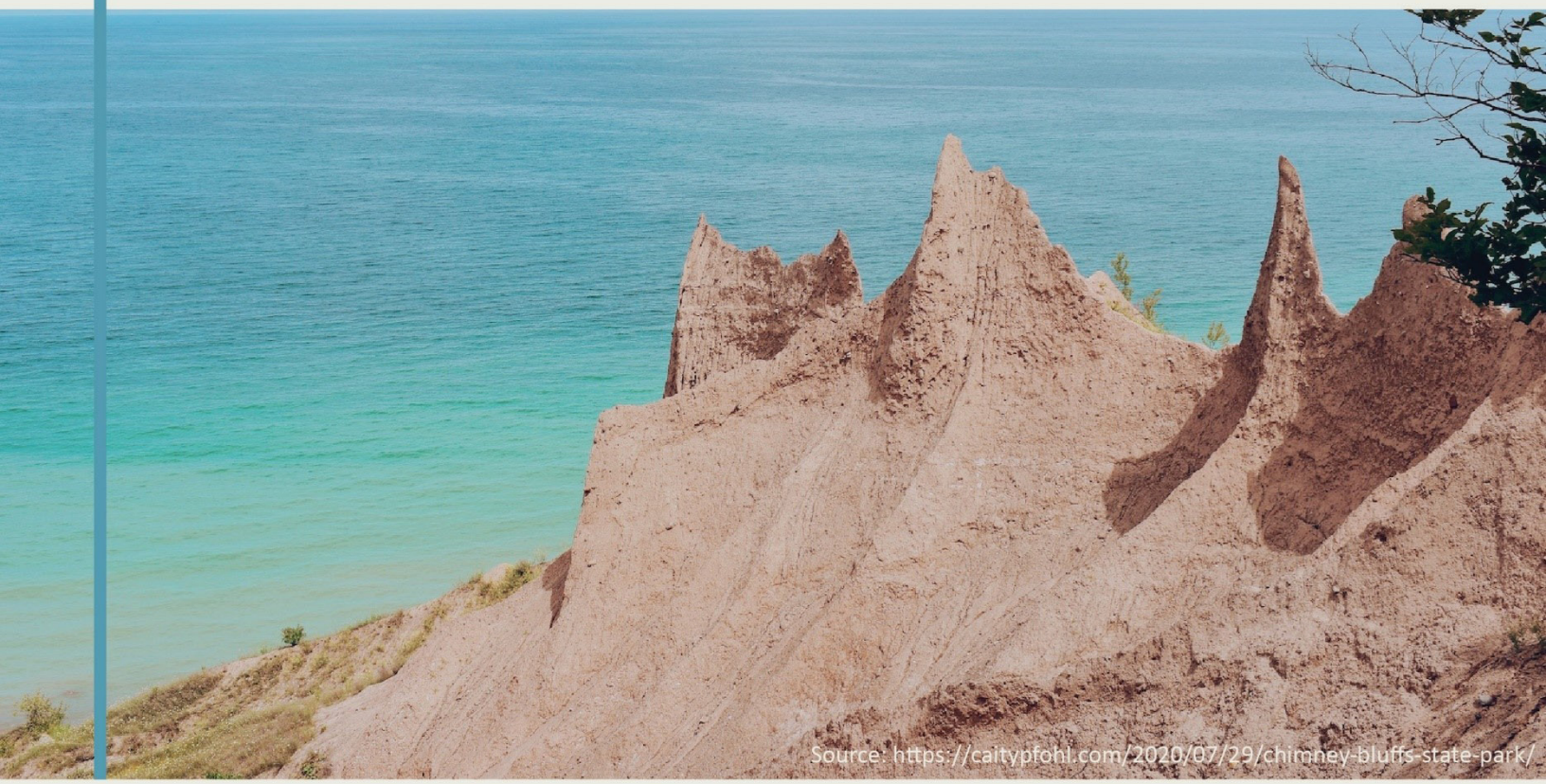
Genesee/ Finger Lakes Regional

COMPREHENSIVE CLIMATE ACTION PLAN

2025



Source: https://caitypfohl.com/2020/07/29/chimney-bluffs-state-park/

Prepared by the Genesee-Finger Lakes Regional Planning Council

Credits and Acknowledgments

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Executive Summary

The Comprehensive Climate Action Plan (CCAP) for the Genesee-Finger Lakes Region charts a path toward reducing greenhouse gas (GHG) emissions while advancing a sustainable, resilient, and low-carbon future. Building on the April 2024 Priority Climate Action Plan (PCAP), the CCAP establishes sector-specific strategies that integrate mitigation and adaptation measures. These strategies not only reduce emissions but also strengthen economic vitality, community resilience, public health, and community benefit, creating co-benefits such as cleaner air and water, job creation, and improved livability.

Funded through the EPA's Climate Pollution Reduction Grant (CPRG) and led by the Genesee/Finger Lakes Regional Planning Council (G/FLRPC), the CCAP covers nine counties, 188 municipalities, and nearly one million residents. Development was guided by advisory committees, sector-specific focus groups, and robust public engagement. Broad community benefits were prioritized through outreach to disadvantaged communities, ensuring that climate risks, barriers, and opportunities were understood from a local perspective.

Why This Plan Matters

The Genesee-Finger Lakes Region is already experiencing hotter summers, heavier rainfall, more frequent flooding, and public health challenges that disproportionately affect vulnerable residents. At the same time, the Region has unique opportunities, abundant natural resources, strong agricultural and educational assets, and a growing clean energy sector that can be leveraged to build a healthier, more resilient, and more prosperous future.

Emissions and Opportunities

Regional emissions totaled 14.5 $MMTCO_2$ in 2022, down 9.5% since 2010. Emissions are concentrated in the built environment (45.6%) and transportation (39.6%). These sectors have consistently been the primary drivers of emissions due to factors such as heavy reliance on fossil fuels for transportation and energy consumption associated with heating, cooling, and powering buildings. Other sources of emissions in the region include agriculture, materials management, and industry. These sectors also present the greatest opportunities for immediate and long-term reductions through investments in clean energy, efficient transportation, sustainable land use, and waste diversion.

The CCAP outlines adaptable strategies for municipalities, industries, and individuals across seven sectors:

- Built Environment: Energy efficiency, electrification, heat pumps, zero-emission codes, incentives.
- Transportation & Land Use: EV adoption, reduced single-occupancy trips, resilient land use, transit expansion.
- Agriculture & Working Lands: Sustainable practices, soil health, forestry, carbon markets.
- Materials Management: Waste diversion, composting, circular economy.
- Electric Power: Renewable energy, microgrids, storage, education.
- Industry: Process decarbonization, energy efficiency, green workforce.
- Regional Capacity Building: Public education, municipal support, emissions dashboards, and benefit-centered engagement.

Benefits

Implementing the strategies in this plan will provide wide-ranging benefits across the Region. Households and businesses can save money through lower energy bills, improved efficiency, and more affordable transportation, while cleaner air and water support better public health. Climate action also creates jobs and training opportunities in fields

like renewable energy, construction, and building maintenance, and strengthens community resilience by preparing infrastructure and natural systems to better withstand extreme weather.

The transition to a clean energy economy will create new jobs and training opportunities, helping build a skilled workforce in fields such renewable energy, construction, and building maintenance. Targeted training programs, partnerships with employers and youth outreach will help prepare the region for these opportunities while address workforce gaps.

Beyond economic and health benefits, the CCAP strengthens community resilience by preparing infrastructure and natural systems to better withstand extreme weather events. Importantly, the CCAP emphasizes the community benefit of climate action, whether cost savings, job creation, or greater resilience, reaching disadvantaged and underserved communities first.

The benefits analysis compares three different scenarios over time. One scenario, the "business as usual" projection show the upwards trajectory of GHG emissions without any interjection. The second and third conservative and ambitious goals show a 10 and 20% reduction, 10% showing if we continue with the same level of GHG reduction measures as we did from 2010 to 2022, and 20% if we account for the uptick in clean energy and climate smart initiatives across the state.

Moving Forward

The CCAP is both a roadmap and a call to action. Success depends on collaboration across all levels of government, businesses, and community members. The next steps include integrating strategies into municipal planning and zoning, pursuing state and federal funding, expanding workforce training, and tracking progress through updated greenhouse gas inventories.

Implementing this plan will require sustained investment. While federal funding has diminished, New York State programs, including those administered by NYSERDA and NYSDEC, remain essential for advancing workforce development, low-carbon buildings, zero-emission vehicles, and local climate projects. These resources will be critical in moving strategies from planning to implementation and ensuring municipalities have the financial and technical support they need to act.

Under the CPRG, a status report is due in 2027 to track emissions reductions, policy milestones, and implementation progress. By remaining adaptive, inclusive, and data-driven, the CCAP ensures the Genesee-Finger Lakes Region can achieve meaningful climate action while creating economic, health, and quality-of-life benefits for all residents. By taking bold, coordinated action now, the Genesee-Finger Lakes Region can reduce emissions, prepare for a changing climate, and build a stronger, healthier, and more equitable future for the nearly one million residents who call this Region home.

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Definitions and Acronyms

Definitions

Adaptation - Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities. (US EPA)

Adaptive Capacity - The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities or to cope with the consequences. (US EPA)

Air Pollution – A mix of hazardous substances from both human-made and natural sources. (National Institute of Environmental Health Sciences)

Climate - The expected frequency of specific states of the atmosphere, ocean, and land including variables such as temperature (land, ocean, and atmosphere), salinity (oceans), soil moisture (land), wind speed and direction (atmosphere), current strength and direction (oceans). Climate encompasses the weather over different periods of time and relates to mutual interactions between the components of the earth system (e.g., atmospheric composition, volcanic eruptions, changes in the earth's orbit around the sun, changes in the energy from the sun itself). (US Weather Service)

Climate Change - A significant variation of average weather conditions—say, conditions becoming warmer, wetter, or drier—over several decades or more. It's the longer-term trend that differentiates climate change from natural weather variability. (NDRC)

Fossil Fuel - including coal, oil and natural gas -- are drilled or mined before being burned to produce electricity or refined for use as fuel. (US Department of Energy)

Greenhouse Gas - Gases that trap heat in the atmosphere are called greenhouse gases. (US EPA)

Heat Island Effect - Heat islands are urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and water bodies. (US EPA)

Mitigation - Reducing emissions and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere. (NASA)

Resilience - A capability to anticipate, prepare for, respond to and recover from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment. (US EPA)

Sustainability - Create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations. (US EPA)

Vulnerability - The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity. (US EPA)

Acronyms

AMI- Average Median Income
IRA- Inflation Reduction Act
CAP- Climate Action Plans
CCAP- Comprehensive Climate Action Plan
CEC- Clean Energy Communities (A New York State Energy and Research Development Authority (NYSERDA) program)
CJWG- New York State's Climate Action Council's Climate Justice Working Group
CLCPA- The Climate Leadership and Community Protection Act
CPRG- Climate Pollution Reduction Grants
CSA- Climate Solutions Accelerator of the Genesee-Finger Lakes Region
CSC - Climate Smart Communities (A New York State Department of Environmental Conservation (NYSDEC) program)
DAC- Disadvantaged Communities
EPA- United States Environmental Protection Agency
G-FL- Genesee-Finger Lakes Region
G/FLRPC - Genesee/Finger Lakes Regional Planning Council
GHG- Greenhouse gas
GTC- Genesee Transportation Council
IPCC - Intergovernmental Panel on Climate Change
NYS- New York State
NYSDEC - New York State Department of Environmental Conservation
NYS DAC - New York State Disadvantaged Communities
NYSERDA - New York State Energy and Research Development Authority
PCAP- Priority Climate Action Plan
Rochester MSA- Rochester Metropolitan Statistical Area
RGRTA- Rochester-Genesee Regional Transportation Authority



1. INTRODUCTION

The Comprehensive Climate Action Plan (CCAP) focuses on identifying greenhouse gas (GHG) reduction measures and strategies that will support a more sustainable, resilient, and low-carbon future for the Genesee-Finger Lakes Region. The Plan will focus on creating achievable and innovative goals, actions, and policies to help communities address a changing climate through mitigation and adaptation strategies.

The CCAP will be built upon the Priority Climate Action Plan (PCAP), completed in April of 2024, and aims to bring people together around a shared vision by inspiring local action and providing a clear path forward that strengthens both communities and the environment.

1.1 Climate Pollution Reduction Grant (CPRG) Overview

Funding for this CCAP came from the Environmental Protection Agency's (EPA) CPRG program, which provides $5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing GHG emissions and other harmful air pollution. Authorized under Section 60114 of the Inflation Reduction Act (IRA), this two-phase program provides $250 million for noncompetitive planning grants and approximately $4.6 billion for competitive implementation grants. On September 8, 2023, the Rochester, New York (NY) Metropolitan Statistical Area (MSA), led by the Genesee/Finger Lakes Regional Planning Council (G/FLRPC), was awarded a CPRG Planning Grant.

Historically, the EPA has taken seriously its responsibility to protect human health and the environment as we face increasingly more harmful impacts of climate change. The Genesee-Finger Lakes (G-FL) Region is experiencing more dangerous levels of flooding, drought, extreme heat, and other climate hazards. With these and other climate challenges comes an opportunity to invest in a cleaner economy that can spur innovation and economic growth while building resilient communities.

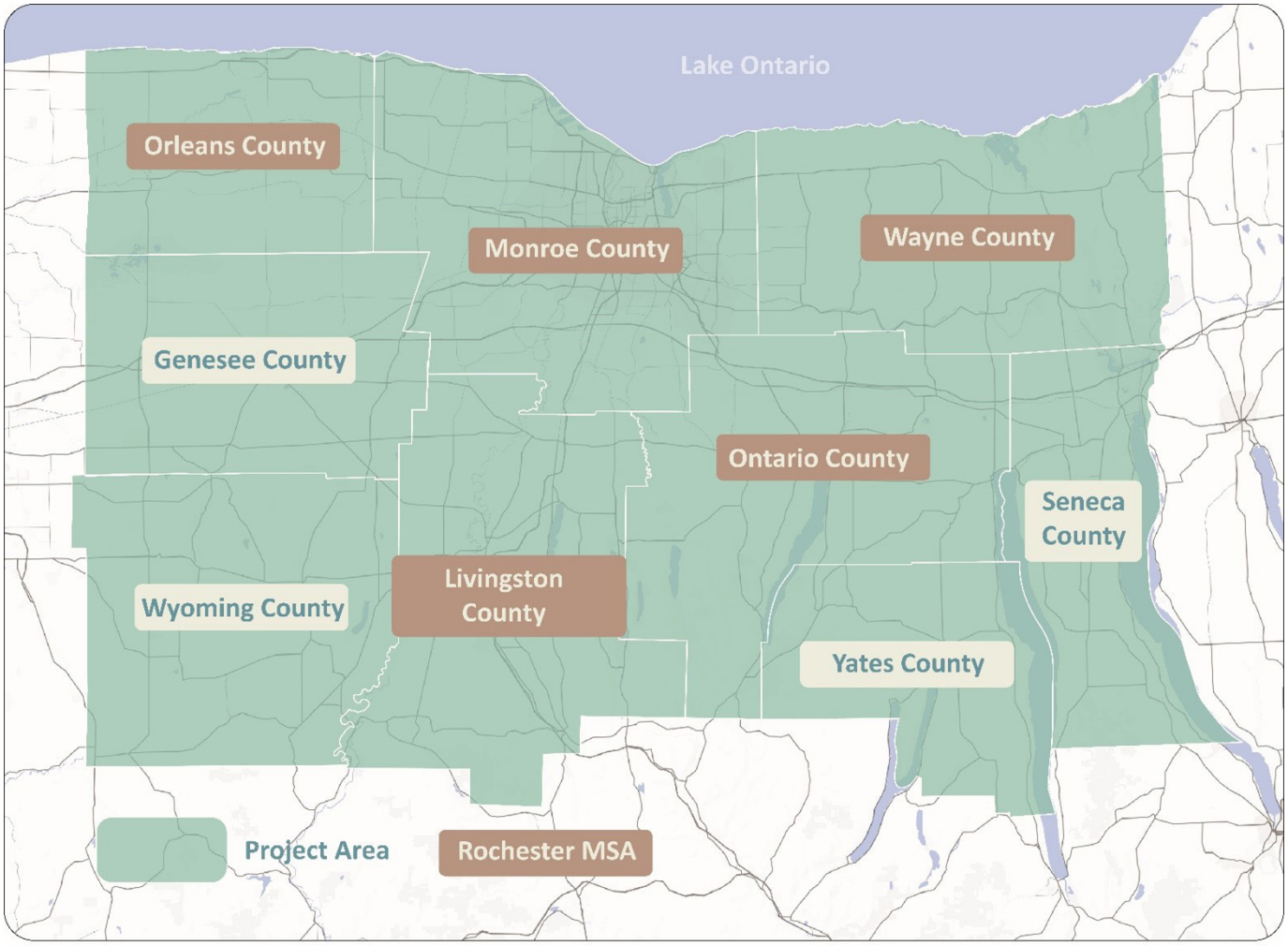
The CCAP will identify a strategy to decrease GHG emissions in all sectors within the project area, including transportation and land use, building and infrastructure, electric power and energy, agriculture and working lands, materials management, and industry and workforce. These strategies and measures will be based on the 2022 Finger Lakes Greenhouse Gas Inventory.

Project Area

The CCAP will incorporate the nine counties of the Genesee-Finger Lakes Region, including the Rochester MSA (Livingston, Monroe, Ontario, Orleans, Wayne, and Yates counties), and three neighboring counties (Genesee, Wyoming, and Seneca) as shown in Figure 1. The project area is part of the Genesee-Finger Lakes Region, which includes 188 municipalities in the nine-county project area. Each of the nine counties covered in this CCAP participated in the advisory committee, focus group meetings, and outreach efforts.

The project area extends south from the shores of Lake Ontario to the low-rolling hills of the Appalachian Highlands. This area is home to an abundance of natural resources, rich farmland, important centers of secondary education, industry, and tourism. The project area is home to around one million residents, a population that is aging while becoming more diverse.

Figure 1: Map of CCAP Project Area



Source: G/FLRPC

1.2 Plan Framework

The fundamental goal of the CCAP planning process is to identify and prioritize strategies and initiatives that will reduce GHG emissions in the Region as described below.

Regional Baseline

The project team reviewed the Climate Solutions Accelerator's (CSA) Genesee-FLX Climate Action Strategy, Monroe County's Climate Action Plan, the City of Rochester Climate Action Plan, the 2013 Finger Lakes Regional Sustainability Plan, and the New York State Scoping Plan to develop a Regional baseline. This baseline helped the project team identify CCAP goals, priority sectors, programs and policies that can support Region-wide change.

Development of a GHG Inventory

With support from the NYS GHG Inventory Collaborative, which is made up of representatives from Albany, Buffalo, and Climate Action Associates, the project team updated the NYSERDA 2010 Finger Lakes GHG Inventory.

Previous Engagement Efforts

Before engaging with the CCAP process, various stakeholders had previously engaged in climate action efforts. Some examples are public engagement efforts for the City of Rochester, Monroe County, and CSA's Genesee-FLX Climate Action Strategy processes. In addition, stakeholders have engaged with the New York State Energy Research and Development Authority (NYSERDA) and Department of Environmental Conservation (NYSDEC) in sustainability efforts, including the Clean Energy Communities (CEC) and Climate Smart Communities (CSC) programs. There are also academic, industry-level, and grassroots efforts that have approached climate action through education, engagement, and outreach.

Identify GHG Reduction Measures and Tools

The project team developed GHG reduction measures and tools using a sector-based approach, coordinating focus groups of stakeholders to design measures that are both realistic and implementable within the current and evolving landscape of each sector. Measures refer to actions or strategies undertaken to reduce emissions, to ensure that measures were achievable, tools such as resources, techniques, or approaches to be used to support the successful implementation of these measures.

Vision Statement

A Vision statement was also developed to provide a long-term direction and roadmap for a more resilient and sustainable future for the Region.

Regional Vision

The Finger Lakes Region will work collaboratively to leverage its unique character and assets to improve the health and well-being of the Region through climate action. This will be achieved through collaboration, education, and engagement resulting in a vibrant, resilient, and healthy Region for current and future generations.

1.3 Planning Process

The CCAP was completed under the direction of an Advisory Committee and with the support of Focus Groups.

Advisory Committee

The project team at Genesee/ Finger Lakes Regional Planning Council facilitated monthly meetings with the Committee. This group consisted of members from the Regional Transit Service (RTS), Genesee Transportation Council (GTC), the Climate Solutions Accelerator of the Genesee-Finger Lakes Region (CSA), NYSERDA's Finger Lakes Regional Clean Energy Hub (AMPED), the City of Rochester, and members from each of the nine counties representative of various county departments.

The Advisory Committee assisted in refining the measures, tools, and vision of the CCAP, including setting measurable GHG emissions goals and targets and identifying and analyzing implementation measures and strategies. Committee measures provided feedback, and attended meetings.

Focus Groups

Eight focus groups were established to support the development of GHG reduction measures to ensure that they are realistic and implementable within the current and changing landscape of the sector. Focus groups included:

- Transportation and Land Use
- Building and Infrastructure
- Electric Power and Energy
- Agriculture and Working Lands
- Materials Management
- Industry
- Workforce
- NYS Disadvantaged Communities (DAC) and Communities with Environmental Risks

Focus group members were selected based on recommendations from our Advisory Committee, previous climate working groups, and additional stakeholders identified for their expertise. Members reviewed GHG emissions calculations and provided feedback on the recommended measures and tools for implementation. Members also supported engagement opportunities.

G/FLRPC hosted two identical informational sessions about the Climate Action Plan (CAP) process and the purpose of the focus groups via zoom on:

- Monday October 28, 2024 at 1:30 pm
- Tuesday November 5, 2024 at 10:00 am

Each of the focus groups met virtually in January, March, and June 2025 to discuss the importance of climate action in the Region, and review GHG reduction measures.

Public Outreach and Participation

The development of the Comprehensive Climate Action Plan required broad community feedback to inform the goals and strategies for reducing regional greenhouse gas emissions and climate pollution in the region. Community engagement throughout this process included CCAP Advisory Committee meetings, community and municipal surveys, three rounds of meetings with eight focus groups, two public webinars, and six pop-up events.

Broad community feedback was sought by G/FLRPC to inform the goals and strategies of the CCAP. Throughout engagement, G/FLRPC particularly sought input from environmental justice populations, including low-income communities and communities of color, which have and will continue to be disproportionately affected by the impacts of climate change.

Engagement occurred in two main phases:

1. January 2025 – March 2025: Development of Draft Measures and Tools
   Community Survey #1, Municipal Survey #1, and Focus Groups Round 1 helped identify preliminary concerns about climate impacts, barriers to climate action, and potential solutions to address these concerns and barriers. This initial feedback was used to develop draft measures and tools that were presented at Focus Groups Round 2.
2. April 2025 – August 2025: Refinement and Prioritization of Draft Measures and Tools
   Feedback from Focus Groups Round 2 and 3 helped further refine the draft measures and tools for each sector. These refined draft measures and tools were presented at the Public Webinars and shared with the public via Community Survey #2 and at Pop-Up Events throughout the region in July and August. Community Survey #2 and Pop-Up Events also helped gain insights into the public's priorities for implementation.

Key takeaways across both phases of engagement include:

- Climate change impacts such as water pollution, increased spread of invasive species and/or disease, extreme heat, air pollution, and flooding are a major concern, according to the municipal and community surveys. In the sector-based focus groups, participants cited climate-related disruptions such as extreme storms damaging the power grid, flooding damaging buildings and infrastructure, and drought/flooding impacting farmers.
- Across all sectors and for residents, business owners, municipalities, and institutions, the cost of implementing climate action is a major barrier. High upfront costs, such as electrifying buildings and fleets, upgrading the electric grid, and installing manure management systems, were identified for every sector.
- Capacity is another major barrier. Municipalities lack staff capacity and need technical assistance navigating grant programs. There are also not enough knowledgeable contractors to meet the demand for electrification. Workforce training and regional hubs for information will be key to bridge these gaps.
- There are clear priorities for implementation. In the short term, the community would like to see quick fixes, such as electrifying vehicles, diverting waste, and increasing energy efficiency. However, in the long term, the community would like to see a wholesale culture shift to reduced car dependence, closed landfills, and net-zero buildings and infrastructure.
- Climate actions should be implemented in a way that ensures all community's benefit. Energy affordability is a major concern and must be addressed to avoid placing additional burdens on households.
- Framing strategies around co-benefits such as job creation, cost savings, cleaner air and water, and increased resilience is crucial to increasing community support. Focus group participants emphasized the importance of focusing on more tangible benefits than abstract emissions reductions.

For more information on public outreach and participation, please see Appendix C.

1.4 Why Are We Climate Action Planning?

Climate action planning is a proactive, strategic effort to address growing concentrations of GHGs in the atmosphere. Deliberate planning and adjustment of these activities and practices can greatly reduce the amount of GHGs produced and generate numerous community benefits, such as lower utility costs and improved environmental and public health. Strategies and actions identified in the CCAP seek to reduce GHG emissions within transportation and land use, buildings and infrastructure, electric power and energy, agriculture and working lands, materials management, and industry and workforce. If implemented, these actions will help reduce the Region's GHG emissions, enhance economic vitality, resilience, and viability as a healthy, livable region.

There are many benefits to climate action planning; climate action leads to economic opportunity and job growth, making the Region more attractive for businesses, largely in the sectors related to energy efficiency and the development of non-motorized transportation infrastructure. Figure 2 is a non-exhaustive list of some of the benefits that come from climate action planning.

While there are many benefits to climate action, there are also costs of inaction that must be considered. These costs include increased utility expenses, reduced air quality due to ongoing fossil fuel combustion, the potential costs imposed by future carbon regulations, and the cost of ongoing dependence on fossil fuels.

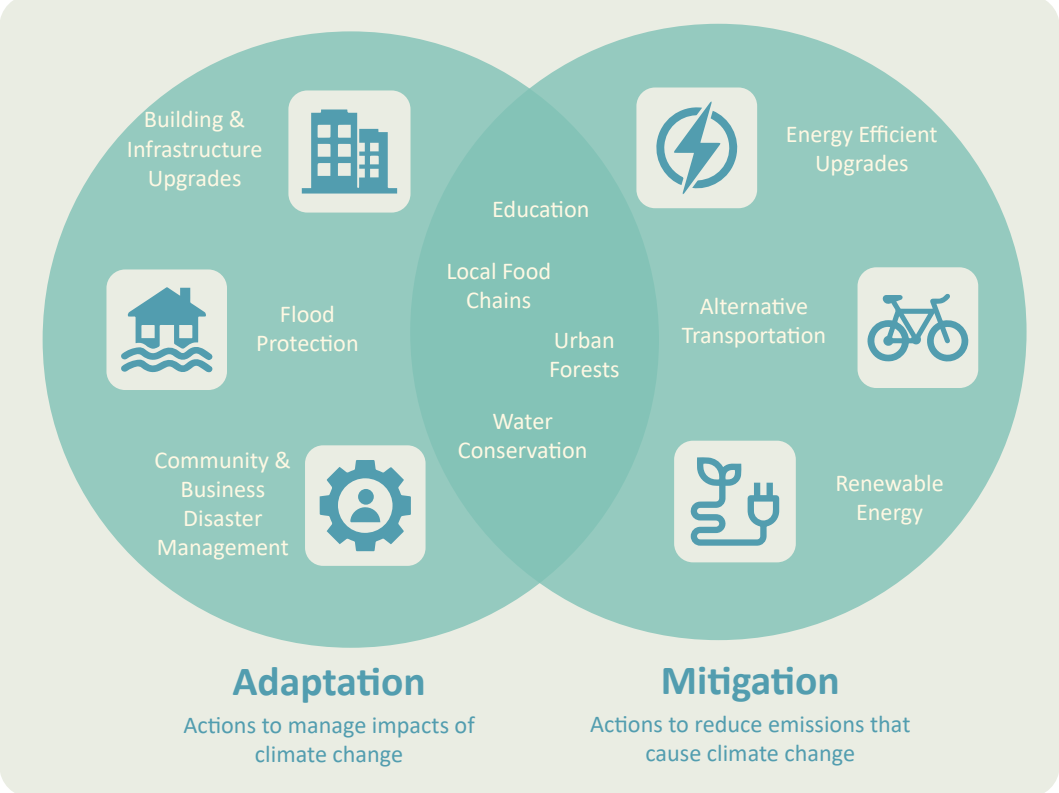
Figure 2: Benefits of Climate Action Planning



Climate Mitigation vs. Adaptation

Addressing climate change requires an integrated approach that targets both its sources and impacts. We will need to utilize efforts that focus on reducing the sources of climate change (mitigation) and efforts that serve to prepare for and minimize harm from the impacts of climate change (adaptation). To navigate the challenges of climate change that face the Region both mitigation and adaptation measures will be crucial. Although mitigation and adaptation can often be separate planning efforts, it is important to consider both components within the overall process. Many initiatives that focus on climate mitigation and reducing GHG emissions include co-benefits for adaptation, and vice versa. This dynamic has contributed to the increasingly common approach of combining climate change mitigation and adaptation in the climate action planning process. This plan will address climate mitigation and examine opportunities for initiatives that provide adaptation benefits.

Figure 3: Adaptation vs. Mitigation in Climate Action Planning



Source: Adapted from Monroe County County-Wide Climate Action Plan

1.5 Regional Strengths, Weaknesses, Opportunities, and Threats

The Regional strengths, weaknesses, opportunities, and threats (SWOT) analysis helps the Region understand where we are now and what do we want our future to be by assessing the Region's unique assets and areas of competitive advantage. The SWOT analysis also identifies the internal or external factors that can keep a Region from realizing its potential. This process will help the Region identify concrete steps to harness the strengths and target opportunities to better improve climate action.

The SWOT analysis was compiled from the Regional Comprehensive Economic Development Strategy (CEDS) update in 2021 and from the PCAP Steering Committee meeting on January 8, 2024 as they directly relate to climate action and resiliency in the Region. Relevant responses from the CEDS process and all responses from the PCAP Steering Committee meeting are below.

Tables 1-4: Regional Climate Action SWOT Analysis

Table 1: Regional Strengths	
Strong connections and partnerships between counties, municipalities, and New York State	Quality of life – affordability, recreation, cultural opportunities
Collaboration across different sectors	Local agriculture
Access to abundant fresh water prime farmland soils	Diversified Regional economy
Willingness to try new things to combat climate change (innovation)	Education and workforce systems supporting career awareness, readiness, and parent outreach
There is a lot of climate action momentum already in the Region	An abundance of renewable energy
Participation in CSC and CEC programs, Color your Community Green Groups	Natural resiliency to natural disasters due to geographic location (climate refuge)

Table 2: Regional Weaknesses	
Job locations are not linked with existing transportation opportunities	Housing- lack of reasonably priced housing
Lack of inter-Regional public transportation opportunities	Lack of community awareness around climate action
High energy prices	Aging infrastructure including housing and electrical grid
Gap between education programs and job skills needed	Lack of awareness about the quality of life in the Rochester MSA, G-FL Region
Lack of skilled workforce in climate related jobs	Wealth and health disparities
Poverty	Property tax burden

Table 3: Regional Opportunities	
Inter-Regional public transportation opportunities to connect economic development opportunities	Cost of living and reasonably priced housing
Alternative energy initiatives- Grid relief and increase jobs in green technologies. Micro-grids	Education and awareness on individual responsibility and promoting the economic benefits of climate action and energy efficiency
Brownfield redevelopment	Education about the Rochester MSA as a place for those relocating due to climate impacts.
Student and graduate retainment	Education and awareness of regional climate action to attract more residents and businesses.
Technology training to fill the skills gap	Health benefits with climate actions
Opportunities for growth in the technology industry	Regional geography provides climate resilience, access to fresh water and recreation

Table 4: Regional Threats	
Competing land uses	Regional competitiveness
Loss of farmland to large scale solar and sprawl	Invasive species and pathogens
Investment/economic development elsewhere in the state/ country	Political polarization



2. Regional Snapshot

As with any planning process, understanding demographic and economic trends is essential for making informed recommendations that more adequately address the region's needs and more closely align with its vision for the future. This section highlights demographic and economic trends in the project area that may impact the implementation of the CCAP.

2.1 Demographics

Population

The rate of population growth is a key factor used to generate projections for potential future GHG emissions. Growth can create more demand for energy and resources, which can in turn impact the GHG emissions produced within a community. Similarly, a population decline can lead to reduced demand for energy and resources. Fewer residents do not always translate to lower emissions, but the general trajectory of population growth can inform future projections and help prioritize future action.

The Regional population, much like other Regions across the state, saw a slight population decline over the last 15 years, though the rate of decline has stabilized since 2010, as shown in Table 5. Historically, Monroe County has had the largest population in the G-FL Region, while Yates County has historically had the smallest population. Livingston, Orleans, Wayne, Wyoming, and Yates counties all saw a slight population drop between 2010 and 2020, with most of those counties seeing population peaks in 2000. Even with population declines in these counties, both the Rochester MSA and Genesee-Finger Lakes Region have seen steady population growth since 1960. During these thirty years, the MSA has seen over a 30% increase in population.

Table 5: Population of the Genesee- Finger Lakes Region 1960-2020

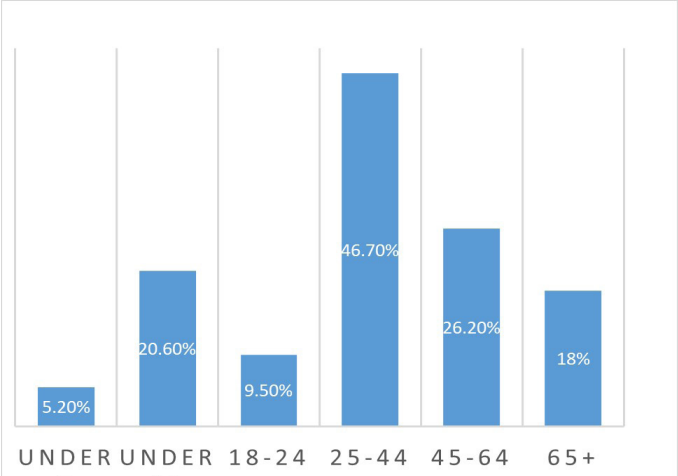
County	1960	1970	1980	1990	2000	2010	2020
Genesee	53,994	58,722	59,400	60,060	60,370	60,079	58,388
Livingston	44,053	55,041	57,006	62,372	64,328	65,393	61,834
Monroe	586,387	711,917	702,238	713,968	735,343	744,344	759,443
Ontario	68,070	78,849	88,909	95,101	100,224	107,931	112,458
Orleans	34,159	37,305	38,496	41,846	44,171	42,883	40,343
Seneca	31,984	35,083	33,733	33,683	33,342	35,251	33,814
Wayne	67,989	79,404	84,581	89,123	93,765	93,722	91,283
Wyoming	34,793	37,688	39,895	42,507	43,424	42,155	40,531
Yates	18,614	19,831	21,459	22,810	24,621	25,348	24,774
Project Area	940,043	1,113,890	1,125,717	1,161,470	1,199,588	1,217,106	1,222,868

Source: U.S. Census Bureau 2021- 5 Year ACS data

Age

On average, the residents of the project area are slightly older than the rest of New York State (NYS). The median age in the Region is 42, while the state median is 40. Monroe County has the lowest median age (39), and Wayne and Ontario Counties have the oldest median age (44). As shown in Figure 4 the largest population of project area residents is between 25 and 44 years old (46.7%). The Region also has a high population of residents under the age of 18 (20.6%) and over 65 (18%). Given the age distribution of residents in the project area, it will be important to consider the needs of young children and an aging population, particularly when developing climate action strategies that pertain to parks, schools, transportation, and housing.

Figure 4: Age Distribution in the G-FL Region



Source: U.S. Census Bureau: 2021 5-Year ACS Data

Income and Poverty

The median household income of the G-FL Region is $63,734, which is lower than the NYS median household income of $79,557. The 2016 Poverty and Self-Sufficiency in the Nine-County Greater Rochester Area report estimated that nearly 38% of people in the nine-county Region have incomes that are not self-sufficient; 14.3% who are below the federal poverty level, and an additional 23.4% described here as "near poor" (above the poverty level but below the self-sufficiency standard). This calculation provides additional evidence of the extent to which poverty (and near poverty) in our Region is highly concentrated.

Since 2014, poverty rates in NYS have surpassed the national average; approximately 14.3% of New Yorkers live in poverty. The poverty rate for the project area is the same as the State at 13.1% as shown in Table 6. Poverty rates varied slightly in the project area from 14% in Genesee County to 8.5% in Ontario County. Poverty rates are considerably higher and are concentrated in the City of Rochester at 31%, and around 20% in both Batavia and Geneva. There are also pockets of poverty in rural areas outside of regional cities, in Sodus, Lyons, Geneseo, Mount Morris, parts of Penn Yan, and Naples.

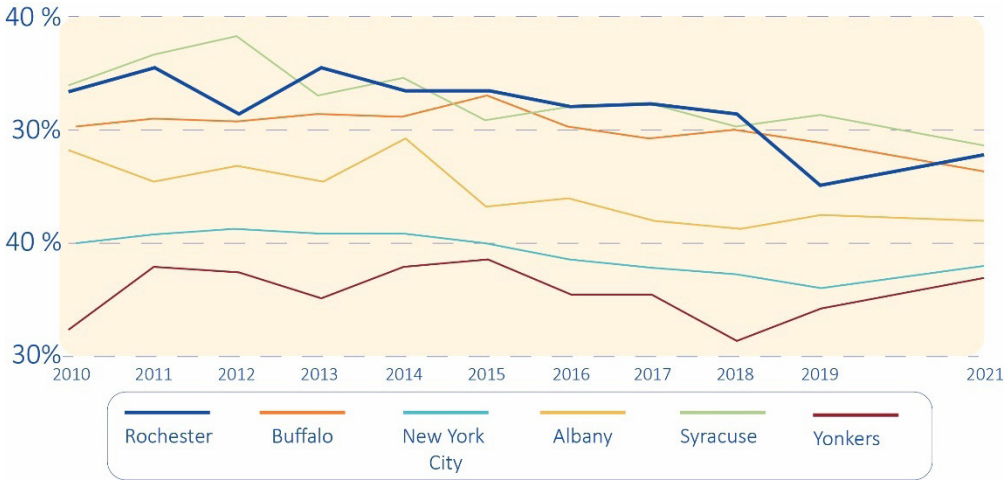
Poverty rates in the six largest cities in the State were significantly higher than the 2021 State average, as shown in Figure 5. In Rochester and Syracuse, the poverty rate for individuals was more than 30% between 2010 and 2017. In Syracuse, Rochester, and Buffalo, one in four people was in poverty in 2021.

Table 6: Poverty Status for the G-FL (2021)

County	Poverty Rate
Genesee	14.0%
Livingston	11.5%
Monroe	13.7%
Ontario	8.5%
Orleans	14.0%
Seneca	11.9%
Wayne	11.2%
Wyoming	9.2%
Yates	13.2%
Region	12.7%

Source: U.S. Census Bureau: 2021 5-Year ACS Data

Figure 5: Share of Individuals Below Poverty Level, Large New York Cities (2010-2019 and 2021)



Source: Adapted from New Yorkers in Need, Poverty Trends 2022

NYS Disadvantaged Communities (DAC)

Climate change is exacerbating existing inequalities and disproportionately impacting our most vulnerable community members. Those who have contributed least to causing the climate crisis will experience the most devastating impacts.

The New York State Climate Action Council's Climate Justice Working Group (CJWG) developed evaluation criteria to identify disadvantaged communities (DACs) for the purpose of ensuring that frontline and otherwise underserved communities benefit from the state's historic transition to cleaner, greener sources of energy, reduced pollution and cleaner air, and economic opportunities.

The CJWG identified 35% of the census tracts in the G-FL Region as disadvantaged communities and approximately a third of Region's residents face the risk of experiencing an outsized burden from. When including the income-eligibility criteria for the purposes of allocating clean energy and energy efficiency, the Genesee-Finger Lakes Region has approximately 45% of all households fit within the eligibility criteria; 29% within the designated census tracts and an additional 15% of income-eligible households. The Region has a significant population that should be given special consideration when implementing climate solutions. The state's designation shows that climate justice concerns extend across urban centers, suburban towns, and rural areas, each with its own unique needs, challenges, and assets ready to address climate change.

For a detailed list of each census tract identified as a NYS Disadvantaged Community please see Appendix D and Table 7. To learn how G/FLRPC engaged with disadvantaged communities in the Region during the CCAP process, refer to Appendix C.

Disproportionate Climate Impacts

Climate change is disproportionately impacting our most vulnerable community members. Those who have contributed least to causing the climate crisis will experience the most devastating impacts. In the United States, low-income communities and communities of color are disproportionately impacted by environmental health hazards, including the effects of climate change such as temperature extremes, severe storms, floods, and vector-borne illnesses. In the Genesee-Finger Lakes Region, groups that are particularly vulnerable to climate change include, but are not limited to, the following groups:

- Disabled- including the deaf community;
- Elderly;

Table 7: NYS Disadvantaged Communities in the G-FL Region

County	Population in State DAC Census Tracts	# of State DAC Census Tracts
Genesee	11,153	4
Livingston	2,931	1
Monroe	236,555	81
Ontario	13,887	4
Orleans	18,198	5
Seneca	8,724	3
Wayne	32,160	8
Wyoming	0	0
Yates	6,288	1
Project Area Total	329,896	107

Source: NYS Disadvantaged Communities Criteria, 2022

- Children;
- Refugees, immigrants, and undocumented individuals;
- People with underlying health problems, including mental health; and
- Low-income populations.
- Energy Burdened Households

Temperature extremes associated with climate change will increase the need for energy to heat and cool homes, exacerbating the already existing energy burden many in the Region face. Despite using less energy, the energy burden on lower-income households tends to be high. Low-income households should not pay more than 6% of their income toward their energy needs. However, the national average energy burden for low-income households is 8.6%, three times higher than that of non-low-income households. This may force vulnerable individuals to choose between keeping the lights on, heating their homes, or buying other essentials, such as food or medicine. According to the LEAD Tool, residents who make up between 0-30% of the area median income (AMI) spend about 15% of their income on energy costs. The energy burden drastically decreases as household income increases, as shown in Figures 6 and 7. Within the Region, an average of 3% of annual household income is spent on energy bills, and the average annual energy cost is $2,316 per year. [1]

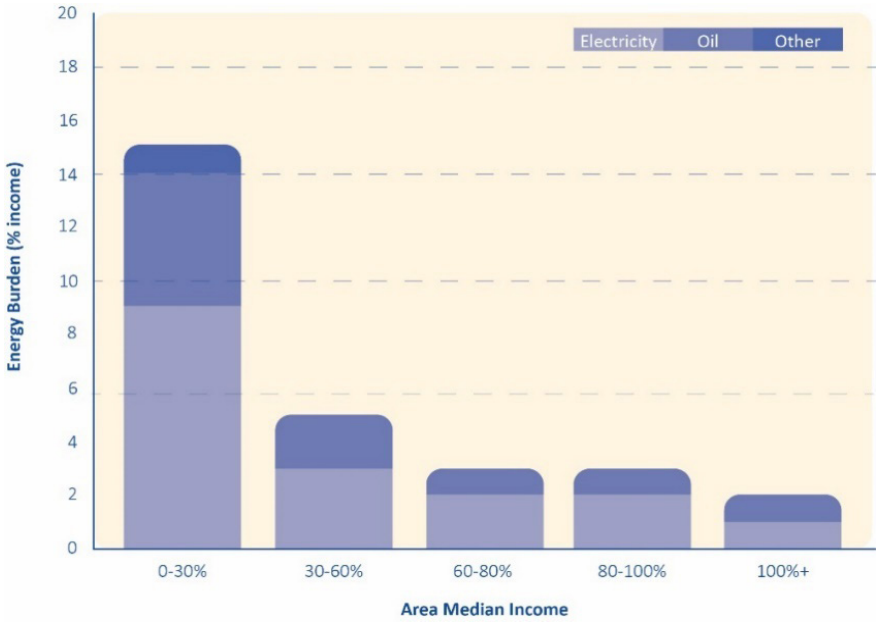
The energy cost burden can be substantial, especially in older, poorly insulated homes that use inefficient heating systems. While there are financial incentives from utilities and state agencies to switch to electric heat pumps and to weatherize the home, it can be challenging for those living in rental units to access those incentives, and the time and paperwork involved can be tedious. Within the project area, those who live in homes that were built before 1940 tend to spend a higher percentage of their income on energy costs, making them more energy burdened, and typically, those who have lower incomes live in older homes.

Health Impacts

Everyone's health is at risk from the impacts of climate change; however, climate change can exacerbate existing health issues and lead to new health care concerns for low-income and vulnerable residents. Households in the lowest income quintile already spend 34% of their income on health expenditures, and this is anticipated to increase.[2]

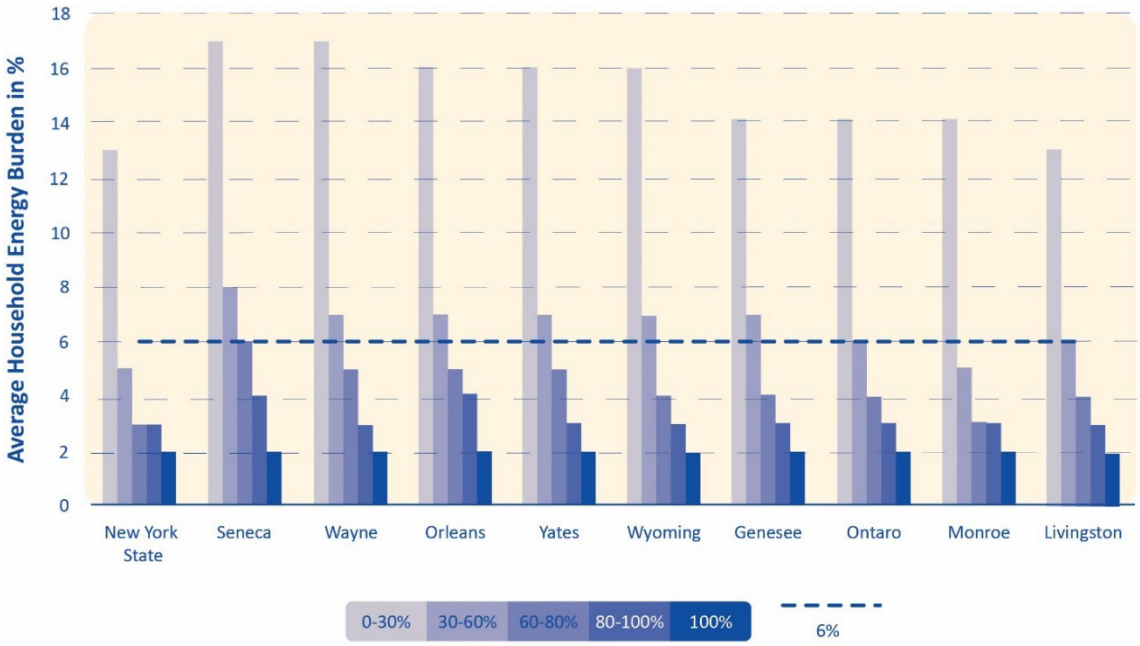
Approximately 4% of the population of the Region is uninsured, largely the poorest people (17.6% of Yates County and 13.3% of Wyoming County do

Figure 6: Energy Burden for G-FL Region (2018)



Source: U.S. Department of Energy Office of Energy Efficiency & Renewable Energy

Figure 7: Average Household Energy Burden (2016-2020)



Source: U.S. Department of Energy Office of Energy Efficiency & Renewable Energy

not have health insurance; this may be due to the high Mennonite and Amish populations in these counties). Rising emissions are boosting healthcare costs by aggravating air quality, increasing respiratory issues, and causing more extreme weather events that result in injuries and worsening chronic conditions. These factors are amplifying the financial burden of healthcare. Nearly every health metric is worse among poor residents. According to a 2019 Common Ground Health study, in the Finger Lakes, most chronic health issues are much more prevalent among those with incomes under $20,000 per year. For example, instances of asthma are 239% higher.

Heat waves and associated heat-related illnesses are also increasing in the Region. These health impacts are disproportionately affecting the elderly and those without access to air conditioning or cooling centers. These health inequities cost the Region $1 billion per year in increased health care costs and loss of economic productivity. Health shocks and stresses could push more of our Region's most vulnerable Residents into poverty.[3]

Climate change poses multiple threats to the people and places of the Region, through temperature increases, extreme flooding, fluctuations in precipitation patterns, and increases in heat-related and vector-borne illnesses. While climate change will impact all residents of the Region, it will not impact everyone equally.

According to the City of Rochester's Climate Vulnerability Assessment, climate change will disproportionately impact seniors/elderly, children, communities of color, low-income residents, renters, people without access to vehicles, disabled individuals, individuals without the ability to access resources in a crisis, individuals dealing with substance abuse, non-native English speakers, undocumented immigrants, refugees, visually/hearing impaired individuals, individuals with mental illness and farmworkers. Climate change impacts threaten to undermine the ecological, economic, and social vitality of the Region, and overall public health.

While climate change poses significant challenges, it also offers significant opportunities to reimagine our Region's future. Successfully mitigating and adapting to climate change will require rehabilitating our aging housing stock, reconceptualizing our transportation system, and modernizing the energy grid. These actions create jobs, stimulate our local economy, and make foster cleaner, stronger, healthier, and more resilient neighborhoods.



3. Local Impacts from a Changing Climate

3.1 Climate Science

Understanding climate change begins with understanding the difference between weather and climate. Weather refers to atmospheric conditions that occur locally over a short period of time, such as rain, snow, clouds, or wind. Climate, however, refers to Regional or global average patterns of temperature, humidity, and precipitation over longer time periods.

Climate is influenced by the movement of heat and moisture by air and ocean currents, which can affect the temperatures, precipitation, humidity, soil moisture, surface water levels, groundwater levels, and even storm events of a particular Region.

While the earth's climate has always experienced natural variability, the pace and scale of current climate change are unprecedented in modern history. The rapid warming observed today is primarily driven by greenhouse gas (GHG) emissions from human activities, including fossil fuel combustion, deforestation, wetland loss, and industrial processes. When we think of climate change, we think of the physical effects of climate change such as heatwaves, sea level rise, and heavy rainfall, and the impacts on communities and the environment, such as floods and droughts.

3.2 Observed and Projected Climate Trends

According to State sources, including but not limited to the New York State Climate Impacts Assessment (2024), and the NYSDEC Observed and Projected Climate Change in NYS (2025), a variety of climate change impacts have already been observed across the northeastern United States, NYS, and the Genesee-Finger Lakes Region. Effects such as increased precipitation, more frequent and intense storms and flooding events, increased shoreline erosion, and negative human health impacts are shown in Figure 8. GHG emissions must rapidly and significantly be reduced and eventually eliminated to prevent the increasingly harmful impacts of climate change over the next several decades.

Since 1901, average temperatures have risen by nearly 2.6°F, accompanied by heavier precipitation, rising seas, and more frequent and intense extreme events such as heatwaves, floods, coastal storms, and droughts. In New York State this has caused an increase in extreme precipitation events with significant damage. [4]

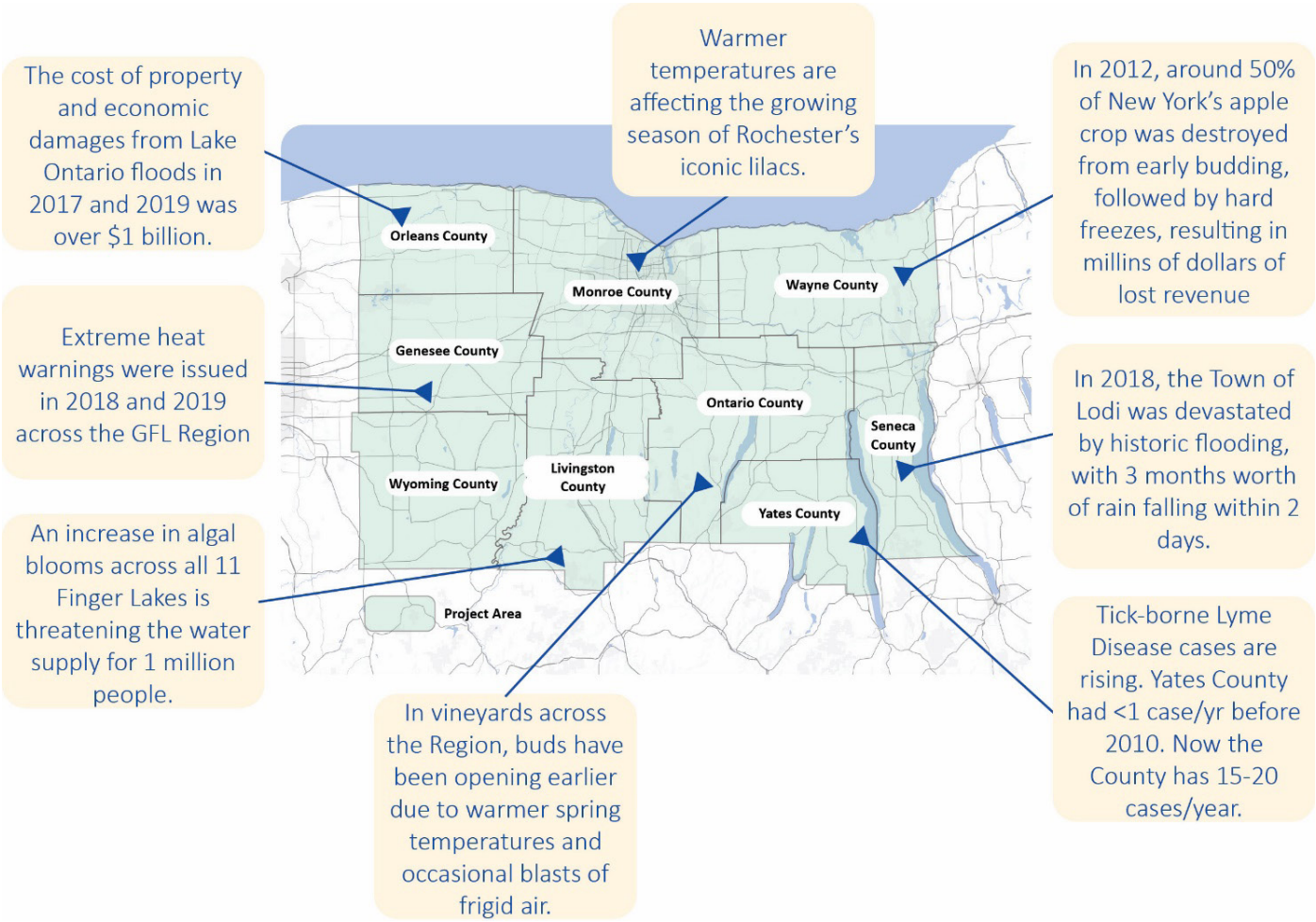
By the 2080s, annual precipitation in the Region is projected to increase by 14% to 29%. Spring flooding is becoming more frequent due to rapid snowmelt and ice jams, while Lake Ontario has experienced repeated high-water events that caused erosion and infrastructure damage in 2017 and 2019. Cleanup costs, infrastructure damage and agricultural losses were in the millions of dollars. Between 1996 and 2017 the nine-county Region saw over $90 million in damage during 230 flooding events. [5]

Winter storms have caused the most significant damage in the region. Although they represent only 20% of all recorded events, they account for over 52% of total damage. The average cost per winter storm event in the region is $1.54 million, nearly 33% higher than the state's average for similar events. [6]

While winter storms will remain a problem for the region, the number of days below freezing is projected to decline sharply, with Rochester expected to experience as few as 39 to 85 freezing days annually by the 2080s as shown in Figure 9. These warming trends are already affecting the Great Lakes, where ice cover has declined by approximately 30% since the 1970s as shown in Figure 10. Reduced ice cover, combined with stronger storms, is increasing shoreline erosion, infrastructure damage, and risks to drinking water supplies.

The frequency and intensity of extreme weather events across NYS and within the G-FL Region are increasing due to a clear warming trend, as shown in Table 8.

Figure 8: Regional Impacts from Climate Change



Source: Adapted from the CSA's Genesee-FLX Climate Action Strategy

Ecosystems and Natural Resources in a Changing Climate

Climate change affects ecosystems at multiple levels, from the populations that make up ecosystems to the services they provide to communities, economies, and people. Changes in average precipitation and temperature, in frequency and severity of extreme weather, and in sea levels all will severely alter ecosystems and impact natural resources, both abruptly as well as gradually.

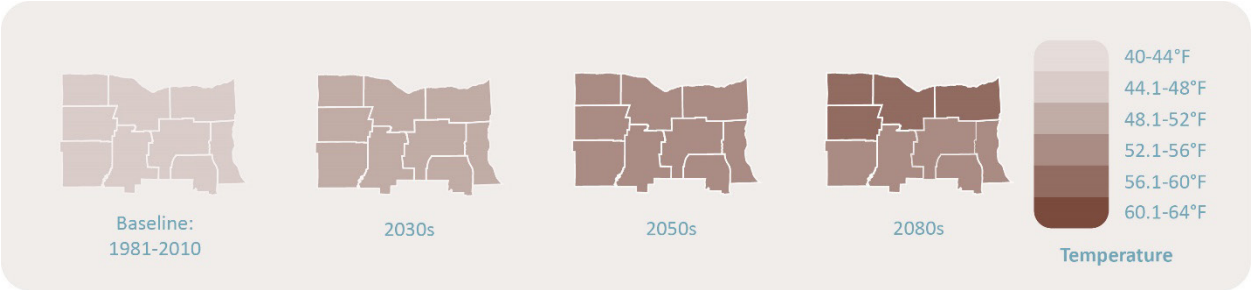
Many plant and animal species are shifting their geographic ranges in response to rising temperatures, with some moving to higher elevations or latitudes. Others are unable to adapt, leading to population declines or local extinctions. Reduced snow cover affects winter survival for species that rely on snow for insulation or habitat protection, while invasive species and pests are increasingly able to thrive under warmer conditions.

Freshwater ecosystems are particularly vulnerable. Warmer water temperatures contribute to thermal stratification in lakes, reducing oxygen levels in deeper waters and increasing the risk of fish kills. Since 2017, all eleven Finger Lakes have experienced harmful algal blooms, which threaten drinking water supplies, public health, recreation, and regional tourism.[7]

Changes in Species and Populations

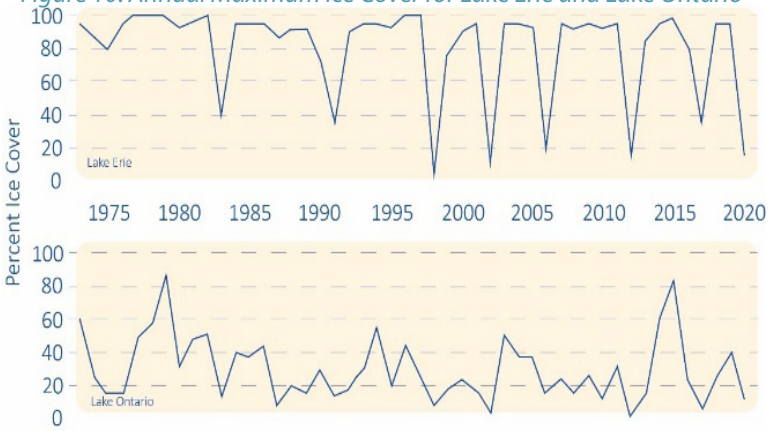
As the climate changes, some species will adapt by changing their behavior, physical characteristics, or how their bodies function. Others will not be able

Figure 9: Projected Annual Average Temperature in the Genesee- Finger Lakes Region During the 21st Century



Source: NYS climate Impacts Assessment (2025)

Figure 10: Annual Maximum Ice Cover for Lake Erie and Lake Ontario



Source: NOAA State Climate Summary (2022)

Table 8: Projected Changes to New York State Extreme Weather, 90th Percentile

Year*	Extreme Heat	Extreme Cold	Number of Heat Waves	Duration of Heat Waves	Extreme Rain
Baseline	0.3 to 18 days	71 to 193 days	0 to 2 / year	3 to 4 days	5 to 13 days
2020s	1.7 to 15	-18 to -11	0.2 to 3	0 to 1	1 to 3
2050s	9.7 to 44	-32 to -19	1 to 7	1 to 2	1 to 4
2080s	26.7 to 73	-37 to -22	3 to 8	2 to 5	2 to 5

Source: Adapted from NYS ClimAID Report, 2014 Data

to adapt. As a result, climate change could lead to expansions, reductions, or extinctions of some populations of plants, animals, and other living organisms. These changes, in turn, can affect the overall biodiversity of a Region.

Many North American plants and animals have been found to have moved roughly 36 feet to higher elevations every 10 years over the last several decades, due to rising average temperatures.[8] Shifts in precipitation patterns caused habitat alterations and movement as well. Reduced snow cover impacts winter survival, especially for species that depend on snow for insulation and protective habitat or seed development. The inclusion of these organisms within an ecosystem shapes the regional characteristic of our landscape and contributes to the cultural and economic prosperity of local businesses, recreation, and imports and exports.

Invasive species can exploit these dynamic changes, increasing the impact on the regional ecosystems. Freshwater ecosystems are particularly vulnerable to this. The warmer temperatures as well as new precipitation patterns are expected to result in the proliferation of insect populations, including mosquitoes, ticks, and aphids. Pests that would regularly die off during typically harsh cold New York winters are now better able to survive and thrive in New York. These pests will affect the health of trees and could compromise the health of New York's forests.

The growing pest population also may affect the public health of residents. The most reported tickborne disease in the state is Lyme disease. The number of reported tickborne disease cases has more than doubled from 2004-2016. In addition, there have been newly introduced tick borne diseases identified in NYS, due to several factors, one being the warming climate in the State. [9]

Altered Ecosystem Services

Ecosystems provide a broad range of substantially and often economically important contributions to communities. These benefits range from material (e.g., energy sources or food production) and non-material (e.g., recreation) and contribute to the regulation of ecosystem processes. Climate change is having variable and increasing impacts on ecosystem services and benefits; from food production to clean water to carbon sequestration; and these changes in availability and quality of ecosystem services, combined with existing social inequities, have disproportionate impacts on certain communities.

Urban and Rural Climate Implications

Our rural and urban communities have distinct vulnerabilities to climate change. Rural and urban communities together are under increasing threat of climate change and the resulting impacts, and adaptation strategies reveal their interdependence and opportunities for successful climate resilience.

These climate-related changes are projected to worsen across the state, posing escalating threats to human health, infrastructure, water resources, ecosystems, coastal communities, and the economy. Marginalized and underserved communities are especially vulnerable, facing disproportionate exposure to these impacts while often lacking the resources to adapt effectively.

Enhancing resilience through equitable adaptation, upgrading and modernizing infrastructure, investing in nature-based solutions, and aligning climate change mitigation efforts with social justice can foster both environmental stability and economic vitality for communities across the state

Urban Implications

Residents in urban areas face multiple climate hazards, including temperature extremes, episodes of poor air quality, and intense precipitation events that can lead to increased flooding on urban streams. These physical changes may lead to large numbers of evacuated and displaced populations and damaged infrastructure; sustaining communities may require significant investment and planning to provide emergency response efforts, a long-term commitment to rebuilding and adaptation, and support for relocation. Underrepresented

communities, such as the poor, elderly, language-isolated, and recent immigrants, are more vulnerable due to their limited ability to prepare for and cope with extreme weather and climate events

Urban areas within the Region and the State will be 1 to 7°F warmer in the daytime and 2 to 5°F warmer at night than the surrounding areas due to the heat island effect. Extreme heat is further exacerbated by the lower surface albedo in urban areas, where structures (such as concrete buildings, parking lots, or roads) reemit heat to a higher degree than in outlying areas, increasing nighttime temperatures. The heat-trapping effects are often coupled with a lack of shade and cooling effects provided by tree cover and other green infrastructure causing greater concern for heat impacts and health risks.
In July 2023 torrential rains triggered severe flooding in Ontario County. Nearly 6 inches of rain fell in three hours, with 3.8 inches falling in a 45-minute period in the City of Canandaigua. Ontario County reported that over 400 emergency assistance calls were made for residents requesting fire, emergency medical, and law enforcement support after the storm; and some residents reported 4 to 5 feet of water in their homes.[10]

Rural Implications
The seasonality of the Northeast is central to the Region's sense of place and is an important driver of rural economies. Milder winters and earlier spring conditions are altering ecosystems and environments in ways that adversely impact tourism, farming, and forestry. The Region's rural industries and livelihoods are at risk from further changes to forests, wildlife, snowpack, and streamflow.

A warming climate is causing destruction to our agricultural communities. As the climate warms, hotter spring temperatures are projected to cause blossoms to open early (known as "early budbreak"). In 2012 an unseasonably warm winter, followed by late spring frost caused damage to apple crops and led to a 60% crop reduction. Similarly, in the spring of 2014, the Finger Lakes wine grape producers saw a 67% loss in European grape varieties, which are especially vulnerable to changes in temperature and precipitation. [11]

The intent of the CCAP is to integrate existing efforts into a framework for collaborative action. This process will advance the PCAP and other work already underway to provide guidance for those who have yet to undertake sustainability work. The Genesee-Finger Lakes Regional CCAP builds off previous climate action plans, and previous climate initiatives happening across the State and the Region. The CCAP process will also align with both NYS goals of resilience, broad-based benefits, and economic growth. Investments that facilitate our Region's transition to a clean energy economy will advance these priorities, while also improving public health and wellness, reducing poverty and racial inequities, and creating resilient and sustainable communities.



4. Leveraging Past Investments

4.1 Priority Climate Action Plan (PCAP)

The Priority Climate Action Plan is a narrative report, that includes a focused list of near-term, high-priority, implementation-ready measures to reduce GHG emissions and an analysis of GHG emissions reductions that would be achieved through implementation. The PCAP focuses on reducing GHG emissions from transportation, buildings, and infrastructure, and municipally run sites, facilities, and operations. By identifying the different possible and probable climate threats that the Region currently faces and, in the future, the greater metropolitan area can effectively prepare and increase the environmental capacity to combat these issues.

The purpose of the PCAP is to identify measures and actions that can support municipalities, industry leaders, and other stakeholders in the project area to reduce their GHG emissions. The PCAP focuses on three priority sectors: municipal operations, transportation, and buildings and infrastructure. These sectors were selected based on the 2010 Finger Lakes GHG Inventory. These sectors were identified as some of the largest emitters of GHG in the Region.

4.2 Existing State Climate Initiatives

NYS has a long-standing track record of investing and planning for its residents' future. The State has long been engaged with climate-related activities and initiatives that created a strong starting point for the Region.

New York Climate Leadership and Community Protection Act

The Climate Leadership and Community Protection Act (Climate Act) was signed into law in July 2019 to address climate change and reach net zero emissions in NYS. The Climate Act sets the goals to reduce emissions to 40% below 1990 levels by 2030 and then to 85% below 1990 levels by 2050. The remaining 15% of emissions will be offset, such as by planting trees that take carbon dioxide out of the air, to reach net zero emissions. The Climate Act includes certain stipulations to direct no less than 35% of the program's benefits to historically disadvantaged communities.

New York State Scoping Plan

The Climate Act called for the creation of a Scoping Plan under the direction of a 22-member Climate Action Council (Council). The Scoping Plan was published in December 2022 and includes recommendations and actions to meet the Climate Act's goals and requirements, including actions to achieve a reduction in economy-wide GHG emissions. This Scoping Plan prioritizes disadvantaged communities and the creation of new job opportunities, supports healthier communities, and ensures that all New Yorkers will benefit from investments in the State's growing green economy. and in every Region of NYS, communities are implementing an exciting array of clean energy projects supported by grant awards. In many cases, local governments with no previous history of participation in NYSERDA programs are now deeply involved in clean energy and sustainability.

Clean Energy Communities

New York State Energy Research and Development Authority's (NYSERDA) Clean Energy Communities (CEC) program provides grants, coordinator support, and a clear path forward to local governments that demonstrate leadership by completing NYSERDA selected high-impact actions. Since the 2016 program launch, hundreds of local governments have completed high-impact actions through the program. Hundreds of local governments have earned the Clean Energy Community designation

The program supports local government officials who want their communities to benefit from the new clean energy economy but struggle with tight budgets and limited staff. The program provides flexible grant funding with no local cost share, free coordinator support, and recognition for your community's leadership. The nine counties in the project area have seen great success in the CEC program, 132 communities are participating, of which 77 have completed some High Impact Action Items (HIA). 55 communities have reached at least a 1-star designation as shown in Table 9.

Table 9: Number of Clean Energy Communities (August 2025)

County	Total # of Participating Communities	Communities Who Have Completed HIAs	Designated Communities				
			1- Star	2- Star	3- Star	4- Star	5- Star
Genesee	17	6	10		1		
Livingston	19	15	4				
Monroe	25	15	3	3	3	1	
Ontario	23	10	10	1		1	1
Orleans	8	3	5				
Seneca	7	3	4				
Wayne	19	16	3				
Wyoming	5	2	3				
Yates	9	7	2				

Source: NYSERDA Clean Energy Communities

Climate Smart Communities

New York State Department of Environmental Conservation's Climate Smart Communities (CSC) program began in 2009 as an interagency initiative. The program supports local governments in leading their communities to reduce GHG emissions, adapt to the effects of climate change, and thrive in a green economy. The benefits of participating include leadership recognition, free technical assistance, and access to grants. Local governments participate by signing a voluntary pledge and using the CSC framework to guide progress toward creating attractive, healthy, and equitable places to live, work, and play.

Communities benefit from the CSC program because they can receive funding for climate change mitigation and adaptation projects, cost reduction for clean vehicles and associated charging/fueling stations, and free technical assistance for clean energy and climate change initiatives from regional coordinators. When joining the CSC program communities make it goal to build a climate-smart community, measure inventory emissions, set climate goals, create a climate action plan, decrease energy use, transition to clean and renewable energy, use climate-smart materials management, use climate-smart materials management, implement climate-smart land use, enhance community resilience to climate change, support a green innovation economy, inform and inspire the public, and engage in an evolving process of climate action. Several communities in the project area have seen success in the CSC program- 44 communities are participating, of which 13 are bronze certified communities, one of which is silver certified. Table 10 shows the number of Climate Smart Communities in the G-FL Region.

4.3 Existing Regional Climate Initiatives

The Region has a strong track record of investing in the future, supported by dedicated regional stakeholders and climate champions. Initiatives across the Region are advancing long-term planning efforts that strengthen climate preparedness and help ensure a resilient future for generations to come.

Genesee-FLX Climate Action Strategy (2021)

The Climate Solutions Accelerator of the Genesee-Finger Lakes Region published the Genesee-FLX Climate Action Strategy in 2021. The strategy moves beyond a singular focus on climate mitigation, adaptation, or resilience, focusing instead on actions that reduce GHGs emissions and contribute substantially to improving quality of life, adaptability, and resilience of individuals and communities to

Table 10: Number of Climate Smart Communities (August 2025)

County	# of Participating Communities	# of Certified Communities	Total # of Communities
Genesee	2	1	3
Livingston	4	0	4
Monroe	5	8	13
Ontario	9	3	12
Orleans	1	0	1
Seneca	1	1	2
Wayne	4	1	5
Wyoming	1	0	1
Yates	3	0	3

Source: NYS DEC Climate Smart Communities

the climate impacts we already experience and those to come. The Genesee-FLX Climate Action Strategy prioritizes climate action that addresses: Vehicle miles traveled; Energy efficiency; Building electrification; Soil health and agricultural waste management; Local food system; Electrical grid; and Economy- wide GHGS reducing measures.

Regional Assessment and Barrier Analysis (RABA) (2024)

Produced by the Finger Lakes Clean Energy Hub, which is administered by Climate Solutions Accelerator, the RABA report offers a snapshot of the region's current landscape and outlines the collaborative, evolving strategies needed to ensure all residents, particularly those in Disadvantaged Communities can participate in and benefit from the clean energy transition. The report highlights that, despite rising demand for clean energy, driven in part by the arrival of climate refugees and the urgency of meeting CLCPA goals, significant barriers remain. Barriers include aging housing stock, landlord negligence, limited funding, and staffing shortages.

Finger Lakes Regional Sustainability Plan (2013)

In 2013, G/FLRPC completed a comprehensive Finger Lakes Regional Sustainability Plan that served as the roadmap for an emissions inventory and climate action strategy. The plan was focused on long-term sustainability efforts that will reduce GHG emissions and energy use. The plan highlights regional collaboration among stakeholders and is used to leverage investment in regionally significant sustainability projects.

Monroe County Climate Action Plan (2022 and 2024)

In 2022, Monroe County completed Phase I of the Climate Action Plan focused on governmental operations. The purpose of this phase was to identify and prioritize goals, strategies and initiatives that will reduce GHG emissions from County-owned sites, facilities, and operations by 80% below the 2019 baseline by 2050. Monroe County developed a GHG inventory and developed GHG reduction goals, priority strategies, actions, policies, and programs to meet the reduction goals of all County-owned buildings and facilities, county vehicle fleets, expressway lights and signals, Pure Waters infrastructure, and solid waste and materials management.

Monroe County Phase II Community-wide Climate Action Plan was adopted by the County Legislature in August 2024. The focus was broadened from Phase I to include GHG emission sources throughout the county including housing, private industry operations, transportation, and infrastructure. The GHG inventory helped Monroe County identify GHG reduction goals, priority strategies, actions, policies, and programs to meet those goals in all emission sources.

City of Rochester Climate Action Plan

The City of Rochester's Office of Energy and Sustainability has created a community-wide Climate Action Plan to provide a framework for sustainable projects and actions. The City's Climate Action Plan has a goal to reduce GHGs emissions by 40% from 2010 levels by 2030. To achieve this goal, the plan outlines 35 implementation actions divided into five focus areas. The five focus areas revolve around residential, commercial, and industrial sectors. These include energy use and supply; transportation; waste and materials management; clean water; and land use.



5. Regional Greenhouse Gas Inventory

A greenhouse gas (GHG) emissions inventory is an essential step to understanding the extent to which each sector is contributing to overall regional emissions. The calculation of emissions by sector will help to identify which sectors have the largest impact and what potential reduction strategies should be targeted. By developing this preliminary understanding of existing conditions, the Region forms a solid foundation from which to develop strategies and measures that will support a reduction in GHG emissions.

5.1 Methodology and Model

In 2010, as a part of developing regional sustainability plans, NYSERDA funded a series of contractors to prepare regional GHG inventories for each of NYS's ten economic development Regions. The baseline year for each of the inventory reports is 2010, and the 2010 Finger Lakes GHG Inventory report is broken down to the county level.

With support from Climate Action Associates, the project team created an inventory based on the 2015 Community and Regional GHG Guidance. Fossil fuel produces three GHGs: CO2, CH_4, and N2O. Carbon dioxide (CO2) typically represents 99% of the GHG footprint, with CH_4 and N2O having minimal impact. Carbon dioxide (CO 2) emissions are the main concern, so other emissions across fuels and GHG types are converted to a CO 2 equivalent and are reported as a single number. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report calculates the CO 2 equivalent for each GHG. The Global Warming Potential (GWP) refers directly to the impact of 1 unit of each gas in the atmosphere compared to 1 unit of CO 2, as shown in Table 11 below.

Table 11: Global Warming Potential (GWP)

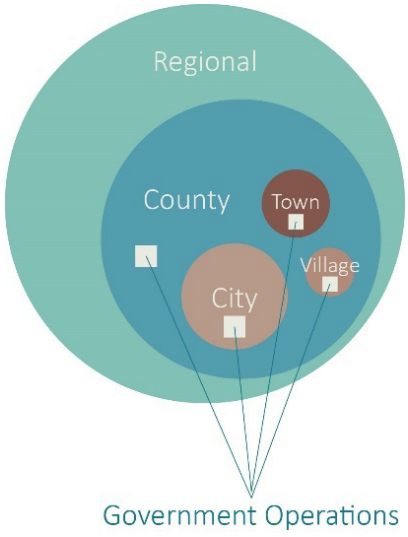
GHG	Global Warming Potential (GWP)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	85
Nitrous Oxide (N_2O)	264

Source: Intergovernmental Panel on Climate Change Fourth Assessment Report

5.2 GHG Inventory Results by Sector

In 2010, the Genesee Finger Lakes Region emitted 16.1 million Metric Tons Carbon Dioxide Equivalent (MTCO2e) GHG emissions. In 2022, the Region emitted 14.6 million MTCO2e. We can attest this 9.5% reduction to cleaner electricity, more efficient vehicles, electrification and decline in fuel oil, and an increase in renewable energy.

Figure 13: Built Environment GHG Breakdown



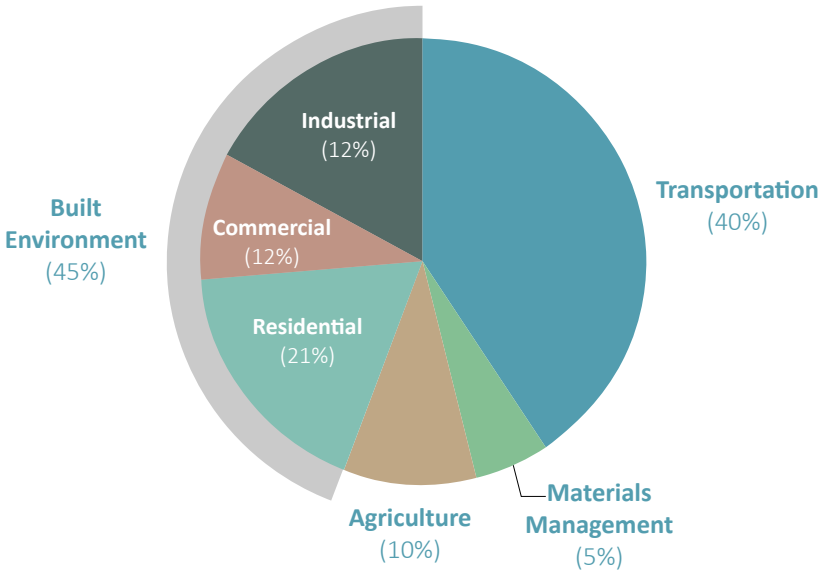
Source: Adapted from the New York Community and Regional Regional GHG Inventory Geography

The built environment (residential, commercial, and industrial) makes up 44.2% of overall regional emissions and the transportation sector makes up about 40% of all regional emissions as shown in Figure 12. These sectors have consistently been the primary drivers of emissions due to factors such as heavy reliance on fossil fuels for transportation and the energy consumption associated with heating, cooling, and powering buildings.

Built Environment

The built environment sector includes residential, commercial, and industrial emissions associated with buildings and operations. As the largest contributor to GHG emissions in the region, this sector contains 6.7 MMTCO2 or 44.2% of all regional emissions.

Figure 12: 2022 GHG by Sector G-FL Region

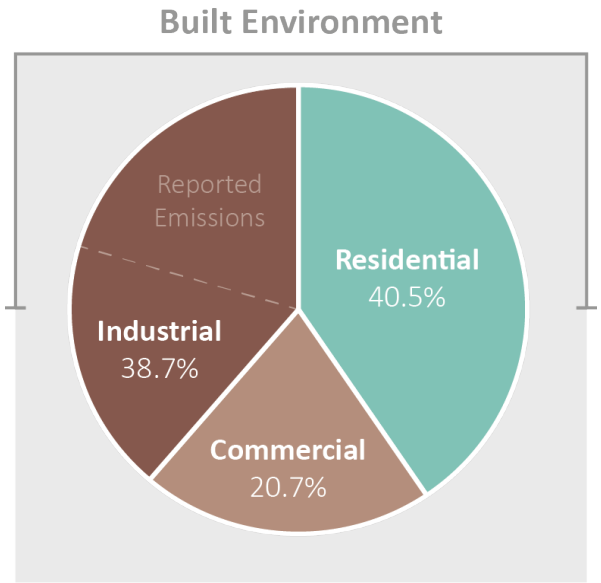


Source: G/FLRPC

Residential Sector

Residential Emissions account for 21% of total emissions in the Region, and 40% of all built environment emissions. Emissions in the residential sector are due to the burning of fossil fuels to heat, cool, and power other home functions.

Figure 11: Built Environment GHG Breakdown



Commercial Sector

The commercial sector accounts for 12% of total emissions in the Region, and 20.7% of all emissions in the built environment. Emissions in the commercial sector are due to the burning of fossil fuels to heat, cool, and power other building functions.

Industrial Sector

Industrial sector emissions account for 12% of all regional emissions and 38.7% of emissions in the built environment. GHG emissions from industry primarily come from burning fossil fuels for energy. Part of the industrial sector also includes reported emissions from EPA's FLIGHT tool and NYSDEC's Title V reports.

Transportation Sector

The transportation sector GHG analysis includes emissions from on-road vehicles, off-road vehicles, rail, marine, and aircraft. Transportation is the second largest emitting sector in the region. This sector has consistently been one of the primary drivers of emissions, largely due to its heavy reliance on fossil fuels for transportation. In 2022, transportation accounted for 40% of the region's overall emissions, or 5.7 MMTCO2e. This is about an 9.5% reduction from the 2010 regional analysis. Reductions in the

transportation sector from 2010 can be attributed to increased vehicle fuel efficiency, programs and policies that support alternative fuel and zero emission vehicles and infrastructure, and initiatives aimed at reducing single-occupancy vehicle use and overall vehicle miles traveled.

Agriculture Sector

The agriculture sector is the third largest emitter in the region, accounting for 10% of all emissions. GHG emissions from agriculture come from enteric fermentation and manure management associated with livestock care. From 2010, the region saw an increase in the number of GHGs emitted in this sector. This uptick is mostly due to the increase in the number of livestock in the region since 2010.

Materials Management

The material management sector (previously called the waste sector) consists of municipal solid waste landfills, wastewater treatment systems, and facilities that operate combustors or incinerators for the disposal of nonhazardous solid waste. Emissions from fossil fuel combustion at facilities with industrial waste landfills, and industrial wastewater treatment systems are included in other sectors.

The materials management sector makes up 5% of total Regional emissions. From 2010, the materials management sector saw a slight increase in regional emissions associated with this sector. This increase is due to the decrease in recyclability of a number of items and increase in the per capita disposal rate according to the 2023 NYS Solid Waste Management Plan.

Municipal Operations

Emissions from municipal operations made up only a minimal amount of the total emissions in the 2010 baseline year at approximately 55 thousand MT CO2e. This accounts for only 2-3% of all emissions produced in the Region. These numbers are not reflected in the GHG analysis for the CCAP.

Carbon Offset and Removal

Although not included in this analysis, carbon offsets and carbon removal play important roles in addressing climate change. While both support climate mitigation, they serve distinct purposes: offsets help reduce or avoid future emissions, often by supporting projects like renewable energy or reforestation, but they do not eliminate existing atmospheric CO_2. In contrast, carbon removal actively draws down CO_2 from the atmosphere, addressing legacy emissions and offering a more permanent pathway toward net-negative emissions.

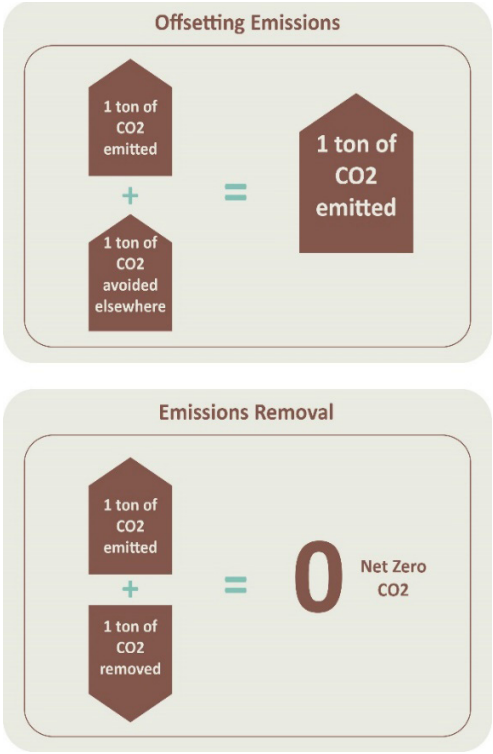
Carbon Offsets

Carbon offsets refer to activities or projects that prevent, reduce, or capture emissions that would otherwise be released into the atmosphere. Rather than removing existing carbon dioxide (CO_2), offsets compensate for emissions produced elsewhere by supporting initiatives that lower future emissions. Because they do not directly remove CO_2 from the atmosphere, offsets alone do not move us closer to true net-zero emissions. A common example of a carbon offset is forest conservation, which helps avoid additional emissions by preserving existing carbon sinks.

Carbon Removals

Carbon removals involve actively removing CO_2 from the atmosphere and storing it in a manner that prevents its release. This process, often referred to as "negative emissions," is essential for addressing past emissions and achieving net-zero goals. Examples of carbon removal strategies include soil carbon sequestration through sustainable agricultural practices and afforestation, which involves planting forests in areas that were not previously forested.

Figure 14: Carbon Offset vs. Carbon Removal



5.3 GHG Inventory Profiles by County

The following county-level greenhouse gas (GHG) inventory profiles provide a snapshot of how emissions vary across the Genesee-Finger Lakes Region. Each profile summarizes local context, key economic drivers, and the primary sources of emissions, highlighting the unique characteristics that shape each county's contribution to the region's overall GHG footprint.

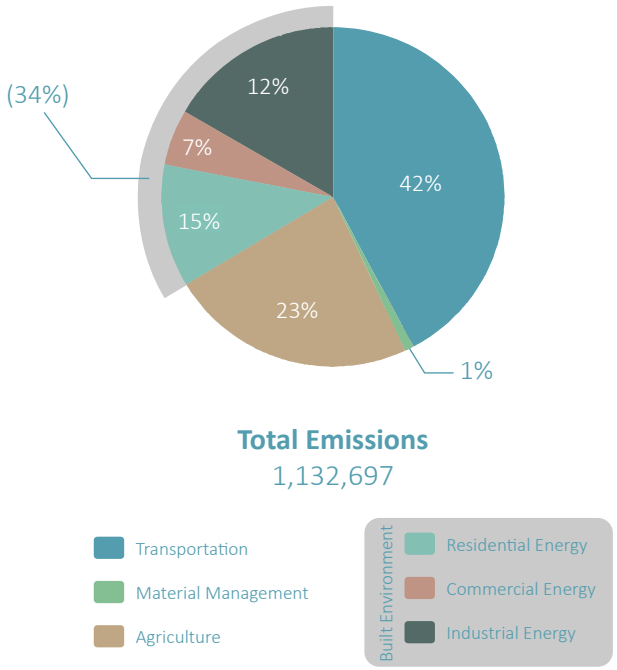
Genesee County

Incorporated in 1802, Genesee County occupies the western edge of the region, nestled between the cities of Buffalo and Rochester. Home to approximately 58,000 residents, Genesee County blends small-town charm with a strong agricultural heritage.

Genesee County boasts the highest percentage of classified farmland in the state and is a leading producer of beets and onions nationwide. Dairy farming remains the county's top agricultural commodity, contributing to Genesee's ranking as fourth in overall agricultural sales in New York State.

In addition to its agricultural prominence, Genesee County plays a key role in the region's environmental footprint. The county accounts for 7.8% of the region's total greenhouse gas emissions, with a total output of 1.11 $MMTCO_2e$. Transportation (42%) and the built environment (24%) are the largest contributors, followed closely by the agriculture sector (23%). Notably, 8.3% of Genesee County's emissions originate from individual polluters.

Figure 15: Genesee County GHG Profile



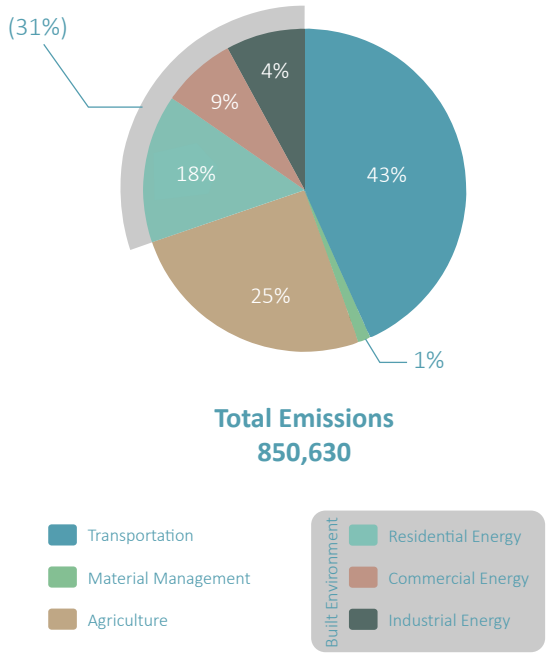
Livingston County

Established in 1821, Livingston County is known for its rolling uplands, rich farmland, and picturesque landscapes. The Genesee River flows through the county, complemented by Conesus and Hemlock Lakes. The county also has well over 14,000 acres in State lands and wildlife management areas, including Letchworth State Park. Livingston County is home to approximately 62,000 residents.

The agricultural industry and related businesses remain central to Livingston County's economy. 77% of the county's land is classified as USDA prime soils or soils of statewide importance; making the land well-suited for diverse crop and livestock production. Livingston County's agricultural heritage has produced a legacy of multi-generational family farm operations utilizing the working landscape of the county.

Livingston County contributes 5.9% of the region's total greenhouse gas emissions with a total output of 8.34 $MMTCO_2e$. Transportation (43%) and agriculture (25%) are the largest GHG contributors. Only 0.36% of Livingston County's emissions originate from individual polluters, reflecting a largely dispersed emission source profile.

Figure 16: Livingston County GHG Profile



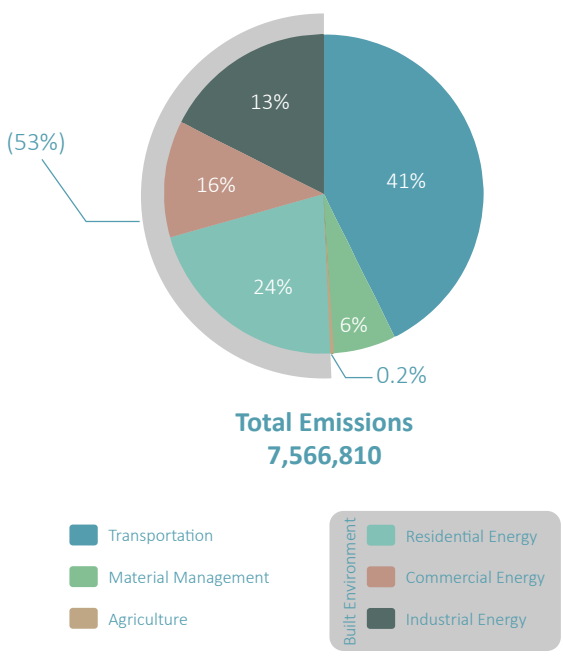
Monroe County

Monroe County, established in 1821, serves as the economic and cultural hub of the G-FL Region. Anchored by the City of Rochester, the county combines a strong industrial legacy with a diverse, modern economy and is home to approximately 752,000 residents, making it the region's most populous county.

The county's landscape is shaped by its Lake Ontario shoreline, the Genesee River gorge, and rural agricultural areas. Its identity is increasingly defined by urban centers, suburban communities, and a diverse workforce that drives regional innovation and growth.

Monroe County plays a major role in regional greenhouse gas emissions, housing 62% of the population and producing just over half of total emissions (7.59 $MMTCO_2e$), while maintaining the region's second-lowest per capita emissions. The built environment accounts for 51% of emissions, followed by transportation at 43%, with agriculture contributing just 0.2%. Individual polluters generate 8.9% of emissions, reflecting the county's concentration of large industrial, commercial, and institutional sources.

Figure 17: Monroe County GHG Profile



Ontario County

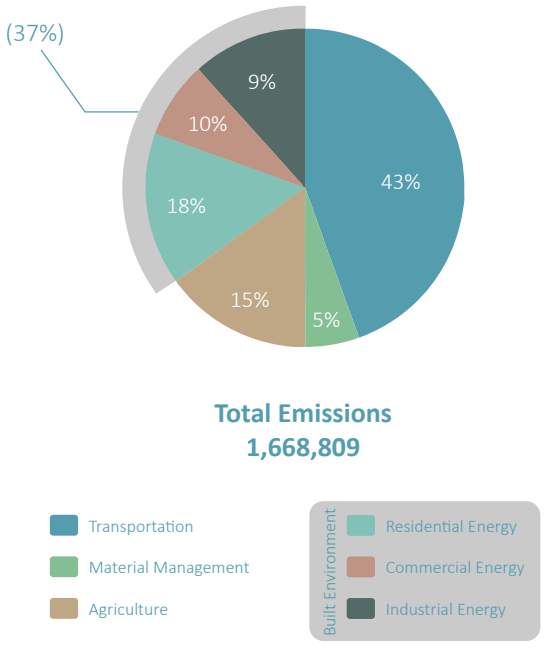
Established in 1789, and is known for its scenic Finger Lakes landscapes, strong tourism sector, and high quality of life, leading the region in median income, home values, and educational attainment.

Home to nearly 112,000 residents, Ontario is the region's second most populous county and has seen steady growth, increasing by 9.8% from 2000 to 2019.

Agriculture remains a cornerstone of Ontario's economy, the county produces wheat, barley, orchard fruits, grapes, and livestock production. While 37% of residents live in urban areas, manufacturing has historically been limited and is largely tied to agricultural processing.

Ontario County contributes 11.4% of the region's total greenhouse gas emissions with a total output of 1.60 $MMTCO_2e$. Transportation is the largest source, accounting for 45% total emissions, followed by 35% from the built environment sector and 15% from agriculture. 11% of Ontario County's emissions originate from individual polluters, reflecting the presence of key manufacturing facilities and landfill operations.

Figure 18: Ontario County GHG Profile



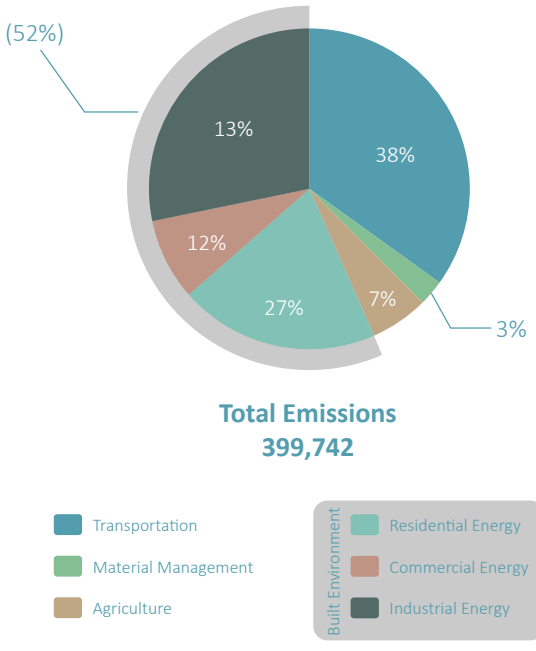
Orleans County

Orleans County, formed in 1824, lies along Lake Ontario's southern shore between Buffalo and Rochester. Known for its rich agricultural heritage, scenic landscapes, and historic Erie Canal corridor, the county balances rural charm with access to major urban markets. Home to approximately 39,000 resident, the County is centered around the villages of Albion, Medina, and Holley.

The county's economy is driven by agriculture, food processing, manufacturing, and logistics. The Medina Business Park, a NYS-certified Shovel-Ready site, provides robust infrastructure for industrial development and positions Orleans as a competitive location for businesses seeking affordability and proximity to Buffalo and Rochester.

Orleans County contributes 2.7% of the region's total greenhouse gas emissions with a total output 0.40 $MMTCO_2e$. Transportation is the largest source, accounting for 35% total emissions, followed by 28% residential energy uses. Individual polluters make up a significant proportion of the County's total emissions. 21% of emissions come from two manufacturing and production operators.

Figure 19: Orleans County GHG Profile



Seneca County

Established in 1804, Seneca County lies at the heart of the Finger Lakes region between Cayuga and Seneca Lakes. Seneca County is the smallest county in the region by area and has one of the lowest populations; home to 32,600 residents (2022 Census). The County is known for its rich history and abundant natural resources. Tourism is a growing cornerstone of the economy, with visitor spending increasing 28% between 2019 and 2023.

Agriculture has been central to Seneca's economy. Apples, grapes, and other fruits remain major commodities. The county is home to the largest concentration of wineries in the Finger Lakes and a world-renowned wine and craft beverage industry.

Seneca Conty contributes 4.1% of the region's total greenhouse gas emissions with a total output of 0.60 $MMTCO_2e$. Transportation is the largest source, accounting for 43% of total emissions, followed by 29% from materials and waste management uses. Individual polluters make up a significant proportion of the County's total emissions.

Wayne County

Formed in 1823, Wayne County is the northeastern-most county in the Finger Lakes region, bordered by Lake Ontario. Wayne County is home to over 91,000 people and the largest land area. Wayne County combines rural agricultural landscapes with small-town communities.

Agriculture has long been the backbone of Wayne's economy, particularly in fruit production, and is one of New York's most productive fruit-growing regions. In recent years the county's economic focus has shifted and diversified to include optics, technology-based manufacturing, sustainable energy, and food processing industries.

Wayne County contributes 6.1% of the region's total greenhouse gas emissions with a total output of 0.89 $MMTCO_2e$. Transportation is the largest source of emissions, accounting for 45% of total emissions, followed by 22% from the residential buildings. Individual polluters make up a small percentage of total emissions (only 0.67%).

Figure 20: Seneca County GHG Profile

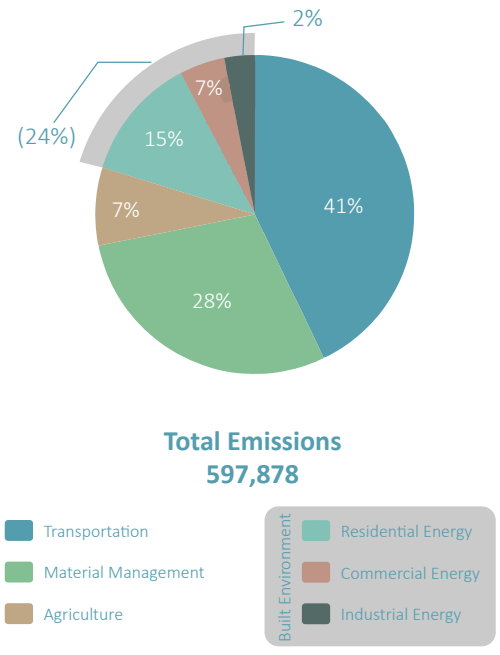
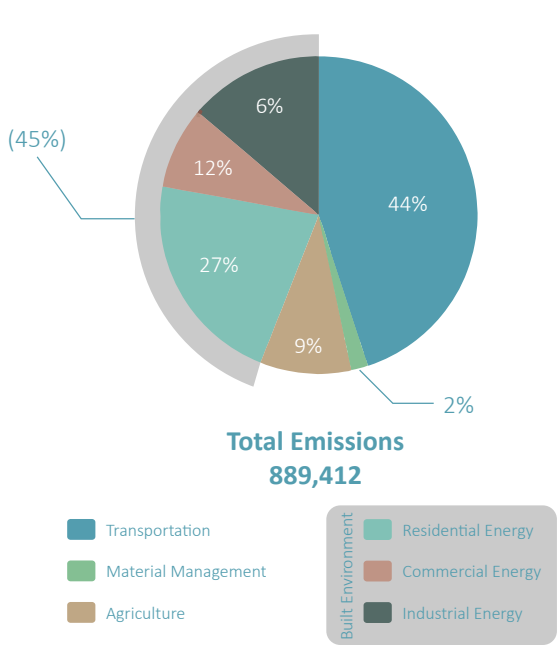


Figure 21: Wayne County GHG Profile



Wyoming County

Wyoming County formed from Genesee County in 1841, rural Wyoming County lies in the southwest corner of the Finger Lakes Region. Wyoming is home to a large portion of Letchworth State Park and is one of New York's most agricultural intensive counties. Wyoming County is home to approximately 39,0000 residents.

Agriculture, particularly dairy production, is the backbone of Wyoming's economy. The county supports diverse crop farming, livestock operations, and food processing industries.

Wyoming county contributes 5.8% to the region's total greenhouse gas emissions with a total output of 0.85 $MMTCO_2e$. Agriculture is the largest source, accounting for 48% of emission, followed by transportation at 21%. Wyoming County has the largest percentage of agricultural emissions in the region. 6.9% of emissions originate from Individual polluters, primarily from industrial energy processes.

Yates County

Yates County, located in the heart of the Finger Lakes Region, is known for its stunning lakeside landscapes, particularly along Keuka Lake and Seneca Lake. With a population of approximately 24,000 residents, Yates is the least populous county in the region, characterized by its rural charm, small villages, and strong agricultural heritage.

Agriculture, especially vineyards, wineries, and dairy farming, is the cornerstone of Yates County's economy, making it a key player in New York's wine industry. The county has also seen steady growth in tourism, driven by its scenic beauty, farm-to-table experiences, and outdoor recreation opportunities.

Yates County contributes 4.4% of the region's total greenhouse gas emissions with a total output of 0.64 $MMTCO_2e$. The built environment makes up a large majority of county-wide emissions at 68%, with industrial energy processes making up over half of the county emissions profile (57%). 54% of emissions in Yates County originate from one individual polluter which can be attributed to crypto currency mining.

Figure 22: Wyoming County GHG Profile

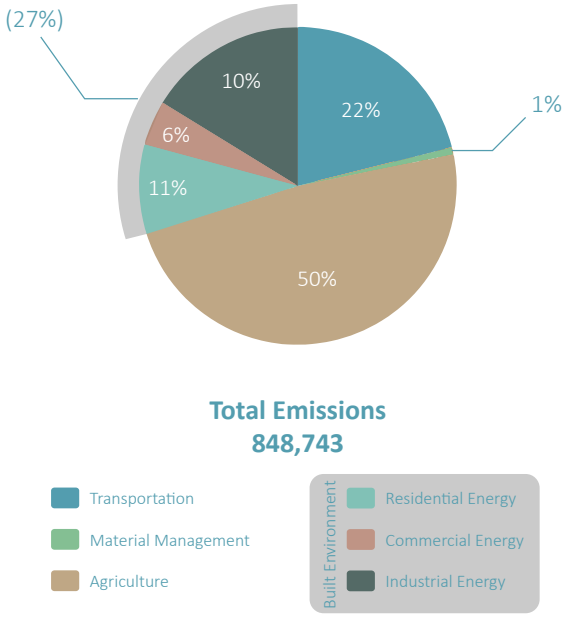
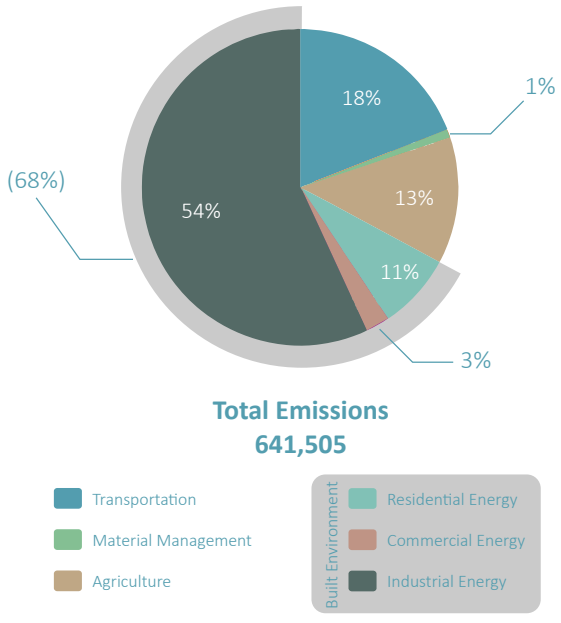


Figure 23: Yates County GHG Profile



Per Capita Emissions

Per capita emissions are a way of measuring GHG emissions on a per-person basis. Instead of just looking at the total emissions from each county, per capita emissions divide the total emissions by the population. Per capita emissions show the average GHG produced by each person in the County. This allows for a fairer comparison of counties of different sizes. Table 12 shows the per capita breakdown by county.

This calculation highlights areas where individuals, households, or local systems are relatively carbon-intensive which allows policymakers to better target efficiency programs, energy policies, or waste reduction efforts where per-person impact is high.

$$Per\ Capita\ Emssions = \frac{Total\ GHG\ Emissions}{Population}$$

Emissions across our region tend to follow a consistent pattern, largely driven by population distribution and the concentration of businesses and industries in urban centers. Generally, counties with larger populations and more densely concentrated industries, such as those located in urban areas, tend to have higher emissions, but may have a lower per capita number. This correlation is not coincidental, as transportation, energy use in buildings, and industrial processes are directly linked to population density and economic activity.

For example, Monroe County has the most people and the highest total emissions in the Region. However, each person in Monroe County produces less emissions on average than residents of smaller counties like Yates and Wyoming. Monroe County is home to 62% of the G-FL regions population but has the second lowest $MTCO_2e$ in the region, at 10 $MTCO_2e$. per person.

Table 12: Finger Lakes Regional GHG Breakdown by Capita by County

County	MTCO2e	%of GHG	2022 Population	% of Population	MTCO2e Per Person
Genesee	1,111,502	7.8%	58,388	4.8%	19
Livingston	833,781	5.9%	61,834	5.1%	13
Monroe	7,301,346	51.4%	759,443	62.1%	10
Ontario	1,605,460	11.3%	112,458	9.2%	14
Orleans	434,113	3.1%	40,343	3.3%	11
Seneca	575,806	4.1%	33,814	2.8%	17
Wayne	841,297	5.9%	91,283	7.5%	9
Wyoming	879,842	6.2%	40,531	3.3%	22
Yates	623,650	4.4%	24,774	2.0%	25
Total	**14,206,798**		**1,222,868**		**12**



6. Greenhouse Gas Reduction Strategies, Measures, and Tools

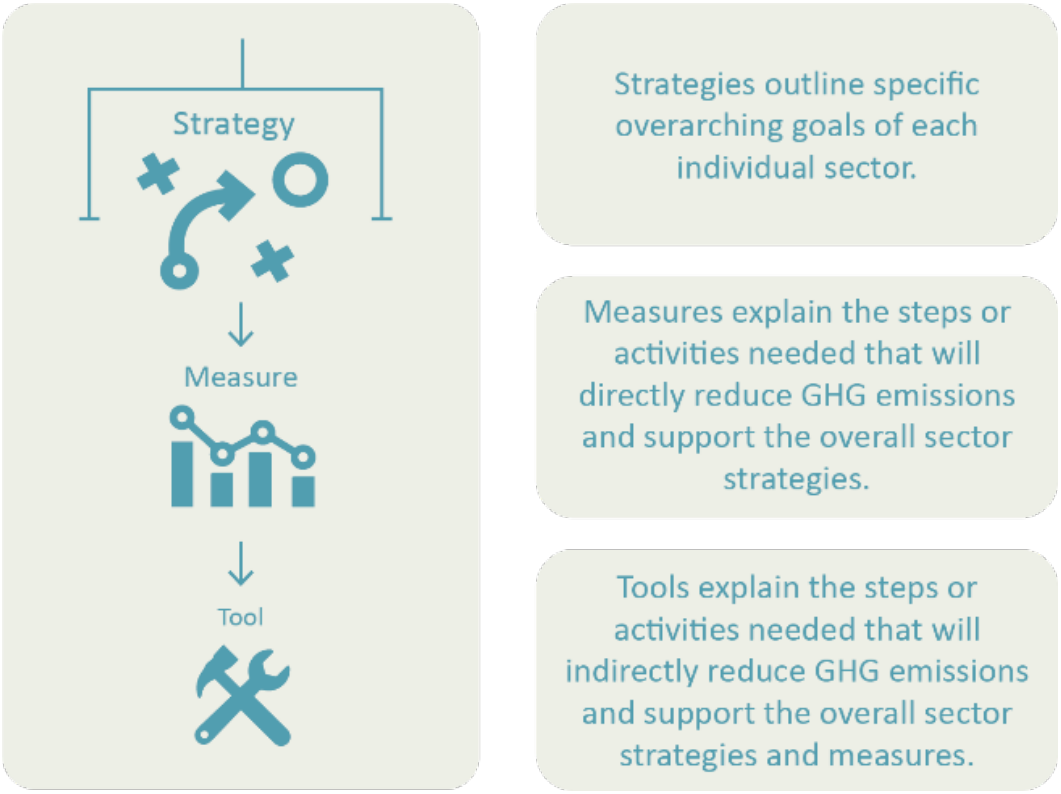
Drawing insight from existing regional, county-wide, and municipal climate action plans in the project area, GHG reduction measures outlined in NYS's Scoping Plan, Climate Smart and Clean Energy Community Programs, results of the 2022 GHG Inventory, and the lived and professional expertise from members of our CCAP Committee and sector-based focus groups, the project team established short and long-term strategies, measures, and tools to reduce GHG emissions region-wide.

The definition and difference between these actions are listed in Figure 25: Strategies, Measures, and Tools Diagram for GHG Reduction.

Given the diverse nature of the project area, and while each strategy, measure, and tool outlined below is important to overall GHG emission reductions, they may not be entirely appropriate for each municipality facing climate change. While each action is valuable to achieving regional GHG reduction goals, not every municipality will find every strategy, measure, or tool equally applicable given the diversity of community needs, resources, and capacities. Municipal leaders, planners, local industries, partners, and even individuals can use this section as a menu of options; selecting, adapting, and sequencing actions that best fit local priorities. Over time, this framework can guide updates to plans, inform grant applications, and serve as a baseline for tracking progress, ensuring that the strategies evolve alongside changing climate conditions, technology, and policy.

Each section below will discuss each of the strategies, measures, and tools in more detail. The full list of strategies and measures is listed in Appendix B: Measures and Benefits Analysis.

Figure 24: Strategies, Measures, and Tools Diagram for GHG Reduction



6.1 Built Environment

The building sector emits 6.3 $MMTCO_2e$, approximately 44.2% of all regional emissions. The strategies, measures, and tools will support the reduction of GHG emissions from buildings by advancing the decarbonization of buildings and infrastructure.

Table 13: Built Environment GHG Reduction Strategies, Measures, and Tools

Strategy	Measure/Tool
Advance Decarbonization of Buildings and Infrastructure	**Measure: Transition to air-source and ground sourced heat pumps and heat pump water heaters in all buildings**
	Measure: Reduce embodied carbon (the greenhouse gas emissions that occur when building materials are produced, transported, and used) from all buildings
	Measure: Increase energy efficiency in all buildings (including weatherization, mold and asbestos abatement etc.)
	Measure: Adopt Zero-Emission Codes and Standards for all buildings
	Tool 1: Explore a pilot program for geothermal energy and networks on a community scale in new and existing developments
	Tool 2: Invest in policies and programs to reduce energy costs and consumption by optimizing energy use (energy audits and benchmarking) to lower GHG emissions in buildings
	Tool 3: Establish financing mechanisms for energy efficiency upgrades for buildings with focus on NYS DAC and communities with environmental risks
	Tool 4: Incentivize the development of buildings with low embodied carbon (LEC) such as localized construction materials, deconstruction, reuse of materials, and recycling to minimize construction waste
	Tool 5: Provide gap funding to support pre-weatherization work in older building stock, with a focus on NYS DAC and communities with environmental risks
	Tool 6: Incentivize building envelope insulation efforts and energy efficiency purchases in all existing buildings
	Tool 7: Create educational programs for businesses, homeowners, and renters to support the transition to more energy efficient technologies (such as energy efficient appliances and changing user behavior) and financial assistance options that help address cost-related challenges
	Tool 8: Utilize Land Banks to repurpose vacant and derelict properties
	Tool 9: Adopt energy efficiency standards for rental properties with the certificate of occupancy
	Tool 10: Continually educate planning and permitting staff on state-wide guidance and policies, energy codes, and methods for incentivizing and implementing decarbonization of buildings
	Tool 11: Develop and adopt building standards for historic buildings in local buildings and zoning codes to allow for opportunities to increase energy efficiency, including weatherization in historical preservation districts. Educate planning boards and historic preservation groups on these updates

Buildings Spotlight: Finger Lakes Community College

Finger Lakes Community College (FLCC) in Canandaigua, NY, integrates sustainability into its campus buildings and operations. The college's facilities include the first public LEED-certified building in Ontario County, designed to maximize natural light, conserve energy, and enhance indoor environmental quality. Across campus, FLCC has implemented energy-efficient lighting, heating, and cooling systems, along with automated sensors to reduce energy consumption. Waste reduction, chemical management, and responsible landscaping practices support environmental stewardship while conserving resources.



Impact at a Glance

- 1st – Public LEED-certified building in Ontario County
- Energy efficiency upgrades – Lighting, HVAC, and automated controls campus-wide
- Sustainable grounds – Native plants, minimal pesticide use, and watershed-friendly landscaping
- Land stewardship – 40 acres protected through a conservation easement

6.2 Transportation and Land Use

The transportation sector emits 5.8 $MMTCO_2$, approximately 40.6% of all GHG emissions in the project area. The strategies, measures, and tools will support the reduction of GHG emissions from transportation by increasing zero and near zero near-zero-emission passenger vehicle adoption, increasing zero and near-zero-emission bus & truck adoption, reducing single-occupancy vehicle trips & VMT, and supporting adaptation and resiliency in land use.

Table 14: Transportation and Land Use GHG Reduction Strategies, Measures, and Tools

Strategy	Measure/Tool
Increase Zero and Near Zero Emission Passenger Vehicle Adoption	**Measure 1: Invest in zero and near zero emission passenger vehicles**
	Tool 1 : Adopt fleet efficiency policies and fleet inventories for municipalities and businesses
	Tool 2 : Develop municipal and business EV infrastructure plans
	Tool 3 : Expand and incentivize EV charging infrastructure for residents and in municipal and private parking lots/garages at points of interest. Consider other behavioral incentives for EV drivers.
	Tool 4 : Expedite and standardize the permitting process for installation of alternative fuel and electric vehicle charging infrastructure
	Tool 5 : Invest in educational campaigns to educate the public and / or fleet operators on EVs including costs, maintenance, driving experience, noise, safety, etc.
Increase Zero and Near Zero Emission Bus & Truck Adoption	**Measure: Invest in zero and near zero emission public transit vehicles**
	Measure: Invest in zero and near zero emission school bus fleet
	Measure: Invest in zero and near zero emission trucks
	Tool 1: Expand zero emission charging and refueling infrastructure and upgrades for bus and truck facilities
	Tool 2: Invest in shore power to provide long-haul trucks, construction vehicles, and municipal vehicles with access to external electrical power while parked at designated locations.

Strategy	Measure/Tool
Reduce Single Occupancy Vehicle Trips & VMT	**Measure: Implement strategies to reduce single-occupancy vehicle trips and VMT**
	Tool 1: Continue to expand active transportation infrastructure and access to micro-mobility modes especially in NYS DAC communities and communities with environmental risks
	Tool 2: Continue to invest in educational campaigns and implement programs and policies to encourage people to walk, bike, or take public transportation by subsidizing participation.
	Tool 3: Work with RGRTA, large employers, municipalities, fleets etc. to promote transportation demand management strategies to increase the share of employees who walk/bicycle or take public transportation to reduce VMT
	Tool 4: Continue to evaluate public transportation service gaps to determine where new and enhanced routes should be located, especially in NYS DAC communities and communities with environmental risks. Advocate for funding to support local action
	Tool 5: Create and expand "Buy Local/Buy Green" campaign to reduce VMTs
	Tool 6: Implement traffic calming measures. Identify roadways for road diets to reduce speeds region wide
	Tool 7: Create anti-idling zones centered around NYS DAC and communities with environmental risks, school zones, pedestrian-centric areas, and transit stations where appropriate
	Tool 8: Encourage replacing traffic lights with roundabouts where it is feasible to reduce time idling and improve traffic safety
	Tool 9: Invest in Intelligent Speed Assistance (ISA) technology for municipal and commercial fleet vehicles to reduce speeding and increase pedestrian and driver safety
Support Adaptation and Resiliency in the Land Use	**Tool 1:** Implement Smart Growth planning, Complete Street policies in land use, zoning reform, and comprehensive planning to prioritize mixed use development in urban and village centers and preventing sprawl into agricultural land
	Tool 2: Conduct a regional level climate vulnerability assessment with an emphasis on NYS DAC and communities with environmental risks for climate adaptation planning
	Tool 3: Adopt climate adaptation policies to reduce runoff, encourage native plants, manage stormwater, and promote overall biodiversity
	Tool 4: Expand and maintain green spaces to mitigate the heat island effects associated impervious surfaces
	Tool 5: Support and implement strategies put forth by County or Municipal Hazard Mitigation Plans
	Tool 6: Develop and implement a regional program to help communities plan for climate adaptation and resiliency
	Tool 7: Encourage developers to coordinate with RGRTA early in the site selection process to ensure alignment with transit service capabilities.

Transportation Spotlight: RTS



In November 2024, RTS debuted New York State's first two hydrogen fuel cell electric buses, advancing its goal of a 100% zero-emission fleet by 2040. These buses join ten battery-electric models already in service, together removing the equivalent of 270 personal vehicles from the road and saving about $187,000 per bus in fuel and maintenance costs over their lifespans.

Hydrogen buses offer key advantages over traditional plug-in electric buses, particularly in cold weather with a 275–325-mile range and refueling times of just 7–10 minutes compared to 3–5 hours of charging. RTS, which operates the state's second-largest electric bus fleet, is working toward New York's targets of 25% zero-emission buses by 2025 and 100% by 2035, while investing in frequent, reliable, and sustainable public transit for the region.

Impact at a Glance

- 270 – Personal vehicles' worth of emissions eliminated
- $187,000 – Lifetime fuel & maintenance savings per electric bus
- 7–10 minutes – Refueling time for hydrogen buses
- 275–325 miles – Range per hydrogen bus

6.3 Agriculture and Working Lands

The agriculture sector emits 1.4 $MMTCO_2$, approximately 9.7% of all GHG emissions in the project area. The strategies, measures, and tools will support the reduction of GHG emissions from agriculture and working lands by removing carbon from the region through sustainable forestry and land use practices and removing carbon from the region through sustainable agricultural practices.

Table 15: Agriculture and Working Lands HG Reduction Strategies, Measures, and Tools

Strategy	Action Description
Remove carbon from the region through sustainable forestry and land use practices	**Measure: Reduce carbon emissions through regional sustainable forest and land use management practices and reforestation**
	Measure: Increase carbon storage in soils through biochar production from slashing and thinning biomass
	Tool 1: Support programs to conserve open space in collaboration with land trust organizations, private landowners, and municipalities
	Tool 2: Establish a tree fund to increase and replace lost tree cover and avoid deforestation across strategic land types, including NYS DAC and communities with environmental risks, to enhance carbon sequestration. Increase tree inventory data and establish regional tree canopy goals
	Tool 3: Increase land restoration activities to enhance the carbon sequestering potential of forestlands
	Tool 4: Promote and expand the utilization of forest carbon credits program
	Tool 5: Provide biochar education and encourage pilot projects

Strategy	Action Description
Remove carbon from the region through sustainable agricultural practices	**Measure: Decrease methane emissions**
	Measure: Decrease fertilizer use
	Measure: Increase energy efficiency through sustainable agricultural practices and use clean energy
	Tool 1: Incorporate water smart land management practices
	Tool 2: Encourage crop and livestock diversification to improve resilience to pests, diseases, and climate variability. For example agroforestry, intercropping, silvopasture and polyculture can enhance biodiversity
	Tool 3: Support local agricultural entities to develop and implement education and outreach programs that will enhance carbon farming, carbon sequestration, increase soil health, promote climate resilience and adaptation, and crop productivity
	Tool 4: Train local agencies to audit GHGs for farm operations and provide resources to lower emissions. (Like an energy audit, but for ag practices)
	Tool 5: Facilitate conducting and sharing of climate-related agriculture research and technology (like precision agriculture, remote sensing, and data analytics) with local farmers in the agriculture industry. Establish monitoring and evaluation mechanisms can help assess the effectiveness of implemented measures and tools.
	Tool 6: Increase financial resources to support farmers with manure management
	Tool 7: Implement and expand the operations of food and methane waste digestors with appropriate regulation and guidelines.
	Tool 8: Support existing Nutrient Management Spear Program to support farmers to manage fertilizer use in a climate smart way and promote best practices for soil health, increase adoption of cover crops and reduced tillage
	Tool 9: Site appropriate land for agrivoltaics, create a reporting and monitoring program to track system operation, compliance, and performance
	Tool 10: Develop purchase agreements for the sale of bio-energy. Encourage and pilot community-scale bio-energy production and distribution and the development of a carbon market
	Tool 11: Support and implement strategies put forth in Agriculture and Farmland Protection Plans
	Tool 12: Incorporate strategies for efficient water use and management to address water scarcity and improve agricultural productivity. For example, rainwater harvesting, drip irrigation, and soil moisture management

Agriculture Spotlight: Hunt Country Vineyards



Winners of the 2020 Sustainability Award from the New York Wine and Grape Association, Hunt Country Vineyards has been farming along Keuka Lake for seven generations. Prioritizing soil health, they use on-farm composting and poultry manure, grow climate-resilient grape varieties, and power operations with a 348-panel solar array and geothermal system. Visitors also benefit from five EV charging stations.

The winery's Uncharted Terroir wine showcases hardy regional grapes that reflect the Finger Lakes' unique character. Hunt Country Vineyards is the first winery in New York State to join the International Wineries for Climate Action, collaborating to decarbonize the wine industry while promoting environmental stewardship both in and beyond the vineyard.

Impact at a Glance

- 7 – Generations of family farming
- 348 – Solar panels powering operations
- 5 – EV charging stations for customers
- 1st – NY winery in International Wineries for Climate Action

Agriculture Spotlight: Rodman Lott and Son Farms



Rodman Lott and Son Farms, a 3,000-acre grain operation in Seneca Falls, has been producing corn, soybeans, and wheat since 1988 and hosting Empire Farm Days for over 30 years. Climate change has brought new challenges such as flooding, drought, fungal diseases, and shortened planting and harvesting windows.

To adapt, the Lotts have invested in larger planting and harvesting equipment and are installing subsurface tile drainage at $1,000 per acre to improve field conditions after extreme rain. Long-time users of no-till practices and cover crops, the Lotts have built soil health, reduced erosion, and improved water retention. While adapting across their entire acreage will cost over $3 million, these investments are strengthening the farm's resilience and long-term viability.

Impact at a Glance

- 3,000 acres – Corn, soybeans, and wheat
- $3.31 million – Estimated cost of full adaptation measures
- $1,000/acre – Cost of tile drainage installation
- 30+ years – Using no-till practices to improve soil health

6.4 Materials Management

The materials management sector emits .8 $MMTCO_2$, approximately 5.5% of all GHG emissions in the project area. The strategies, measures, and tools will support the reduction of GHG emissions from materials management by increasing landfill diversion, sustainability managing landfills and wastewater treatment facilities, and building capacity for the region to reduce, reuse, and recycle materials.

Table 16: Materials Management GHG Reduction Strategies, Measures, and Tools

Strategy	Action Description
Increase Landfill Diversion	**Measure: Increase landfill diversion by reducing the per capita waste numbers in the Region and elongating landfill lifespans**
	Tool 1: Expand composting facilities, programs, and funding for medium to large waste producers to reduce the amount of food in landfill, in accordance to NYS Food Donation and Food Scraps Recycling law. Over time, extend support to include small scale waste producers.
	Tool 2: Provide programs and funding for large food waste producers to reduce amount of food landfilled.
	Tool 3: Encourage and incentivize medium to large food waste producers and municipalities to write and fulfill goals of Organics Management and local Solid Waste Management plans
	Tool 4: Develop partnerships with municipalities, schools, and private entities (like CAFOS) to support pilot programs on organics management/waste reduction
	Tool 5: Develop a construction and demolition waste reduction program and policies for new construction and renovation foczaused on reuse, contractor training, and market capacity building for reclaimed material.
	Tool 6: Support innovation of alternative materials for single use plastics
	Tool 7: Encourage waste districts locally, ensure that garbage, recycling, and food waste is all included in a single pick up to reduce VMTS.
	Tool 8: Create a demand and develop a market for circular material regionally and locally to reduce VMT's and overall waste.
	Tool 9: Increase tipping fees or tax to include externality costs (AKA Pay-As-You-Throw (PAYT)

Strategy	Action Description
Sustainability Manage Landfills and Wastewater Treatment Facilities	**Measure: Encourage landfills and wastewater treatment facilities to use the latest technology of methane capture for active and closed landfills**
	Tool 1: Encourage end of life for landfills to maximize use for local residents in the area - i.e. Open space, photovoltaic power, etc.
	Tool 2: Incentive early implementation of Landfill Gas recovery systems and review policies that incentivize early implementation
Build capacity for the region to reduce, reuse, and recycle material	**Tool 1:** Expand education and awareness on recycling, composting, and waste reduction, especially at schools and public institutions.
	Tool 2: Support sustainable procurement policies for public institutions region-wide
	Tool 3: Support existing goals and programs outlined in the latest New York State Solid Waste Management Plan
	Tool 4: Encourage reuse, repair, and upcycling through programming, education, incentives, and incubator projects.
	Tool 5: Encourage the standardization and adoption of recycling and waste diversion strategies for public places and events
	Tool 6: Provide a space for waste diversion research for specific materials (i.e. textile recycling etc.)
	Tool 7: Provide and promote e-waste and other hard to dispose of item collection in strategic locations
	Tool 8: Promote model policies for municipalities to reduce waste and promote circularity
	Tool 9: Support the hiring of personnel working on landfill diversion county-wide

Materials Management Spotlight: Shift2

In 2022, Shift2 (formerly the Shore Foundation) received a $15,000 NYSP2I Community Grant to refurbish 100 corporate laptops and distribute them to families in Rochester's Roberto Clemente School No. 8 community; an area designated as an environmental justice neighborhood. Most households were receiving their first computer, bridging the digital divide while keeping e-waste out of landfills.

Founded in 2018, Shift2's mission is to maximize the usefulness of existing technology for community, environmental, and economic benefit. The project diverted 475 pounds of e-scrap from landfills, benefited 275 individuals, and extended each laptop's life by 3–5 years. Any unusable equipment was responsibly recycled to recover valuable materials, supporting a circular economy and expanding equitable access to technology.

Impact at a Glance:

- 475 lbs – E-scrap diverted from landfills
- 275 – Individuals gained technology access
- 83% – Households received their first computer
- 3–5 years – Extended laptop lifespan

6.5 Electric Power

The strategies, measures, and tools that will support the reduction of GHG emissions and transition away from fossil fuels in the electric power sector are expanding renewable energy capacity and creating regional support mechanisms to advance electric power and energy initiatives.

Table 17: Electric Power GHG Reduction Strategies, Measures, and Tools

Strategy	Action Description
Expand Renewable Energy Capacity	**Measure: Increase large-scale renewable energy generation to supply clean electricity to the region, in appropriate areas**
	Measure: Increase the adoption of small and medium scale renewables (like rooftop and parking lot solar installations), with an emphasis on commercial land in NYS DAC communities and communities with environmental risks
	Measure: Support the development and construction of zero-emission nuclear power plants (including small nuclear reactors) to support a reliable and affordable electric grid
	Tool 1: Conduct feasibility studies and pilot programs to site region-wide renewable energy installations to maximize local power generation, with an emphasis on NYS DACs and communities with environmental risks.
	Tool 2: Conduct Microgrid and battery storage feasibility pilot studies
	Tool 3: Expand municipal and emergency operation resiliency with the integration of battery storage and microgrid technologies
	Tool 4: Capitalize on existing state and federal funding opportunities, and pilot innovative financing strategies (e.g., zero-to-low interest financing, gap funding) to support energy efficiency and renewable energy projects
	Tool 5: Expand on existing model zoning and policy language for renewable energy and battery storage projects. Target outreach to municipalities with moratoriums for renewable energy and battery storage in place
	Tool 6: Partner with utilities and other energy stakeholders to increase grid capacity, create, meet, and expand their energy goals ensuring customer affordability remains a key consideration
	Tool 7: Encourage the adoption of Community Choice Aggregation and other innovative renewable energy project agreements
Create regional support mechanisms to advance electric power and energy initiatives	**Tool 1:** Develop targeted programs for reaching high energy users. Use pilot projects to promote this technology's success (ex. IDA)
	Tool 2: Utilize existing AMPED Clean Energy Hub to provide education and technical assistance about funding and rebate programs for residents and business owners
	Tool 3: Utilize existing Clean Energy Communities program to provide education and technical assistance about funding and rebate programs for municipalities
	Tool 4: Facilitate ongoing region-wide conversations about the role of renewable energy

Electric Power & Energy Spotlight: Green Spark Solar

Based in Rochester, New York, GreenSpark Solar installs residential, commercial, and community solar energy systems throughout Central New York. Founded in 2002, the company became a certified B-Corp in 2015, reflecting its commitment to people, planet, and profit. GreenSpark is also recognized as a Top Workplace, Top Solar Contractor, and NYSERDA Gold Quality Solar Installer, demonstrating excellence in both employee culture and solar system performance.

Through high-quality, economically viable solar projects, GreenSpark helps local customers reduce their carbon footprint while promoting climate solutions that benefit communities and the environment. Their mission is to "be a force for good" by addressing the climate crisis locally with expert solar installations at competitive pricing.

Impact at a Glance

- Top – Workplace, Solar Contractor, NYSERDA Gold Installer
- Multiple projects – Residential, commercial, and community solar installations reducing local carbon emissions
- Municipalities Supported: Town of Irondequoit, Town of Williamson, Village of Brockport, Village of Lima, Village of Sodus Point, Seneca Nation

6.6 Industry & Workforce Development

The industrial sector emits 2.4 $MMTCO_2$, approximately 17.1% of all GHG emissions in the project area. The strategies, measures, and tools will support the reduction of GHG emissions from the industrial sector by decarbonizing industrial processes in the Region and strengthening the green workforce.

Table 18: Industry & Workforce Development GHG Reduction Strategies, Measures, and Tools

Strategy	Action Description
Decarbonize industrial processes in the Region	**Measure: Decarbonize and retrofit industrial processes by adopting zero emission technologies, improving energy efficiency, and transitioning to carbon-free and renewable energy sources.**
	Tool 1: Create a working group of regional industry leaders to decarbonize industrial processes
	Tool 2: Prioritize siting industries in the region on brownfield sites and near current infrastructure to support energy reduction and employee access
	Tool 3: Provide programming, education, and financial incentives for energy reduction in the industry sector
Strengthen the Green Workforce	**Tool 1:** Develop a working group with employers, employees, and other regional partners to identify workforce needs and gaps to support collaboration in planning for the future of the regional workforce
	Tool 2: Provide outreach, education, and technical assistance for employers by partnering with educational institutions, expanding training capacity, and updating training content for existing industries
	Tool 3: Build a clean energy workforce development training center that targets NYS DAC and communities with environmental risks and provides services to connect residents with jobs in energy efficiency fields
	Tool 4: Use building demonstration sites as locations for community education and outreach
	Tool 5: Define and integrate clean energy pathways into skilled trade and educational programs
	Tool 6: Launch marketing campaigns about what it takes to be in the clean and renewable energy space. Target middle and high school students

Industry Spotlight: Finger Lakes Extrusion

Finger Lakes Extrusion (FLEX), based in Canandaigua, New York, is a leading manufacturer of flexible plastic tubing solutions that integrates sustainability into its core operations. Energy efficiency upgrades including a new insulated roof, motion-sensor LED lighting, and a variable frequency drive HVAC system, as well as a solar array now provides 80% of the facility's electricity.

FLEX conserves water by rotating chiller water monthly and maintaining high standards with UV and chlorine treatment systems. Their proactive waste management practices minimize environmental impact, generating only 200 pounds of material requiring disposal annually.

Impact at a Glance:

- 1,634 panels – Solar array supplying 80% of electricity
- 1,200 gallons/month – Water saved through chiller rotation
- 200 lbs/year – Material requiring disposal
- Multiple upgrades – Energy-efficient lighting, HVAC, and roof insulation

6.7 Building Regional Capacity

The strategies, measures, and tools that support building regional capacity are building citizen support for climate action and building municipal capacity for climate action.

Table 19: Building Regional Capacity GHG Reduction Strategies, Measures, and Tools

Strategy	Action Description
Build Citizen Support for Climate Action	**Tool 1:** Provide community-wide education on rebates and incentives related to funding for climate-related improvements
	Tool 2: Create a recurring community climate public forum for region-wide sustainability goals
	Tool 3: Support community organizations serving NYS DACs and communities with environmental risks to assist with accessibility of affordable clean energy and energy efficiency improvements
	Tool 4: Support the increased participation in Climate Solution Accelerator's Color Your Community and Color Your Organization Green groups
Build Municipal Capacity for Climate Action	**Tool 1:** Increase the participation of local municipalities to pursue Climate Smart Communities and Clean Energy Communities certification and begin implementing action items
	Tool 2: Develop a region-wide or sector-based green bank for loans, credit enhancements, and the creation of new grant financing methods
	Tool 3: Take advantage of state and federal finance mechanisms for climate mitigation and adaptation projects
	Tool 4: Create a GHG inventory dashboard for municipalities
	Tool 5: Support the creation of municipal and regional positions that will bolster and support climate action
	Toll 6: Advocate for supportive policies at local, state, and federal levels can create a conducive environment for sustainable practices. For example, tax incentives, grants, or subsidies for farmers adopting sustainable methods

Regional Capacity Spotlight: Color your Community Green

Color Your Community Green (CYCG) enables and mobilizes local citizen action teams by towns, villages, and neighborhoods to champion high-impact climate solutions within their own municipalities throughout the region. Initiative emphasizes environmental justice, inclusivity, nonpartisanship, and intergenerational fairness. These community groups are mobilized with the support of the Climate Solutions Accelerator and inspired by Color Brighton Green. With the support of the community, municipalities have successfully reduced local greenhouse gas emissions through education, and targeted actions.

Impact at a Glance:

- Dozens of teams formed across municipalities, especially in disadvantaged areas
- 30+ local climate projects executed—from composting to walkability
- Expanded toolkit, regular trainings, funding support including startup funds
- Municipal empowerment rooted in justice, inclusion, and collaboration

6.8 Review of Authority to Implement Measures & Strategies

NYS's Municipal Home Rule Law authorizes counties to adopt local laws, however their scope or authority is limited. As a result, the scope of authority to implement most climate-related measures rests with municipal governments, while counties primarily play a coordinating, planning, or supporting role. The CCAP reflects this division of authority and, in Appendix E GHG Reduction Measures Implementation Table identifies the appropriate level of government along with key partners that would lead implementation of each measure.



7. Benefit Analysis and Emissions Projections

The CCAP is primarily geared toward reducing GHG emissions and building community resilience to climate change impacts within the Region. Implementation of the CCAP will also result in numerous environmental, economic, and social "co-benefits" beyond climate mitigation and adaptation. Potential for co-benefits such as improvements to local air quality and water supply, increases in local green jobs, cost savings, public health improvements, and improved mobility options, can help the Region make decisions about how it prioritizes implementation of the measures in the CCAP.

7.1 CCAP GHG Benefits

Sector measures are consensus-developed high-level containers that represent local and regional climate action underway and planned throughout the Region. The CCAP reports GHG reduction benefits expected by 2035, according to realistic assumptions of progress based on local trends. Assumptions for 2050 reflect the Region's reduce emission by 85% by 2050.

CCAP GHG benefits are the direct result of local and regional actions of addressing strategies, measures, and tools outlined in this document.

Please see Appendix B: Measures and Benefits Analysis for a more detailed breakdown. missions

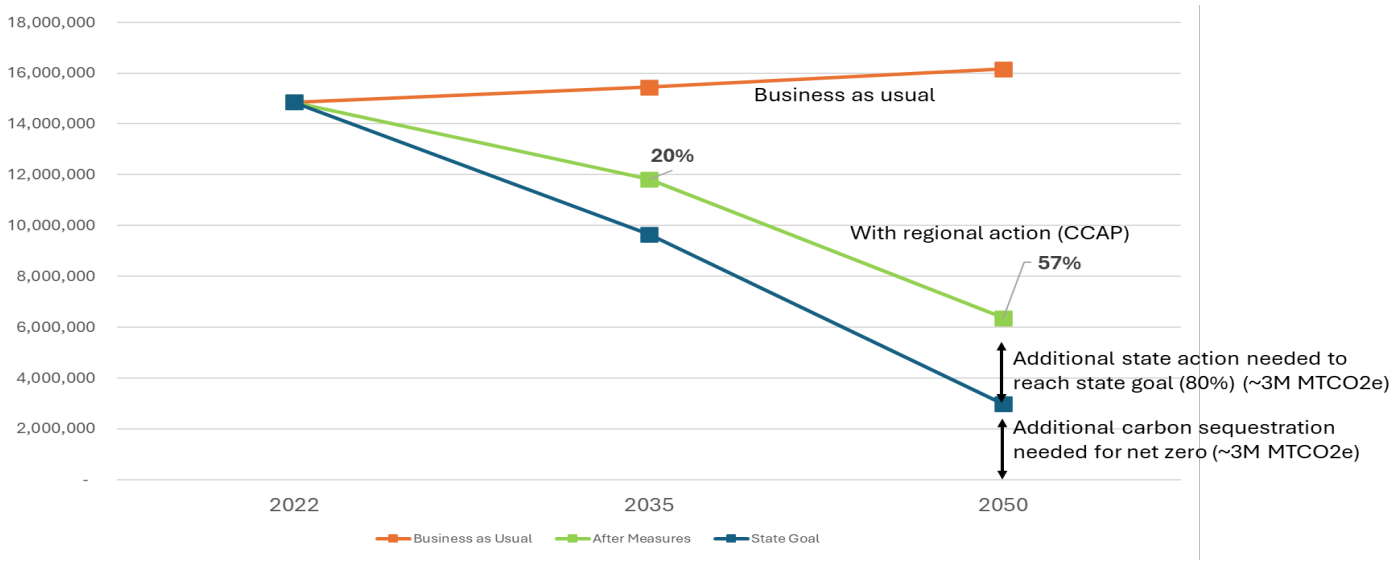
Table 20: CCAP GHG Benefits Summary ($MTCO_2e$)

Measures Summary		Savings by 2035		Savings by 2050	
	Number of Measures	Existing Trends (10% reduction)	Ambitious (20% reduction)	2050 Pathway	Total (80% reduction)
A. Transportation and Land Use	5	251,625	503,251	1,099,059	1,602,309
B. Buildings and Infrastructure	4	924,953	1,849,906	2,672,456	4,522,361
C. Electric Power and Energy	2	55,415	110,831	258,454	369,285
D. Agriculture and Working Lands	5	107,049	214,099	428,197	642,296
E. Materials Management	2	98,345	196,690	716,292	912,981
F. Industry and Workforce	1	136,284	272,568	545,136	817,704
Total	19	1,518,257	3,036,513	5,461,140	8,497,653

7.2 Emissions Projections

Regional emission projections compare "business as usual" forecasts given a slight population increase over time without any measure's intervening to reduce GHGs and projections of emissions after implementing GHG reduction measures in 2035 for a conservative 10% reduction or an ambitious 20% reduction for overall trajectory of decreasing GHGs 80% by 2050.

Figure 25: CCAP Impact Projection, 2022-2050 ($MTCO_2e$)





8. Workforce Planning Analysis

The goal of the workforce planning analysis is to better position the Region to meet our environmental goals by better understanding potential workforce shortages associated with CCAP actions and identify potential actions and solutions to address challenges, and potential partners at the state, regional, and/or local levels who can help address them.

During the CCAP process G/FLRPC with the support of Highland Planning we convened focus groups to discuss climate action in the region, challenges, and opportunities. The Workforce Development focus group met three times during the process. This focus group was made up of experts from educational institutions, employment service providers, county representatives, and regional employers.

The key findings from those meetings included the following:

- Increase awareness of clean energy careers, especially for youth.
- Emphasize that climate action and green jobs are long-term opportunities.
- Expand access to training, clear career pathways, and worker safety.
- Businesses need emergency preparedness plans for extreme weather.
- Risk of population shifts as people relocate due to climate impacts.
- Difficulty attracting younger workers; need for better soft skills, wages, and workplace culture.
- Limited green job openings beyond skilled trades.
- Unclear job definitions, demand uncertainty, and geographic/job mismatches.
- Transportation and funding challenges.

Over the past five years, several regional workforce development initiatives, studies, and programs have been launched to address critical gaps in the clean energy workforce ecosystem. The G-FL Regional CCAP will align with these regional and statewide efforts, advancing shared goals of resilience, job creation, and economic opportunity. The transition to renewable, low-emission energy sources represents one of the most significant societal transformations of our time. For the G-FL Region, this shift presents both challenges and unprecedented opportunities. Preparing our regional workforce not only to withstand these changes but to thrive within them will require targeted investment, cross-sector collaboration, and a commitment to community benefits and innovation. By doing so, the region can lead in building a just, inclusive, and future-ready clean energy economy.

Workforce Challenges

In 2024 the Center for Governmental Research (CGR) with the support of MRB Group prepared The Finger Lakes Region Clean Energy Workforce Current State and Future Prospects for the Climate Solutions Accelerator of the Genesee/Finger Lakes (the Accelerator) to better understand the region's Clean energy economy, with a particular focus on the employment trends, educational needs, and hiring demands of the industry, and to identify regional assets and barriers to meeting the needs in an equitable manner. The Accelerator is designated by the New York State Energy Research and Development Authority (NYSERDA) as the Finger Lakes Clean Energy Hub for this region. This report has two main components; qualitative engagement with Finger Lakes regional stakeholders, through interviews and focus groups; and a quantitative analysis of employment statistics and trends, including core, supportive, and tangential clean energy industries and occupations.

- Core- involving engineering, technician, scientific, production, installation and repair roles that are needed for the design and deployment of clean energy-related systems, goods, and technologies.
- Supportive- primary function is not specifically clean energy work but supports the clean energy economy and the supply chains for clean energy products and services.

- Tangential- primary function is not specifically clean energy work but can include services related to infrastructure and utilities, professional and technical services, various types of non-profit organizations, selected government industries whose counted jobs include a small portion related to the regulation and administration of housing and transportation services and more).

In 2023 The clean energy workforce in the Finger Lakes region employed an estimated 96,000 people, or 16% of the regional workforce including industries and occupations with varying levels of connection of clean energy. This workforce has increased slowly (just 0.3%) in the last 10 years but is expected to grow 10% in the next 10 years.

Based on this research and analysis from the Future Prospects study as well as the 2022 Finger Lakes Workforce Development Strategy developed by the Finger Lakes Regional Economic Development Council (FLREDC) and Camion Associates the following themes were identified that reflect both challenges and opportunities related to workforce development in clean energy in the Region.

Lack of Regional Awareness and Promotion
The Finger Lakes region is missing opportunities to promote and expand awareness of clean energy careers. From 2013 to 2023, job growth in clean energy industries in the Finger Lakes region significantly lagged both New York Station and the Country (.03% growth in the Region vs 9% growth in the State, and 19% growth in the country). Projections suggest regional growth will accelerate to 10% over the next decade, nearly matching national expectations and narrowing the gap with the state (14%).

Regional growth is at risk due to a lack of awareness about the diverse job opportunities, skill requirements, and career pathways within the clean energy sector. Without targeted outreach, education, and training the Region may miss out on economic development, workforce advancement, and equitable participation in the transition to a low-carbon economy. Bridging this knowledge gap is essential to building a resilient regional workforce that can meet the demands of a rapidly evolving energy landscape. The clean energy sector offers a unique opportunity to revitalize interest in skilled trades by aligning traditional roles with emerging low-carbon technologies. As demand grows for cleaner infrastructure such as solar installations, EV charging stations, and energy-efficient systems, so does the need for electricians, plumbers, HVAC technicians, and other tradespeople trained in sustainable practices. This transition will modernize the trades but also create accessible, well-paying career pathways that support a just and inclusive clean energy economy.

Lack of a Shared Understanding of Clean Energy Jobs
Workforce and educational stakeholders report a lack of clarity about clean energy career paths and skill requirements. It is also wrongly assumed that all clean energy roles require advanced degrees, limiting effective program design and outreach. Conversely, educators note that industry leaders have not consistently defined or communicated their workforce needs, leaving institutions uncertain about whether to create specialized clean energy curricula or integrate such content into existing programs. This confusion is compounded by the fact that many clean energy jobs, like solar or heat pump installation, require foundational skills (e.g., in HVAC, electrical, or construction trades) rather than entirely new ones. Workers can shift fluidly between fossil fuel and clean energy projects depending on demand.

Systemic and Sector-Specific Barriers
Barriers such as lack of interest in the trades, inadequate transportation, and childcare access are common across all sectors but are especially stated in clean energy. This can be attributed to the location of worksites and training programs, training programs offered only during standard work hours, or requiring upfront fees will disproportionately exclude low-income individuals or those with caregiving responsibilities. Similarly, procurement policies that favor large, established firms may disadvantage smaller, community-based enterprises

or those owned by marginalized groups.

Lack of Workforce Diversity
Without intentional strategies to increase inclusion, clean energy workplaces risk replicating the lack of diversity seen in traditional trades. Diverse recruitment and retention strategies are essential for long-term ecosystem growth.

Skepticism Gap
The "skepticism gap" refers to the disconnect between public perception and the realities or potential of clean energy jobs. Many businesses and municipalities remain hesitant to the clean energy transition, often awaiting clearer signals of market demand, regulatory certainty, or technological maturity. Some educators are reluctant to invest in new programs, and some just transition workers see little immediate relevance to their careers.

This skepticism whether about job availability, pay, stability, or the viability of the clean energy transition itself can undermine momentum for clean energy workforce development. We can see this in lower participation rates in training programs, slower policy support, the lack of investment from industry, and a misalignment with the existing workforce.

Lack of Electricians
Data suggests that the renewable energy cluster is in significant need of electricians to fill critical positions, estimating there is an annual demand for 240 electricians through 2032. Additional formal training on the job, and apprenticeship programs are needed to expand the pathway and address the needs of the renewable energy cluster.

7.2 Recommendations & Solutions

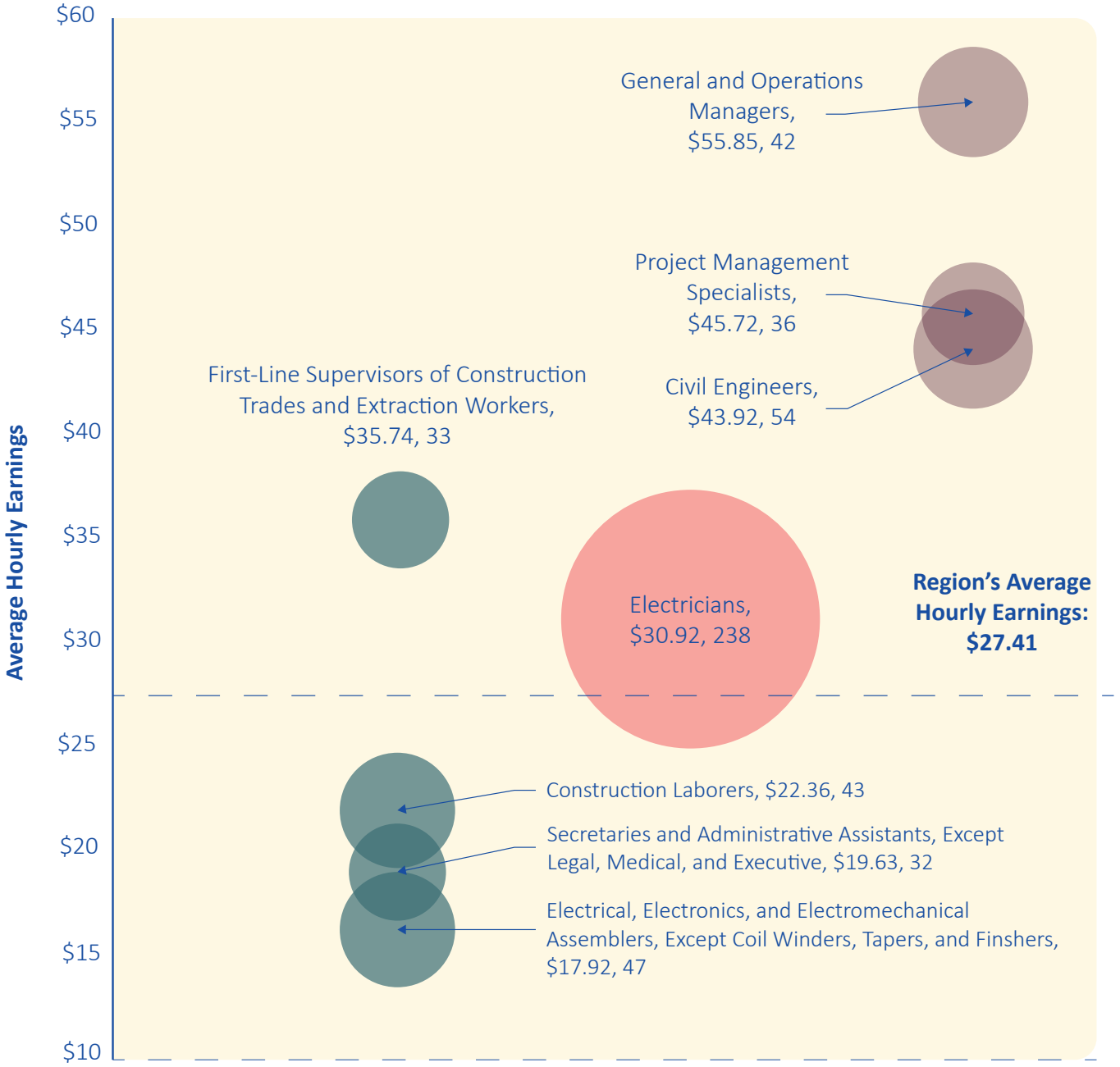
To sustainably grow and grow and diversify the clean energy workforce, regional stakeholders should promote clean energy careers through skilled trade and educational programs, career guidance, and strategic marketing. Key actions include coordinated outreach, expanding training programs (especially solar installation), aligning education with job market needs, and creating inclusive pathways for underrepresented groups. Partnerships among industry, government, and education are essential, along with transparent hiring and advancement practices. Public awareness should be raised through data-sharing, success stories, incentives, and targeted events to engage both workers and skeptical stakeholders.

To promote clean energy careers, clean energy pathways should be integrated into skilled trade and educational programs as a strategic recruitment tool. Marketing campaigns targeting middle and high school students can raise awareness about what it takes to pursue a career in the clean and renewable energy space. Organizations such as the G/FLRPC, Climate Solutions Accelerator, Greater Rochester Chamber of Commerce, Finger Lakes Regional Economic Development Council (FLREDC), regional workforce development boards, and One Stop Partners should lead public outreach efforts. Sharing accessible, easy-to-understand briefs about job types, required skills, and training opportunities with educators, job seekers, and employers can help demystify these career paths.

Hosting career fairs and demonstrations with local employers offers students immersive experiences, while also engaging parents, coaches, and other adult influences in students' career planning. Regional events like GLOW With Your Hands and the Finger Lakes Career Carnival provide strong models for such programming. Additionally, developing summer programs for career counselors and educators combining lectures, facility tours, and hands-on lesson planning will help "educate the educators" and enrich classroom content with real-world insights.

To expand training for in-demand occupations, partnerships with community colleges, training providers, and workforce development agencies are essential to embed clean energy careers into regional strategies. Regular employer–educator convenings can ensure alignment between training and labor market needs. Scaling up solar installation training based on regional demand, both for residential and

Figure 26: Top Gap Occupations: Clean & Renewable Energy



Source: Adopted from the Finger Lakes Workforce Development Strategy

commercial sectors, is critical. Addressing gaps in skilled trades such as electricians and planning for increased demand for HVAC installers is equally important. A comprehensive credential program that includes installation, sales, marketing, and financial incentives would help meet this growing need.

Public engagement must also be increased to build broad support and awareness. Targeted outreach efforts can highlight clean energy incentives, while neutral, solution-focused events can address skepticism by discussing practical benefits and concerns. Collaborating with unions is important to support transitioning workers and ensure unionized trades are informed and involved. Coordination with NYSERDA, the NYSDEC, and G/FLRPC will help keep clean and renewable energy top-of-mind in the community as a vibrant and growing economic sector.

Advancing broad-community benefits should be a guiding principle across all efforts. Working with community-based organizations helps reach underrepresented groups, while multilingual materials and inclusive environments are necessary to support immigrants and non-English speakers. Programs like the Tradeswomen's Pre-Apprenticeship Training Program and the Sisters in the Brotherhood initiative are key models for encouraging women to enter skilled construction trades.

Revising hiring practices to engage women, Black, Latino, and other marginalized candidates, along with ensuring transparent promotion criteria and access to professional development, supports equitable advancement. Finally, providing accurate information about wages, job growth, and career stability in the clean energy sector will help motivate a more diverse and informed group of job seekers.



9. Funding Availability

There are a wide range of available federal funding opportunities which would support the implementation of CCAP measures. Since January of 2025 the Federal Government has reversed course from previous funding initiatives such as the Infrastructure Investments and Jobs Act (IIJA) and the Inflation Reduction Act (IRA) and appear to be no longer funding climate planning and climate science initiative. Due to this reversal communities within the Region will be more heavily relying on NYS for implementation funding.

9.1 NYS Funding Availability

NYS's nation-leading climate agenda is the most aggressive climate and clean energy initiative in the nation, calling for an orderly and just transition to clean energy that creates jobs and continues fostering a green economy. NYS has a variety of funding sources that can be used to reduce GHG emissions across the state.

New York State Energy Research and Development Authority (NYSERDA)

NYSERDA works to promote energy efficiency, renewable energy, and emissions reduction across New York's economy and energy system. NYSERDA supports clean energy and technologies, and is working to advance community benefits, jobs and economic development, public health, and community resilience through a variety of funding sources.

Several opportunities available through NYSERDA include the following:

Workforce Development and Training- $170 million in funding is available to support clean energy workforce development and training.

Multifamily Buildings Low-Carbon Pathways Program- This program offers flexible packages of incentivized energy upgrades that bring deep energy savings to major building systems. This guided path of building upgrades can help you achieve your sustainability goals. Each of the upgrade packages includes detailed guidance for each building system and a set of required upgrades, along with additional recommended upgrades to achieve even deeper energy savings and incentives to major building systems.

Truck Voucher Incentive Program-The New York Truck Voucher Incentive Program helps make it easier for fleets to adopt zero-emission vehicle technologies while removing the oldest, dirtiest diesel engines from New York roads. The program provides vouchers, or discounts for Class 4-8 trucks, transit buses, paratransit shuttle buses, school buses, and port cargo handling equipment.

For a full list of NYSERDA's funding opportunities visit: https://www.nyserda.ny.gov/All-Programs

New York State Department of Environmental Conservation (NYSDEC)

The NYSDEC looks to conserve, improve, and protect New York's natural resources and environment and to prevent, abate and control water, land, and air pollution, to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being. NYSDEC's goal is to achieve this mission through the simultaneous pursuit of environmental quality, public health, economic prosperity, and social well-being, including environmental justice and the empowerment of individuals to participate in environmental decisions that affect their lives. The NYSDEC funds the following program:

Climate Smart Communities Grant- The Climate Smart Communities (CSC) Grant program was established in 2016 to provide 50/50 matching grants to cities, towns, villages, counties for eligible climate change mitigation, adaptation, and planning and assessment projects. Funds are available for two broad project categories; implementation and certification. The first project category supports implementation projects related to the reduction of GHG emissions (mainly outside the power sector) and climate change adaptation. The second supports planning and assessment projects aligned with Climate Smart

Communities certification actions. Applications are accepted through the Consolidated Funding Application; the next round is anticipated to open in Q3 2024. For a full list of State and Federal funding opportunities listed below visit G/FLRPC CCAP website: https://engage.gflrpc.org/CPRG/ghg-reduction-funding

Table 21: Funding Availability

Funding Source	Funding Program	Sector	Eligible Applicants
NYS DEC	Climate Smart Communities (CSC)	All	Municipalities
NYSERDA	Clean Energy Communities	All	Municipalities
NYS Department of Agriculture & Markets	Agricultural & Farmland Protection Planning Grants	Agriculture and Working Lands	Municipalities
U.S. Department of Agriculture	Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans & Grants	Agriculture and Working Lands	Agriculture producers and small businesses
NYS Department of Agriculture & Markets	Agricultural & Farmland Protection Planning Grants	Agriculture and Working Lands	Municipalities
Northeast Sustainable Agriculture Research & Education	Professional Development Grants	Agriculture and Working Lands	Farmers and producers
Northeast Sustainable Agriculture Research & Education	Farmer Grant Program	Agriculture and Working Lands	Farmers and producers
NYSERDA	Agriculture Energy Audit Program	Agriculture and Working Lands	Farmers and producers
National Grid	Agri-business Program	Agriculture and Working Lands	Individuals Businesses
New York State Department of Agriculture & Markets	Climate Resilient Farming Round 6	Agriculture and Working Lands	Soil and Water Conservation Districts.
New York State Department of Agriculture & Markets	Urban Farms & Community Gardens Grant Program	Agriculture and Working Lands	Not-for-profit organizations educational institutions Municipalities Community-led groups Tribes
New York State Department of Agriculture & Markets	CAFO Enhanced Nutrient and Methane Management Program	Agriculture and Working Lands	Soil and Water Conservation Districts
USDA	On-Farm Energy Initiative	Agriculture and Working Lands Energy Buildings	Farmers and producers

Funding Source	Funding Program	Sector	Eligible Applicants
NYS DEC	Community Forest Conservation Round	Agriculture and Working Lands Land Use	Municipalities
NYS DEC	Conservation Partnership Program Grants	Agriculture and Working Lands Land Use	Land Trusts
NYSERDA	Commercial & Industrial Carbon Challenge	Buildings	Large energy consumers
National Grid	Weatherization Program	Buildings	Individuals Businesses
NYSERDA	Appliance Upgrade Program	Buildings	Individuals
NYSERDA	Zero Emission Homes for Healthier Communities	Buildings	Developers
NYSERDA	Building Cleaner Communities Competition	Buildings	Developers Non Profits
NYSERDA	Flex Tech	Buildings	Commercial, industrial, institutional, and multifamily facilities including small businesses and not-for-pro
National Grid	Energy Efficient Lighting For Business	Buildings	Businesses
National Grid	Real Time Energy Management (RTEM) Incentive	Buildings	Peak demand over >300kW
NYSERDA	Workforce Training - Building Operations & Maintenance	Buildings Workforce	Building owners and property managers
NYSERDA	Large Scale Thermal	Buildings Energy	Property Owners
NYSERDA	Comfort Home Program	Buildings Energy	Individuals
NYS Homes and Community Renewal	Weatherization Assistance Program	Buildings LIDAC	Individuals
NYS Office of Temporary and Disability Assistance	Home Energy Assistance Program	Buildings LIDAC	Individuals
Environmental Facilities Corporation	Green Innovation Grant Program	Energy	Municipalities
NYSERDA	Build Ready	Energy	Property Owners
NYSERDA	NY-Sun	Energy	Property Owners
NYSERDA	Strategic Energy Management Program	Energy	Participants demonstrating measurable energy savings may qualify.

Funding Source	Funding Program	Sector	Eligible Applicants
NYSERDA	On-site Energy Manager Program	Energy Buildings	Industrial, commercial, and multifamily facilities or buildings
NYSERDA	Clean Heat for All: Packaged Terminal Heat Pump Program	Energy Buildings	Multifamily building owners and operators
NYSERDA	Commercial Property Assessed Clean Energy (PACE) Financing Resources	Energy Buildings	Municipalities
NYSERDA	NYS Greenbank Clean Energy Financing	Energy Buildings	Private developers
NYSERDA	Residential Energy Assessment	Energy Buildings	Individuals
RG&E	Commercial & Industrial Rebates	Energy Buildings	Commercial and industrial customers
NYS DEC and Environmental Facilities Corporation	Wastewater Infrastructure Engineering Planning Grant	Infrastructure	Municipalities School Districts District corporations or improvement districts
Environmental Facilities Corporation	Drinking Water State Revolving Fund	Infrastructure	Public, private, non-profit, and non-community owned water systems.
NYS DOS	Smart Growth Community Planning Program	Land use	Municipalities
NYSERDA	EmPower +	LIDAC Energy Buildings	Individuals
NYSERDA	NYS Clean Heat	LIDAC Energy Buildings	Individuals
NYS DEC	Municipal Food Scraps Recycling Grant Program	Materials Management	Municipalities
NYS DEC	Municipal Landfill Gas Management Projects	Materials Management	Municipalities
Recycling Partnership	Polypropylene Recycling Grant	Materials Management	Public private or nonprofit operated material recovery facilities
Waste Management	Waste Management Charitable Giving	Materials Management	Organizations Corporate partners Individuals
US EPA	Solid Waste Infrastructure and Recycling Grants	Materials Management	Municipalities tribes

Funding Source	Funding Program	Sector	Eligible Applicants
NYS DEC	Municipal Waste Reduction and Recycling Program	Materials Management	Municipalities Tribes
New York State Pollution Prevention Institute	Food Waste Reduction & Diversion Reimbursement Program	Materials Management	Not-for-profit Businesses
New York State Pollution Prevention Institute	Grants for NYS Colleges & Universities	Materials Management	Universities and Colleges
Environmental Facilities Corporation	The Industrial Finance Program	Materials Management	Public or private entities
NYS DEC	Recycling Coordination & Education Projects	Materials Management	Municipalities Local Public Authorities Local Public Benefit Corporations School Districts Supervisory Districts & Improvement Districts Native American Tribes or Nations
NYS DEC	Grants for Municipal Landfill Closure Projects	Materials Management	Municipalities Local Public Authorities Local Public Benefit Corporations School Districts Supervisory Districts & Improvement Districts Native American Tribes or Nations
NYS DEC	Grants for Recycling Capital Projects	Materials Management	Municipalities Local Public Authorities Local Public Benefit Corporations School Districts Supervisory Districts & Improvement Districts Native American Tribes or Nations
NYS DEC	Municipal Landfill Gas Management Projects	Materials Management	Municipalities
Empire State Development	Business Food Waste Mitigation Grant Program	Materials Management	Municipalities Not-for profit organizations for profit organizations
USDA	Solid Waste Management Grants	Materials Management	Public bodies Nonprofits Federally recognized tribes Academic institutions

Funding Source	Funding Program	Sector	Eligible Applicants
FTA	National Rural Transit Assistance Program	Transportation	Rural and tribal transportation systems
NYSERDA	Charge Ready	Transportation	Public, private and nonprofit organizations
NYSERDA	Electric Schools Buses	Transportation	Schools
Joint Utilities of NY	EV Make-Ready Program Fleet Assessment	Transportation	Municipalities Businesses
Joint Utilities of NY	Medium- and Heavy-Duty EV Make-Ready Pilot	Transportation	
RG&E, NYSEG	OptimizeEV	Transportation	Individuals
National Grid	Charge Smart NY	Transportation	Individuals
NYSERDA	Truck Voucher Incentive Program	Transportation	Truck Operators
NYSERDA	Drive Clean Rebate	Transportation	Individuals
NYSERDA	Clean Mobility Program	Transportation	Municipalities Transit operators, Community-based organizations Local employers or groups of employers with a total of at least 1,000 employees in the community that they intend to serve.
NYSERDA	Clean Energy Internship Program	Workforce	Individuals businesses
NYSERDA	Energy Efficiency and Clean Technology Training	Workforce	Education institutions and job training programs Businesses Unions
NYSERDA	Climate Justice Fellowship	Workforce	Businesses Universities Municipalities



10. Next Steps

The CCAP is designed to lay out the policies and the programs necessary for the Genesee-Finger Lakes Region to reduce GHG emissions in each of the sectors and The CCAP laid the groundwork for future action to be taken in the Region.

The next step for the Region as part of the EPA's Climate Pollution Reduction Grant is a status report, due at the close of the 4-year grant period in 2027. The report will measure progress on the GHG reduction measures, track emissions impacts, and document policy and program milestones, ensuring transparency and accountability.
Through implementation of reduction measures, G/FLRPC will keep the public engaged by sharing updates, reporting successes, and inviting input to refine strategies. Regular communication with municipalities, community organizations, and residents will help maintain momentum, adapt to new challenges, and keep the Climate Action Plan as a living framework that drives measurable progress beyond 2027.

Achieving these outcomes will require continued support from G/FLRPC and other local organizations to assist municipalities in implementing measures, tracking results, and sustaining engagement across the Region. This will include offering GHG inventories as a service to monitor individual municipality progress and guide future action.

Providing GHG inventories as a service will give municipalities a reliable, consistent way to measure and track their emissions over time, ensuring they can monitor progress toward their climate goals. G/FLRPC can compile and analyze local data on emissions sources, using standardized methods aligned with state and federal reporting protocols. By offering this service, G/FLRPC will not only reduce the technical and staffing burden on municipalities but also create comparable datasets across the Region, allowing for shared learning, benchmarking, and coordinated climate action. Regular inventory updates will help communities evaluate the effectiveness of their measures, adjust strategies as needed, and demonstrate accountability to residents, partners, and funding agencies.

10.1 Monitoring

Successful implementation of the PCAP and CCAP strategies requires monitoring and reporting on the results of our efforts and a robust public process. Reporting requirements provide transparency and public access to information and awareness of where improvements can be made in our emissions reduction activities. Information ranging from annual GHG emissions to how well the policies implemented are working to meet the GHG emission limits will be released in a range of reports.

Reporting is critical to track how the Region is meeting the GHG emission reduction goals; and the Region will measure, track, and report on the investments, benefits, and positive outcomes for Disadvantaged Communities.

Relating to future steps towards climate action, specifically related to GHG emissions and inventories, our recommendations are as follows:

- Perform a GHG Inventory and update with the latest data every 5-10 years starting in 2025.
- Utilize the data and analysis presented in this report to inform a formal climate action plan, including a GHG Inventory update in 2025, 2030, 2040, 2050 and so on.
- Utilize this report's findings to prioritize projects and actions that will impact the sectors or sources that have the largest opportunity for emissions reductions. a. For example, spearhead an initiative that targets reducing emissions within the Department of Public Works and their vehicle emissions, or target resident behaviors such as energy savings in the wintertime which would directly impact stationary emissions.

10.2 Municipal Implementation

Table 22 below outlines a sequential framework for advancing climate action that can be scaled according to municipal capacity. The process begins with the identification of priorities, ranging from the selection of a limited number of actions in smaller municipalities, to facilitated workshops in medium-sized municipalities, to comprehensive planning processes with broad public engagement in larger jurisdictions. These priorities are then integrated into existing planning frameworks, whether through comprehensive plan updates, zoning and capital improvements, or alignment across multiple policy documents. Funding strategies follow, progressing from modest local or state grants to the pursuit of state and federal programs, and ultimately to multi-year funding initiatives supported by regional partnerships and private investment. Implementation approaches similarly scale with capacity, from reliance on volunteers or part-time staff, to departmental leadership with clear milestones, to the establishment of dedicated sustainability positions or teams. Finally, progress is tracked through increasingly sophisticated methods, beginning with simple tools such as spreadsheets, advancing to periodic greenhouse gas inventories, and culminating in ongoing monitoring dashboards and public reporting systems.

Collectively, these steps provide municipalities with a structured, adaptable roadmap to guide the transition from planning to implementation.

Table 22: Municipal Next Steps for Climate Action

Step	Small Municipalities	Medium Municipalities	Large Municipalities
1. Identify Priorities	Hold a working session with municipal boards to review strategies and select 2–3 immediate priorities.	Conduct a facilitated workshop with department heads, elected officials, and community stakeholders to rank actions.	Undertake a comprehensive climate action planning session, incorporating public engagement and sector-specific input.
2. Integrate into Plans	Add selected actions into the next comprehensive plan update, annual work plan, and/or budget.	Update zoning, capital improvement plans, and transportation policies to align with selected strategies.	Integrate actions across multiple plans, such as comprehensive, hazard mitigation, transportation, and/or housing plans.
3. Seek Funding	Apply for small state or county grants	Pursue state/federal programs.	Launch multi-year funding strategies, including federal resilience grants, private partnerships, and regional collaborations.
4. Implement	Use volunteer committees or part-time staff to launch initial projects.	Assign departmental leads and set clear milestones.	Create dedicated sustainability staff positions or teams for implementation.
5. Track Progress	Use simple tracking tools such as Excel or budget tracking	Use GHG inventory updates every 3–5 years to assess progress.	Establish ongoing monitoring dashboards and public reporting platforms.

Endnotes

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