ensure ongoing feedback loops and transparency about how input is used.
- Either omit surveys entirely or make them very short and simple, to increase participation rate.

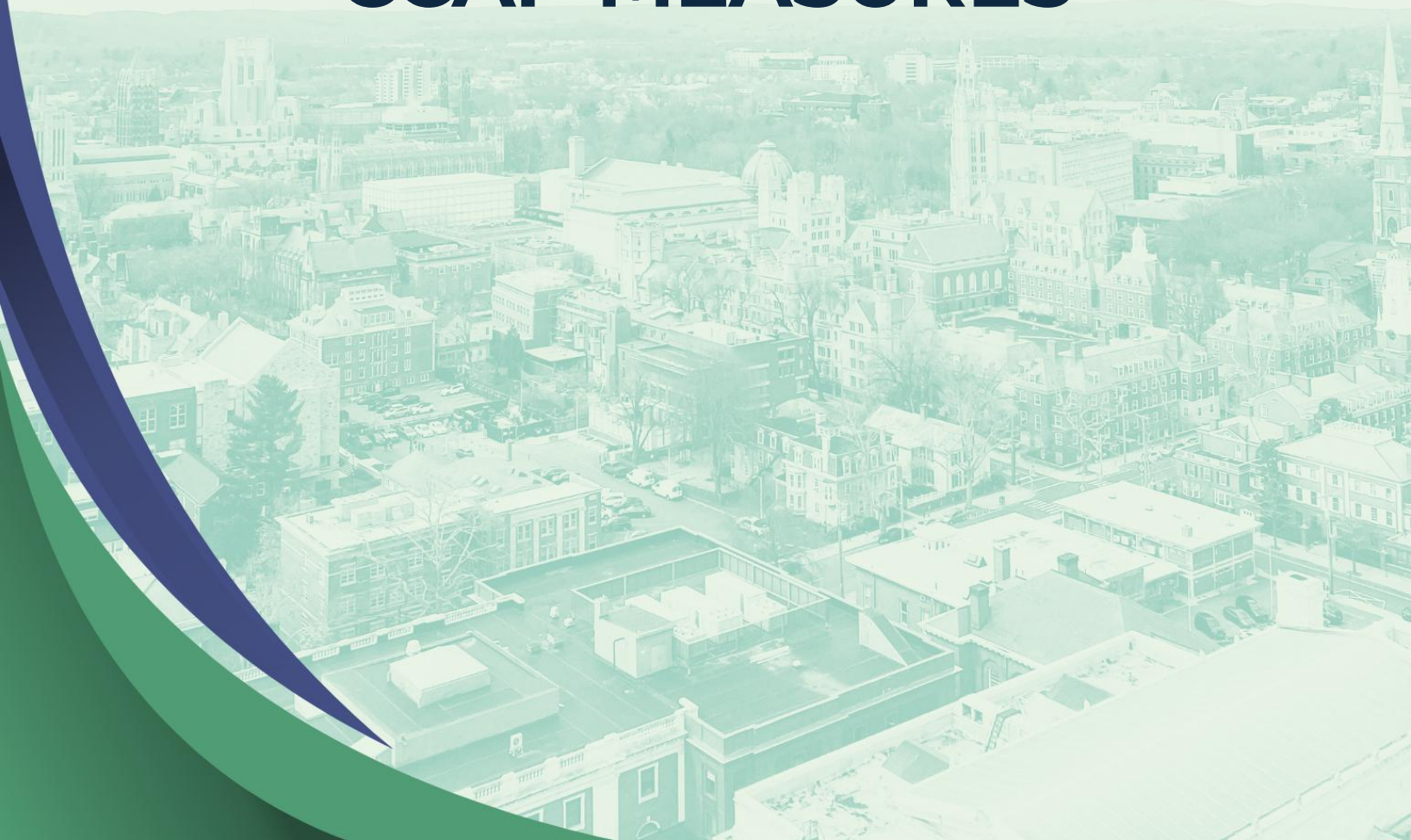
Municipal Stakeholder Engagement

Engagement activities that spanned topic-specific deep dives and cross-sector dialogue were most successful, fostering practical problem-solving and peer learning. Workshops that included interactive exercises, such as the ColleCTive Climate Action Forum, mapping workforce needs, and identifying LIDAC priorities, generated actionable feedback and buy-in. However, participation was sometimes limited by staff attendance barriers and competing priorities.

For future climate action plan activities focused on municipal stakeholder engagement, it is recommended to:

- Maintain regular, structured engagement with municipal stakeholders, including sector forums and regional workshops.
- Include a mix of larger forums that bring together multiple stakeholders from across the region and more tightly focused and smaller sector or topic groups to gain multiple perspectives.
- Engage overall broader participation from smaller towns.
- Include equity-focused break-out groups.

ESTIMATING COSTS OF CCAP MEASURES



13.0 ESTIMATING COSTS OF CCAP MEASURES

This chapter provides a preliminary assessment of the potential costs associated with implementing the GHG emission reduction measures outlined in this CCAP. Estimated implementation costs for climate action measures provide information to help guide selecting, prioritizing, and communicating about CCAP strategies. Cost estimates ensure decision-makers have the broad financial context needed to compare strategies with similar GHG emissions reductions and make informed decisions using their limited resources effectively. These estimates also inform future funding applications, support internal budget planning, and facilitate communication with stakeholders about implementation requirements.

These cost opinions are intended to offer a general sense of scale and investment required, rather than precise project-level estimates. To develop these cost opinions, an analogous estimating methodology was used to extrapolate from similar, completed projects in order to estimate costs of new initiatives. This approach involved drawing from comparable case studies, typical grant award ranges from relevant state and federal programs, industry-standard cost estimates for infrastructure, technology, and services, estimated staff time and administrative capacity needed for implementation, and historical data from previous Requests for Proposals (RFPs) and procurement efforts. When applying analogous estimates, reference projects with similar scope and technology were identified, costs were scaled accordingly, and regional cost variations were considered.

The costs included in the cost opinions reflect only those likely to be incurred by the implementing authority, such as a state agency, regional entity, or municipality. Costs incurred by private entities, utilities, or other partners are not included unless they are expected to be publicly funded or subsidized.

The cost opinions are tied to the broader strategies identified in the CCAP and are given by sector below. As specific projects are developed under each strategy, more detailed and accurate cost estimates will be necessary. This chapter should therefore be viewed as a foundational tool for planning and prioritization, rather than a definitive budget.

CCAP STRATEGY COST ESTIMATES BY CCAP MEASURE

Mobility and Transportation

Mobility and Transportation			
Strategy	**Estimated Cost Range**	**Implementing Authority/Level**	**Source**
T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.	$1,000,000 - $43,500,000 per Municipality	Municipality	Kelly Blue Book, 2025 US Department of Energy, Office of Energy Efficiency and Renewable Energy, Alternative Fuels Data Center, Electric School Bus Education
T.02: Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.	$2,000,000 - $57,000,000 per Municipality	Municipality	Purchase Costs of Zero-Emission Trucks in the United States to meet future Phase 3 GHG standards, Working Paper 2023-10, International Council on Clean Transportation Department of Energy, Hydrogen Fueling Stations Cost, 2020 Hydrogen Fuel Cell Partnership, Costs and Financing
T.03: Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time.	$250,000 - $2,800,000 per Municipality	Municipality	US DOT, Intelligent Transportation Systems Joint Program Office, The National Traffic Signal Report Card, 2007 USDOT Federal Highway Administration, Traffic Signal Operations and Maintenance Staffing and Resource Requirements Guidelines Questionnaire, 2008
T.04: Offer discounted transit fare for LIDACs.	$200,000 - $300,000 loss of CTtransit Fare Revenue per month in New Haven County	Regional	RPA, Reduced Fares, Lessons from Across the Country

Mobility and Transportation			
Strategy	**Estimated Cost Range**	**Implementing Authority/Level**	**Source**
T.05: Create a transit-first approach.	$75,000 - $17,500,000	Municipality	Based on similar projects and consulting cost estimates.
T.05.a: Pilot pedestrianization, limited traffic (bus only lanes/streets) and use of active transportation downtown and in dense developments.	$100,000 - $5,000,000 per project	Municipality	US DOT, Safe Streets for All Grant NOFO, 2025
T.05.b: Ensure federally designated Opportunity Zones are completely accessible by transit.	$300,000 - $12,000,000 per project	Municipality	CTDOT Awards LOTCIP Funding 2025
T.05.c: Advocate for transit plans that incentivize new development in areas that will allow for transit, walking, and bike use.	$75,000 - $350,000 per Plan	Municipality	Based on similar projects and consulting cost estimates.
T.06: Partner with micro-transit companies to enable cross-town trips for smaller towns nearby.	Annual Operating Cost $400,000 - $2,500,0000 per Municipality	Municipality	Microtransit Feasibility Study Final Report 051024 May 10 2024
T.07: Reduce spatial misalignment through changes in land use	$50,000 - $325,000 per Municipality	Municipality	Based on similar projects and consulting cost estimates.
T.07.a: Conduct feasibility studies for creating economic zones in areas with high commute times	$75,000 - $200,000 per Study	Municipality	Based on similar projects and consulting cost estimates.

Mobility and Transportation			
Strategy	**Estimated Cost Range**	**Implementing Authority/Level**	**Source**
T.07.b: Encourage denser housing in areas near existing economic zones.	$50,000 - $150,000 per Municipality	Municipality	Based on similar projects and consulting cost estimates.
T.08: Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.	$1,000,000 - $2,100,000 per project	Municipality/ CTtransit	Park-and-Ride Lot Study, Coastal Region MPO Final Report, 2014
T.09: Increase the overall Electric Vehicle adoption and create infrastructure	$1,000 - $42,000 per Municipality	Municipality	Based on similar regional projects and consulting cost estimates.
T.09.a: Communicate the benefits of CHEAPR to low and middle-income communities, and have limited time offers of higher rebate to encourage the buying of EVs in the short-term.	Cost to Municipality: $4,000 per Municipality Cost to State: Rebates that would have occurred without outreach or incentives - $500 per rebate Rebates attributed to outreach and incentivization efforts - $2,500 per rebate	Municipality/ State	Municipal Employee Salary in Connecticut (November 01, 2025) | Salary.com CHEAPR - Program Statistics
T.09.b: Encourage car owners in rural communities to set up at home EV charging by taking advantage of Federal Tax credits.	$1,000 - $4,500 per Municipality	Municipality	Municipal Employee Salary in Connecticut (October, 2025) | Salary.com

Mobility and Transportation			
Strategy	**Estimated Cost Range**	**Implementing Authority/Level**	**Source**
T.09.c: In high-density development areas, implement requirements for new development to include EV charging stations.	$5,000 - $25,000 per Municipality	Municipality	Municipal Employee Salary in Connecticut (October, 2025) | Salary.com
T.09.d: Communicate the benefits of the eBikes incentive program and advocate for increased funding for it, especially encouraging the growth of the Voucher+ offer for LIDACs	$2,000 - $8,500 per Municipality	Municipality	Municipal Employee Salary in Connecticut (October, 2025) | Salary.com
T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.	$5,000 per Municipality $6,000,000 per State Program	Municipality/State	OSC Rideshare Report 2025
T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: this requires an increase in work-from-home opportunities to reduce VMT during the work commute.	$4,000 - $150,000 per Municipality	Municipality/ State	Seattle Bicycle Master Plan 2020-2024 Implementation Plan
T.12: Improve broadband access (with a least 1GBPS) state-wide.	$41,000,000 - $114,000,000 per Project	State	CTDEEP Broadband Deployment

Mobility and Transportation			
Strategy	**Estimated Cost Range**	**Implementing Authority/Level**	**Source**
T.13: Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.	$530,000,000 - $5,000,000,000 (entire State)	State	2024 Connecticut Clean Hydrogen Roadmap

Electricity Production and Consumption

Electricity Production and Consumption			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
E.01: Utilize on site renewables (i.e., rooftop solar) to power municipal operations.	$150,000 - $450,000 per project	Municipality	Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies 2024 Municipal Solar and Storage Resource Guide – MAPC Greenskies Completes 120-kW Rooftop Solar Project For Connecticut YMCA | Titan Energy
E.02: Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and/or invest in storage capabilities within the municipality.	$325,000 - $11,500,000 per project	Municipality	Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies RE-Powering America's Land: Traditional New England City Builds a Modern Microgrid 2016 Municipal Solar and Storage Resource Guide – MAPC Greenskies Completes 120-kW Rooftop Solar Project For Connecticut YMCA | Titan Energy

Electricity Production and Consumption			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
E.03: Increase procurement of renewable energy for municipal services.	$200,000 - $475,000 per Municipality	Municipality	Federal Off-Site Energy Procurement Options Connecticut - Clean Energy Options - Community Energy Community Energy Profile 2016 Prepared by MAPC
E.04: Pursue microgrid projects that integrate onsite renewables and electricity from the grid to power municipal services.	$325,000 - $11,500,000 per project	Municipality	Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies 2024 Traditional New England City Builds a Modern Microgrid EPA 2016 Metropolitan Area Planning Council Municipal Solar and Storage Resource Guide Greenskies Completes 120 kW Rooftop Solar Project for Connecticut YMCA
E.05: Increase efficiency of wastewater treatment facilities, utilize onsite solar, or biogas to lower emissions at these facilities.	$1,000,000 - $8,000,000 per facility	Municipality	Transitioning Small Wastewater Treatment Plants to Solar with Direct Pay Incentives, Environmental Finance Center Network MassDEP Fact Sheet BioGas Production
E.08: Adopt clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.	$100,000 - $250,000 per Municipality	Municipality	Based on similar regional projects and consulting cost estimates.

Electricity Production and Consumption			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
E.09: Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.	$50,000 - $175,000 per project	Municipality/Housing Authority	Capital Cost and Performance Characteristics for Utility-Scale Electric Power Generating Technologies 2024 Maycroft Apartments Clean Energy Group Low Income Housing in Boston to save over $800,000 on bills with rooftop solar, PV Magazine 2025
E.10: Prepare economic development plans around offshore wind energy.	$100,00 - $250,000 per Plan	Municipality	Based on the cost of similar economic development plans
E.11: Partner with local workforce development centers and union chapters to prepare workforce in key renewable energy sectors, such as offshore wind energy and solar installations	$250,000 - $500,000 (Entire Region)	Regional	MA Clean Energy Center Climate Critical Workforce Training, Equipment, and Infrastructure Grants MA Clean Energy Center Offshore Wind Works-Workforce Training and Development Grants Vermont State University NABCEP Certification - PV Installation Professional Bunker Hill Community College Solar Panel Installer Training
E.12: "Develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project" (O'Neill, 2023).	$10,000,000 - $18,000,000 per project	Federal	Reservoir Methane Capture Mechanism Global Innovation Lab for Climate Finance 2022 Kinneytown Dam Removal Gets Financial Boost from State, June 2025 Valley Independent Sentinel

Energy Efficiency in Buildings

Energy Efficiency in Buildings			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
B.01: Require building owners to annually benchmark and disclose their energy usage and efficiency ratings.	$125,000 - $250,000 per Municipality	Municipality	Local Law 97 NYC FAQ Building Emissions Reduction and Disclosure
B.02: Provide educational resources and support to building owners on improving energy performance in their buildings.	$2,000 - $5,000	Municipality	Based on SLR professional experience consulting cost estimates.
B.03: Ensure all municipal operations rely on 100% renewable energy sources.	$0- $300,000 per building	Municipality	Clean Start, Average Cost of Solar PPA Energy Information Administration, Commercial Buildings Energy Consumption Survey, 2012 Energy Information Administration Connecticut Profile Data, October 2025
B.04: Advocate for strict building codes and achieve net zero energy usage.	$5,000 - $56,000 per Municipality	Municipality	Based on similar regional projects.
B.05: Offer incentives and expedited permitt ing for projects that achieve green building certifications.	$10,000 - $30,000 per Municipality	Municipality	Based on similar regional projects.

Energy Efficiency in Buildings			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
B.06: Support climate-friendly land use.	Will vary based on initiative and support level-needed		
B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties.	$9,000 - $19,000 per unit	Municipality/ Housing Authority	US Department of Energy, Solar Hot Water System Calculator, 2023
B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and reduce barriers to solar uptake.	$16,000 - $40,500 per facility	Municipality	US Department of Energy, Solar Hot Water System Calculator, 2023
B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.	$150 - $350 per system installed	Municipality/ Housing Authority	The Best Home Energy Monitors (2025) | EnergySage
B.10: Require the use of sustainable building materials in the construction and building of low-income housing.	$10,000 - $30,000 per Municipality	Municipality	Based on similar regional projects.

Energy Efficiency in Buildings			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
B.11: Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.	$500,000 - $2,500,000 per Municipality	Municipality	NYS Homes and Community Renewal, Resilient Retrofits Term Sheet, 2025
B.12: Monitor and report the energy and cost savings resulting from retrofitting and sustainable materials to demonstrate their impact and encourage further investment.	$13,000 - $56,000 per Municipality	Municipality	Based on similar regional projects.
B.13: Set up outreach programs at the regional or local level that target LMI households for heat pump installation and energy efficiency upgrades	$10,000-$30,000 per Municipality	Municipality	Based on similar regional projects.

Waste Management

Waste Management			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
W.01: Establish a county-wide unit-based pricing program with food-scrap collection and public education	$100,000 - $500,000 (Co-collection infrastructure such as sorting facilities may cost up to $3,500,000) per Municipality	Municipality	DEEP Announces $15 Million in Grant Awards for Materials Management Infrastructure Grant Program Sustainable Materials Management Grant Program, Phase 2 Application
W.02: Establish a regional waste management authority in New Haven County, implement waste diversion infrastructure and programs	$550,000 - $4,500,000 (Entire Region)	Regional	Waste Management and Diversion - CRCOG | Capitol Region Council of Governments DEEP Announces $15 Million in Grant Awards for Materials Management Infrastructure Grant Program February 27 2025
W.03: Expand and continue community-based food waste reduction programs, such as CET's assistance for food waste reduction in businesses, school, and institutions.	$5,000,000- $10,000,000 (Entire State)	State	DEEP Announces Assistance Available to Help Businesses Recycle and Divert Food Waste May 24 2022
W.04: Advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations.	$2,000 - $5,500 per Municipality	Municipality	Based on similar regional projects.
W.05: Advocate for extended producer responsibilities (EPR) program for packaging to reduce waste by 190,000 tons per year, saving municipalities $50 million per year.	$4,000 per Municipality $112,000 for Entire State	Municipal/State	Office of Inspector General (GSA) Highest Paid Employees 2023

Industrial

Industrial			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
I.01: Require utility companies, gas suppliers, and health care establishments to report emissions data.	$125,000 - $250,000 per Municipality	Municipality	Local Law 97 NYC FAQ Building Emissions Reduction and Disclosure | Boston.gov
I.02: Embed a purchasing criterion in public projects that states a preference for suppliers or service providers who have a transparent and standardized GHG inventory	$8,000 - $20,000 per Municipality	Municipality	Based on similar projects and consulting cost estimates
I.03: Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas.	$500,000 - $1,000,000 per Grant Round	State/Federal Granting Agency	Based on grant amounts

Working Lands and Forestry

Working Lands and Forestry			
Strategy	**Estimated Cost Range**	**Implementing Authority**	**Source**
L.01: Pursue afforestation and reforestation throughout the county	$130- $580 per acre	Municipality/ State	Is Reforestation a Profitable Investment? An Economic Analysis | NC State Extension Publications
L.02: Support current efforts and management strategies to maintain existing forests on both private and public property.	$10 - $3,570 per acre per year	Municipality/ State	Natural Lands Management Cost Analysis, 28 Case Studies, Prepared by the Center for Natural Lands Management for the EPA, 2004 Connecticut Land Conservation Council, state of the Lands, Results from the 2023-24 Connecticut Land Trust Census
L.03: Increase urban tree canopy in low-income disadvantaged communities	$65,000 - $150,000 per project	Municipality	CTDEEP Urban Forestry Grant Accomplishments 2024
L.04: Support farming initiatives across urban, rural, and suburban typologies	$75,000 - $350,000 per project	Municipality/ Regional	Urban Agriculture and Innovation Production Competitive Grants Program Grants Notice, 2024)

COST ESTIMATE ASSUMPTIONS AND CALCULATIONS

Mobility and Transportation

T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.

Measure Cost Quantification and Assumptions: This cost opinion assumes that 25% of the municipal fleet will be replaced with electric vehicles (EVs) over the next five years. It includes the installation of Level 2 chargers, with one charger for every two EVs. The opinion accounts for Type C electric school buses and light-duty municipal EVs, assuming sufficient grid capacity and site readiness for deployment. It also includes training costs for drivers and maintenance staff as part of the initial rollout. The average cost of a light-duty EV is estimated at $58,000, while an electric school bus averages $388,054. Each Level 2 charger, with two ports and installation, is estimated to cost $2,305. Vehicle counts are based on New Haven's fleet size, approximately 600 municipal vehicles and 350 school buses, with the low-end estimate scaled to reflect the smallest population community in the region. This opinion does not include potential grant offsets or subsidies.

T.02: Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.

Measure Cost Quantification and Assumptions: This cost opinion assumes that medium- to heavy-duty vehicles (representing approximately 20% of a municipality fleet) cannot transition to electric vehicles (EVs). The high-end opinion includes the construction of a hydrogen fueling station within the municipality, while the low-end opinion assumes access to a regional hydrogen fueling station. It is assumed that hydrogen fuel cell trucks cost an average of $450,000 each. Vehicle counts are based on fleet estimates from New Haven. The cost of constructing a hydrogen fueling station is estimated at $2,600,000.

T.03: Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time.

Measure Cost Quantification and Assumptions: Adjusting the US DOT cost signal estimate from 2007 to 2025 dollars; this cost opinion assumes an average cost of $5,000 to adjust signal timing at a single intersection. Consultant fees are estimated at $225 per hour, and traffic engineers are expected to spend 20–25 hours per intersection. This opinion assumes a comprehensive study of all signalized intersections. The high-end cost is based on New Haven's 292 signalized intersections, while the low-end cost reflects a smaller study area covering approximately 10% of those intersections.

T.04: Offer discounted transit fare for LIDACs.

Measure Cost Quantification and Assumptions: This cost opinion assumes a base fare of $1.75 for CTtransit and applies a 50% discount to participating riders. It assumes that

approximately 3% of the population currently uses the bus for commuting and that about 25% of the population qualifies as LIDAC. Of this group, it is assumed that 50% of LIDAC bus riders participate in the discounted fare program and ride the bus at an average of 30 times per month. This opinion reflects only the anticipated loss of fare revenue and does not include any associated program administration or implementation costs.

T.05: Create a transit-first approach.

Measure Cost Quantification and Assumptions: Low cost assumes that a municipality implements the lowest cost strategies from the following strategies under T.05. High cost assumes that the municipality implements all the highest cost strategies.

T.05.a: Pilot pedestrianization, limited traffic (bus only lanes/streets) and use of active transportation downtown and in dense developments.

Measure Cost Quantification and Assumptions: This cost opinion is based on the funding range for SS4A Planning and Demonstration Grants. Actual costs will vary significantly depending on the project's type, scope, and scale.

T.05.b: Ensure federally designated Opportunity Zones are completely accessible by transit.

Measure Cost Quantification and Assumptions: This cost opinion assumes infrastructure investments within Opportunity Zones. The low-end amount is based on the minimum construction cost for LOTCIP projects, while the high-end amount reflects the highest 2025 LOTCIP project awards.

T.05.c: Advocate for transit plans that incentivize new development in areas that will allow for transit, walking, and bike use.

Measure Cost Quantification and Assumptions: This cost opinion assumes the development of a Bicycle and Pedestrian Master Plan with consultant support, based on an hourly rate of $200. The range depends on the size and complexity of the plan.

T.06: Partner with micro-transit companies to enable cross-town trips for smaller towns nearby.

Measure Cost Quantification and Assumptions: This cost opinion assumes annual operating costs only for micro-transit programs. Startup expenses, which are not included in this cost opinion, would include feasibility studies and procurement.

T.07: Reduce spatial misalignment through changes in land use

Measure Cost Quantification and Assumptions: Low cost assumes that a municipality implements the lowest cost strategies from the following strategies under T.07. High cost assumes that the municipality implements all the highest cost strategies.

T.07.a: Conduct feasibility studies for creating economic zones in areas with high commute times

Measure Cost Quantification and Assumptions: This cost opinion assumes that a consultant will be hired to conduct the feasibility analysis, with an hourly rate of $200. The range depends on the size and complexity of the feasibility study.

T.07.b: Encourage denser housing in areas near existing economic zones.

Measure Cost Quantification and Assumptions: This cost opinion assumes that a consultant will be hired to conduct a zoning review and update to incentivize new housing development, with an hourly rate of $200. The range depends on the size and complexity of the zoning review.

T.08: Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.

Measure Cost Quantification and Assumptions: The high-end cost opinion assumes the development of one new publicly owned lot with 100 spaces. This does not include annual maintenance costs or any increase in CTtransit operating costs. The low-end cost opinion assumes the expansion and improvement of an existing lot, excluding annual maintenance costs and additional CTtransit operating expenses. Inflated to 2025 Dollars

T.09: Increase the overall Electric Vehicle adoption and create infrastructure

Measure Cost Quantification and Assumptions: Low cost assumes that a municipality implements the lowest cost strategies from the following strategies under T.09. High cost assumes that the municipality implements all the highest cost strategies.

T.09.a: Communicate the benefits of CHEAPR to low and middle-income communities, and have limited time offers of higher rebate to encourage the buying of EVs in the short-term.

Measure Cost Quantification and Assumptions: The cost opinion for the municipality assumes administrative time for conducting outreach, based on an average municipal employee salary of $55,922. The cost per municipality assumes 160 hours of outreach work. The cost for the State is the incremental cost per rebate of $500, as well as the full cost of any rebates that were incentivized via outreach efforts ($2,500 per rebate). The average cost of the existing rebate program was determined by reviewing the total cost and number of rebates for the SCRCOG/NVCOG communities in program year 2024. The total cost was $14,630,750 and the number of rebates was 6,693.

T.09.b: Encourage car owners in rural communities to set up at home EV charging by taking advantage of Federal Tax credits.

Measure Cost Quantification and Assumptions: This cost opinion assumes administrative time for conducting outreach, based on an average municipal employee salary of $55,922. The estimated time required for outreach ranges from 40 to 150 hours.

T.09.c: In high-density development areas, implement requirements for new development to include EV charging stations.

Measure Cost Quantification and Assumptions: This cost opinion assumes an average consultant fee of $200 per hour and an average legal consultant fee of $300 per hour. The high-end cost assumes the municipality does not have capacity to complete this task, while the low-end cost assumes that the town has capacity.

T.09.d: Communicate the benefits of the eBikes incentive program and advocate for increased funding for it, especially encouraging the growth of the Voucher+ offer for LIDACs

Measure Cost Quantification and Assumptions: This cost opinion assumes administrative time for conducting outreach and preparing grant applications, based on an average municipal employee salary of $55,922. The estimated time required for outreach and grant writing ranges from 80 to 300 hours, reflecting the effort needed to identify and apply for funding opportunities.

T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.

Measure Cost Quantification and Assumptions: The low-end cost opinion assumes a municipality passes an ordinance or updates zoning to require that large new developments provide drop-off areas and dedicated parking for shared-mobility vehicles, but only if those vehicles are electric. The high-end cost opinion assumes the state adds a rebate to the CHEAPR program specifically for rideshare drivers purchasing EVs. Based on the Ride Clean Mass Program, this assumes an average rebate of $4,500 and that approximately 10% of Connecticut's estimated 12,300 rideshare drivers participate in the program.

T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: this requires an increase in work-from-home opportunities to reduce VMT during the work commute.

Measure Cost Quantification and Assumptions: The high-end cost opinion is based on Seattle's DOT Commute Trip Reduction Program's annual State funding levels. The funding level was adjusted for SCRCOG/NVCOG Municipality populations. The low-end cost assumes administrative time for conducting outreach and creating a carpooling

program among local community groups, based on an average municipal employee salary of $55,922. It assumes approximately 150 hours of outreach and coordination.

T.12: Improve broadband access (with at least 1GBPS) state-wide.

Measure Cost Quantification and Assumptions: Because this is a statewide strategy, the low-end cost opinion is based on the ConneCTed Communities Grant Program Round 2 funding amount, while the high-end cost opinion reflects the Broadband Equity, Access, and Deployment (BEAD) Program funding amount.

T.13: Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.

Measure Cost Quantification and Assumptions: This cost opinion is based on the Connecticut Hydrogen Roadmap, which outlines short-term and long-term capital investments required to achieve statewide targets. The low-end range reflects projected investments through 2027, while the high-end range represents investments through 2040.

Electricity Production and Consumption

E.01: Utilize on site renewables (i.e., rooftop solar) to power municipal operations.

Measure Cost Quantification and Assumptions: The Energy Information Administration (EIA) reports the cost estimate for utility-scale solar projects to be $1,500 per kW in 2023 USD. The cost range assumes the project will be 100 kW to 300 kW. This is based on similar municipal projects in the Northeast (120 kW project on the YMCA in Hartford, 235 kW project in Medford MA, 104 kW project in Acton MA)

E.02: Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and/or invest in storage capabilities within the municipality.

Measure Cost Quantification and Assumptions: The Energy Information Administration (EIA) reports the cost estimate for utility-scale battery energy storage systems to be $436/kWH or $1,744/kW in 2023 USD and reports the cost estimate for utility-scale solar projects to be $1,500/kW in 2023 USD. The cost range assumes the size of the project to be 100 kW - 3 MW solar array with a storage capacity ranging from 100 kW - 4 MW. This is based on research of microgrids installed in the Northeast. In 2014, Rutland, Vermont installed a 2.3 MW solar PV array on 9 acres with 4 MW of additional energy storage in batteries and cost approximately $10M. Medford, MA installed a microgrid energy management system at the DPW building. This included a 235 kW PV solar array and 100kW/255kWh storage solution funded by a $833,366 grant. Acton, MA installed a 104 kW PV solar array for $850,000 along with a 2MW/4MWh battery storage system for $1.25M.

E.03: Increase procurement of renewable energy for municipal services.

Measure Cost Quantification and Assumptions: Eversource and United Illuminating electric customers are able to purchase Renewable Energy Certificates through Connecticut Clean Energy Options program. Under this program, 100% renewable clean energy costs 2.9 cents per kWh and 50% renewable energy option costs 1.45 cents per kWh. The cost range assumes municipal energy consumption based on available electricity inventories for Somerville, MA, scaled to align with the size of municipalities in the region. In 2016, Somerville, MA released an energy inventory. The City's annual electricity consumption across municipal services (schools, vehicles, recreation, street lights, buildings, libraries, etc.) was 15,976,476 kWh.

E.04: Pursue microgrid projects that integrate onsite renewables and electricity from the grid to power municipal services.

Measure Cost Quantification and Assumptions: The EIA reports the cost estimate for utility-scale battery energy storage systems to be $436/kWH or $1,744/kW in 2023 USD and reports the cost estimate for utility-scale solar projects to be $1,500/kW in 2023 USD. The cost range assumes the size of the project to be 100 kW - 3 MW solar array with a storage capacity ranging from 100 kW - 4 MW. This is based on research of microgrids installed in the Northeast. In 2014, Rutland, Vermont installed a 2.3 MW solar PV array on 9 acres with 4 MW of additional energy storage in batteries and cost approximately $10M. Medford, MA installed a microgrid energy management system at the DPW building. This included a 235 kW PV solar array and 100kW/255kWh storage solution funded by a $833,366 grant. Acton, MA installed a 104 kW PV solar array for $850,000 along with a 2MW/4MWh battery storage system for $1.25M.

E.05: Increase efficiency of wastewater treatment facilities, utilize onsite solar, or biogas to lower emissions at these facilities.

Measure Cost Quantification and Assumptions: These costs consider upgrades to existing facilities to improve energy efficiency and reduce GHG emissions. Where capital improvements or upgrades to wastewater infrastructure are needed, for example if a facility is past its life expectancy, planning for energy upgrades should be incorporated as part of future or planned capital investments to optimize cost efficiencies. The Environmental Finance Center Network estimates the total cost to install solar at a small WWTP to be $1.32M. A WWTP in MA recently started a project to install an anaerobic digestion system which is estimated to cost $7.6M. MWRA wastewater treatment facility in Clinton MA was provided an estimate of $1.6M to install pretreatment system for biogas and the turbines to be powered by biogas. The cost estimate is based on the case studies provided and associated costs.

E.08: Adopt clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.

Measure Cost Quantification and Assumptions: The cost to review existing codes and ordinances to integrate requirements for clean energy purchasing or onsite renewable energy installation is based on consulting fees and staff time to review and adopt updated zoning ordinances. The cost estimate assumes a consultant rate of $200/hr or staff time at $200/hr with a team of 5 and a project timeline ranging from 100 hours to 250 hours. This includes time to review existing codes and time to adopt updated language.

E.09: Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.

Measure Cost Quantification and Assumptions: The cost range was estimated based on examples of installations on affordable housing developments. In Dorchester, MA, solar arrays, totaling 100 kW, were installed on the rooftop of a housing development for 104 families. The cost of the project was $244,000 and portions of the projects were covered by tax credits. In Washington D.C., a solar PV array paired with a battery storage system was installed in an affordable housing development. The project includes a 62.4 kW solar rooftop array and a 46 kW/56 kWh storage. The total cost of the equipment and installation was $327,000. The EIA reports the cost estimate for utility-scale battery energy storage systems to be $436/kWH or $1,744/kW in 2023 USD and reports the cost estimate for utility-scale solar projects to be $1,500/kW in 2023 USD. For the cost estimate of this strategy, it is assumed, similar to the provided case studies, projects will range from 50kW to 150 kW solar arrays, either with or without battery storage of around 50 kWh. It is assumed the project will receive a tax credit for a percentage of the installation cost and other financial support from state grants (assuming 30% of the project will be covered for the purposes of this estimate).

E.10: Prepare economic development plans around offshore wind energy.

Measure Cost Quantification and Assumptions: Economic development plan should include installation and operation costs, job creations, and incentive overviews. Assessment of potential for offshore wind in the area. Focus on coastal municipalities in the CCAP (New Haven, West Haven, Milford, Branford). Shrewsbury, MA listed an RFP in February of 2025 for the Economic Development Plan for $120,000. CRCOG in CT posted an RFP in 2021 for $90,000 for the development of a comprehensive Economic Development Strategy. These Plans do not consider renewable energy but provide a baseline for Economic Development Plan cost estimates. The cost estimate for this strategy is based on these RFPs, scaled to align with the size of municipalities within the region.

E.11: Partner with local workforce development centers and union chapters to prepare workforce in key renewable energy sectors, such as offshore wind energy and solar installations

Measure Cost Quantification and Assumptions: MA Clean Energy Center offers $800,000 across 1-2 years for organizations building career pathways and programs in climate occupations. $2.5M funding is available in MA for Offshore Wind Workforce. Community Offshore Wind in New Jersey invested $2.5M in programs to train individuals in clean energy skills. These programs are statewide. Solar Installation Certification programs are approximately $1,400-$2,400 per individual (Vermont State University, Bunker Hill Community College). The 2023 Connecticut Clean Energy Industry Report stated that the sector grew by 1,200 jobs in 2022. The cost estimate for this strategy is based on the cited statewide examples and cost of individual programs, adjusted to align with the scale of municipal/regional level strategies rather than statewide and individual programs. The cost estimate assumes investing $2,500 per worker (based on covering cost of solar training / certification and additional support) for 100-200 workers in the region.

E.12: "Develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project" (O'Neill, 2023).

Measure Cost Quantification and Assumptions: Installation of a pilot methane and GHG capture system for a hydroelectric reservoir in Brazil cost $10.8M. Cost of dam removal for retired hydroelectric dams in NVCOG (ex. Kinneytown Dam) currently has $18M in pending funding requests to cover remaining project costs.

Energy Efficiency in Buildings

B.01: Require building owners to annually benchmark and disclose their energy usage and efficiency ratings.

Measure Cost Quantification and Assumptions: New York City implemented Local Law 97 in 2019, which requires buildings of certain lot sizes to report and limit carbon emissions. The law included a $30M Accelerator program to provide free technical assistance, resources, and financing opportunities. The City of Boston requires buildings in certain categories to report building annual energy and water consumption using the free ENERGY Star Portfolio Manager. The City of Boston's program receives ongoing funding from fines and compliance payments from buildings that do not meet reporting requirements or emission targets. The city provides technical support services for compliance and planning. The cost of the strategy is estimated by scaling the available costs of similar programs to the size of municipalities in NVCOG/SCRCOG. The costs associated with this strategy include technical assistance and establishing requirements.

B.02: Provide educational resources and support to building owners on improving energy performance in their buildings.

Measure Cost Quantification and Assumptions: This cost opinion assumes staff time for municipalities will range between 80 and 200 hours, based on an average municipal employee salary of $55,922.

B.03: Ensure all municipal operations rely on 100% renewable energy sources.

Measure Cost Quantification and Assumptions: This cost opinion assumes that municipal operations will transition to using 100% renewable energy through Power Purchase Agreements (PPAs). This assumes cost would be the difference between current commercial energy cost and new cost under the PPAs. Adjusted to 2025 dollars, the estimated cost of electricity under the PPA would range from $0.15 to $0.28 per kilowatt-hour (kWh). The current cost of commercial electricity is .23 per kWh. To calculate total energy consumption, it is assumed that government office buildings use a median of 11.9 kWh per square foot annually. The low-end cost estimate is based on a municipal building of 100,000 square feet, while the high-end estimate assumes 500,000 square feet. While there is potential for cost savings, that is not included in the cost opinion.

B.04: Advocate for strict building codes and achieve net zero energy usage.

Measure Cost Quantification and Assumptions: This cost opinion assumes that the primary expenses are administrative, related to updating building codes and enforcing compliance. The low-end estimate reflects approximately 200 hours of staff time for enforcement activities, based on an average municipal employee salary of $55,922. The high-end estimate assumes the municipality will need to hire a new staff member dedicated to enforcement, incurring a full annual salary.

B.05: Offer incentives and expedited permitting for projects that achieve green building certifications.

Measure Cost Quantification and Assumptions: This cost opinion assumes the primary expense is associated with updating zoning regulations to include green building incentives. It is expected that a consultant will be hired to complete this task at a rate of $200 per hour. The low-end cost estimate assumes the work will require approximately 50 hours, while the high-end estimate assumes up to 150 hours of consultant time.

B.06: Support climate-friendly land use.

Measure Cost Quantification and Assumptions: This strategy encompasses a broad range of potential policy and planning initiatives, such as zoning reforms, transit-oriented development incentives, or greenfield development restrictions, that support climate goals indirectly through land use patterns. Because the specific actions and implementation mechanisms have not been defined, costs will vary significantly based on the type and scale of initiative pursued and the level of technical or financial support needed by the implementing authority.

B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties.

Measure Cost Quantification and Assumptions: According to the Federal Energy Management Program's Solar Hot Water System Calculator, this cost opinion assumes solar heating installation for a residential property with a family of two will cost approximately $9,305, with an annual operation and maintenance cost of $47. The high-end estimate assumes installation for a residential unit housing a family of four, with a total cost of $18,611 and annual maintenance fees of $93.

B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and reduce barriers to solar uptake.

Measure Cost Quantification and Assumptions: This cost opinion assumes solar heating installation on a municipal office building using the Federal Energy Management Program's Solar Hot Water System Calculator. The low-end estimate is based on a facility with approximately 50 employees, with an installation cost of $16,196 and annual operation and maintenance costs of $81. The high-end estimate reflects a larger facility with around 150 employees, with an installation cost of $38,742 and annual operation and maintenance costs of $1,657.

B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.

Measure Cost Quantification and Assumptions: This cost opinion assumes an average cost of between $150-$350 for installation of an energy monitoring system at each low-income housing unit. For smaller municipalities where approximately 10% of the housing stock is considered affordable, we estimate ~50 low-income housing units per region with an overall cost of ~$17,500 for the municipality. For larger municipalities, such as the New Haven Housing Authority, we estimate ~500 low-income housing units per region with an overall cost of $175,000 for the municipality.

B.10: Require the use of sustainable building materials in the construction and building of low-income housing.

Measure Cost Quantification and Assumptions: This cost opinion assumes that the primary expense is associated with updating regulations to require the use of sustainable building materials in low-income housing construction. It is expected that a consultant will be hired to complete this task at a rate of $200 per hour. The low-end estimate assumes the work will require approximately 50 hours, while the high-end estimate assumes up to 150 hours of consultant time.

B.11: Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.

Measure Cost Quantification and Assumptions: This cost opinion assumes a grant amount of up to $50,000 per recipient. The low-end estimate reflects funding for 10 grants in a single round, while the high-end estimate assumes 50 grants. It is assumed that city staff already have the administrative capacity to manage the program, so no additional staffing costs are included.

B.12: Monitor and report the energy and cost savings resulting from retrofitting and sustainable materials to demonstrate their impact and encourage further investment.

Measure Cost Quantification and Assumptions: This cost opinion assumes the use of the free EPA Energy Star Portfolio Manager tool for monitoring and reporting energy and cost savings. The low-end estimate reflects 520 hours of staff time, assuming the town or region has existing administrative capacity to manage the reporting process. The high-end estimate assumes the region lacks internal capacity and must hire a dedicated staff member to oversee monitoring and reporting, with an average municipal salary of $55,922.

B.13: Set up outreach programs at the regional or local level that target LMI households for heat pump installation and energy efficiency upgrades

Measure Cost Quantification and Assumptions: This cost opinion assumes municipal staff time will range between 400 and 1,000 hours. The estimate is based on an average municipal employee salary of $55,922, and reflects the time required to conduct outreach, coordination, or administrative tasks associated with the strategy.

Waste Management

W.01: Establish a county-wide unit-based pricing program with food-scrap collection and public education

Measure Cost Quantification and Assumptions: Based on recent awards through CT DEEP's Sustainable Materials Management (SMM) Grant Program, funded food-scrap programs range from ~$200,000 for local composting programs at existing city and town facilities, such as transfer stations, up to $3,500,000 for built co-collection support infrastructure sorting facilities supporting citywide residential curbside composting program in similarly sized large cities. Food craps systems will be defined by the needs of each municipality. This cost opinion is based on grants within the regions as well as similar regions throughout CT.

W.02: Establish a regional waste management authority in New Haven County, implement waste diversion infrastructure and programs

Measure Cost Quantification and Assumptions: According to CRCOG, a Regional Waste Authority Grant of $570,000 was awarded by CT DEEP to evaluate and identify a governance structure for forming a new or expanding an existing regional waste authority, as well as to support planning activities for diversion programs and infrastructure development. Additionally, CT DEEP's Sustainable Materials Management (SMM) Grant Program provided $4,500,000 to the Southeastern Connecticut Regional Resource Recovery Authority for the construction of a commercial-scale food waste composting facility. Low range is based on the establishment of the region's waste authority and high range is based on waste diversion infrastructure.

W.03: Expand and continue community-based food waste reduction programs, such as CET's assistance for food waste reduction in businesses, schools, and institutions.

Measure Cost Quantification and Assumptions: CT DEEP has invested up to $5,000,000 in the Center for EcoTechnology (CET) for this program. The low-end cost opinion assumes a continued CT DEEP investment of $5,000,000, while the high-end cost opinion assumes an increase in CT DEEP's investment in the CET program.

W.04: Advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations.

Measure Cost Quantification and Assumptions: This cost opinion assumes staff time for municipalities will range between 80 and 200 hours, based on an average municipal employee salary of $55,922.

W.05: Advocate for extended producer responsibilities (EPR) program for packaging to reduce waste by 190,000 tons per year, saving municipalities $50 million per year.

Measure Cost Quantification and Assumptions: The low-end cost opinion assumes local municipalities expand educational campaigns to promote statewide messaging on appropriate recycling and composting regulations, restrictions, and opportunities. This is based on an average municipal employee salary of $55,922 and assumes approximately 150 hours of outreach and coordination. The high-end cost opinion is based on CT DEEP creating an Office of Inspector General position to enforce EPR packaging requirements, using the average salary from OpenPayroll data in addition to the low-end cost assumptions.

Industrial

I.01: Require utility companies, gas suppliers, and health care establishments to report emissions data.

Measure Cost Quantification and Assumptions: New York City implemented Local Law 97 in 2019, which requires buildings of certain lot sizes to report and limit carbon emissions. The law included a $30M Accelerator program to provide free technical assistance, resources, and financing opportunities. The City of Boston requires buildings in certain categories to report building annual energy and water consumption using the free ENERGY Star Portfolio Manager. The City of Boston's program receives ongoing funding from fines and compliance payments from buildings that do not meet reporting requirements or emission targets. The city provides technical support services for compliance and planning. The cost of the strategy is estimated by scaling the available costs of similar programs to the size of municipalities in NVCOG/SCRCOG. The costs associated with this strategy include technical assistance and establishing requirements.

I.02: Embed a purchasing criterion in public projects that states a preference for suppliers or service providers who have a transparent and standardized GHG inventory

Measure Cost Quantification and Assumptions: Minor change to regulations and requirements for procurement of public projects will include staff time to review examples and develop criteria. Cost estimate assumes staff time at $200/hr with a team of 5. It is assumed it will take between 40 hours to 100 hours to complete this.

I.03: Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas.

Measure Cost Quantification and Assumptions: The cost estimate for this strategy assumes implementing a series of grants of $25,000 for smaller facilities and $100,000 for larger facilities. The grants will cover energy efficiency upgrades and/or subsidize larger renewable energy investments. This strategy is estimated to cover 20 small facilities or 10 larger facilities, or a combination of both.

Working Lands and Forestry

L.01: Pursue afforestation and reforestation throughout the county

Measure Cost Quantification and Assumptions: The low-end cost opinion assumes $100 per acre for total site preparation and reforestation, covering only the costs of seedlings and planting. The high-end cost opinion assumes $450 per acre, which includes seedlings and planting as well as chemical site preparation for hardwood control,

bedding, and herbaceous weed control. These estimates were adjusted for inflation from 2019 dollars to 2025 dollars

L.02: Support current efforts and management strategies to maintain existing forests on both private and public property.

Measure Cost Quantification and Assumptions: This cost opinion assumes an average management cost of preservation at $51 per acre per year, with a range of $6 to $2,100 per acre per year, adjusted for inflation to 2025 dollars. Connecticut has 117 land trusts managing 190,550 acres. The median operating budget of a land trust in Connecticut is $40,000, for a median management cost of around $25 per acre. The cost per acre decreases as the acreage of the land trust/preserve increases due to economies of scale.

L.03: Increase urban tree canopy in low-income disadvantaged communities

Measure Cost Quantification and Assumptions: This Cost Opinion Assumes similar project cost to previous CT urban forestry (2024) Projects

L.04: Support farming initiatives across urban, rural, and suburban typologies

Measure Cost Quantification and Assumptions: This cost opinion assumes alignment with the award amounts provided under the Urban Agriculture and Innovative Production Competitive Grants Program.

REFERENCES

14.0 REFERENCES

2030 VMT Goals and Strategies. (2030). CT.Gov. https://portal.ct.gov/dot/pp_bureau/2030-vmt-goals-and-strategies

Amiri, A., Ottelin, J., & Sorvari, J. (2019). Are LEED-Certified Buildings Energy-Efficient in Practice? Sustainability, 11(6), Article 6. https://doi.org/10.3390/su11061672

Apartments get final round of money for better heating systems and other climate improvements | AP News. (2024). Retrieved July 28, 2025, from https://apnews.com/article/apartment-buildings-climate-upgrades-renewable-energy-solar-93a2f3c8d62e04db6963c680f77b7f78

Argonne GREET R&D Model. (2024). Retrieved July 29, 2025, from https://greet.anl.gov/

Barrero, J. M., Bloom, N., & Davis, S. J. (2021). Why Working from Home Will Stick (Working Paper No. 28731). National Bureau of Economic Research. https://doi.org/10.3386/w28731

Beaulieu, J. J., Smolenski, R. L., Nietch, C. T., Townsend-Small, A., & Elovitz, M. S. (2014). High Methane Emissions from a Midlatitude Reservoir Draining an Agricultural Watershed. Environmental Science & Technology, 48(19), 11100–11108. https://doi.org/10.1021/es501871g

Bell, S. (2025, May 6). Ensuring Climate Resilience and Reducing Energy Costs in Multifamily Housing. California Climate Investments. https://www.caclimateinvestments.ca.gov/2025-profiles/ensuring-climate-resilience-and-reducing-energy-costs-in-multifamily-housing

Boeing, G. (2017). OSMnx: New methods for acquiring, constructing, analyzing, and visualizing complex street networks. Computers, Environment and Urban Systems, 65, 126–139. https://doi.org/10.1016/j.compenvurbsys.2017.05.004

Bonsack, K. (2022, March 4). 2015 Land Cover Numbers and Charts | Center for Land Use Education and Research. https://clear.uconn.edu/projects/landscape/ct-stats/lc2015/

Bureau, U. C. (2025). American Community Survey (ACS). Census.Gov. Retrieved July 28, 2025, from https://www.census.gov/programs-surveys/acs.html

Cao, H. (2025). Integrating Energy Efficiency, Sustainable Materials, and Eco-City Planning: A Holistic Approach to Green Building Design. Applied and Computational Engineering, 123, 17–23. https://doi.org/10.54254/2755-2721/2025.19566

CDP reporting. (2024). Retrieved July 29, 2025, from https://www.apiday.com/blog-posts/carbon-disclosure-project-reporting-what-is-it-and-how-does-it-work

CEC TownData. (2024). Retrieved July 28, 2025, from https://www.ctenergydashboard.com/CEC/CECTownData.aspx

Center for Neighborhood Technology, 2019 Annual Report. (2019). Retrieved July 29, 2025, from https://www.cnt.org/annual-report/2019/

Chapter 8: Urban systems and other settlements. (2022). Retrieved July 28, 2025, from https://www.ipcc.ch/report/ar6/wg3/chapter/chapter-8/

Commission, C. E. (2024). Estimating Energy Savings From Community Scale Solar Water Heating in Los Angeles County. California Energy Commission.

https://www.energy.ca.gov/publications/2024/estimating-energy-savings-community-scale-solar-water-heating-los-angeles-county

Comparing Market Effects of Benchmarking and Disclosure Ordinances in 4 U.S. Cities | Better Buildings Initiative. (2025). Retrieved July 28, 2025, from https://betterbuildingssolutioncenter.energy.gov/alliance/market-solutions/financial-performance/market-effects-benchmarking?utm_source=chatgpt.com

Council on Environmental Quality. (2022). Climate and Economic Justice Screening Tool (Version 2.0). The White House. Retrieved September 5, 2025, from https://ndcpartnership.org/knowledge-portal/climate-toolbox/climate-and-economic-justice-screening-tool-cejst

CT Greenhouse Gas Inventory Reports. (2024). CT.Gov - Connecticut's Official State Website. Retrieved July 28, 2025, from https://portal.ct.gov/DEEP/Climate-Change/CT-Greenhouse-Gas-Inventory-Reports

Delaware Valley Regional Planning Commission. (2025). Retrieved July 28, 2025, from https://www.dvrpc.org/

Desai, C. S., Siriwardane, H. J., Janardhanam, R., & University of Arizona. Dept. of Civil Engineering and Engineering Mechanics. (1983). Interaction and Load Transfer Through Track Support Systems - Part 2: Testing and Constitutive Modelling of Materials and Interfaces (No. DOT/RSPA/DMA-50/83/12). https://rosap.ntl.bts.gov/view/dot/37685

Diamond, L. (2024, April 12). Sustainability Projects Reduce the Energy Burden of Low-Income Households. Mercy Housing. https://mercyhousing.org/2024/04/sustainability-projects-reduce-the-energy-burden-of-low-income-households/

Ehrhardt-Martinez, K., & Donnelly, K. A. (2010). Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities.

ENERGY STAR Certification for Buildings | ENERGY STAR. (2025). Retrieved July 28, 2025, from https://www.energystar.gov/buildings/building-recognition/building-certification

EPA Facility Level GHG Emissions Data. (2024). Retrieved July 28, 2025, from https://ghgdata.epa.gov/ghgp/main.do

Evaluation of U.S. Building Energy Benchmarking and Transparency Programs: Attributes, Impacts, and Best Practices | Energy Markets & Policy. (2017). Retrieved July 28, 2025, from https://emp.lbl.gov/publications/evaluation-us-building-energy?utm_source=chatgpt.com

Farrell, J. (2015). Report: Public Rooftop Revolution. Institute for Local Self-Reliance. Retrieved July 29, 2025, from https://ilsr.org/articles/public-rooftop-revolution/

Gans, W., Alberini, A., & Longo, A. (2013). Smart meter devices and the effect of feedback on residential electricity consumption: Evidence from a natural experiment in Northern Ireland. Energy Economics, 36, 729–743. https://doi.org/10.1016/j.eneco.2012.11.022

Getting Started with Clinical Decarbonization | Institute for Healthcare Improvement. (2025). Retrieved July 29, 2025, from https://www.ihi.org/library/publications/getting-started-clinical-decarbonization

Getting Started—OSMnx 2.0.5 documentation. (2025). Retrieved July 28, 2025, from https://osmnx.readthedocs.io/en/stable/getting-started.html

Green building and wood. (2025). In Wikipedia. https://en.wikipedia.org/w/index.php?title=Green_building_and_wood&oldid=1298335717

Home | Energy Markets & Policy. (2025). Retrieved July 29, 2025, from https://emp.lbl.gov/

Home energy monitor. (2025). In Wikipedia. https://en.wikipedia.org/w/index.php?title=Home_energy_monitor&oldid=1296402678

How Community Choice Aggregation Fits Into California's Clean Energy Future. (2018). Retrieved July 29, 2025, from https://www.greentechmedia.com/articles/read/how-community-choice-aggregation-fits-into-californias-clean-energy-future

How Utility Programs Can Drive Electrification and Energy Efficiency in Multifamily Affordable Housing. (2025, July 28). Tax Credit Advisor. https://www.taxcreditadvisor.com/articles/how-utility-programs-can-drive-electrification-and-energy-efficiency-in-multifamily-affordable-housing/

Hydrogen. (2024). IEA. Retrieved July 29, 2025, from https://www.iea.org/energy-system/low-emission-fuels/hydrogen

ImpaCT 2050. (2024). ImpaCT 2050. Retrieved July 28, 2025, from https://www.cprgct.org

Intergovernmental Panel on Climate Change (IPCC). (2023). Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press. https://doi.org/10.1017/9781009325844

Jnat, K., Shahrour, I., & Zaoui, A. (2020). Impact of Smart Monitoring on Energy Savings in a Social Housing Residence. Buildings, 10(2), Article 2. https://doi.org/10.3390/buildings10020021

Li, X., & Wen, J. (2014). Review of building energy modeling for control and operation. Renewable and Sustainable Energy Reviews, 37, 517–537. https://doi.org/10.1016/j.rser.2014.05.056

Lutsey, N., & Sperling, D. (2008). America's bottom-up climate change mitigation policy. Energy Policy, 36(2), 673–685. https://doi.org/10.1016/j.enpol.2007.10.018

Mittakola, R. T., Ciais, P., Schubert, J. E., Makowski, D., Zhou, C., Bazzi, H., Sun, T., Liu, Z., & Davis, S. J. (2024). Drivers of natural gas use in U.S. residential buildings. Science Advances, 10(14), eadh5543. https://doi.org/10.1126/sciadv.adh5543

New Haven-Milford, CT MSA Situation & Outlook Report. (2018). Retrieved July 28, 2025, from https://proximityone.com/metros/2013/cbsa35300.htm

Newsham, G. R., Mancini, S., & Birt, B. J. (2009). Do LEED-certified buildings save energy? Yes, but…. Energy and Buildings, 41(8), 897–905. https://doi.org/10.1016/j.enbuild.2009.03.014

nparker-nasi. (2025, June 18). Electric Vehicle Outlook. BloombergNEF. https://about.bnef.com/insights/clean-transport/electric-vehicle-outlook/

NREL Researchers Reveal How Buildings Across United States Do—And Could—Use Energy | NREL. (2023). Retrieved July 29, 2025, from https://www.nrel.gov/news/detail/features/2023/nrel-researchers-reveal-how-buildings-across-the-united-states-do-and-could-use-energy

Opportunity, the T. M. O. for E. (2025). Fair Fares – ACCESS NYC. Retrieved July 29, 2025, from https://access.nyc.gov/programs/fair-fares/

Outreach and Feedback. (2024). ImpaCT 2050. Retrieved July 29, 2025, from https://www.cprgct.org/outreach-and-feedback

Peter, S., Kambule, N., Tangwe, S., & Yessoufou, K. (2022). Quantification of the Impact of Solar Water Heating and Influence of Its Potential Utilization through Strategic Campaign: Case Study in Dimbaza, South Africa. Energies, 15(21), Article 21. https://doi.org/10.3390/en15218283

Policy and Governmental Affairs, O. of H. P. I. (2024). Highway Statistics Series—Policy | Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/statistics.cfm

Reducing Fuel Consumption and Greenhouse Gas Emissions of Medium- and Heavy-Duty Vehicles, Phase Two: Final Report (with Committee on Assessment of Technologies and Approaches for Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles, Phase Two, Board on Energy and Environmental Systems, Division on Engineering and Physical Sciences, Transportation Research Board, & National Academies of Sciences, Engineering, and Medicine). (2020). National Academies Press. https://doi.org/10.17226/25542

Regmi, M. B. (2020). Measuring sustainability of urban mobility: A pilot study of Asian cities. Case Studies on Transport Policy, 8(4), 1224–1232. https://doi.org/10.1016/j.cstp.2020.08.003

Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5. (2010). National Academies Press. https://doi.org/10.17226/12999

Rodríguez-Jiménez, L., Romero-Martín, M., Spruell, T., Steley, Z., & Gómez-Salgado, J. (2023). The carbon footprint of healthcare settings: A systematic review. Journal of Advanced Nursing, 79(8), 2830–2844. https://doi.org/10.1111/jan.15671

Skandalos, N., & Karamanis, D. (2025). Net-zero energy communities at Local Climate Zones: Integrating photovoltaics and energy sharing for a social housing neighborhood. Energy, Ecology and Environment, 10(3), 352–369. https://doi.org/10.1007/s40974-025-00354-y

Tao, Y., Yang, L., Jaffe, S., Amini, F., Bergen, P., Hecht, B., & You, F. (2023). Climate mitigation potentials of teleworking are sensitive to changes in lifestyle and workplace rather than ICT usage. Proceedings of the National Academy of Sciences, 120(39), e2304099120. https://doi.org/10.1073/pnas.2304099120

UC Davis. (2017). Retrieved July 29, 2025, from https://escholarship.org/uc/ucd

Union of Concerned Scientists. (2025). Retrieved July 29, 2025, from https://www.ucs.org/resources/ride-hailing-emissions and https://www.ucs.org/sites/default/files/2020-02/Ride-Hailing%27s-Climate-Risks.pdf

U.S. Energy Information Administration—EIA - Independent Statistics and Analysis. (2023). Retrieved July 28, 2025, from https://www.eia.gov/consumption/residential/data/2020/index.php?view=state#ce

US EPA. (2015, August 31). Fuel Economy and EV Range Testing [Overviews and Factsheets]. https://www.epa.gov/greenvehicles/fuel-economy-and-ev-range-testing

US EPA. (2017, June 30). Local Greenhouse Gas Inventory Tool [Data and Tools]. https://www.epa.gov/statelocalenergy/local-greenhouse-gas-inventory-tool

US EPA. (2023, August 8). Idle Reduction [Announcements and Schedules]. https://www.epa.gov/smartway/idle-reduction

US EPA. (2024). EJScreen (Version 2.3). Retrieved August 2025, from https://pedp-ejscreen.azurewebsites.net/

US EPA. (2025, January 9). Transportation Sector Emissions [Overviews and Factsheets]. https://www.epa.gov/ghgemissions/transportation-sector-emissions

US EPA, R. 10. (2016, July 28). Connecticut NPDES Permits (Connecticut) [Collections and Lists]. https://www.epa.gov/npdes-permits/connecticut-npdes-permits

USDA/NASS QuickStats Ad-hoc Query Tool. (2025). Retrieved July 28, 2025, from https://quickstats.nass.usda.gov/results/C02AC8A9-A90D-3D2A-ABA6-98BC8A87838A

Usta, P., & Zengin, B. (2021). The Energy Impact of Building Materials in Residential Buildings in Turkey. Materials, 14(11), 2793. https://doi.org/10.3390/ma14112793

Wisconsin Town Offsets 50% Of Municipal Energy Use With Rooftop Solar |. (2022). Retrieved July 28, 2025, from https://www.aibatecar.com/news/wisconsin-town-offsets-50-of-municipal-energy-use-with-rooftop-solar/?utm_source=chatgpt.com

With Trash Truck Approval, City Steps Electric. (2025, January 15). New Haven Independent. https://www.newhavenindependent.org/article/funding_sparked_for_electric_trash_truck

Zhang, X., Yin, S., Lu, X., Liu, Y., Wang, T., Zhang, B., Li, Z., Wang, W., Kong, M., & Chen, K. (2025). Establish of air pollutants and greenhouse gases emission inventory and co-benefits of their reduction of transportation sector in Central China. Journal of Environmental Sciences, 150, 604–621. https://doi.org/10.1016/j.jes.2023.12.025

APPENDIX A

CCAP Goals and Strategies by Sector

Mobility and Transportation Sector

Goal	Strategies
Goal 1: A Clean and Green Municipal Fleet	Strategy T.01: Accelerate and/or begin adopting EV's into the municipal fleet, including public school buses.
	Strategy T.02: Begin adopting alternate fuel sources such as hydrogen for medium to heavy-duty vehicles, where appropriate, if EV transition is not possible.
	Strategy T.03: Reduce idling in municipal fleet; work with civil engineers to adjust traffic signals and patterns to reduce idle time
Goal 2: Create a transit-first approach and reduce spatial misalignment	Strategy T.04: Offer discounted transit fare for LIDACs.
	Strategy T.05: Create a transit-first approach. a. Pilot pedestrianization, limited traffic (bus only lanes/streets) and use of active transportation downtown and in dense developments. b. Ensure federally designated Opportunity Zones are completely accessible by transit. c. Advocate for transit plans that incentivize new development in areas that will allow for transit, walking, and bike use.
	Strategy T.06: Partner with micro-transit companies to enable cross-town trips for smaller towns nearby.
	Strategy T.07: Reduce spatial misalignment through changes in land-use. a. Conduct feasibility studies for creating economic zones in areas with high commute times. b. Encourage denser housing in areas near existing economic zones.
	Strategy T.08: Create more park-and-ride options and increase transit access and frequency in areas with high car ownership and high commute times to work to enable multi-modal trips.

Goal	Strategies
Goal 3: Reduce emissions from private vehicles	Strategy T.09: Increase the overall Electric Vehicle adoption and create infrastructure. a. Communicate the benefits of CHEAPR to low and middle-income communities, and have limited time offers of higher Rebate to encourage the buying of EVs in the short-term. b. Encourage car owners in rural communities to set up at home EV charging by taking advantage of Federal Tax credits. c. In high-density development areas, implement requirements for new development to include EV charging stations. d. Communicate the benefits of the eBikes incentive program and advocate for increased funding for it, especially encouraging the growth of the Voucher+ offer for LIDACs
	Strategy T.10: Incentivize EVs for shared-mobility companies (Uber/Lyft); this can even include free public parking for such vehicles.
	Strategy T.11: Incentivize trip reduction programs in public offices and partner with private offices for the same: increase work-from-home opportunities to reduce VMT during the work commute.
	Strategy T.12: Improve broadband access (with at least 1GBPS) state-wide.
	Strategy T.13: Pursue alternative fuel sources, such as hydrogen, where appropriate if electrification is not possible.

Electricity Production and Consumption

Goal	Strategies
Goal 1: Reduce electricity consumption from fossil fuel sources in municipal buildings and services	Strategy E.01: Utilize onsite renewables (e.g., rooftop solar) to power municipal operations
	Strategy E.02: Leverage powers of municipal utilities to procure renewable power, expand electricity production capabilities, and/or invest in storage capabilities within the municipality
	Strategy E.03: Increase procurement of renewable energy for municipal services.
	Strategy E.04: Pursue microgrid projects that integrate onsite renewables and electricity from the grid to power municipal services.
	Strategy E.05: Increase efficiency of wastewater treatment facilities, utilize onsite solar, or biogas to lower emissions at these facilities.
Goal 2: Increase renewable energy production and consumption at the local scale	Strategy E.06: Set up outreach programs that communicate state and federal financing programs that support onsite renewable generation to consumers
	Strategy E.07: Evaluate the potential of siting renewable energy projects on vacant, underutilized land/combine with open space planning
	Strategy E.08: Consider adopting clean energy zoning ordinances that would require new and/or existing buildings to meet certain clean energy milestones through the use of onsite renewables or clean energy purchasing.
	Strategy E.09: Coordinate with housing authorities to build out community and rooftop solar, battery storage, and microgrids for affordable housing and overcome barriers to solar uptake.

Goal	Strategies
Goal 3: Prepare local economies for renewable energy transition	Strategy E.10: Prepare economic development plans around offshore wind energy.
	Strategy E.11: Partner with local workforce development centers and union chapters to prepare workforce in key renewable energy sectors, such as offshore wind energy and solar installations
Goal 4: Cap methane emissions from hydroelectric facilities	Strategy E.12: Develop and take actions to mitigate the future propagation and release of additional methane and greenhouse gases from two reservoirs connected to the federal hydroelectric project.

Energy Efficiency in Buildings

Goal	Strategies
Goal 1: Ensure energy efficiency and sustainability through building codes and regulations	Strategy B.01: Require building owners to annually benchmark and disclose their energy usage and efficiency ratings.
	Strategy B.02: Provide educational resources and support to building owners on improving energy performance in their buildings.
	Strategy B.03: Ensure all municipal operations rely on 100% renewable energy sources.
	Strategy B.04: Advocate for strict building codes and achieve net zero energy usage.
	Strategy B.05: Offer incentives and expedited permitting for projects that achieve green building certifications.
	Strategy B.06: Support climate-friendly land use.

Goal	**Strategies**
Goal 2: Renewable heating access for low-income homes	Strategy B.07: Install solar heating systems on low-income housing units to provide renewable water heating for these properties
	Strategy B.08: Integrate solar heating systems into community initiatives and reduce overall energy costs and barriers to solar uptake.
	Strategy B.09: Install energy monitoring and management systems in low-income housing to track and control energy consumption.
Goal 3: Energy-efficient building materials and retrofits	Strategy B.10: Support the adoption of sustainable building materials in low-income housing construction and renovation
	Strategy B.11: Establish a city-wide retrofit program focused on low-income residents and municipal buildings, providing grants and low-interest loans to property owners for energy-efficiency upgrades and heat pump installations.
	Strategy B.12: Monitor and report the energy and cost savings resulting from retrofitting and sustainable materials to demonstrate their impact and encourage further investment.
	Strategy B.13: Set up outreach programs at the regional or local level that target LMI households for heat pump installations and energy efficiency upgrades.

Waste Management

Goal	Strategies
Goal 1: Divert waste with local and regional programs	Strategy W.01: Establish a county-wide unit-based pricing program with food-scrap collection and public education
	Strategy W.02: Establish a regional waste management authority in New Haven County; implement waste diversion infrastructure and programs.
	Strategy W.03: Expand and continue community-based food waste reduction programs, such as CET's assistance for food waste reduction in businesses, schools, and institutions
Goal 2: Enact and expand statewide waste reduction laws	Strategy W.04: Advocate for the expansion of Connecticut's Commercial Organics Law to include a wider array of organizations and more geographic locations.
	Strategy W.05: Advocate for extended producer responsibility (EPR) program for packaging to reduce waste by 190,000 tons per year, saving municipalities $50 million per year.

Industrial

Goal	Strategies
Goal 1: Improve Emissions Monitoring, Accounting, and Reporting	Strategy I.01: Require utility companies, gas suppliers, and health care establishments to report emissions data.
Goal 2: Reduce emissions through low-carbon procurement	Strategy I.02: Embed a purchasing criterion in public projects that states a preference for suppliers or service providers who have a transparent and standardized GHG inventory.
Goal 3: Reduce emissions from the health care sector through public-private partnership	Strategy I.03: Collaborate with the healthcare sector to offer financial grants or subsidies to healthcare facilities that are committed to adopting low-emission practices in specific medical areas. Partner with major healthcare providers to establish a preferential purchasing system, prioritizing suppliers or service providers who disclose their carbon footprint and have clear decarbonization objectives.

Working Lands and Forestry

Goal	Strategies
Goal 1: Preserve and support existing and potential forested lands	Strategy L.01: Pursue afforestation and reforestation throughout the county.
	Strategy L.02: Support current efforts and management strategies to maintain existing forests on both private and public property.
Goal 2: Increase urban tree canopy and agriculture (UTC)	Strategy L.03: Increase urban tree canopy in low-income disadvantaged communities.
	Strategy L.04: Support farming initiatives across urban, rural, and suburban typologies.

APPENDIX B

ARIMA Model

ARIMA combines aspects of autoregression (AR), differencing (I), and moving average (MA) to predict future values based on past observations. By examining data, ARIMA can model temporal dependencies and seasonality, providing insights into future levels while accounting for fluctuations and long-term trends. This approach is particularly valuable for greenhouse gas forecasting as it supports data-driven environmental planning and policy decision-making to meet sustainability targets and mitigate climate impacts.

The ARIMA model is specified as:

$$y_t^{(d)} = \alpha + \sum_{j=1}^{p} \phi_j y_{t-j}^{(d)} + \varepsilon_t + \sum_{k=1}^{q} \theta_k \varepsilon_{t-k}$$

where

$$y_t^{(d)} = y_t^{(d-1)} - y_{t-1}^{(d-1)}, d \geq 1$$

and

- $y_t^{(d)}$: d-th order differenced observation at time t
- α: the intercept in the model
- ϕ_j: autoregressive coefficients (j ∈ {1,...,p})
- α: the intercept in the model
- θ_k: moving average or lagged forecast error coefficients with (k ∈ {1,...,q})
- ε_t: error term at time t
- ε_{t-k}: error term at time $t-k$
- p: the number of lagged values used in the autoregressive (AR) part of the model.
- d: the number of times the time series is differenced to achieve stationarity.
- q: The number of lagged errors used in the moving average (MA) part of the model.
- $y_t^{(d-1)}$: (d-1)-th order differenced observation at time t
- $y_{t-1}^{(d-1)}$: (d-1)-th order differenced observation at time t-1

Model Training and Validation

Table A.1 provides a summary that includes the following details of the ARIMA models:

- The predictive performance of the model on activity parameters and direct emissions projections, measured by MAPE.
- The number of observations used for the ARIMA model
- The best parameter combination (p, d, q) for each model.

Table A.1. Summary of detailed data and model performance.

Sector	Activity Parameters	(p,d,q)	# of local observations	Test MAPE (%)
Mobile combustion	Car VMT	(0,1,0)	40	4.77
	Truck VMT	(7,1,7)	40	4.35
	Bus VMT	(1,2,7)	40	5.21
	Car MPG	NA	40	NA
	Truck MPG	NA	40	NA
	Bus MPG	NA	40	NA
Electricity consumption	Electricity consumption	(2,1,2)	7	3.31
Stationary combustion (residential)	Natural gas consumption	(2,2,2)	32	2.52
Stationary combustion (commercial)	Emissions	(1,1,0)	32	5.09
Stationary combination (industrial)	Emissions	(1,0,0)	32	9.6
Agriculture	Emissions	(1,2,0)	32	4.6
Wastewater treatment	Emissions	(1,1,4)	32	0.33

APPENDIX C

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Elizabeth McCarthy
Company:	SCRCOG/NVCOG		**SLR International Corporation**
cc:	Pamela Green (SLR), Noah Slovin (SLR), Raquel Gaba (UMass), Claudia Cunningham (UMass)	**Date:**	October 1, 2024
		Project No.	149.000006.00001

RE: Southbury Sustainability Fair
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from the Southbury, CT Sustainability Fair. The Fair was attended by Elizabeth McCarthy (SLR), Claudia Cunningham (UMass), and Raquel Gaba (UMass).

The fair was well attended and there were many people who stopped by the table to learn more about the project, though not everyone participated in the activities. Most people were interested in getting more information and talking about climate action in their county. Participants were typically residents of Southbury, and a few lived in neighboring towns and stumbled on the fair while on a walk. There were several high school students who stopped by the table.

The activities included at the table are described below.

- Climate Change Trivia: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).
- Invest in Change: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participant was given 10 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.
- Empowerment Cards: Participants reflected on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

Based on the responses from attendees, the majority of community members are concerned with emissions produced from the transportation and energy sectors, are interested in targeted actions within these areas to minimize environmental impact and generate community benefits.

Invest in Change

18 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- *Transportation:* a better public transportation system, more efficient vehicles
- *Electricity:* reduce electricity generation from fossil fuels, increase renewable energy production locally

- *Energy Efficiency:* require energy efficiency in building codes, provide renewable heating access for low-income households
- *Industrial:* improve emissions monitoring, accounting, and reporting
- *Waste Management:* enhance or build composting and recycling programs
- *Land and Forestry:* preserve and expand forests, plant and maintain trees in urban areas

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing significant investments to reduce greenhouse gas emissions within the transportation sector, followed by electricity and then energy efficiency. Waste management was the sector with the least amount of investment interest from participants. Many people noted that their community already has a recycling or composting program, and that they are more concerned about other sectors

Sector	Number of Coins	Percentage of Total Coins
Transportation	45	25%
Electricity	37	20.6%
Energy Efficiency	29	16.1%
Industrial	26	14.4%
Waste Management	19	10.6%
Land and Forestry	24	13.3%

We Are Better Together

The following table summarizes the responses received on the empowerment cards included at the engagement table. Participants had many comments about their main concerns or where they would be interested in seeing significant improvements to GHG management, but often had trouble thinking about what these actions might look like in their own life and what they may do to reduce their personal carbon footprint.

Prompt	Responses
If my regional government provides resources and support for improving my **home's energy performance**, I will be empowered to…	…get heat pumps and solar panels. …invest long term in low-energy use technology. …support these efforts in any way that I can. Electricity is very high in Southbury. …consider changing my cooling or heating system.
If my state/city/town provides a more **accessible transit system**, I will be empowered to…	…bike more with lanes, shuttle for seniors, and enjoy less traffic. …ride my bike to do errands in Woodbury, or even walk! Right now, it is too dangerous, there is no shoulder and cars go too fast.

Prompt	Responses
	…use the services, we need more transportation that is earth-friendly!
If my regional government launches **education campaigns to raise awareness** about carbon emissions, I will be empowered to…	…drive less!
If my city/town expands or creates community-based **food waste reduction** programs, I will be empowered to…	
If my city/town enhances **recycling programs**, I will be empowered to…	

Suggestions

The event was very successful and well attended. To improve engagement at the CCAP table, the following recommendations should be considered for future events:

- **Candy** (lots of tables had candy, and it works!) or a craft activity related to climate action that attendees can take home and draw in parents with small children! (there was a table with make your own seed balls, painting rocks)
- **Basket for general comments:** Include a basket and index cards where participants can share general comments about the project or thoughts related to climate action in New Haven-Milford counties. Many participants engaged in thoughtful discussions and shared their input with staff, but didn't physically write it down since they didn't feel it aligned with the empowerment cards. These general comments were noted, but having a basket for general comments is a great opportunity to make sure participants can share their thoughts in their own words.
- **Survey:** Printed QR code that connects to the survey
- **Handouts:** People were interested in having physical items to take home and read later, especially for those who were only stopping by quickly and didn't have time to share comments. Attendees liked the PCAP poster that was at the booth and would appreciate having that information in a handout to refer to later. It is suggested that the handout include project information, where engagement and public input will be incorporated in the project, and additional opportunities for public input.

Event Pictures


ZARK TRAIL®
IF MY REGIONAL GOVE IENT PROVIDES
RESOURCES AND SUPP FOR IMPROVING MY
HOME'S ENERGY PERFORMANCE, I'LL BE
EMPOWERED TO... Get Heat Pumps
& Solar Panels


IF MY STATE/CITY/TO PROVIDES A MORE
ACCESSIBLE PUBLIC NSIT SYSTEM, I WILL
BE EMPOWERED TO...
BIKE MORE W/
LANES. SHUTTLE
FOR SENIORS.
LESS TRAFFIC.


TOGETHER!
INVEST IN CHANGE
TRANSPORTATION
ELECTRICITY
ENERGY EFFICIENCY
INDUSTRIAL
WASTE MANAGEMENT
SOLAR FOR ALL


WE ARE BETTER TOGETHER!
Our government can empower us all to adopt low-carbon lifestyles, making sustainable living accessible and achievable for everyone!
WHAT WILL YOU BE EMPOWERED TO DO?
SOUTH CENTRAL REGIONAL COUNCIL
Planning for Our Region's Future
SCRCOG
NAUGATUCK VALLEY COUNCIL


R TOGETHER!
adopt low-carbon lifestyles, making
d achievable for every
MPOWERED TO
SOUTH CENTRAL REGIONAL
W.GOHEL

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Elizabeth McCarthy
Company:	SCRCOG/NVCOG	**SLR International Corporation**	
cc:	Pamela Green (SLR), Noah Slovin (SLR), Krashang Goswami (UMass)	**Date:**	October 7, 2024
		Project No.	149.000006.00001

RE: Cheshire Sustainability Fair
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from the Cheshire, CT Sustainability Fair. The Fair was attended by Elizabeth McCarthy (SLR) and Krashang Goswami (UMass).

The fair was well attended and there were many people who stopped by the table to learn more about the project and provide input on climate action they are interested in seeing in their community. The CCAP booth was one of a handful of tables, which enabled a lot of participation and engagement from attendees.

There were many children, both younger and high school students, who were interested in the Climate Change Trivia at the booth and the Invest in Change activity. The participation from younger attendees often drew in their parents who then engaged about the project and provided input. Most attendees asked questions about the CCAP process and wanted to learn more about key findings to date related to emissions and climate impact in the New Haven-Milford MSA. Participants engaged in conversations with SLR and UMass representatives, who took notes throughout the event and invited everyone to write their comments down on index cards to be shared with the COGs. This general feedback is included in the "What We Heard" section below.

The activities included at the table are described below.

- Climate Change Trivia: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).
- Invest in Change: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participant was given 10 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.
- Empowerment Cards: Participants reflected on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

Based on the responses from attendees, the majority of community members are concerned about waste management, specifically related to plastic waste and education around recycling. Most comments from participants were related to the environmental and climate impacts associated with emissions, not particularly focusing on reduction strategies within specific sectors. Priority seemed to be given to protecting natural resources, minimizing generation of

waste, and facilitating access to clean energy through regional efforts rather than placing responsibility on homeowners and the individual.

What We Heard

The following are comments received from attendees and recorded on index cards in the "General Notes" basket.

Waste

- Ban plastics!
- Recycling plastic…get rid of plastic! It makes everyone feel okay when they buy plastic items and then recycle it, but in reality, only about 5% of waste is getting recycled.
- Composting pilot at schools is a great start, but how, as a homeowner, can I support composting initiatives?

Agriculture

- Climate change – carbon fuels are the big contributors, but so is beef and cattle. I am not saying that people shouldn't eat meat, but we can help support conscious decisions about food and meat.
- Support local diverse farming, reduce factory farming, and reduce government farming subsidies

Land and Forestry

- I support saving bird species and creating a cleaner environment to protect wildlife habitats.
- How can property owners act on invasive species? We need educational and technical resources.
- Mixville Pond has been closed due to bacteria loads. Is this linked to carbon emissions and climate change? I used to swim there all the time.
- Preserve land!
- We need to protect natural resources and plants from stormwater runoff. The Mill River is polluted from industrial activities (comments from two high school students).

Transportation

- People in Cheshire are reliant on cars. I would walk if it was safe, but it is not walkable and there are no sidewalks on the Main Road!
- What reduction strategies exist in the transportation sector for suburban areas?
- Why are we taking biking (which is green) and making it brown with E-Bikes? We need to reduce use, not transition to electricity which uses fossil fuels. Electricity is polluting.
- Not many people in Cheshire would argue against improvements in transportation and public transit. There is only one public bus and it leaves from Waterbury.
- Transportation needs to be cleaner.

Energy

- Install solar panels on roofs or already developed areas. Don't destroy forests and natural areas to build solar farms.
- Decentralize solar power, both creation and distribution.
- I tried to get solar panels on my house, but was told that my house doesn't receive enough sun, it is facing the wrong direction, and there are too many trees nearby. The recommendation was to cut down the trees! I tried to use clean energy, but I can't do it at my house, and I am worried about the impact of cutting down all those trees. I wish it was easier for homeowners to get clean energy.
- The potential of solar panels to change electricity coupled with efficiency improvements is significant.
- Make clean energy affordable and distributable.

Strategies

- Use regulations that make a real difference.
- Big actions – close down cruise ships, end fishing in the ocean, and regulate/enforce methane emissions
- Promote solutions that re-use and repurpose items, and consider opportunities with industry to implement requirements

General Comments

- Are you going to many other events? Sustainability Fairs may favor certain participants and input.
- I have inhalers that need to be recycled, drug drop off places won't take them. What can I do?
- Not in our lifetime, but eventually, fossil fuels will run out. Even without the pressure of climate change, we need to be thinking about transitioning away from fossil fuels and prepare.

Invest in Change

26 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- *Transportation:* a better public transportation system, more efficient vehicles
- *Electricity:* reduce electricity generation from fossil fuels, increase renewable energy production locally
- *Energy Efficiency:* require energy efficiency in building codes, provide renewable heating access for low-income households
- *Industrial:* improve emissions monitoring, accounting, and reporting
- *Waste Management:* enhance or build composting and recycling programs
- *Land and Forestry:* preserve and expand forests, plant and maintain trees in urban areas

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing

significant investments in the management of land, forestry, and waste in the region. Many people were clearly frustrated with the state of waste management in Cheshire, stating that their plastic does not get recycled properly. There was a lot of interest in banning plastics. Many people said that the electricity, energy efficiency, and industrial sectors were "well-taken care of", referring to actions that are already taking place in these areas to reduce carbon emissions.

Sector	Number of Coins	Percentage of Total Coins
Transportation	40	15.8%
Electricity	38	15.0%
Energy Efficiency	33	13.0%
Industrial	36	14.2%
Waste Management	48	19.0%
Land and Forestry	58	23.0%

We Are Better Together

The following table summarizes the responses received on the empowerment cards included at the engagement table.

Prompt	Responses
If my regional government provides resources and support for improving my **home's energy performance**, I will be empowered to…	
If my state/city/town provides a more **accessible transit system**, I will be empowered to…	"I work from home, so I usually walk or bike places. I would love to see more bike-friendly lanes."
If my regional government launches **education campaigns to raise awareness** about carbon emissions, I will be empowered to…	"Convert home heating to geothermal. It saves the earth and saves money!" "Share with others and educate about the environmental impact of our actions, like getting rid of astro-turf!"
If my city/town expands or creates community-based **food waste reduction** programs, I will be empowered to…	
If my city/town enhances **recycling programs**, I will be empowered to…	"Understand and spread awareness about plastic recycling! My plastic does not get recycled, it gets sent (using fossil fuels) out of state to landfills, which is frustrating." "Be more mindful about putting recycling in the correct bin" "Ask what can and can't be recycled? This needs to be answered and we need help to

Prompt	Responses
	reduce plastic waste and increase education on recycling.”

Suggestions

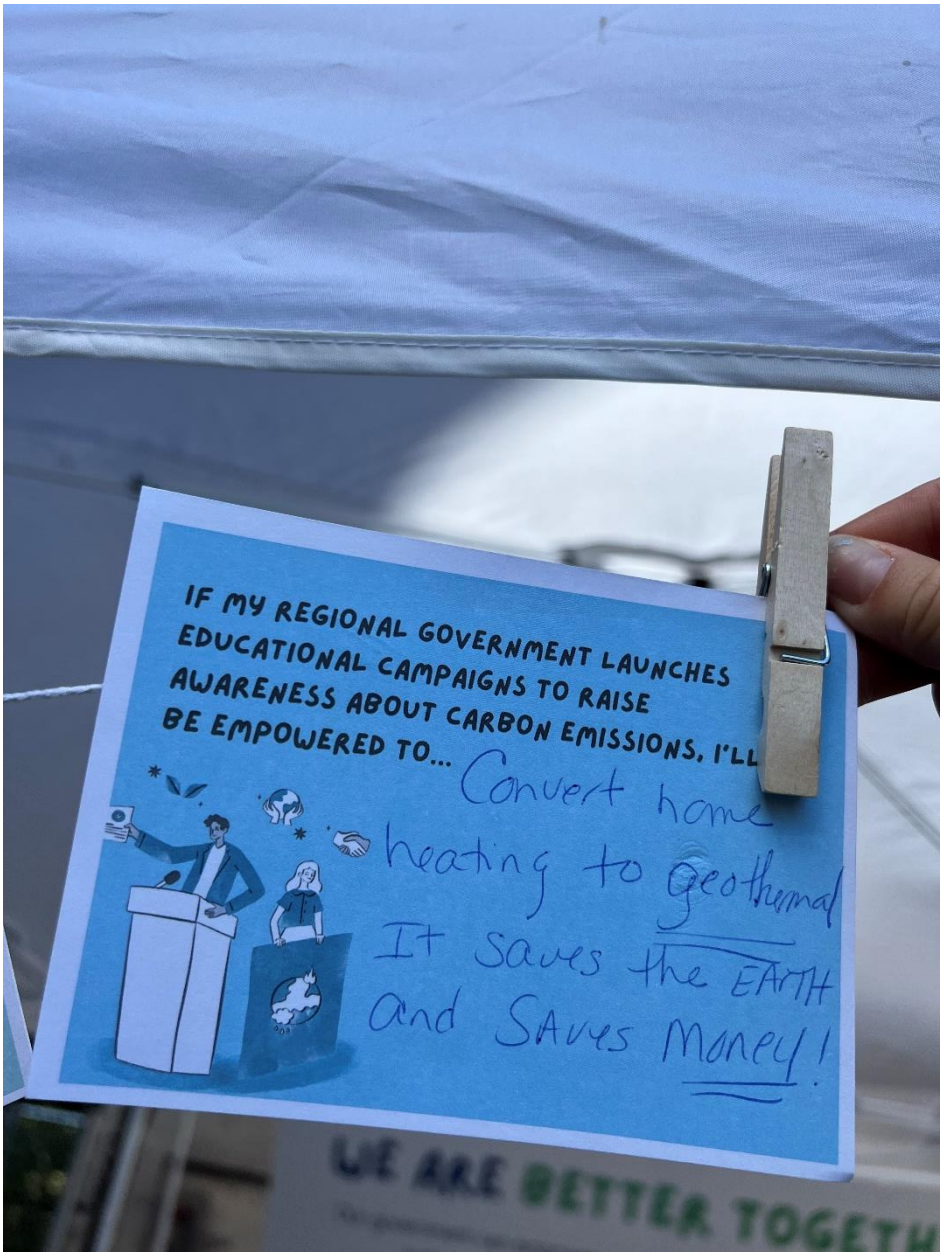
The event was very successful and well attended. After the Southbury Sustainability Fair, the following additions were made to the booth.

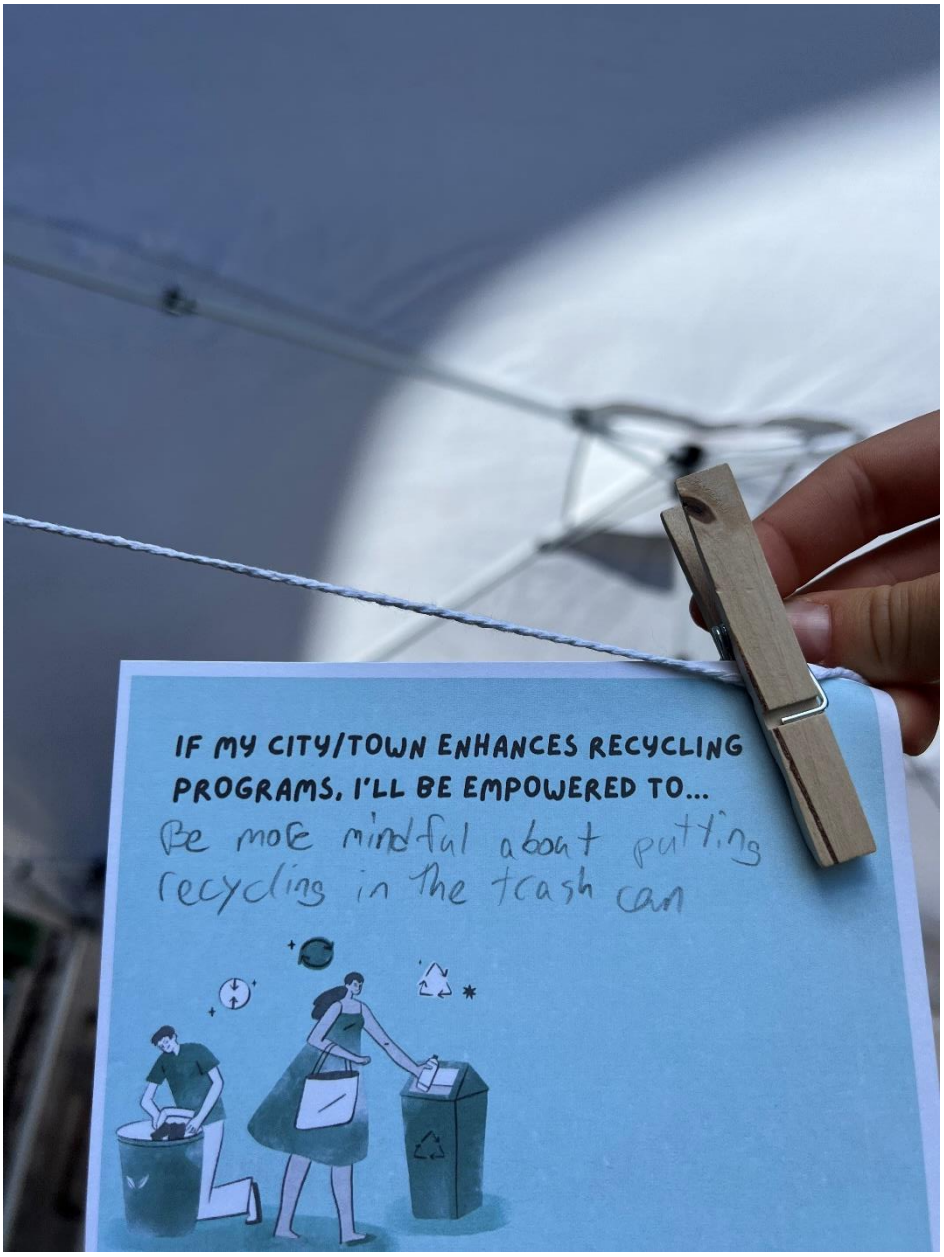
- **Candy:** We had a basket of candy at the event, which helped draw in interest from younger attendees and parents!
- **Basket for general comments:** A basket for general comments from attendees was added to the table. Some participants wrote down feedback, but the majority of the comments included in the basket were written down by SLR/UMass staff following conversations with attendees. Attendees were very interested in learning more and chatting about the project. The basket was still a great opportunity to make sure participants can share their thoughts without filling out the provided activity cards.

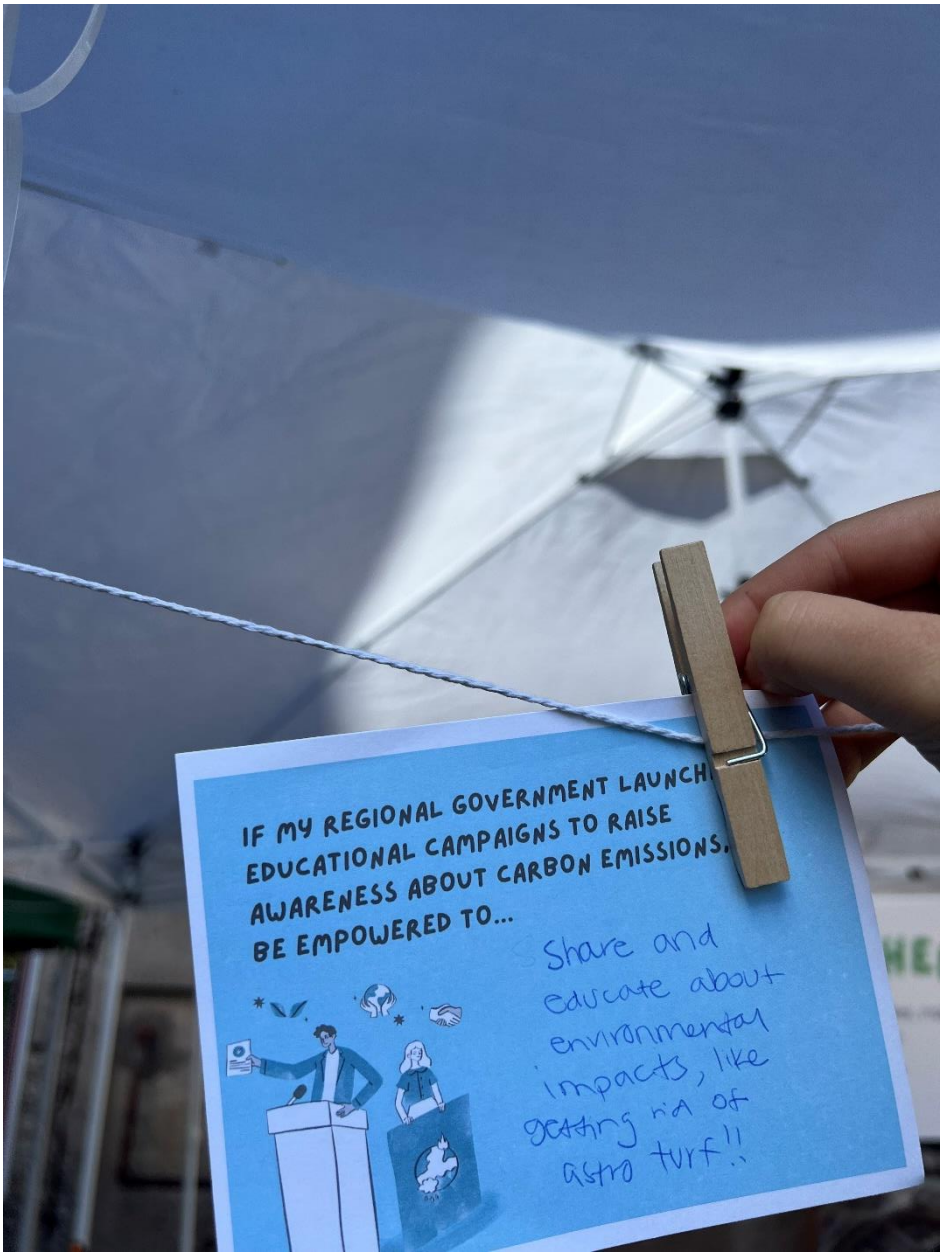
To improve engagement at the CCAP table, the following recommendations should be considered for future events:

- **Survey:** Printed QR code that connects to the survey. Attendees were informed that a survey would be available at a later date and to check the project website for further details.
- **Handouts:** People were once again interested in having physical items to take home and read later. Attendees liked the CCAP poster that was at the booth and would appreciate having that information in a handout to refer to later. It is suggested that the handout include project information, where engagement and public input will be incorporated in the project, and additional opportunities for public input.

Event Pictures


IF MY REGIONAL GOVERNMENT LAUNCHES EDUCATIONAL CAMPAIGNS TO RAISE AWARENESS ABOUT CARBON EMISSIONS, I'LL BE EMPOWERED TO... Convert home heating to Geothermal It saves the EARTH and SAves Money!
WE ARE BETTER TOGETH


IF MY CITY/TOWN ENHANCES RECYCLING PROGRAMS, I'LL BE EMPOWERED TO...
Be more mindful about putting recycling in the trash can


IF MY REGIONAL GOVERNMENT LAUNCH
EDUCATIONAL CAMPAIGNS TO RAISE
AWARENESS ABOUT CARBON EMISSIONS,
BE EMPOWERED TO...
Share and
educate about
environmental
impacts, like
getting rid of
astro turf!!

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Chanel Lobdell
Company:	SCRCOG/NVCOD		**SLR International Corporation**
cc:	Pamela Green (SLR), Noah Slovin (SLR), Claudia Raimundo (UMass), Raquel Gaba (UMass), Camille Barchers (UMass)	**Date:**	October 19, 2024
		Project No.	149.000006.00001

RE: Ansonia Autumn Festival
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from the Ansonia, CT Autumn Festival. The Festival was attended by Chanel Lobdel (SLR), Claudia Raimundo (UMass), and Raquel Gaba (UMass).

The Festival was well attended and while the event was not focused on Sustainability, many people who stopped by the table were happy to learn about the project and provide input on the types of climate action they are interested in seeing in their community. The CCAP booth was one of a handful of booths, which enabled a lot of participation and engagement from attendees.

The event had many children, both younger and high school students, who were drawn to the booth by the Climate Change Trivia. The participation from younger attendees often drew in their parents who then engaged with the project and provided input. Attendees that participated in the booth were happy to hear about the plan development and shared their concerns in Ansonia related to climate change. Participants engaged in the Invest in Change activity and in conversations with SLR and UMass representatives, who took notes throughout the event.

The activities included at the table are described below:

- **Climate Change Trivia**: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).

- **Invest in Change**: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participants was given 10 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.

- **Empowerment Cards**: Participants were asked to reflect on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

    - **Note**: While these cards were available, due to the nature of the event the Trivia and Invest in Change were the only activities attendees participated in.

Based on the responses from attendees, many community members are concerned about land and forestry protection followed by energy efficiency, transportation, and waste management. Many participants were excited to see that the region is taking steps to develop a CCAP and wanted the Town of Ansonia to support programs that will help reduce greenhouse gas emissions.

What We Heard

The following are comments received from attendees during conversation about the project.

- Invasive plants are a real problem in Ansonia. We need to figure out a way to advertise/educate the public about invasive plants.
- Ansonia had a food scrap program that was discontinued.
- Ansonia cut down tress to put solar panels in, but the community can't tap into the solar energy supply.
- Ansonia sold the wastewater pollution authority to Aquarion and there is concern over this decision.
- Ansonia doesn't have a lot of public nature areas and one of the protected areas had a 100 year protection, but that is coming to an end soon which will open it up to possible development.
- While solar panels are great there is currently a big maintenance cost that people aren't aware of. If someone has an issue with their roof they now have to call a roofer and a solar panel technician, increasing the cost of house maintenance.

Invest in Change

25 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- Transportation: a better public transportation system, more efficient vehicles.
- Electricity: reduce electricity generation from fossil fuels, increase renewable energy production locally
- Energy Efficiency: require energy efficiency in building codes, provide renewable heating access for low-income households
- Industrial: improve emissions monitoring, accounting, and reporting
- Waste Management: enhance or build composting and recycling programs
- Land and Forestry: preserve and expand forests, plant and maintain trees in urban areas.

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing significant investments in land, forestry, and energy efficiency in the region. Many people were concerned about preserving and expanding forests and were interested in seeing investments in protecting open space. There was also a lot of interest in improving energy efficiency because it

would help people's bills and provide economic benefits to households in the area. People discussed that industrial pollution was not an issue in Ansonia.

Sector	Number of Coins	Percentage of Total Coins
Transportation	49	19.6%
Electricity	25	10.0%
Energy Efficiency	52	20.8%
Industrial	21	8.4%
Waste Management	46	18.4%
Land and Forestry	57	22.8%

Photos


WE ARE BETTER TOGETHER!
Our government can empower us all to adopt low-carbon lifestyles, making sustainable living accessible and achievable for everyone!
WHAT WILL YOU BE EMPOWERED TO DO?
INVEST IN CHANGE!
Where do you want your money to go to reduce local emissions?
TRANSPORTATION
ELECTRICITY
ENERGY EFFICIENCY
INDUSTRIAL
WASTE MANAGEMENT
LAND & FORESTRY
CLIMATE POLLUTION REDUCTION GRANT
NEW HAVEN COUNTY
WHAT
WHERE & WHO
HOW
MORE INFO
SCRCOG


INVEST IN CHANGE!
ELECTRICITY
ENERGY EFFICIENCY
LAND & FORESTRY
UNIVERSITY OF MASSACHUSETTS

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Chanel Lobdell
Company:	SCRCOG/NVCOG	**SLR International Corporation**	
cc:	Pamela Green (SLR), Noah Slovin (SLR)	**Date:**	April 26, 2025
		Project No.	149.000006.00001

RE: Rock to Rock Earth Day Green Fair
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from the Rock to Rock Earth Day Green Fair (the Event) in New Haven, CT. The Event was held on April 26th from 10 AM to 2 PM in East Rock Park. The Event had live music, food trucks, and a range of sustainability focused booths for riders to engage with before and after their ride. The Event was attended by Chanel Lobdel (SLR) and Elizabeth McCarthy (SLR).

The Event's focus on sustainability brought together a large group of people interested in learning more about the Comprehensive Climate Action Plan (CCAP) and providing input. The CCAP booth was one of a handful of booths, which enabled a lot of participation and engagement from attendees.

The event had many children, both younger and high school students, who were drawn to the booth by the Climate Change Trivia. In addition, many attendees were climate conscious and were drawn in by the "Invest in Change" activity and the project information board. Attendees that participated in the booth were happy to hear about the plan development and shared their concerns and ideas related to mitigating climate impacts. Participants engaged in the Invest in Change activity, trivia, empowerment cards, and in conversations with the SLR representatives, who took notes throughout the event.

The activities included at the table are described below:

- **Climate Change Trivia**: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).

- **Invest in Change**: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participants was given 3 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.

- **Empowerment Cards**: Participants were asked to reflect on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

Based on the responses from attendees, many community members are concerned about sustainable transportation options followed by renewable energy access. Many participants were excited to see that the region is taking steps to develop a CCAP and wanted to see a push towards more renewable energy production and implementation.

What we Heard

The following are comments received from attendees during conversation about the project.

- There needs to be an educational element in the strategies.
- We need to protect our waterways and update our water standards.
- Strategies should focus on equity and environmental justice areas to restore balance and past inequities.
- We need to develop our solar resources!
- We need to create better ways for individuals to do their own solar. The current permitting process and connection to United Illuminating (electric provider in New Haven) is very complex and is a barrier for individuals switching to more renewable energy sources.
- There needs to be better municipal follow-through and enforcement to ensure any the strategies outlined in this plan actually get implemented.
- There needs to be zoning updates to encourage EV-readiness. There is a local program that provides municipalities technical assistance to help adopt policies and best practices for EV-readiness.

Invest in Change

25 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- Transportation: a better public transportation system, more efficient vehicles.
- Electricity: reduce electricity generation from fossil fuels, increase renewable energy production locally
- Energy Efficiency: require energy efficiency in building codes, provide renewable heating access for low-income households
- Industrial: improve emissions monitoring, accounting, and reporting
- Waste Management: enhance or build composting and recycling programs
- Land and Forestry: preserve and expand forests, plant and maintain trees in urban areas.

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing significant investments in transportation and electricity in the region. Many people mentioned that investment was needed to make public transit and active transportation options more efficient and accessible. There was also a lot of interest in expanding solar energy production.

People discussed the need to simplify the solar permitting process and to develop a better system for connecting solar to the local service provider (United Illuminating).

Sector	Number of Coins	Percentage of Total Coins
Transportation	20	26.7%
Electricity	15	20.0%
Energy Efficiency	11	14.7%
Industrial	5	6.7%
Waste Management	11	14.7%
Land and Forestry	13	17.3%

Empowerment Cards

One individual participated in the empowerment cards activity. They focused on enhanced recycling programs and indicated that if their City or Town enhanced recycling programs, they would be more empowered to do the following:

- Be more educated about recycling and waste management
- Participate as an individual in collective waste management programs.
- Be more hopeful about the future!
- Encourage others to effectively recycle.

Photos


WE ARE BETTER TOGETHER!
Our government can empower us all to adopt low-carbon lifestyles, making sustainable living accessible and achievable for everyone!
INVEST IN CHANGE!
TRANSPORTATION
ELECTRICITY
ENERGY EFFICIENCY
WASTE MANAGEMENT
LAND & FORESTRY
INDUSTRIAL


ARE BETTER TOGETHER!
INVEST IN CHANGE!
TRANSPORTATION
ELECTRICITY
INDUSTRIAL


WE ARE BETTER TOGETHER!
TRANSPORTATION
ELECTRICITY
INDUSTRIAL

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Chanel Lobdell
Company:	SCRCOG/NVCOD	**SLR International Corporation**	
cc:	Pamela Green (SLR), Noah Slovin (SLR), Karl Tacheron (UMass), Camille Barchers (UMass)	**Date:**	November 14, 2024
		Project No.	149.000006.00001

RE: New Haven Elm Street Library – Tabling
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from tabling at the New Haven Elm Street Library on Thursday, November 14, from 10:30-2:30. The table was staffed by Chanel Lobdell (SLR) and Karl Tacheron (UMass).

The table was hosted at the main entrance of the library where staffers engaged people as they were entering or exiting the building. Many people who stopped at the table were interested to hear about the project and provide input on what they thought would make the biggest impact on their community.

The table was visited by a diverse group of people, from young children with their parents, library staff, and adults of all ages picking up library books or escaping the cold. Many of the participants were drawn to the table because of the banner, with individuals stating, "Yes, we are better together!" Visitors who participated in the booth were interested in hearing about the project and were happy that the region was focused on helping reduce emissions. Many participants engaged in the Invest in Change activity, while other participants, who didn't have as much time to participate, grabbed a flyer so they could take the online survey.

The activities included at the table are described below:

- **Climate Change Trivia**: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).

- **Invest in Change**: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participants was given 10 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.

- **Empowerment Cards**: Participants were asked to reflect on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

Based on the responses from attendees, many community members are concerned about making the transportation system more efficient and accessible, with a few individuals putting all

their tokens into the transportation sector. Other important themes that came up included education, especially when it comes to waste management systems.

What We Heard

The following are comments received from attendees during conversation about the project.

- People are receiving grants to use land for community gardens, but after they create it, they lose the funding and then they don't maintain the gardens, making the area look run down. This is especially a problem in Ward 20.
- We need to educate people on why composting and recycling is important. Many people don't understand where their waste goes or why it is important.
- Over the past 40 years, progress has been made to clean up the rivers in the area. We weren't able to swim in the Housatonic River when I was growing up, but now we can.

Invest in Change

23 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- Transportation: a better public transportation system, more efficient vehicles.
- Electricity: reduce electricity generation from fossil fuels, increase renewable energy production locally
- Energy Efficiency: require energy efficiency in building codes, provide renewable heating access for low-income households
- Industrial: improve emissions monitoring, accounting, and reporting
- Waste Management: enhance or build composting and recycling programs
- Land and Forestry: preserve and expand forests, plant and maintain trees in urban areas.

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing significant investments in transportation and waste management. Many people were concerned about the public transit system and were interested in seeing investments in making the public transit system more accessible and efficient, with some mentioning the need for more electric buses. There was also interest in seeing more composting and recycling programs. Individuals also thought that investing in electricity and energy efficiency is important to them from a pricing perspective, with individuals mentioning that the price of energy/electricity is currently too expensive.

Sector	Number of Coins	Percentage of Total Coins
Transportation	55	23.9%
Electricity	33	14.3%
Energy Efficiency	34	14.8%
Industrial	29	12.6%

Sector	Number of Coins	Percentage of Total Coins
Waste Management	47	20.4%
Land and Forestry	32	13.9%

Empowerment Cards

Two individuals participated in the empowerment card activity; the results include the following:

- If my regional government launches educational campaigns to raise awareness about carbon emissions, I'll be empowered to… *create a better future for all!*
- If my State/City/Town provides a more accessible public transit system, I will be empowered to… *I already ride the bus, but I would like to see more electric buses for New Haven.*

Photos


CLIMATE POLLUTION REDUCTION GRANT
WE ARE BETTER TOGETHER!
nhfpl
INVEST IN CHANGE!
ENERGY EFFICIENCY
LAND & FORESTRY


MARY ELLEN IVES
nhfpl
INVEST IN CHANGE!
ENERGY EFFICIENCY
LAND & FORESTRY


nhfpl
INVEST IN CHANGE!

Memorandum

To:	Stephanie Camp, Christine O'Neill, Ian McElwee	**From:**	Chanel Lobdell
Company:	SCRCOG/NVCOG		**SLR International Corporation**
cc:	Pamela Green (SLR), Noah Slovin (SLR), Michael McNally (UMass), Camille Barchers (UMass)	**Date:**	November 19, 2024
		Project No.	149.000006.00001

RE: New Haven Mitchell Branch Library – Tabling
New Haven-Milford MSA CCAP

The following memorandum summarizes the key takeaways from tabling at the New Haven Mitchell Branch Library on Tuesday, November 19, from 10:00-1:00. The table was staffed by Chanel Lobdell (SLR) and Michael McNally (UMass).

The table was hosted at the main entrance of the library where staffers were able to engage people as they were entering or exiting the building. Many people who stopped at the table were interested to hear about the project and provide input on what they thought would make the biggest impact on their community.

The library was hosting two back-to-back Storytime events, so the table was visited by many young families as they were either waiting for Storytime to begin or as they were leaving. Other participants included individuals that worked at the library or adults dropping off or picking up books. Many of the participants were drawn to the table due to their curiosity about the "Invest in Change" activity. Individuals who participated in the booth were interested in hearing about the project and were eager to learn more about climate solutions. Participants engaged in conversation about their climate and emission concerns and participated in the Invest in Change activity.

The activities included at the table are described below:

- **Climate Change Trivia**: Participants were invited to test their knowledge about climate change and sources of emissions in New Haven County. A set of trivia questions was prepared for the event and printed for reference by the UMass and SLR staff. Participants spun a wheel to determine which category the trivia question would fall under (transportation, waste, electricity, industry, agriculture, and climate).

- **Invest in Change**: Participants were asked to share where they would like to see the region make investments in climate action and emission reduction. Each participants was given 10 "coins" to distribute across the provided six sectors, transportation, electricity, energy efficiency, industry, waste management, and land and forestry.

- **Empowerment Cards**: Participants were asked to reflect on how different municipal, regional, or state efforts to implement emission reduction strategies and programs may empower them to make changes in their own life to reduce their personal carbon footprint.

- **Notes**: While these cards were available, individuals did not participate in this activity at the event. A few participants did take the cards home to think about what they would be empowered to do.

Based on the responses from attendees, many community members were concerned about the preservation of land and forestry, the transportation system, and enhancing recycling and composting programs. Many people were also interested in increasing the energy efficiency of their homes and reducing electricity consumption from fossil fuels.

What We Heard

The following are comments received from attendees during conversation about the project.

- One of the librarians mentioned that the transit was a big issue because it isn't reliable. She stated that her bus was late today, as usual.
- If the trains and buses were faster, more people would use them.
- One participant mentioned that she really cares about reducing plastic use and would like to see more composting programs.
- One resident, who moved here from Seattle, was disappointed in the recycling and composting programs here and wanted a community composting program and thought there needed to be more education around how and what can be recycled.
- One participant mentioned that the bottle return program is very difficult to do. The bottle collection facilities are always dirty, full, or closed.
- One participant in the coin game mentioned that they had just bought a hybrid and was enthusiastic about emissions reduction but was unaware of the state rebates (CHEAPR) for plug-in hybrids and battery vehicles when asked if he took advantage of the available rebates.
- One resident mentioned the need for a West River cleanup, especially between the Wilbur Cross Parkway Overpass from Whalley Street to Ramsdale Street in New Haven. It is currently filled with plastic and debris. It is especially had after heavy rain fall.
- Invasives are an issue in the area.
- One resident was interested in taking post-industrial or vacant lots and greening them. The city has many spots that are largely abandoned that could be greened, but it is important that we maintain the green space once we add it in.
- One resident mentioned that they were currently a renter but looked forward to more control over their home efficiency once they find a home of their own.
- One resident expressed anxiety around the upcoming federal administration and its impacts on parks and land preservation.

Invest in Change

11 people participated in the Invest in Change activity. To inspire participants and provide an understanding of types of reduction initiatives, the following examples were written below each sector:

- Transportation: a better public transportation system, more efficient vehicles.
- Electricity: reduce electricity generation from fossil fuels, increase renewable energy production locally
- Energy Efficiency: require energy efficiency in building codes, provide renewable heating access for low-income households
- Industrial: improve emissions monitoring, accounting, and reporting
- Waste Management: enhance or build composting and recycling programs
- Land and Forestry: preserve and expand forests, plant and maintain trees in urban areas.

The following table summarizes the responses from those who participated in the Invest in Change activity. Based on the responses received, the community is most interested in seeing significant investments in land and forestry and energy efficiency. Many people thought we needed more green spaces and to preserve open space. Due to many of the participants being homeowners in the Westville neighborhood, there was a large interest in increasing energy efficiency to help lower their cost while also helping reduce emissions.

Sector	Number of Coins	Percentage of Total Coins
Transportation	19	17.3%
Electricity	18	16.4%
Energy Efficiency	21	19.1%
Industrial	11	10.0%
Waste Management	14	12.7%
Land and Forestry	27	24.5%

Photos


NEW BOOKS
WHAT WILL YOU BE EMPOWERED TO DO?


WHAT WILL YOU BE EMPOWERED TO DO?


NEW BOOKS
WE ARE BETTER TOGETHER!
WHAT WILL YOU BE EMPOWERED TO DO?
MORE INFO


NEW BOOKS
WHAT WILL YOU BE EMPOWERED TO DO?

APPENDIX D

Memorandum

To:	Stephanie Camp, Ian McElwee, Christine O'Neill	**From:**	Pamela Green
Company:	SCRCOG / NVCOG	**SLR International Corporation**	
		Date:	May 29, 2025
		Project No.	149.000006.00001

RE: ImpaCT 2050 Workforce Development Workshop
New Haven-Milford Comprehensive Climate Action Plan

Workshop Overview

To inform the workforce development analysis for the New Haven-Milford Comprehensive Climate Action Plan (CCAP), SLR facilitated the ImpaCT 2025 Workforce Development Workshop on May 22, 2025. The workshop addressed the purpose of the analysis, current demographic and economic conditions in the region, and CCAP strategies along with associated implementation challenges. It concluded with a facilitated discussion on opportunities for coordination and solutions to address workforce-related challenges. This memorandum summarizes the key discussions and takeaways from the workshop.

Attendees

Name	Organization
Julia Fiore	SLR
Pamela Green	SLR
Stephanie Camp	SCRCOG
Ian McElwee	SCRCOG
Christine O'Neill	NVCOG
Mike Anderson	United Illuminating (Avangrid)
Ann Harrison	Workforce Alliance
Amy Feest	Southern Connecticut University Office of Workforce and Lifelong Learning
James Shrivell	The Work Place Bridgeport
Valerie Watson	The Work Place Bridgeport

Summary of Workshop Discussions

Data Sources

Attendees mentioned multiple data sources that could provide insights into the regional labor market. Workforce Regions release updated reports every four years. New Haven received funding for a geothermal project that may include information about regional labor markets and

identified solutions. The Valley Community Foundation was involved in the development of a Regional Labor Market Analysis for the Greater New Haven Area. NVCOG and SCRCOG are studying Waste Management Authorities, which may inform job creation potential within this industry. The Dalia Report indicates that many young people ages 16-24 lack clear career pathways. United Illuminating may be able to provide data related to utility worker shortage, specifically how many employees are set to retire within the next decade. The identified data sources may help inform the workforce analysis for the CCAP.

Current Workforce Coordination and Programs

Workforce Boards across the region maintain local workforce plans. Programs like the Good Jobs Challenge by Workforce Alliance ensures that participants find employment with livable wages and good benefits. Other initiatives include the Platform to Employment for Youth to support outreach and awareness among youth populations.

Electricity Sector Workforce Development

Southern Connecticut State University offers a Utility Management Program, while the Work Place collaborates with Eversource and United Illuminating through existing partnerships. A 12-week hybrid training (virtual evening and weekend in-person sessions) is implemented in coordination with Eversource. The program prepares workers, with opportunities for job placements at the conclusion of the program. The Work Place additionally is managing a $2M Energy Works grant to recruit and train utility line workers.

United Illuminating also partners with Housatonic Community College, United Way, and Technology Colleges. This includes internships with high school students, school outreach by line workers, attending career fairs and community events, and a dedicated training facility in Trumbull offering guaranteed employment post-training. Programs for homeowners, including energy efficiency and low-income discounts, are also a part of United Illuminating's outreach.

Waste Management Sector Development

The industry is mainly controlled by two major companies, reported by workshop participants. There are some existing efforts focused on workforce development in the industry, specifically some community colleges in the region offer 2-year programs focused on waste management. Regional Waste Management Authorities and local expansions within the waste management industry offer opportunities for new job creation.

Identified Workforce Development Needs

Existing infrastructure at the regional level, such as Workforce Boards and the American Jobs Centers, should be leveraged rather than building new or parallel infrastructure. Participants had differing perspectives on the driving force behind employment gaps. Some noted that the key challenge is not the lack of skills or knowledge in the region, but the gap in connecting people to existing programs. Others shared that there is a lack of public awareness around career possibilities.

Workshop attendees emphasized the need to increase access to jobs and career paths to foster equity. Additional recommendations included sector-specific employer outreach to implement on-the-job training, apprenticeships, or subsidized training opportunities; prioritizing soft skills development and mental health resources for jobseekers; and targeted engagement with underserved communities to raise awareness about career opportunities. Programs should be accessible to a range of individuals: adults, youth, underemployed, and unemployed. This could

be through flexible training program formats or stipends for individuals who need a source of income during training periods.

With regard to funding these workforce development efforts, there was interest in focusing on partnerships with companies and smaller, localized grant opportunities as federal funding has become uncertain.

Electricity Sector Needs and Gaps

In the electricity sector, workforce shortages, especially for electricians and line works, is a growing concern. Apprenticeship opportunities for electricians are limited. Many trade school graduates are not able to obtain apprenticeships due to training ratios.

While offshore wind is not currently a focus, stated by Work Place representatives, due to industry uncertainty, there my be transferable skills within this field and existing training initiatives.

There is a lack of centralized information on green jobs in Connecticut. Participants suggested developing a resource hub for green jobs that can be accessed online. The platform should focus on building awareness around green career pathways through trainings and resources.

Waste Management Needs and Gaps

The sector struggles with attraction and retention due to unclear career advancement opportunities and stigma, though newer technologies like AI waste sorting and sustainable practices may help change perceptions. The industry is anticipating expansion in the types of roles.

Participants commented that no training programs currently exist that are specific to Waste Management.

Workshop Highlights

Participants focused on the practical challenges and opportunities for building the climate workforce within the SCRCOG and NVCOG communities. Below is a synthesis of the main feedback and discussion points raised during the workshop.

Barriers to Workforce Development

- **Funding Instability and Uncertainty:** Multiple speakers emphasized that the recent wave of grant cancellations, freezes, and delays—particularly for federal programs like the EPA Community Change Grants, FEMA Hazard Mitigation, and the Inflation Reduction Act—has created significant uncertainty for workforce development initiatives. This has disrupted planned training programs, undermined confidence in launching new projects, and made it difficult for organizations to commit to hiring or upskilling workers.
- **Training Pipeline Disruptions:** With grants for workforce development in clean energy and related sectors frozen or delayed, participants noted that training providers are struggling to maintain program continuity. There is concern that this will result in a shortage of qualified workers just as demand for climate-related skills is rising.
- **Employer Hesitancy:** Employers represented in the discussion voiced reluctance to invest in new hires or expand apprenticeship programs without reliable funding streams. Some mentioned that wage subsidies and on-the-job training programs are on hold, further slowing workforce entry and advancement.

Opportunities and Solutions Proposed

- **Regional Collaboration:** Several participants suggested that, given the federal funding landscape, regional actors—including workforce boards, community colleges, and local governments—should pool resources and coordinate efforts to sustain training and outreach. Leveraging existing infrastructure, such as American Job Centers, was seen as a way to maximize impact despite funding setbacks.
- **Alternative Funding and Partnerships:** There was consensus that new partnerships with private sector employers, philanthropic organizations, and state agencies could help fill the gap left by suspended federal programs. Some speakers encouraged exploring local or state-level grants that are still active, even if on a smaller scale, and advocated for creative financing models.
- **Focus on Equity and Resilience:** The discussion repeatedly circled back to the importance of maintaining a focus on equity—ensuring that underrepresented communities are not left behind as funding sources shift. Participants called for prioritizing stipends, wraparound supports, and targeted outreach to these groups, even if resources are constrained.

Concerns and Risks

- **Loss of Momentum:** A number of attendees warned that the current environment risks eroding the momentum built over the past several years in climate workforce development. There was concern that skilled workers may leave the sector or region if job prospects dry up, making future ramp-ups more difficult.
- **Program Fragmentation:** With federal coordination weakened, some worried about the risk of duplicative or fragmented local efforts. Calls were made to maintain communication and data-sharing between organizations to avoid inefficiency.

Suggested Actions

- **Convene a Regional Task Force:** Participants agreed to form a working group to track funding developments, share best practices, and coordinate responses to grant cancellations or delays.
- **Develop a Central Resource Hub:** There was strong support for creating a centralized portal or clearinghouse for workforce opportunities, training programs, and funding updates, to keep both job seekers and employers informed.
- **Advocate for Policy Change:** Some suggested a coordinated advocacy campaign to urge state and federal officials to restore or protect critical climate workforce funding.

Memorandum

To:	Stephanie Camp, Ian McElwee, Christine O'Neill	**From:**	Pamela Green
Company:	SCRCOG / NVCOG	**SLR International Corporation**	
		Date:	April 22, 2025
		Project No.	149.000006.00001

RE: Climate Planning Workshop
New Haven-Milford Comprehensive Climate Action Plan

Workshop Overview

The workshop convened municipal leaders, regional planners, and stakeholders to advance the Comprehensive Climate Action Plan (CCAP) as part of the EPA's Climate Pollution Reduction Grant program. The agenda included an overview of the CCAP development process, deep dives into Municipal Emissions Reduction Playbooks (MERPs), Low-Income Disadvantaged Communities (LIDACs), and Workforce Development, including interactive breakout sessions and group discussions.

The workshop highlighted the interconnectedness of emissions reduction, workforce development, and equity in climate action planning. Participants identified key workforce gaps, funding barriers, and opportunities for regional collaboration.

Attendees

Name	Organization
Julia Fiore	SLR
Pamela Green	SLR
Stephanie Camp	SCRCOG
Ian McElwee	SCRCOG
Christine O'Neill	NVCOG
Mike Anderson	United Illuminating (Avangrid)
Ann Harrison	Workforce Alliance
Amy Feest	Southern Connecticut University Office of Workforce and Lifelong Learning
James Shrivell	The Work Place Bridgeport
Valerie Watson	The Work Place Bridgeport

Summary of Workshop Discussions

Municipal Emissions Reduction Playbooks (MERPs) Breakout

The MERP breakout introduced participants to the Municipal Emissions Reduction Playbooks, customized toolkits designed for each municipality to streamline climate action planning and implementation. Each MERP includes a municipality overview, sector analysis, scenario planning, a local action plan, strategy prioritization, and recommendations for next steps. The primary goal is to make addressing climate change as straightforward as possible for local governments.

Key Discussion Themes

- The importance of municipal fleet electrification, energy efficiency upgrades for buildings, grid improvements, and enhanced waste diversion infrastructure was emphasized.
- Achieving emissions reductions will require regulatory and financial investment and support at all levels of government.
- The need for significant investment in workforce growth, retention, and training was highlighted as a prerequisite for implementing the strategies outlined in the MERPs.

Discussion Questions, Breakout Activities, and Community Feedback

- **Discussion Questions:** Participants were prompted to consider whether any existing conditions or readiness factors were missing from the playbooks, if any key local priorities or conflicts with emissions reduction strategies had been overlooked, and if anything about the prioritization process was surprising.
- **Breakout Activity:** Groups reviewed the structure and content of the MERPs, discussed how strategies were prioritized, and considered how the tool could be improved for their municipalities.
- **Community Feedback:** A follow-up survey was announced to gather further input from participants.

Workforce Planning Breakout

The Workforce Planning breakout focused on identifying workforce capacity, skills gaps, and support needs in relation to the implementation of CCAP strategies. The session aimed to surface local and regional challenges, discuss solutions, and explore opportunities for coordination to ensure a robust workforce for climate action.

Key Discussion Themes

- **Closing Training Gaps:** There is a widespread shortage of skilled workers due to outdated training systems and insufficient certification opportunities. Upskilling existing staff and training local officials, contractors, and builders in new technologies, codes, and standards is urgently needed.
- **Assessing Workforce Expansion Needs:** Municipalities must evaluate whether their current workforce can meet the demands of CCAP strategies, with growing needs for specialized skills in energy, transportation, and waste management.

- **Funding Strategies:** Limited funding restricts workforce development efforts, particularly in low-income communities. Many federal and state funding streams are currently frozen, delayed, or at risk6.
- **Coordination and Support:** Collaboration with community colleges, trade schools, regional organizations, and employers is essential to expand workforce pipelines and provide technical assistance1.

Discussion Questions, Breakout Activities, and Community Feedback

- **Discussion Questions:** Participants reflected on workforce capacity and skills gaps, sufficiency of local training initiatives, opportunities for regional coordination, funding mechanisms, and additional challenges or strategies relevant to their community.
- **Breakout Activity:** Attendees completed a matrix identifying support needs by sector (energy efficient buildings, electricity, mobility, waste management), noting whether their community needed training, staff, or funding to advance CCAP strategies.
- **Community Feedback:**
    - *Affordable Housing:* Funding models rely heavily on grants, limiting the ability to attract developers (Guilford).
    - *Waste Management:* Workforce development is needed to expand composting and waste management programs (NVCOG).
    - *Regional Coordination:* Workforce development is more effective at the regional level, with a need for coordination between municipalities and regional entities.
    - *Zoning and Development:* Attracting developers for affordable housing may require zoning changes and updated code standards (Wallingford).
    - *Innovation:* Support for industrial hemp agriculture and hemp-based building materials was discussed as a climate and workforce strategy.

LIDAC (Low-Income & Disadvantaged Communities) Breakout

The LIDAC breakout aimed to help participants identify high-priority social vulnerabilities within their communities and explore how emission reduction strategies could be refined to maximize benefits for low-income and disadvantaged populations. The activity used a structured matrix to guide participants through the analysis of four categories of social vulnerability, economic status, social demographics, health, and education, and their intersection with CCAP themes: energy efficient buildings, electricity, mobility, and waste management.

Key Discussion Themes

- **Priority Vulnerabilities:** Economic status and affordability were frequently cited as top concerns, alongside social diversity, health access, and educational attainment.
- **Sector Interactions:**
    - *Energy Efficient Buildings:* Weatherproofing, heat pumps, and solar heating can lower energy costs for vulnerable households.
    - *Electricity:* Local renewable energy and municipal energy audits help drive down costs and improve reliability.

  - *Mobility & Transportation:* Expanding public transit, EV uptake, and bike/pedestrian infrastructure were discussed, though geographic barriers and limited transit schedules remain challenges.
  - *Waste Management:* Growth in recycling and composting programs can create jobs and improve outcomes for LIDACs.
- **Opportunities:** Tailoring outreach and program design to specific vulnerabilities, leveraging municipal programs, and using mapping tools (CCVI, Environmental Justice Mapping Tool) to identify and prioritize vulnerable populations.

Discussion Questions, Breakout Activities, and Community Feedback

- **Discussion Questions:** The activity prompted participants to review each social vulnerability category, identify those most relevant to their community, and reflect on how these interact with each CCAP theme. They were also asked to consider opportunities to refine actions or implementation steps to maximize LIDAC benefits.
- **Breakout Activity:** Participants completed a matrix, leaving comments on top-priority vulnerabilities and their interactions with CCAP themes, as well as suggestions for maximizing benefits for LIDACs.
- **Community Feedback:**
  - *Economic Status:* Affordability and access to energy audits were highlighted. Some communities noted a shift toward greater wealth but persistent housing challenges.
  - *Social Demographics:* Housing diversity and access remain issues.
  - *Health:* Chronic illness and access to care, especially for older residents, were noted.
  - *Education:* Generally high, but some isolation and barriers remain for certain groups.

Suggested Actions

Next Steps (All Breakouts)

- Distribute a follow-up survey to gather additional feedback.
- Refine MERPs, workforce, and LIDAC strategies based on participant input.
- Maintain ongoing engagement with municipal, regional, and community stakeholders.
- Monitor critical funding streams to support implementation

Community Notes from Workforce Planning Breakout Activity

Reflect on what support your community may need to advance and implement CCAP strategies. Leave a comment in the appropriate box to note whether your community needs training, staff, or funding, be sure to write your name, community, and any specific details!

Category	**Energy Efficient Buildings**	**Electricity Production and Consumption**	**Mobility and Transportation**	**Waste Management**
Example Strategies	- Heat pump and solar installation - Energy efficient building installation - New building codes, standards, and zoning training - Education and outreach specialists for residents	- Renewable energy and offshore wind project workers - Skilled workers for microgrid installation and solar canopy projects - Staff needed for energy upgrades	- EV Fleet Maintenance - Heavy duty EV operators and maintenance - EV Charging station installation and maintenance - Staff for increased public transit services - Bike and pedestrian infrastructure - Complete Streets Projects	- Recycling coordinators - Composting program managers - Education and outreach specialists - Repair specialists - Waste collection staff for recycling and composting - Regional Waste Management Authority Staff
We need training access!				

We need staff!				
We need funding access!				

We need…				

Community Notes from LIDAC Breakout Activity

Review the four categories of social vulnerability (economic status, social demographics, health, education) and consider which is a high priority in your community. Leave comments in the blue column to share information that is relevant to your community and the identified social vulnerability category.

Move along the table to reflect on how each social vulnerability may interact with the four CCAP themes (energy efficient buildings, electricity production and consumption, mobility and transportation, and waste management). Leave these comments in the green box. Then consider opportunities to refine actions or implementation steps to maximize benefits for LIDACs, writing these in the purple box.

For all comments please note your name and community!

LIDAC and Emission Reduction Matrix DAVID G. PARENT P&Z COMMISSION WALLINGFORD, CT 203 269 2136		Top-Priority Social Sensitivities in Your Community	Energy Efficient Buildings	Electricity Production and Consumption	Mobility and Transportation	Waste Management
		Leave a note in the box below that corresponds to a high-priority disadvantaged community in your municipality. Provide details on the disadvantaged community and challenges it faces.	- Heat pumps and solar heating - Energy efficiency, weatherproofing - New building codes and standards	- Renewable energy production - Local energy production - Energy reliability	- Increased EV uptake - Increased public transit - Bike and pedestrian infrastructure - Complete Streets Projects	- Increase recycling and composting
Economic Status		Im David I am not a P&Z Employee so I do not have direct knowledge of these activities. I do know that the Electric Division does energy audits, we do have municipal	I The town has more wealthy people than it did in 1970 but it was much easier to buy a home			

		electricity which drives down costs. The is a rudimentary town transit system and medical transportation for seniors, We have both bus and rail service to New Haven and rail service to Hartford. WE also have very light ridership because of scheduling issues. We had more rail commuters in 1970 than we do today. We use private firms for waste management. Basically we are car dependent. Bikes are great going north and south but are not practical for east and west because of the ranges of hills. The roses are				

		too dangerous to make bike travel practical.				
Social Demographics	- Race - Ethnicity - Gender - Marriage Status - etc.	I am aware that we have a lot of married people but the housing situation makes living here hard. We are in the upper quarter od towns by wealth. Our Affordable Housing plan show we have a diverse population	We are more diverse that we were in 1970			
Health	-Age -Chronic Illness -Disability -Mental Health -etc.	I am an older person and am well aware of wide spread chronic illnesses. We have great health care access but utilizing it depends upon	No enough knowledge to comment			

		have a great insurance policy				
Education	-Attainment level -Literacy -Language -etc.	For the most part people are literate and we have a higher percentage of people who are well educated and are wealthy than we did in 1970, This town seems to be isolated even after the opening of 1-91 in 1965	Not enough knowledge to comment			