PHASE II

Community-wide

CLIMATE ACTION PLAN

MONROE COUNTY New York

JUNE 2024

ADAM J. BELLO
COUNTY EXECUTIVE

ACKNOWLEDGMENTS

Many individuals contributed time and effort to help develop Phase II of the Monroe County Climate Action Plan (CAP). Their commitment and hard work are greatly appreciated.

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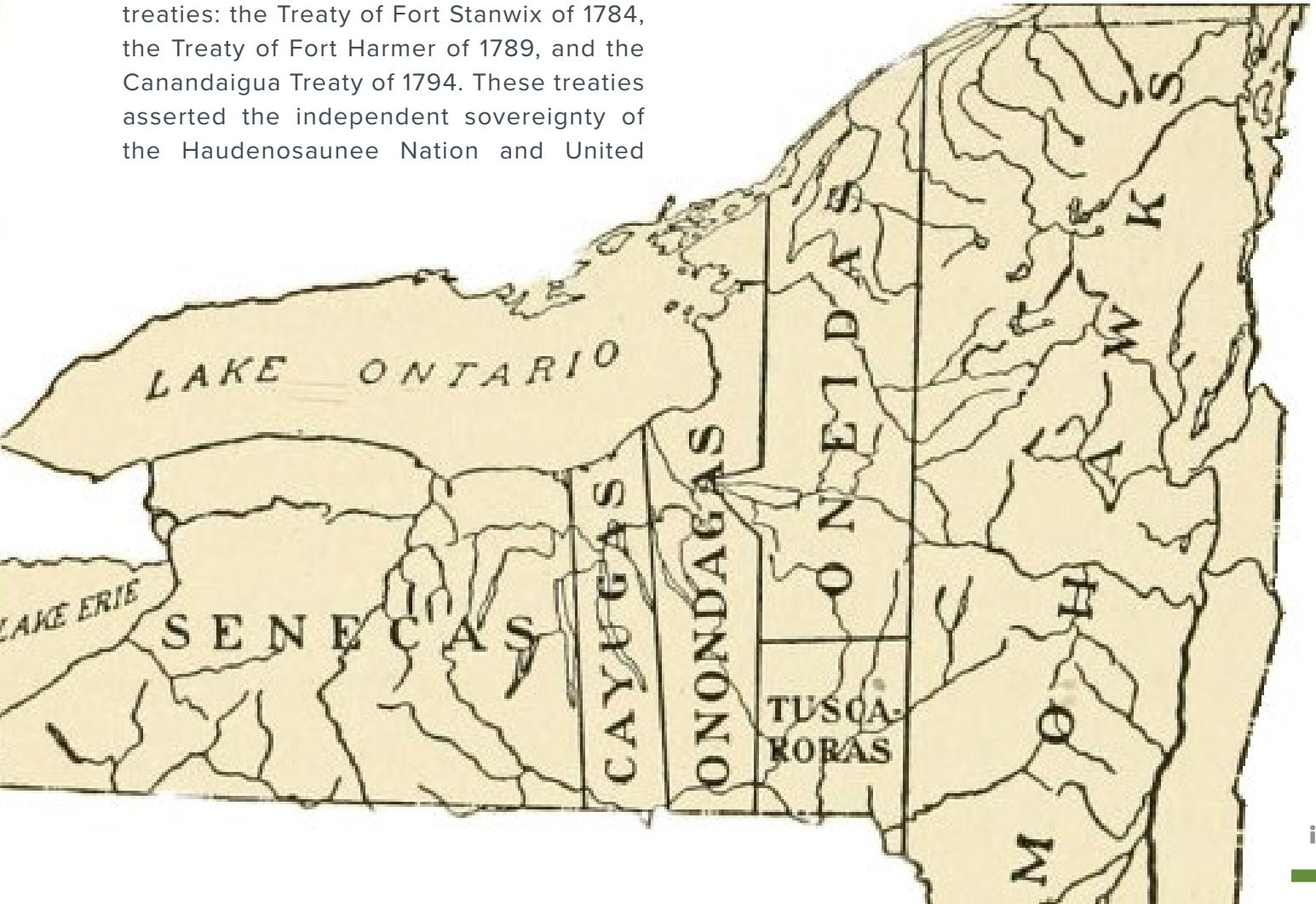
INDIGENOUS LAND ACKNOWLEDGMENT

The overarching goal of this Climate Action Planning process is to develop a strategic framework and actions for improving the County's relationship with the land. As such, it is important to recognize the legacy of our land and those who first resided here. Our community is located on the homelands of Ho-de-no-sau-nee-ga (Haudenosaunee) and Onöndowa'ga (Seneca) people. We acknowledge that this land has been taken from the Haudenosaunee and Seneca people through a history of unjust land acquisition and unfair treatment during the time of colonization.

The Haudenosaunee Confederacy (which includes the Onondaga, Mohawk, Oneida, Cayuga, and Seneca Nations) and the United States have three major standing treaties: the Treaty of Fort Stanwix of 1784, the Treaty of Fort Harmer of 1789, and the Canandaigua Treaty of 1794. These treaties asserted the independent sovereignty of the Haudenosaunee Nation and United States, established territorial boundaries and means of compensation, and called for a peaceful and friendly relationship between both entities.

The Haudenosaunee and Seneca people are an integral part of our community who continue to contribute to our community's history, culture, and growth. Through this acknowledgment, Monroe County recognizes, honors, and respects the Haudenosaunee Confederacy and Seneca Nation as the traditional stewards of the lands and waters on which we live - and strive to learn from these indigenous communities to foster a more integrated and sustainable relationship with their indigenous lands.

Image Source: Oneida Nation

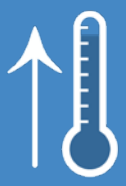


Executive Summary

Climate change is one of the most pressing issues of our time, with significant implications for our environment, economy, and public health. Monroe County is dedicated to leading the way in climate action with its efforts to reduce greenhouse gas (GHG) emissions and build resilience against climate-related risks. The **Climate Action Plan (CAP)** presents a comprehensive strategy to reduce our region's contribution to climate change for a more sustainable future.

Climate change is already having an impact on New York State and these impacts are projected to grow.

In Western New York, by the 2080s, middle range projections show:



RISING TEMPERATURES

between 5.7°F and 9.6°F

RISING PRECIPITATION

between 4% and 13%

CHANGES IN EXTREME EVENTS:

MORE DAYS ABOVE 90°F

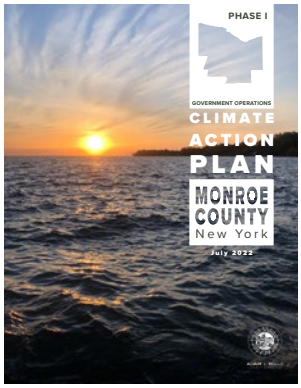
FEWER DAYS BELOW 32°F

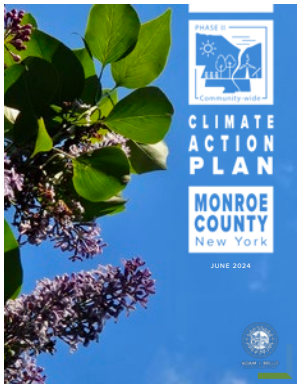
The CAP Approach:

Monroe County completed the CAP using a two-phased approach. To begin the planning process, Phase I focused on emissions from County-owned sites, facilities, and operations to create a strategy to decrease GHG emissions attributed to government operations. **This document represents Phase II, which expands on the first phase of the CAP to address emissions from Monroe County residents and from businesses and organizations in Monroe County that are not operated by the County.** Together, these phases provide a road-map for climate action that is applicable to all stakeholders in Monroe County.

Both Phase I and Phase II of the CAP can be found at the County's climate action website:

www.monroecountyclimateaction.com



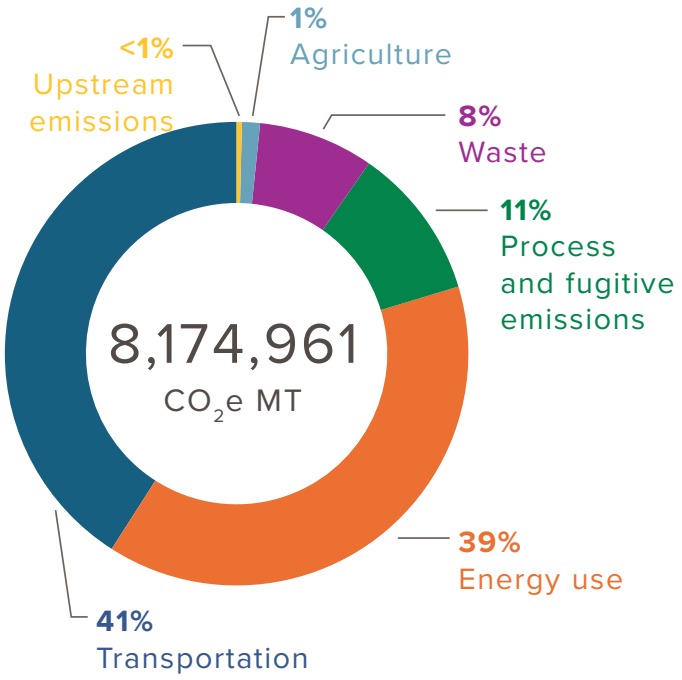


GHG Inventory

A key element of the CAP is a the GHG inventory, which measured emissions from **Monroe County residents and from businesses and organizations in Monroe County that are not operated by the County. This inventory is a complement to the GHG inventory conducted in Phase I, which measured emissions from government operations.** Both the Phase I and Phase II inventories utilize the International Council for Local Environmental Initiatives' (ICLEI) ClearPath tool with data from 2019.

Identifying six different source categories, the Phase II GHG inventory details the metric tons of carbon dioxide equivalent (CO_2e MT) in Monroe County. This data highlights that, at over 80% of the total emissions, transportation and energy use are the largest sources of GHG emissions in Monroe County.

Total 2019 Emissions:



The majority of GHG emissions in Monroe County come from the transportation and energy use sectors.

Forecasting GHGs

As a baseline to guide potential emissions reductions, a "business as usual" (BAU) forecast was developed. This BAU forecast assumes no additional actions will be taken within the Monroe County boundary to reduce emissions beyond what is already regulated or policies that have already been adopted as of 2023. Still, the forecast relies on the achievement of the State's ambitious goals for zero-emission vehicles and a zero-emission grid. **If NYS emission reduction goals are met, GHG emissions in Monroe County are projected to decrease by 32.5% by 2050.**

COMMUNITY-WIDE TARGET

GHG REDUCTION

80%

below 2019 levels by 2050

Taking climate action, Monroe County aims to achieve an 80% reduction in GHG emissions county-wide by 2050, compared to the 2019 baseline. This target is consistent with the overall target set in Phase I of the CAP for government operations. Although not regulatory in nature, Phase II of the CAP encourages voluntary participation from all community stakeholders.

A Guiding Framework:

To outline the steps necessary to achieve the GHG reduction target of 80% below 2019 levels by 2050, the CAP provides a dynamic framework of goals, strategies and actions for community-wide implementation. Shaping this framework is the extensive community engagement that was conducted as part of the planning process, including regular CAP Advisory Committee meetings, multiple rounds of public workshops, online surveys, stakeholder meetings, and other interactive engagement techniques.

The framework is organized by six focus areas, including: transportation; buildings and housing; energy use and consumption; land and water resources; partnerships, education and economy; and, sustainable materials management. These focus areas align GHG sources with different sectors of Monroe County that were identified as critical for addressing environmental challenges.

Based on input received, the transportation focus area and the buildings and housing focus area were identified as top priorities.

FOCUS AREA GOALS

Transportation:

» Increase connectivity surrounding high trip potential and population centers.

» Reduce vehicle miles traveled.

» Increase zero emission personal and fleet vehicles, equipment, and facilities.

Buildings & Housing:

» Consider existing development, redevelopment, and new development scenarios to reduce or eliminate GHG emissions.

» Reduce energy use of buildings powered by fossil fuels, and transition to renewable energy sources where possible.

» Implement green building infrastructure and renewable energy generation policies on new development and encourage the retrofitting of existing buildings and land.

Energy Use & Consumption

» Identify opportunities to reduce energy use and convert to renewable energy sources.

» Support municipalities and connect individuals to potential resources and programs for transitioning from fossil fuels to renewable energy.

Land & Water Resources:

» Protect and conserve existing open spaces, agricultural lands, and natural areas.

» Improve access to and awareness of local natural resources at both a micro and macro scale to build environmental stewardship community-wide.

» Mitigate and reduce heat island impacts from the built environment.

Partnerships, Education & Economy:

» Identify and foster connections between private and public organizations, local and county governments, and regional initiatives.

» Increase awareness and access to online platforms, tools, and networks to leverage partnerships between these groups.

Sustainable Materials Management:

» Support, connect, and enhance access and awareness of diverting waste from landfills.

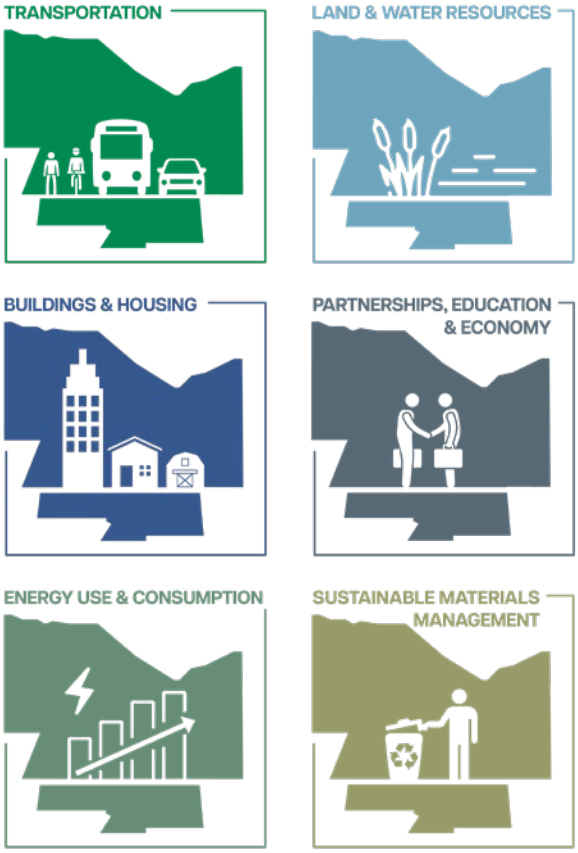
» Develop waste reduction and minimization programs that incorporate techniques of reduction, reuse, recycling, composting and organics recycling.

» Increase innovative re-purposing of waste byproducts and consider opportunities to harvest waste products for energy.

Community-wide Implementation:

Essential to the CAP are the actions for implementation. It is these actions that identify ways to reach the community-wide GHG reduction target and support sustainable practices throughout Monroe County. Categorized by a variety of strategies, the actions are presented in tables following the goals for each focus area. Each action table highlights the actions applicable to the County, municipalities, businesses, community organizations, and individuals. These tables are designed to be used as a checklist for climate action.

To access the action table for a specific focus area, click on the corresponding focus area icon below:



Climate action through the implementation of CAP goals, strategies and actions can have numerous benefits, such as:

- cost savings through energy efficiency and renewable energy adoption,
- improved public health from reduced air pollution,
- preservation of natural resources,
- economic growth through the creation of green jobs,
- enhanced community resilience to climate impacts, and
- greater equity by reducing energy costs for low-income families.

Supporting Continued Climate Action:

The CAP is a part of an ongoing effort for climate mitigation and adaption in Monroe County that includes a variety of guiding plans and operational studies. As a tool for continued climate actions, the Phase II CAP highlights key plans that identify community-wide policies and programs in Monroe County. Additionally, the CAP outlines state, regional and local planning efforts and funding opportunities for climate action to serve as resources for Monroe County stakeholders.

Together, the data, planning framework and implementation resources presented in the CAP support **a community-wide effort for collective action and community engagement in achieving a more resilient future for all residents.**

Monroe County Climate Action Plan (CAP)
Phase II: Community-Wide

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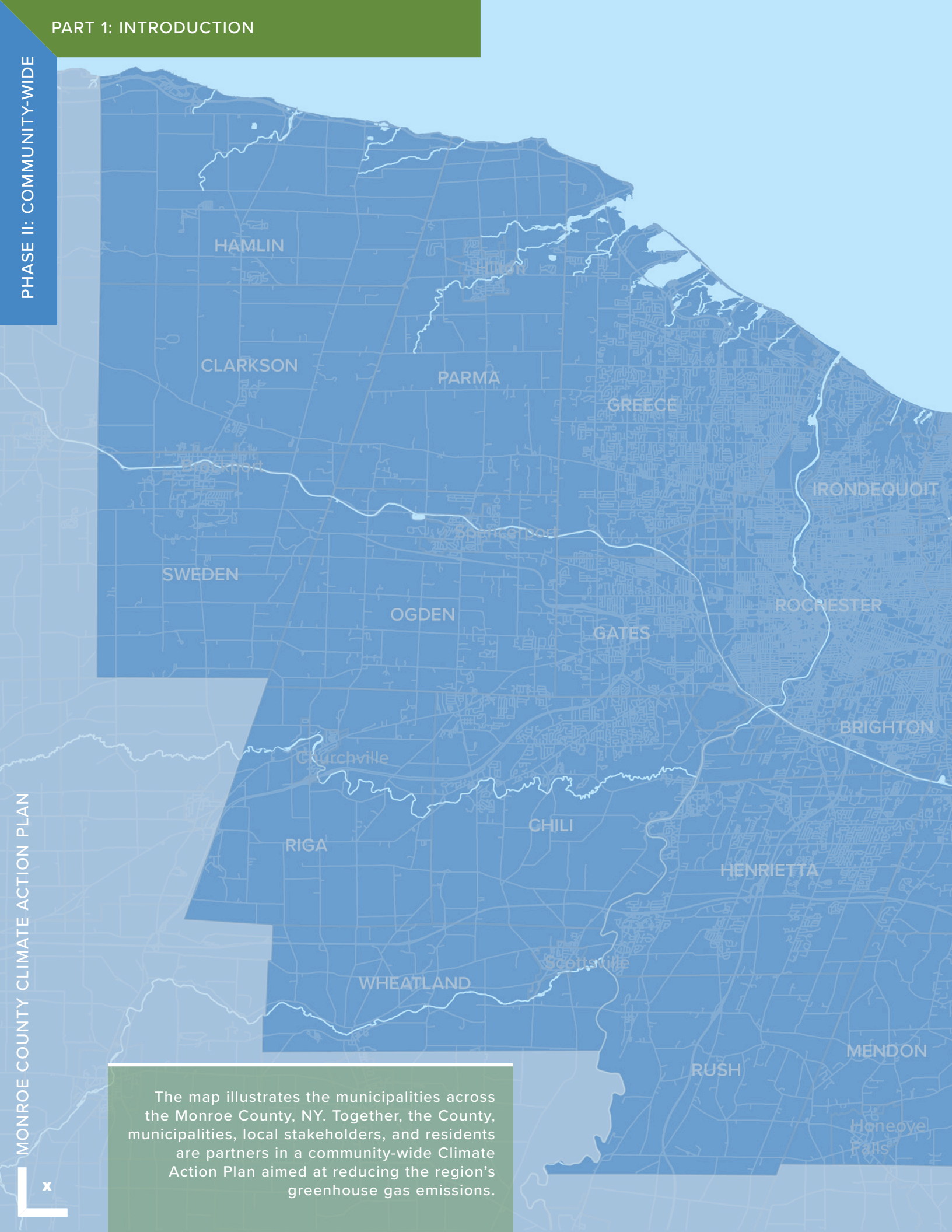
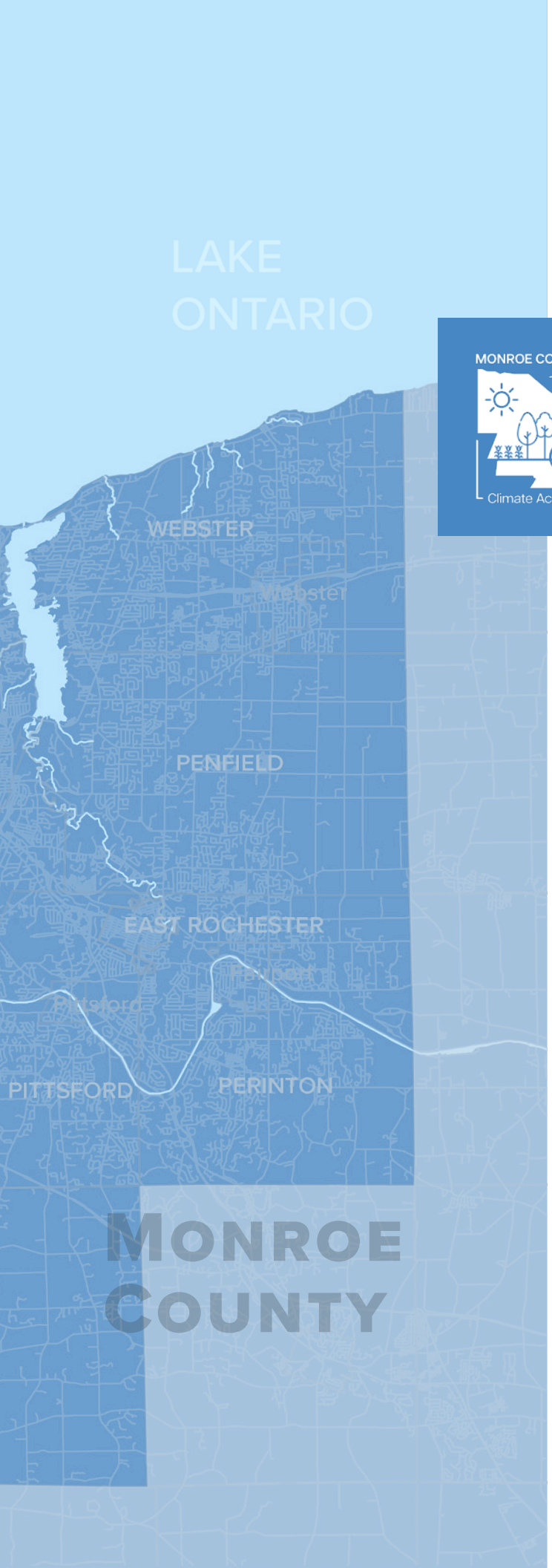


The map illustrates the municipalities across the Monroe County, NY. Together, the County, municipalities, local stakeholders, and residents are partners in a community-wide Climate Action Plan aimed at reducing the region's greenhouse gas emissions.



Part 1

Introduction

The Monroe County Climate Action Plan is a comprehensive roadmap designed to reduce our region's contribution to climate change and ensure a more sustainable future.

About the Monroe County CAP

Monroe County is already committed to climate action initiatives through the Monroe County Legislature's approval to fund up to $1,000,000 annually toward projects listed in the Phase I CAP.

The Monroe County Climate Action Plan (CAP) is a two-phased approach to developing this critical planning initiative. Phase I of the Monroe County CAP was completed in 2022 and centered on Government Operations. During this phase goals, strategies and initiatives that will reduce greenhouse gas (GHG) emissions from County-owned sites, facilities, and operations were identified and prioritized. Based on plan findings, the County developed a strategic action plan for climate change adaptation and mitigation at the county-government level. With Phase I, Monroe County takes a leadership position from which local municipalities and community members can draw inspiration and best practices upon which to build. This important first step set the stage for the next phase of the Climate Action Plan.

In Phase II of the CAP, Monroe County continues to work toward creating resilient and sustainable communities across the region. This phase is community-wide, broadening the scope of the CAP to consider a variety of GHG emission sources and activities, encapsulating the impacts of how we all live, work, and travel throughout the County.

Focused on reducing GHG emissions from the County and all its stakeholders, Phase II addresses residential, commercial, industrial, municipal, and other energy-dependent activities in Monroe County that fall outside of the County's direct control. This approach offers a more thorough understanding of the whole scope of the County's emissions-producing infrastructure and activities, including land use and operations by the private sector.

Phase II of the CAP plays an educational and guiding role, encouraging climate action by local stakeholders, residents, and municipalities. By adopting this Plan, the County is not imposing regulatory authority over municipalities, businesses, or residents within its borders, rather the County hopes to foster collective action through inspiration and collaboration. Voluntary participation from all community stakeholders is encouraged to implement the CAP.

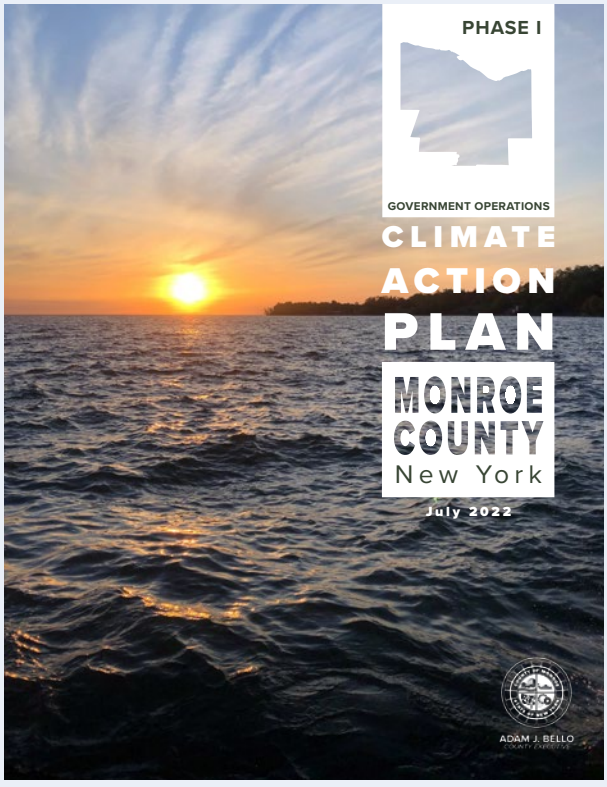
Both Phases I and II of the Monroe County CAP are vital planning efforts necessary to create a comprehensive roadmap to reduce our region's contribution to climate change, providing a more resilient and sustainable future.

PHASE I

GOVERNMENT OPERATIONS

The focus of Phase I of the CAP is to reduce GHG emissions from sites, facilities and operations that are managed by the County. To accomplish this, the plan set an overall target for Monroe County government operations:

Reduce GHG emissions attributed to government operations by 80% below 2019 levels by 2050.



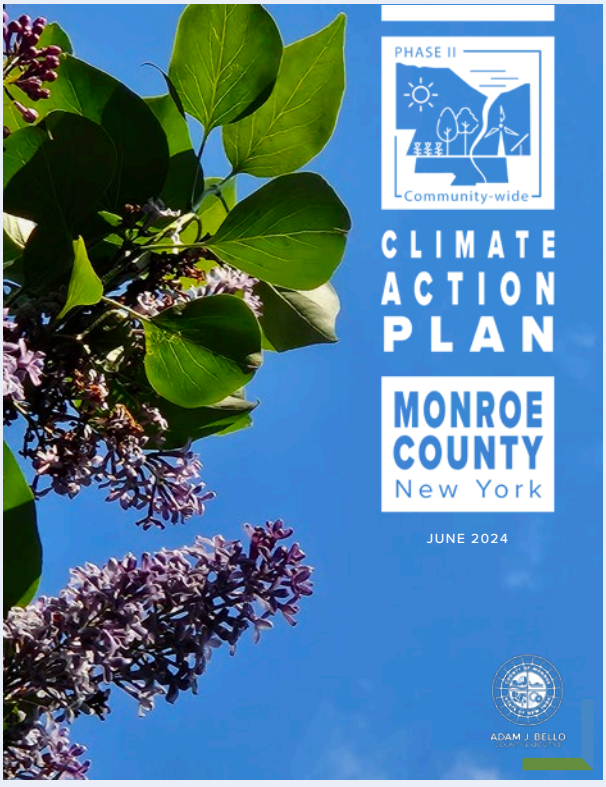
PHASE II

COMMUNITY-WIDE

The focus of Phase II of the CAP is to serve as a long-range planning guide for Monroe County and its partners to achieve a target GHG emission reduction. To accomplish this, the plan set a target for community-wide efforts:

Reduce GHG emissions county-wide by 80% below 2019 levels by 2050.*

**This Community-wide CAP is not regulatory in nature.*



Why Does Monroe County Need a CAP?

Climate change in Monroe County is real. Annual temperatures that were projected specifically for Monroe County from the New York Climate Change Science Clearinghouse (NYCCSC) show an increase of 4.3-5.4° F by the 2050s. By the 2080s, the annual average temperature in Monroe County could rise by as much as 10.7 ° F. The NYCCSC also projected that the average precipitation in Monroe County is expected to increase by approximately 5.7 inches by the end of the 21st century, per the weighted mean of the projected values. As detailed in the Phase I CAP, precipitation increases can have impacts on our local water systems, particularly flooding along the Lake Ontario shoreline.[1]

Monroe County, similar to other areas of New York State, is seeing effects such as increased precipitation, more frequent and intense storm events, and more extreme temperatures. These changing weather patterns can negatively impact the regional economy, agriculture, food supply chains, and even quality of life. The CAP will serve as framework to help Monroe County, municipalities, residents, and businesses implement strategies for a reduction of GHG emissions throughout the County.

1 NYCCSC Projections and the Monroe County Phose I Climate Action Plan (CAP).

WHAT IS A CLIMATE ACTION PLAN (CAP)?

A climate action plan is a comprehensive, strategic effort to address and reduce greenhouse gas (GHG) emissions in the atmosphere and the related environmental and climatic impacts associated with rising GHG emissions.

Temperature and precipitation projections specifically for Monroe County were developed by the New York Climate Change Science Clearinghouse (NYCCSC) and can be seen in more detail in Phase I of the CAP. Phase I of the CAP can be accessed at:

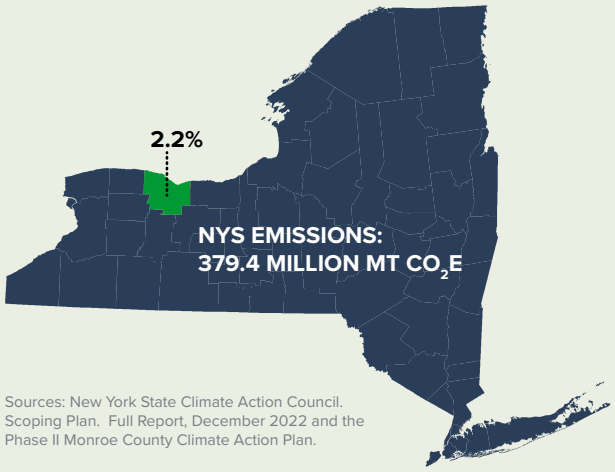
www.monroecountyclimateaction.com/about-phase-i

As detailed in Phase I of the CAP, if current day emissions trends are left unchecked, Monroe County could face a wide array of difficulties and challenges, including but not limited to degradation of air quality, heat-related health risks, increased costs of farming practices, and increased cooling and heating costs.

PERCENTAGE OF NYS EMISSIONS

Although Monroe County contributes only a small percentage to the gross New York State (NYS) GHG emissions measured by carbon dioxide equivalent, it is part of a statewide effort to reduce GHG emissions. As stated in the 2022 NYS Scoping Plan, the severity of climate change and the threat of more severe impacts will be determined by the actions undertaken in New York and other jurisdictions to reduce GHG emissions.

Figure 1. Monroe County's Percentage of NYS Total Emissions



Sources: New York State Climate Action Council. Scoping Plan. Full Report, December 2022 and the Phase II Monroe County Climate Action Plan.

Figure 2. The Greenhouse Effect, Greenhouse Gases & Global Warming

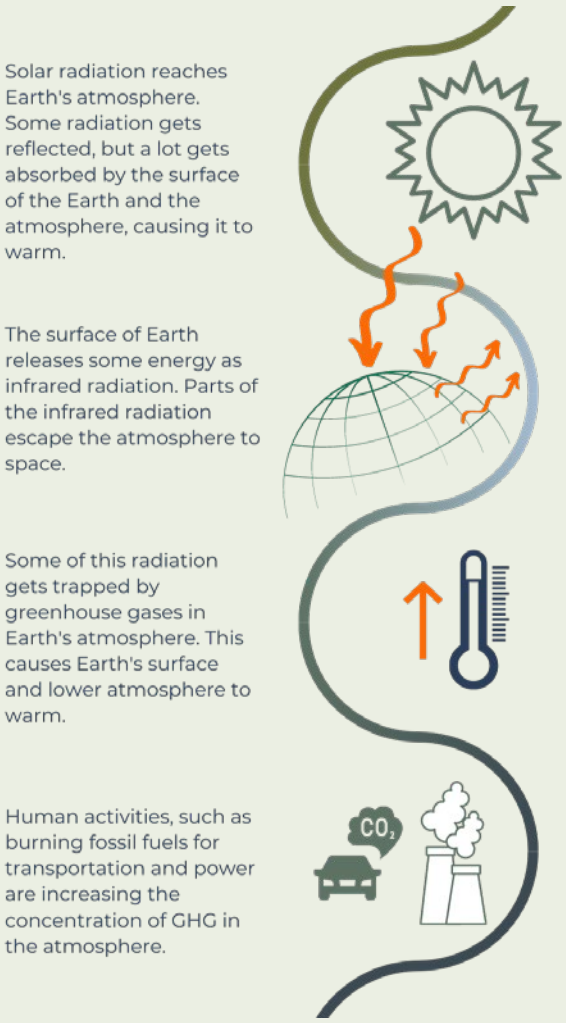


Figure 3. The Difference between Global Warming & Climate Change

The NOAA Climate.gov website explains: *global warming refers only to the Earth's rising surface temperature, while climate change includes warming and the "side effects" of warming.*[1]

1 NOAA Climate.gov website: https://www.climate.gov/news-features/climate-qa/whats-difference-between-global-warming-and-climate-change Accessed June 10, 2024.

What Are the Benefits of Taking Action?

In addition to reducing GHG emissions, the strategies identified in this plan can produce a number of community benefits. These include:

Cost Savings:

Promoting energy and water efficiency, along with the adoption of renewable energy, can lead to reduced utility bills for residents and businesses. Similarly, encouraging alternative transportation methods such as bicycling, walking, public transit, ride-sharing, and electric vehicles can result in cost savings compared to traditional gasoline or diesel vehicles, as well as parking expenses.

Preservation:

Preserving and redeveloping existing buildings not only protects historic assets but also promotes sustainable development. This approach reduces the need to develop open spaces and agricultural lands, thus preserving these critical areas. Adaptive reuse and revitalization are green building strategies that help lower greenhouse gas (GHG) emissions by minimizing the need for demolition and new construction.

Equity:

Efforts to address climate change can promote equity by generating cost savings that particularly benefit low-income families in reducing their energy bills. Additionally, fostering engagement and collaboration among diverse stakeholders ensures representation from all communities, contributing to equitable decision-making processes.

Economic Development:

Fostering local economic development through climate action can have significant benefits. For example, investing in the renewable energy sector can stimulate business and create jobs in the design, manufacture, and installation of renewable energy technologies.

Public Health:

Lowering greenhouse gas (GHG) emissions reduces air pollutants, enhancing air quality and improving public health. Furthermore, climate action can foster opportunities for active lifestyles, promoting physical activity and better health.

Mobility and Connection:

Mobility and connection initiatives through climate action can enhance transportation options by encouraging the installation of bike infrastructure, promoting high-density development that supports walkability, and advocating for improved public transit accessibility.

Ecosystem Protection:

Efforts to protect and conserve ecosystems, open spaces, agricultural lands, and other natural areas are critical components of climate resilience and environmental sustainability. Examples include maintaining and restoring wetlands, preserving the Lake Ontario shoreline, and protecting water quality.

Raise Awareness:

Creating opportunities for community members and organizations to connect on common goals can increase awareness of the benefits of reducing greenhouse gas (GHG) emissions. These opportunities also provides access to tools and resources that enable residents, businesses, and organizations to work towards GHG emission reduction.

Community-wide Planning Process

The Community-wide CAP plays an educational and guiding role, encouraging climate action by local stakeholders, residents, and municipalities. Through this plan, the County hopes to foster collective action through inspiration and collaboration. The planning tools utilized to support the voluntary participation from community stakeholders include:

- Identification of existing climate conditions and projections (detailed in Part 2)
- Identification of key resources, case studies, and partners to support implementation (detailed in Parts 3 & 5)
- A comprehensive community-wide GHG emissions inventory and baseline (detailed in Part 4)
- An overall GHG emissions reduction goal (detailed in Part 5)
- An outline of prioritized actionable strategies for reducing GHG emissions (detailed in Part 5)

Each of these tools are further detailed within the different parts of the Phase II CAP.

COMMUNITY ENGAGEMENT

Phase II of the CAP was completed under the direction of a CAP Advisory Committee, stakeholder engagement, and feedback from the community. During the committee's monthly meetings, the project team presented updates on the Plan's progress and facilitated discussions around critical data points, goals, and strategy components.

The project team facilitated numerous stakeholder conversations, centered around the six focus areas developed earlier in the planning process. Stakeholder conversations ranged from one-on-one conversations with an individual or agency, to focus-area-specific group conversations. The stakeholder discussions helped shape the CAP and prioritize actions and strategies for plan implementation.

Additionally, the project team facilitated three rounds of community engagement. The first round consisted of two virtual workshop sessions, and the launch of the Ideas Wall, which provided members of the public with the opportunity to directly comment on and discuss the focus areas.

The next round of public meetings introduced the GHG emissions report to the public and launched an online survey that received over 600 responses. The final round of public meetings unveiled the draft CAP to the community, providing the opportunity for public comment.

TIMELINE

A timeline of the planning process for Phase II of the CAP is presented below. The timeline includes public workshops, stakeholder meetings, and advisory committee meetings.

Figure 4. Phase II Timeline for the Monroe County Climate Action Plan

Throughout the Phase II planning process, a variety of outreach techniques were utilized to support the development of the Community-wide CAP. The following summarizes each of these techniques.

CAP ADVISORY COMMITTEE

Phase II of the Climate Action Plan was carried out with guidance from a CAP Advisory Committee. This committee comprised citizens, local students, Monroe County staff, and members of the County Legislature. The committee assisted with at public outreach events, shared and gathered information from their collective networks, and helped find events for the project team to attend to provide meaningful public outreach.

PROJECT WEBSITE

The project website, www.monroecountyclimateaction.com was created at the start of Phase II of the CAP, and is available for members of the public to visit 24/7. The website details Phase I of the CAP, and provides crucial details and documents about Phase II. The website is kept up-to-date with the latest public participation opportunities (virtual and in-person), engagement tools such as surveys and the Ideas Wall, and important information about local, regional, and national climate action resources.

POP-UPS

Throughout the planning process of Phase II of the CAP, various pop-ups were held. Members of the project team attended various festivals, events, and meetings to help spread the word about the CAP and get feedback from members of the community about climate action priorities. Pop-up events included the Corn Hill Arts Festival, Irondequoit Farmers Market, Westside Farmers Market, Seneca Park Zoo Brew, etc.

STAKEHOLDERS

Stakeholders have played a critical role in the development of the Community-Wide CAP. The project team met with a variety of stakeholders from different sectors between February and March 2024, to get targeted feedback on goals, actions and strategies to help reduce GHG emissions throughout the County. Stakeholders had multiple opportunities to engage with the project team virtually and in-person.

GOALS SURVEY

At the conclusion of Public Workshop #2, a Goals and Strategies online survey was launched. The survey allowed members of the public to review and prioritize preliminary goal statements and actions for each of the Plan's six focus areas. The survey was open from July 26, 2023 to November 12, 2023 and received 652 responses.

Background Photograph:Attendees at Public Workshop #2

PUBLIC WORKSHOP #1

The first public workshop was held virtually on March 15, 2023, offering two opportunities for the public to participate. The workshop helped kick-off the Community-Wide CAP. Attendees learned about the importance of addressing climate change, what happened during Phase I of the CAP, and the next steps for Phase II. At the Workshop, an online discussion board, available online via Social Pinpoint, called an Ideas Wall, was launched and all were invited to participate. Public workshop #1 had over 100 participants.

PUBLIC WORKSHOP #2

The purpose of Public Workshop #2, held on July 26, 2023, was to introduce county-wide GHG emission snapshot and foster discussion and collect feedback on potential GHG reduction goals and strategies. The workshop included an online session and an in-person open house. Attendees had the opportunity to prioritize the six focus areas (Table 1 on page 12 shows these rankings).

IDEAS WALL

The purpose of the Ideas Wall was to collect public input and facilitate discussion on the key issues, opportunities, and priorities for the Community-Wide CAP focus areas. Participants were invited write down their thoughts and respond to each other's ideas on a virtual forum, with the option to comment on any of the six focus areas. The Ideas Wall was open for comment from May to August of 2024.

The Ideas Wall received over 220 comments across all six focus areas, 1,889 page visits, and 740 unique visitors. The transportation focus area received the most comments, while the sustainable materials management focus area (formerly Waste & Recycling) received the least amount of comments. A full breakdown of comments by focus area is shown in the figure below.

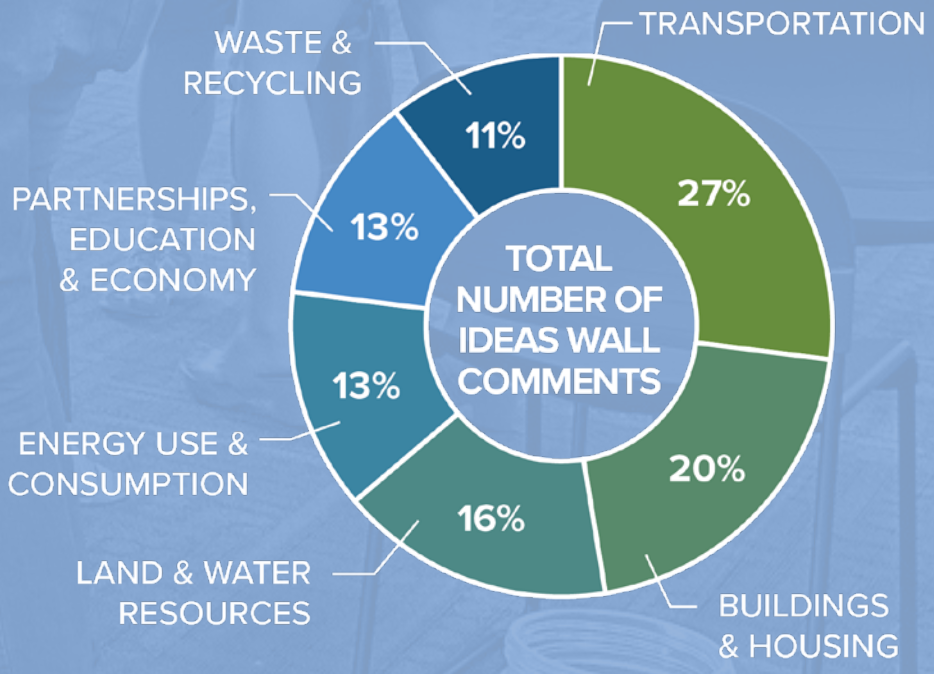


Figure 5. Summary of Ideas Wall Comments by Focus Area

Community-wide Focus Areas

To support the community-wide reduction GHG emissions target, Phase II of the CAP established six focus areas that are relevant to Monroe County, its stakeholders and its residents. These focus areas align GHG sources detailed in the GHG Inventory presented in Part 4, with different sectors of Monroe County that were identified as critical for addressing environmental challenges. Figure 6 introduces each focus area, what it includes and the sources of emissions it aims to reduce. These focus areas help frame the development of the goals, strategies and actions detailed in Part 5 of the Phase II CAP.

FOCUS AREA PRIORITIES

Members of the public had the opportunity to prioritize the six focus areas at Public Workshop #2 and through an online survey which was advertised via handouts at various pop-up events. A table ranking the focus areas from highest priority to lowest priority, based on community feedback, can be found below.

Table 1. Matrix of Votes for Each Focus Area

Rank	Transportation	Buildings & Housing	Energy Use & Consumption	Land & Water Resources	Partnerships, Education & Economy	Sustainable Materials Management
1	**34%**	9%	23%	20%	9%	6%
2	17%	**34%**	9%	11%	11%	17%
3	11%	14%	**29%**	26%	9%	11%
4	20%	9%	23%	**23%**	17%	9%
5	11%	17%	14%	17%	**26%**	14%
6	6%	17%	3%	3%	29%	**43%**

Highest Priority → **Lowest Priority**

34% of respondents believe that Transportation is the most important issue, and 34% also believe that Buildings & Housing is the second most important issue. Inversely, 43% of all respondents believe that Sustainable Materials Management is the lowest priority issue.

Figure 6. Summary of Focus Areas

The **Transportation Focus Area** includes all modes of transportation, the infrastructure needed to support them, and the travel distance between our destinations to reduce GHG emissions from transportation.

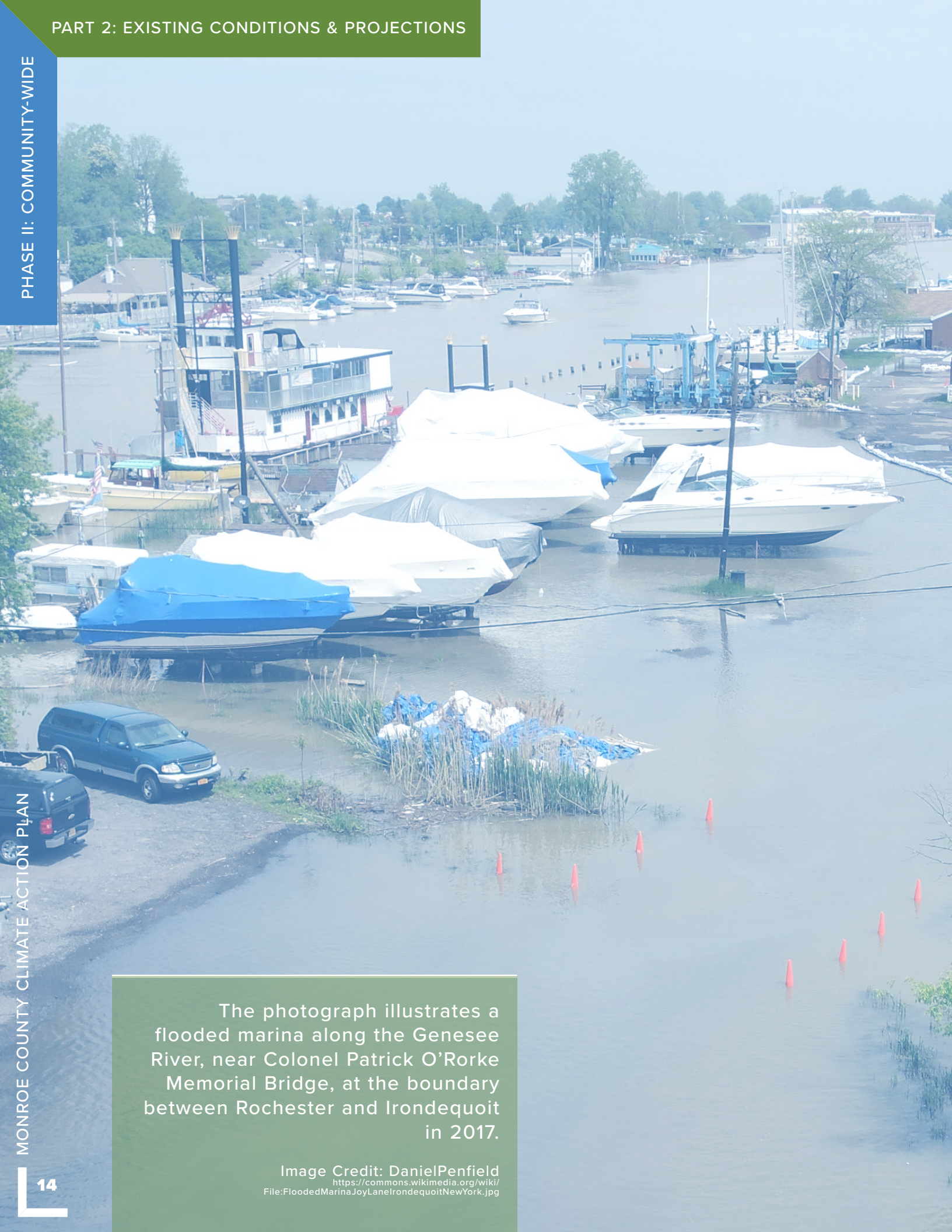
The **Buildings & Housing Focus Area** addresses all commercial, industrial, and residential structures to reduce GHG emissions, including energy use emissions, process and fugitive emissions and upstream emissions.

The **Energy Use & Consumption Focus Area** addresses the type and amount of energy we use to reduce GHG emissions, including energy use emissions, process and fugitive emissions and upstream emissions.

The **Land & Water Resources Focus Area** addresses the open space and water resources in Monroe County, including parks, streams, rivers, canals, and Lake Ontario, to reduce GHG emissions from agriculture, forestry, and land use.

The **Partnerships, Education & Economy Focus Area** addresses nurturing partnerships, fostering collaboration and connecting networks in our efforts to reduce our individual and collective climate impacts.

The **Sustainable Materials Management Focus Area** addresses each phase of the product lifecycle including production, transportation, use and disposal to reduce GHG emissions from waste generation and water supply.



The photograph illustrates a flooded marina along the Genesee River, near Colonel Patrick O'Rorke Memorial Bridge, at the boundary between Rochester and Irondequoit in 2017.

Image Credit: DanielPenfield
https://commons.wikimedia.org/wiki/File:FloodedMarinaJoyLaneIrondequoitNewYork.jpg

Part 2

Existing Conditions & Projections

The current climate conditions and expected trends underscore the urgent need for climate action planning.

The Science of Climate Change

Climate change, a persistent and growing force on our planet, is one of the most pressing issues our society is facing and will continue to face well into the future. Based on a 2014 report, the Intergovernmental Panel on Climate Change (IPCC) has stated that there is a greater than 95% chance that the rising global average temperatures are primarily due to human activities, driven by growing levels of greenhouse gases (GHGs) in the atmosphere.[1] In its 2023 report, the IPCC states that, human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming.[2] Fossil-fuel combusting, urban sprawl / rapid development of open space, and other human activities contribute to these ever-growing GHG levels. In 2022, the National Oceanic and Atmospheric Administration (NOAA) reported that measurements reflect that carbon dioxide is more than 50 percent higher than they were during the preindustrial era, and continue to rise.[3] As detailed by the Environmental Protection Agency (EPA), carbon dioxide (CO_2) is the primary greenhouse gas emitted through human activities.[4]

1 IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
2 IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001
3 NOAA, June 3, 2022. "Carbon dioxide now more than 50% higher than pre-industrial levels." https://www.noaa.gov/news-release/carbon-dioxide-now-more-than-50-higher-than-pre-industrial-levels
4 United States Environmental Protection Agency (EPA) website. "Overview of Greenhouse Gases" https://www.epa.gov/ghgemissions/overview-greenhouse-gases Accessed June 14, 2024.

Some greenhouse gases can stay in the atmosphere for centuries or millennia.[5] These GHGs trap heat, leading to a rise in temperatures; the impacts of which can already be seen on the environment across the globe. This includes rapidly melting icecaps leading to rising sea levels, increased flooding, stronger and more frequent extreme weather events, and so on.[6] These impacts have devastating implications for all facets of our natural environment and society.

5 U.S. Environmental Protection Agency. 2016.Climate change indicators in the United States, 2016. Fourth edition. EPA 430-R-16-004. www.epa.gov/climate-indicators
6 Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W.Solecki. 2014. Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information. New York State Energy Research and Development Authority (NYSERDA), Albany, New York.

Western New York Climate Projections

Climate change is already impacting New York State and impacts are projected to increase with further warming. These impacts include greater incidence of heat stress caused by more frequent and intense heat waves as well as greater incidence of heavy rainfall events affecting food production, natural ecosystems, and water resources.[7] The Integrated Assessment for Effective Climate Change Adaptation in New York State (ClimAID), prepared for the New York State Energy Research and Development Authority (NYSERDA) in 2011 and updated in 2014, aims to provide information on the State's climate vulnerability to inform climate action strategies and encourage further research.

7 Rosenzweig, C., W. Solecki, A. DeGaetano, M. O'Grady, S. Hassol, P. Grabhorn (Eds.). 2011. *Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation.* Technical Report. New York State Energy Research and Development Authority (NYSERDA), Albany, New York. www.nyserda.ny.gov

Data from the 2014 ClimAID update shows historic and future trends in New York State, by region. Monroe County is part of the Western New York region, for which the official meteorological observing station utilized is in Rochester. The trends for Western New York are described in the following temperature, precipitation and extreme event summaries.

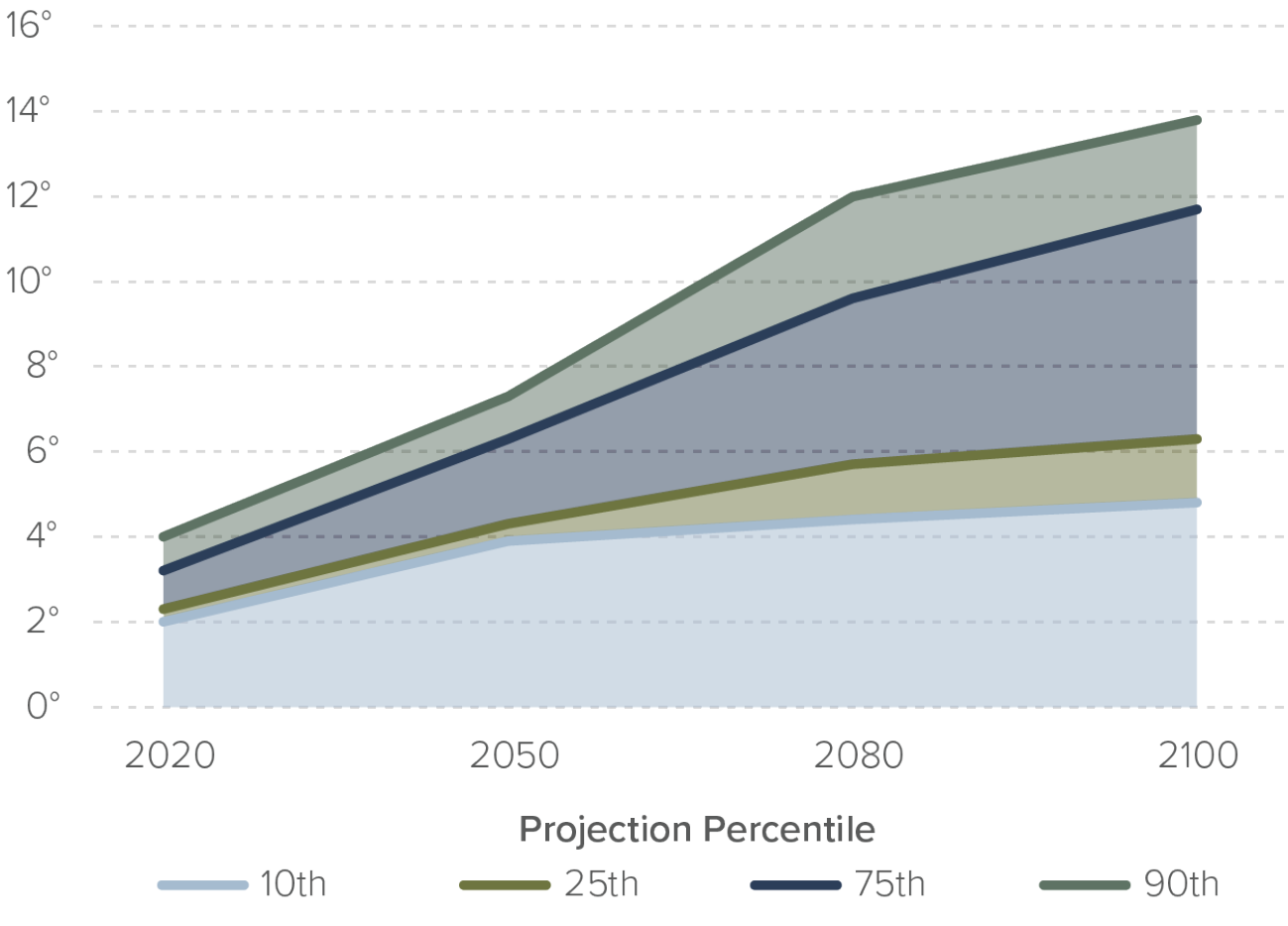
TEMPERATURE

Annual average temperatures across New York are projected to rise. Temperature increases will have significant negative effects such as increased flood damage, more intense urban heat islands, proliferation of disease-carrying insects, and more algal blooms that could impact drinking water supply. With more intense summers and milder winters, the growing season could also lengthen by around a month, which may have a negative impact on native species such as the region's renowned lilacs.

The ClimAID historical analysis shows that temperatures in the Western New York region have warmed at a rate of 0.32° F per decade over the time period between 1901 to 2012. Middle range projections for Western New York show continued warming by 5.7-9.6° F in the 2080s based on the baseline average air temperature (1971-2000).[8]

8 Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W.Solecki. 2014. Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information. New York State Energy Research and Development Authority (NYSERDA), Albany, New York.

Figure 7. Projected Temperature Changes in Region 1 (Western New York)
Source: ClimAID



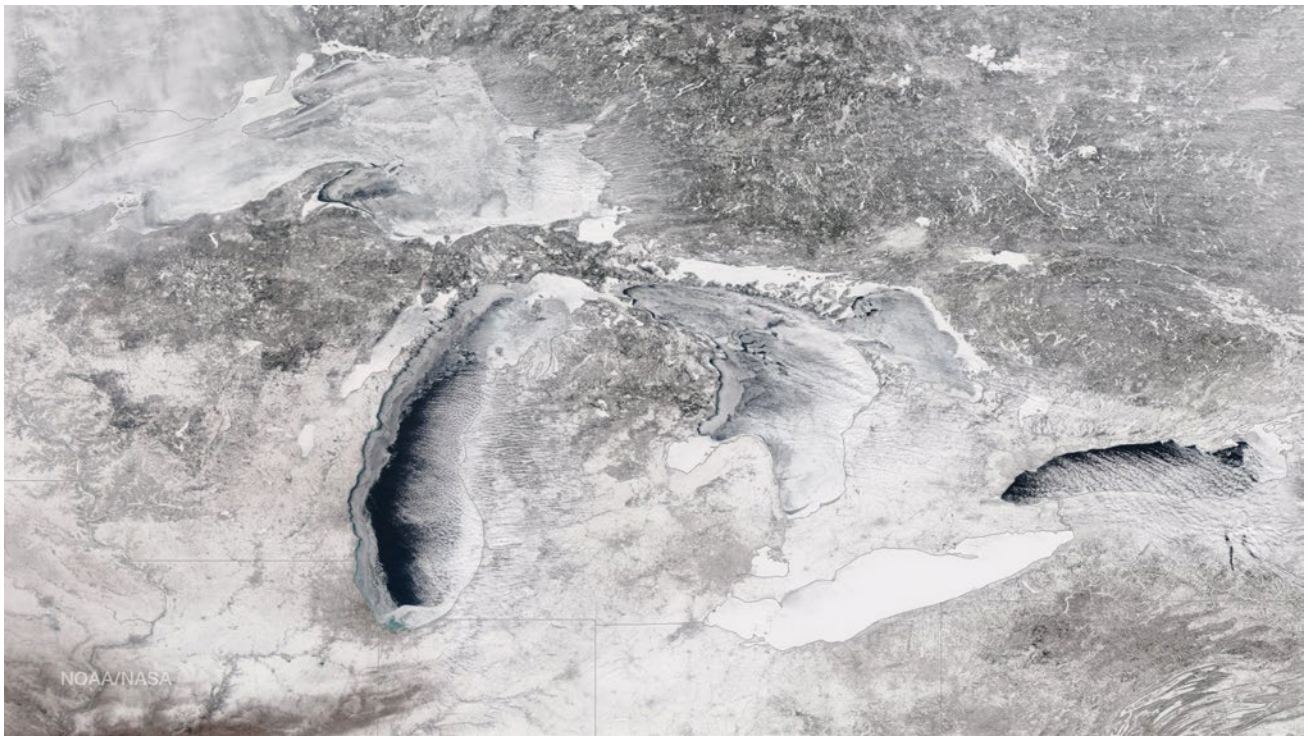


Image Source: NOAA

PRECIPITATION

ClimAID projections show that in the Western New York region, precipitation is predicted to increase 2-7% through the 2020s, 4-10% by the 2050s, and 4-13% by the 2080s compared to the 1970-2000 baseline.[9] Much of the additional precipitation may occur during winter months, with slight decreases in summer and fall. Lake effect snow could initially increase due to lack of ice cover on Lake Ontario, but may decrease later this century as temperatures rise. Extreme precipitation will heighten flood risks and cause economic damage, as seen recently on Lake Ontario, and will impact farming practices.

9 Ibid.

CHANGES IN EXTREME EVENTS

Frequencies of cold events, heat waves, drought and intense precipitation projected to change statewide. Large storms, high heat indices, and intense precipitation periods may occur more often due to higher temperatures and increased atmospheric moisture. The 2014 ClimAID update shows that Western New York will see increases in extreme heat days and decreases in extreme cold days. More specifically, the ClimAID middle range projections show by the 2080s, Western New York will see between 27 to 57 days over 90° F, as compared to 8 days for the 1971 to 2000 base period. Projections also show that the region will see between 68 to 88 days below 32° F, as compared to 133 days for the 1971 to 2000 base period.[10]

10 Ibid.

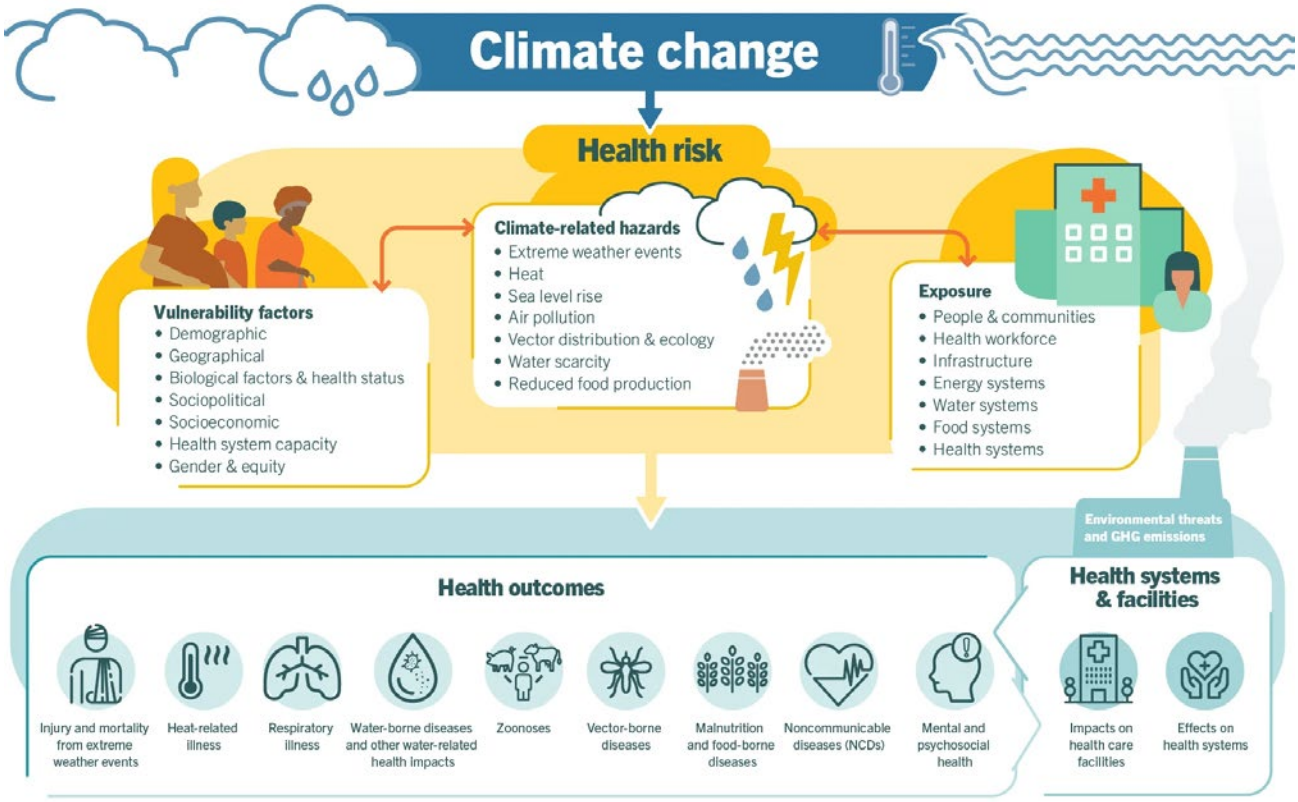
Additional details about ClimAID Projections can be found in Phase I of the CAP.

Climate Change & Public Health

Climate change has numerous effects on our planets rising temperatures, extreme weather events, rising sea levels, and increasing $C0_2$ levels which affect our health and safety. According to the U.S. Centers for Disease Control, climate change has also been linked to increases in violent crime and overall poor mental health. The health effects of climate change can include respiratory and heart diseases, pest-related diseases, water- and food-related illnesses, and injuries and deaths.

The graphic below identifies the connections between climate-related hazards and potential health outcomes affecting the population. It should be noted that disadvantaged communities and vulnerable populations are at increased risk for exposure and impacts of these climate hazards. These topics will be further explored in the County's Climate Adaptation and Resiliency Plan.

Figure 8. Illustration of Climate Change and Health



Source: The World Health Organization
For more information visit: www.who.int/news-room/fact-sheets/detail/climate-change-and-health

NYS Disadvantaged Communities (DACs)

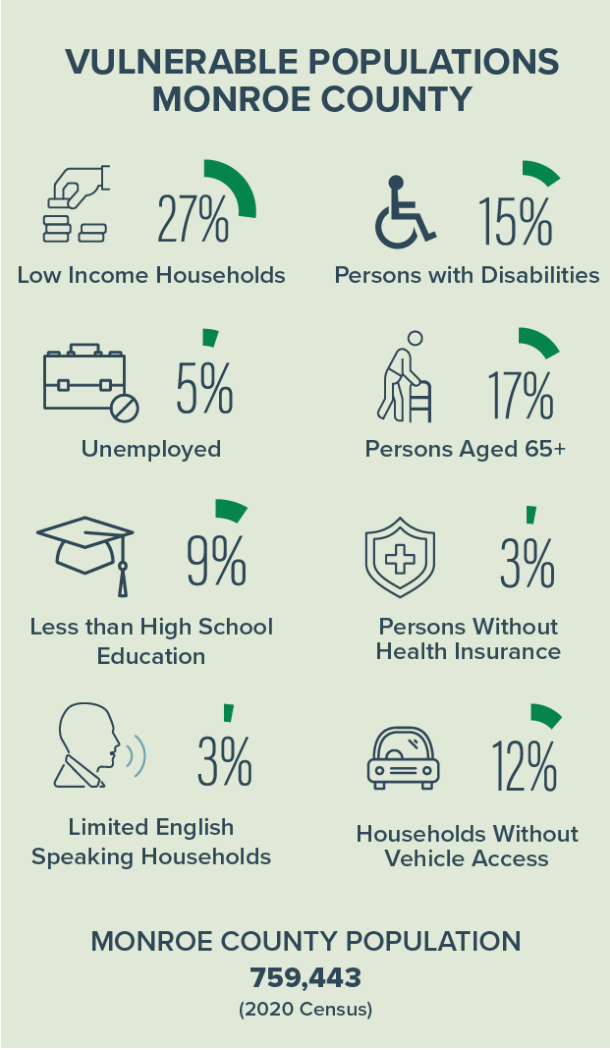
The impacts of climate change disproportionately affect communities, with some bearing more significant burdens than others. As detailed in the New York State (NYS) Climate Action Council's Scoping Plan, historically marginalized communities typically experience a lower life expectancy and quality of life as measured by environmental burdens, climate change risks, population characteristics, and health vulnerabilities.[1] To incorporate equity into State investments, the NYS Climate Act prioritizes disadvantaged communities.

WHAT IS A DISADVANTAGED COMMUNITY?

The Climate Justice Working Group, established under the NYS Climate Act, was charged with the development of disadvantaged communities (DACs) criteria. Forty-five indicators were used to identify the DACs, considering the environmental burdens of climate change risk within a community and its vulnerable population characteristics that contribute to more adverse effects of climate change. In Monroe County, this includes census tracks in seven different municipalities, as show in Figure 10.

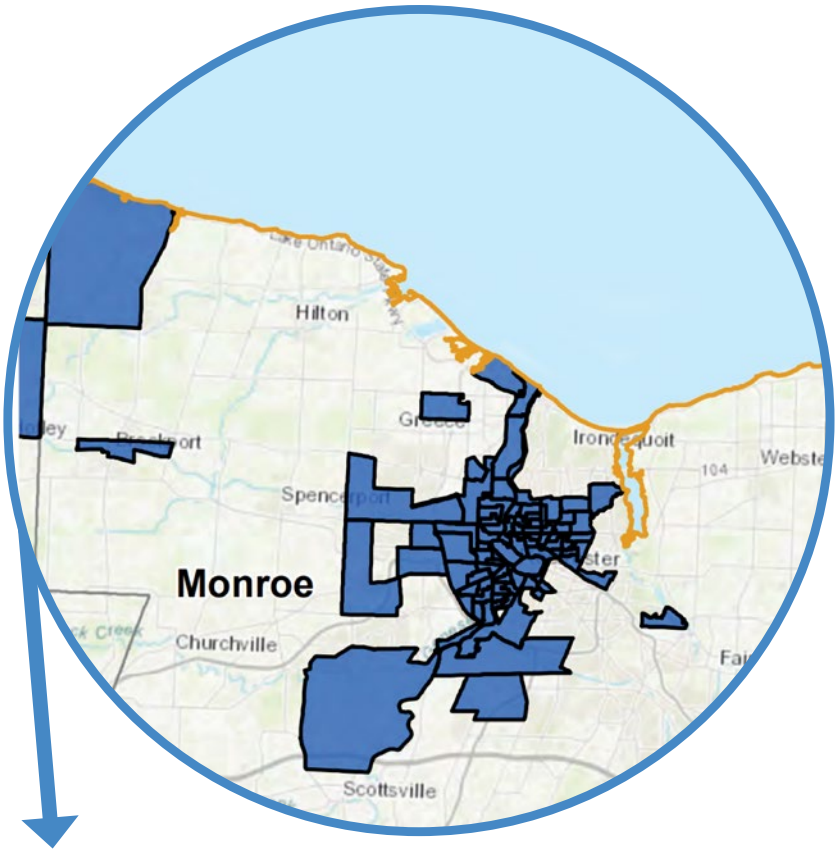
1 New York State Climate Action Council. *Scoping Plan.* Full Report, December 2022. climate.ny.gov/scoping-plan

Figure 9. Monroe County Vulnerable Populations Demographics



For more information visit: www.nyserda.ny.gov/ny/Disadvantaged-Communities

Figure 10. Map of Disadvantaged Communities in Monroe County



Monroe County's DAC census tracts include those in the following municipalities:

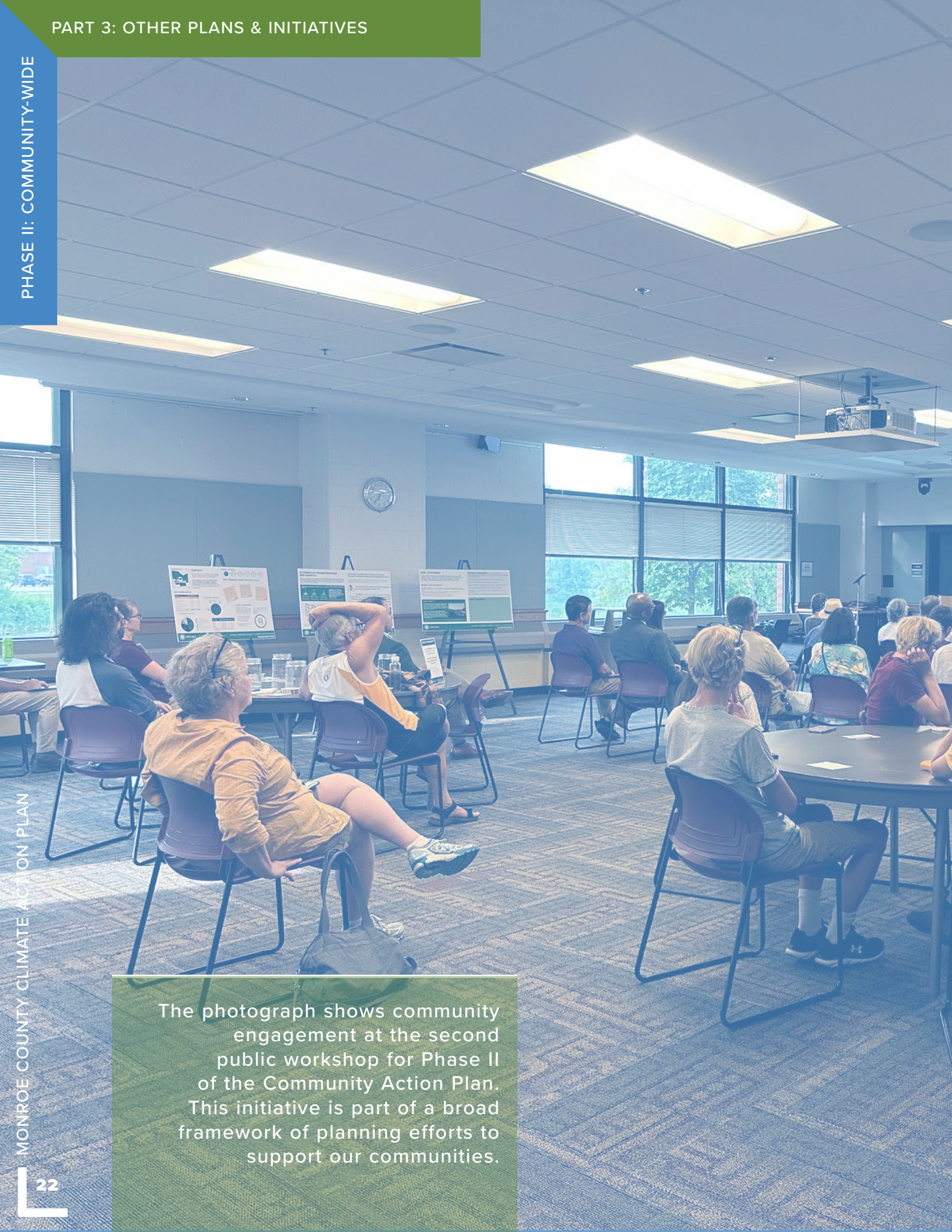
- Rochester
- Irondequoit
- Brighton
- Greece
- Gates
- Hamlin
- Brockport



Click here to explore the interactive mapper showing key DAC statistics!

Why Are DACs Important?

- Climate change unequally exacerbates existing burdens, vulnerabilities, and stressors in communities throughout the state.
- DACs were identified to ensure those communities directly benefit from the State's historic transition to cleaner, greener sources of energy, reduced pollution and cleaner air, and economic opportunities.
- DACs are to receive 35% to 40% of benefits from NYS Climate Act and related State-led initiatives investments.
- DACs represent 35% of New York's population.



The photograph shows community engagement at the second public workshop for Phase II of the Community Action Plan. This initiative is part of a broad framework of planning efforts to support our communities.

MONROE COUNTY
Climate Action Plan

Part 3

Other Plans & Initiatives

Monroe County is addressing climate change through a collaborative effort that utilizes a variety of tools for climate mitigation and adaption to guide the future of our communities.

County Plans & Initiatives

Phase II of the CAP is a guiding document and focuses on actions and strategies related to the reduction of GHG emissions. The CAP is one element of a larger compilation of plans and initiatives that are tackling climate change throughout the County. While Phase II of the CAP is centered on shaping strategies to reduce GHG emissions, other actions and policies related to overall sustainability, resiliency, transportation, and land use goals are addressed in related county long-range planning efforts, such as the Countywide Active Transportation Plan. Another guiding document is the Monroe County Climate Adaptation and Resiliency Plan, which will address strategies related to future climate resiliency. Also part of the community-wide vision are operational plans that provide tools for action, such as the Monroe County Hazard Mitigation Plan with its strategies addressing response to climate-related disasters. These plans will work together to act on climate change in our community.

Figure 11. Monroe County Planning Framework

GUIDING DOCUMENTS

The following are guiding documents that provide the policy to support a community-wide vision in Monroe County:

Plan Forward

The County's Comprehensive Planning process is currently underway as of 2022. One of the three key themes of the Plan is "Environment," which will address issues and opportunities pertaining to climate change, energy, natural resources, etc.

Countywide Active Transportation Plan

The Countywide Active Transportation Plan will address reducing transportation-related emissions by promoting, enhancing, and supporting a non-motorized transportation network throughout the County.

Phase II Community-Wide CAP

This document (Phase II of the CAP) focuses on GHG emission sources throughout the County, such as housing, private industry operations, transportation infrastructure, etc.

Monroe County Climate Adaptation And Resiliency Plan

Monroe County is shifting into climate resiliency planning efforts towards addressing climate impacts in 2024. The Climate Adaptation and Resiliency Plan, complementary to the Community-Wide CAP, will also focus on climate change but will specifically seek to reduce or mitigate risks from natural and human-driven hazards over time, reducing the likelihood of harm from compounding disasters. The plan will assess potential risks, identify vulnerable assets and populations, evaluate likelihood and severity of potential impacts, and develop implementation plans with various adaptation, mitigation, and recovery actions.

OPERATIONAL PLANS & STUDIES

The following are operational plans and studies that provide the tools for action to support a community-wide vision in Monroe County:

Bring Monroe Back

Monroe County received over $144 million in State and Local Fiscal Recovery Funds through the American Rescue Plan Act (ARPA). The County's COVID-19 strategy identified six key focus areas includes infrastructure improvements and sustainability.

Phase I Government Operations CAP

Phase I of the CAP focuses on the reduction of GHG emissions from county-run sites, facilities, infrastructure, and operations.

Monroe County Hazard Mitigation Plan

This plan identifies potential hazards affecting residents, allows access to Federal Emergency Management Agency (FEMA) mitigation funding, and details projects to reduce future damages from natural and non-natural hazards through risk assessments of buildings, infrastructure, and critical facilities.

Organics Management Plan

Under development in Monroe County is an Organics Management Plan to develop a strategy for reduction, reuse, and recycling of organic materials.

New York State Climate Action

New York State has implemented one of the most ambitious climate action laws in the country. The New York State (NYS) Climate Leadership and Community Protection Act, commonly referred to as the Climate Act, was enacted on July 18, 2019. This landmark legislation mandates that the New York State must significantly reduce its overall GHG emissions. Specifically, the Climate Act requires a 40 percent reduction in GHG emissions by the year 2030, and a minimum reduction of 85 percent by 2050, compared to the baseline levels recorded in 1990. The Climate Act also calls for 100% clean transportation for light duty vehicles by 2035, and 100% zero-emission electricity by 2040.

SCOPING PLAN

As part of the NYS Climate Act, a Scoping Plan was completed in 2022 under the direction of the Climate Action Council to meet the goals and requirements of the law. This agenda outlines a carefully managed and equitable shift towards clean energy sources that will generate high-quality employment opportunities while fostering healthy communities.

Regional Climate Action

Climate action planning also occurs at the regional level with both public and non-profit entities engaged in climate action across the Finger Lakes.

FINGER LAKES REGIONAL SUSTAINABILITY PLAN

Covering Orleans, Genesee, Wyoming, Monroe, Livingston, Wayne, Yates, Seneca and Ontario Counties, under the direction of the Genesee-Finger Lakes Regional Planning Council, the Sustainability Plan focuses 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.

PRIORITY CLIMATE ACTION PLAN

With funding from the EPA, in 2024 the Genesee-Finger Lakes Regional Planning Council produced a strategy to decrease greenhouse emissions in municipal operations, the transportation sector, and the buildings sector.

THE GENESEE-FLX CLIMATE ACTION STRATEGY

The Climate Solutions Accelerator of the Genesee-Finger Lakes Region is a nonprofit organization that completed a roadmap for the nine-county region to achieve substantial GHG emissions reductions and enhance climate resilience. The strategy has an overarching goal of reaching net zero emissions by 2050, exceeding the targets of the New York State's Climate Act. Key strategies and recommendations are organized into five focus areas: energy, transportation, waste, agriculture/working lands, and community resilience. For energy, priorities include transitioning to renewable sources like wind and solar, increasing energy efficiency in

buildings, and modernizing utility grids. The transportation section emphasizes reducing vehicle miles traveled through better land use planning and developing low-carbon mobility options.

Municipal CAPs

Communities in Monroe County are taking action to address GHG emissions. The City of Rochester and Town of Brighton have adopted CAPs, and currently, the Town of Pittsford is also working on the development of a CAP.

CITY OF ROCHESTER CLIMATE ACTION PLAN

The City of Rochester's Climate Action Plan, endorsed by the City Council in May 2017, aims to reduce GHG emissions by 40% from 2010 levels by 2030. To achieve this target, the Plan outlines 35 implementation actions organized into five key focus areas spanning the residential, commercial, and industrial sectors:

- Energy Use and Supply
- Transportation
- Waste and Materials Management
- Clean Water
- Land Use

The strategies and actions within these focus areas are designed to decrease emissions across the city through measures related to energy efficiency, renewable sources, sustainable transportation, waste reduction and diversion, water conservation, and climate-resilient land use practices.

The City of Rochester previously developed a government operations CAP in 2013, focusing on reducing the GHG emissions for buildings, vehicles, and other activities managed by the City of Rochester. The City is currently in the process of updating their CAP.

TOWN OF BRIGHTON CLIMATE ACTION PLAN

The Town of Brighton has developed a CAP to identify strategies and measures to reduce greenhouse gas emissions and adapt to the impacts of climate change. The CAP establishes a goal of achieving net zero emissions by 2042 through comprehensive mitigation strategies across sectors like energy, transportation, waste management, and natural resources.

Key mitigation strategies include transitioning to renewable energy sources, increasing energy efficiency of buildings, developing alternative transportation options, reducing waste sent to landfills, conserving natural areas, and promoting climate-smart land use policies. The plan also outlines adaptation measures to enhance resilience, such as improving stormwater management, protecting public health during extreme weather, supporting environmental justice for vulnerable populations, and engaging the community through education and outreach efforts. Successful implementation will include collaboration between the town government, businesses, institutions, residents and other stakeholders in the years ahead.

Climate Smart Communities (CSC)

Climate Smart Communities (CSC) is a New York State Department of Environmental Conservation (DEC) program meant to assist governments with reducing greenhouse gas emissions, implementing climate change adaptation strategies, and providing technical assistance and grants to participating communities.

To take part, communities must formally adopt the CSC pledge; register through the CSC online portal; select and implement CSC actions (over 100); collect documentation; and, apply for certification. Upon review, the community will be evaluated and receive a bronze or silver certification based on points. As of 2024, there are 416 registered communities across NYS, covering a population of 9,563,298 in total. Of these registered communities, 127 are bronze certified and 13 are silver certified.

Benefits of participating in the CSC program include access to CSC grants, streamlined access to training, resources and tools, a strong framework to organize local climate actions and highlight priorities, and State-level recognition. There are additional quality-of-life benefits to implementing certification actions, such as cost savings due to greater efficiency, improved air quality, flood risk reduction, conservation of greenspace, and more walkable communities.

Clean Energy Communities (CEC)

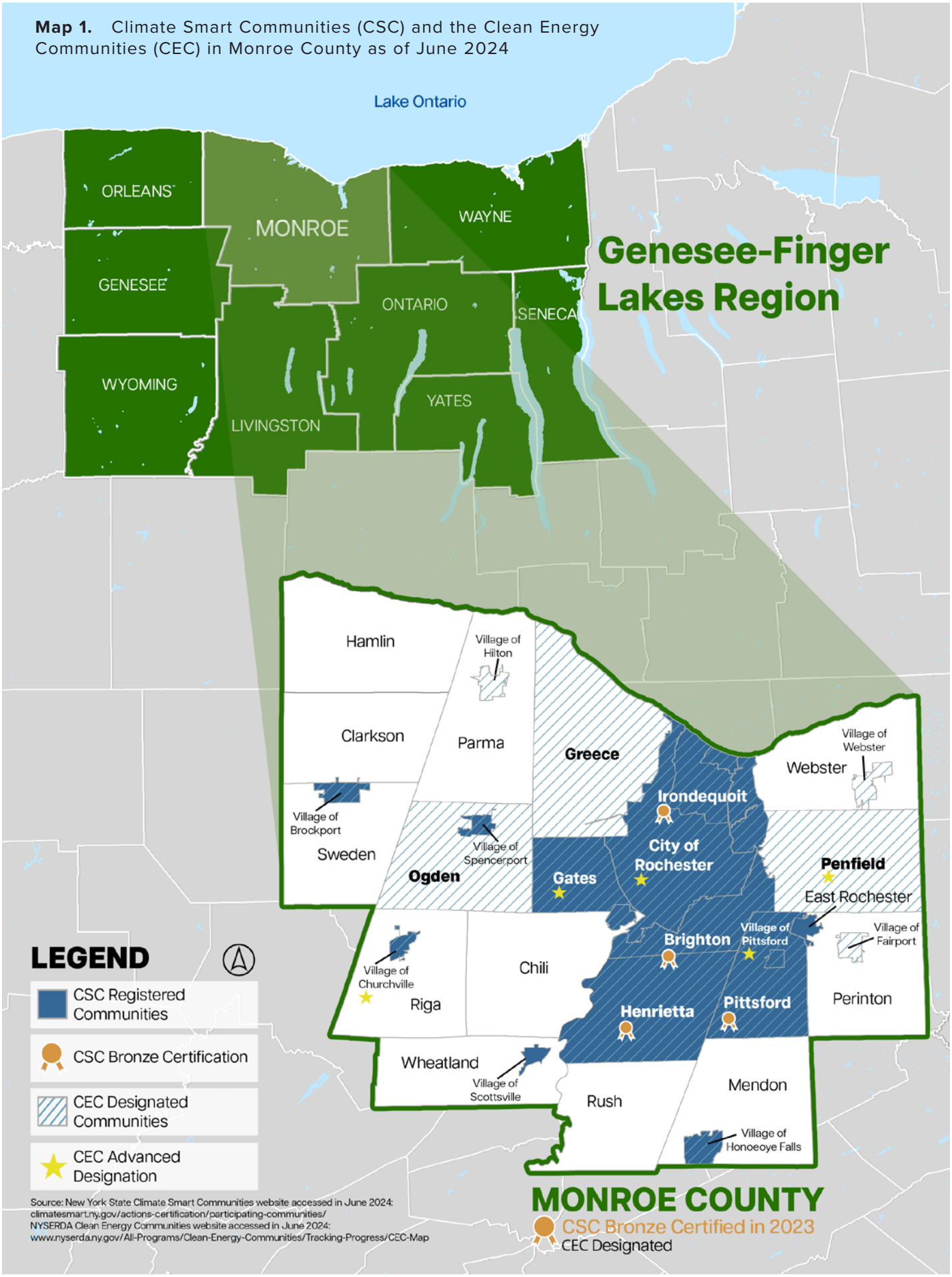
Another New York State program available to communities is the Clean Energy Communities (CEC) program through the New York State Energy Research and Development Authority (NYSERDA). Similar to CSC, the CEC allows municipalities to undertake actions working towards clean energy goals to earn points and obtain increased recognition and access to grant funding. With more points earned, the community can receive advanced designation with star ratings from one to five. As of June 2024, with 2,500 points, Monroe County is CEC Designated.

CSC IN MONROE COUNTY

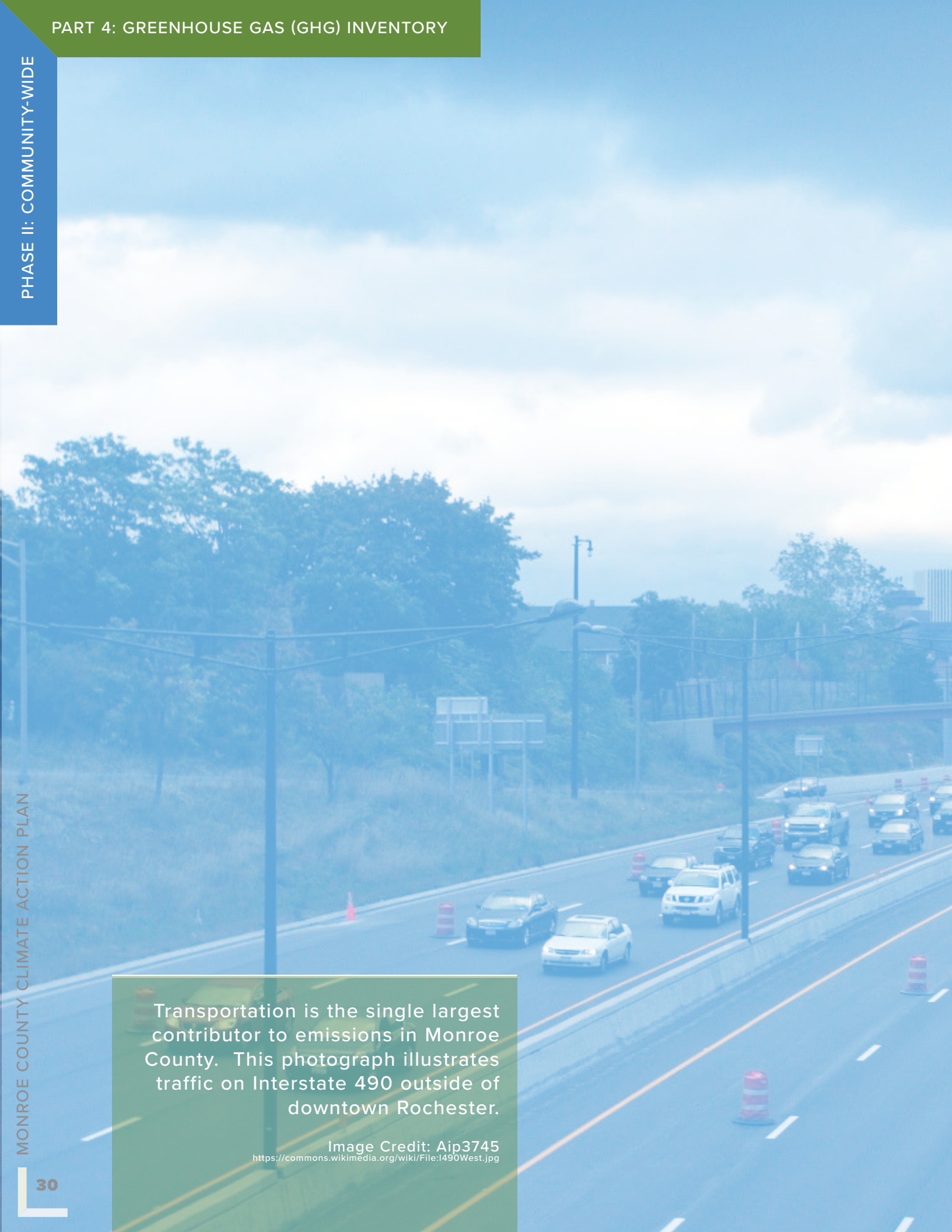
Monroe County passed a resolution to register as a Climate Smart Community (CSC) in 2021. Given the County's commitment to the program, as well the participation of several local communities, the CSC serves as a structure through which the County can plan, prioritize, and track resiliency and sustainability efforts.

As a result of the CSC program, the County has obtained funding for this climate action planning process. Additionally, as of April 21, 2023, Monroe County became a Bronze Certified Climate Smart Community. To achieve this status, the County earned 157 points from 27 actions including the development of the Phase I Government Operations Climate Action Plan.

Map 1. Climate Smart Communities (CSC) and the Clean Energy Communities (CEC) in Monroe County as of June 2024



Source: New York State Climate Smart Communities website accessed in June 2024: climatesmart.ny.gov/actions-certification/participating-communities/
NYSERDA Clean Energy Communities website accessed in June 2024: www.nyserda.ny.gov/All-Programs/Clean-Energy-Communities/Tracking-Progress/CEC-Map



Transportation is the single largest contributor to emissions in Monroe County. This photograph illustrates traffic on Interstate 490 outside of downtown Rochester.

Image Credit: Aip3745
https://commons.wikimedia.org/wiki/File:I490West.jpg

Part 4

Greenhouse Gas (GHG) Inventory

The community-wide GHG inventory provides a baseline measure of the emissions from Monroe County residents as well as businesses and organizations that are not operated by the County.

About the GHG Inventory

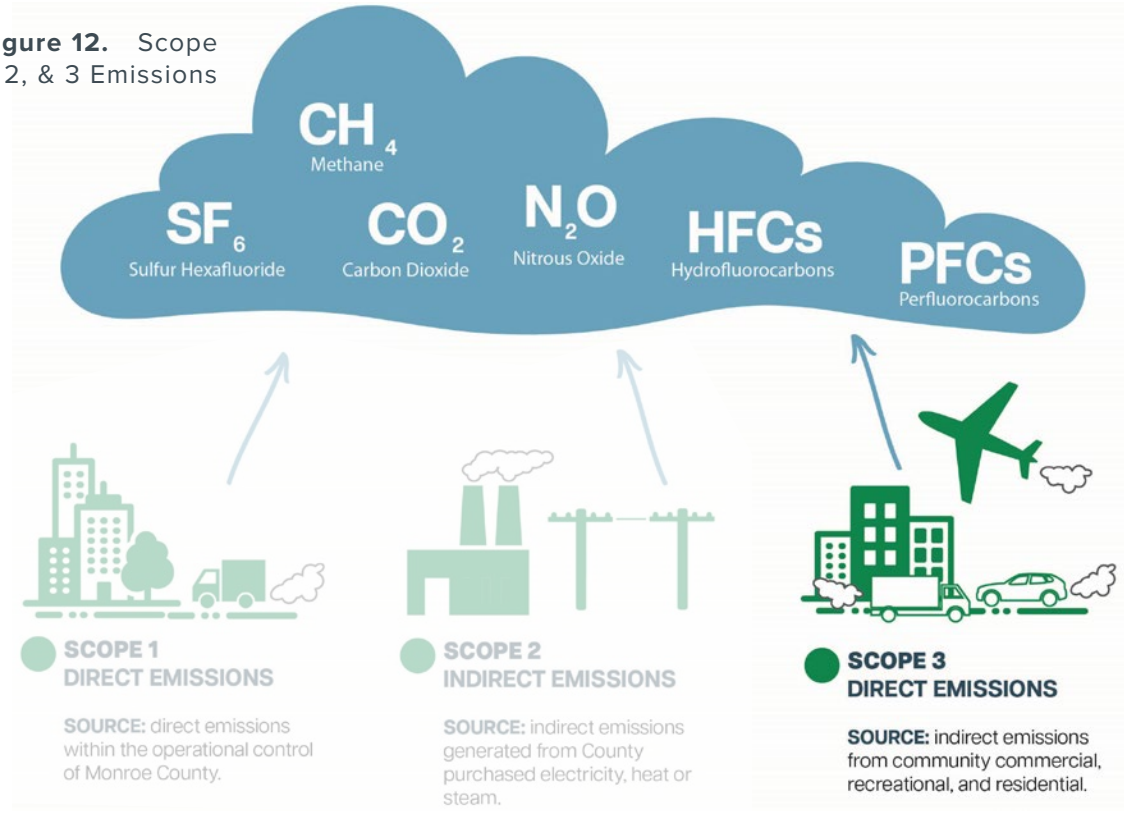
Many of our daily activities result in greenhouse gas (GHG) emissions. When we drive vehicles, use electricity, or heat our homes from fossil fuel sources, we are causing GHG emissions. Developing a GHG inventory helps us understand current emissions levels and identify the sources and activities that have the largest impact on emissions.

The community-wide GHG inventory that follows is a complement to the county operations GHG inventory that is included in Phase I of the Monroe County Climate Action Plan (CAP). The community-wide inventory and the county operations inventory measure emissions from different sources. The community-wide GHG inventory measures emissions from Monroe County residents and from businesses and organizations in Monroe County that are not operated by the County (Scope 3). The county operations inventory measures emissions from buildings owned by Monroe County as well as from county operations (Scopes 1 and 2).

PURPOSE

The community-wide emissions inventory provides a baseline to help the County understand current emissions levels and determine where to target potential reduction strategies (as proposed in Part 5). The County intends to lead by example (see Phase I CAP) and work with its organizational partners to encourage community members and other public and private entities to take actions to reduce their emissions.

Figure 12. Scope 1, 2, & 3 Emissions



METHODOLOGY

The community-wide GHG emissions inventory was developed using the International Council for Local Environmental Initiatives' (ICLEI) ClearPath tool, a globally recognized GHG accounting model. The ClearPath tool is the same tool that was used for the County's Phase I GHG emissions inventory. All input data including emission source and units, land use data, demographic data, applicable emission factors, and operational assumptions were collected and input into the ClearPath tool consistent with ICLEI protocols and tool prompts. Data sources include Monroe County, the Climate Solutions Accelerator, the Genesee Transportation Council (GTC), the New York State Energy Research and Development Authority (NYSERDA), and United States Environmental Protection Agency (EPA) models such as the Motor Vehicle Emission Simulator (MOVES) model.

The community-wide GHG emissions inventory uses Monroe County's geographic boundary as its physical boundary. All emissions generated within this boundary were collected and assessed. Consumption data included in the emissions inventory is based on population data. Due to the limited availability of GHG-related historical data for the County and the economically disruptive COVID-19 pandemic, it was determined that 2019 was the most appropriate year to use for the community-wide GHG emissions inventory.

Figure 13. GHG Methodology Diagram

When
2019

Where
Monroe County

Who
- Monroe County residents
- Businesses and organizations in Monroe County (that are not operated by Monroe County)

What
- Vehicle emissions
- Energy use emissions
- Waste emissions
- Agriculture emissions
- Other emissions

Why
To develop a baseline emissions inventory for Monroe County.

Carbon Sequestration

Although this community-wide GHG inventory does not reflect carbon sequestration, which is the process of capturing and storing atmospheric carbon dioxide, it is a method of reducing the amount of carbon dioxide in the atmosphere with the aim of mitigating climate change.[1] To learn more about this process, visit the closer look on page 69.

1 USGS website: "What is carbon sequestration?" https://www.usgs.gov/faqs/what-carbon-sequestration Accessed June 10, 2024.

Emissions Sources

The community-wide GHG emissions inventory reports emissions from the following source categories:

- **Transportation:** emissions from vehicles including cars, trucks, trains, airplanes, boats, and construction and lawn equipment.
- **Energy Use:** emissions from the production and consumption of electricity, natural gas, propane, heating oil, and wood for heating residential, industrial, and commercial buildings.
- **Process and Fugitive Emissions:** emissions from HVAC and refrigerant use, natural gas leakages, and emissions from industrial processes.
- **Waste Generation and Water Supply:** emissions from landfills, recycling, and composting, and from wastewater processing and water supply operations.
- **Agriculture, Forestry, and Land Use:** emissions from fertilizer, livestock, and dairy associated with agricultural and forestry land uses.
- **Upstream Emissions:** emissions from electric power transmission and distribution losses.

Transportation (41%) and energy use (39%) are the two largest contributors to total emissions in Monroe County.

Note: All data from 2019.

TOTAL EMISSIONS BY SECTOR

In Monroe County, transportation and energy use make up over 80% of total emissions. This is consistent with regional and statewide trends. Both the *2022 Statewide GHG Emissions and the 2022 Genesee-Finger Lakes Climate Action Strategy Report* for the nine county Genesee-Finger Lakes region found that transportation and energy were the two largest sources of emissions.

Figure 14. Percentage of Monroe County Total 2019 Emissions by Sector

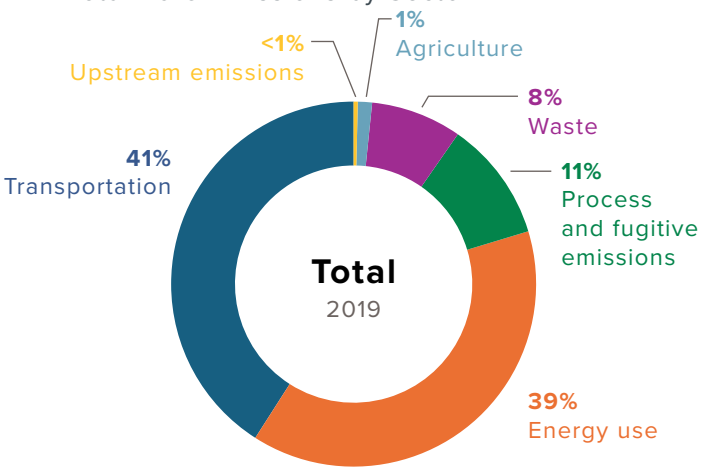


Table 2. Total Metric Tons of Carbon Dioxide Equivalent (CO_2e MT) in Monroe County in 2019

	2019 Emissions (CO_2e MT)
Transportation (41%)	3,347,100
Energy Use (39%)	3,166,408
Process and Fugitive Emissions (11%)	870,589
Waste Generation and Water Supply (8%)	658,199
Agriculture, Forestry, and Land Use (1%)	102,917
Upstream Emissions (<1%)	29,748
Total:	8,174,961

Table 3. Monroe County Emissions Sources by Sector in 2019

Transportation (41%)	Cars and Trucks, Employee Commutes	Emissions were generated based on fuel (gasoline, diesel, ethanol, compressed natural gas [CNG], and other fuels) and vehicle miles traveled (VMT) records for sources including on-road light, medium, and heavy duty vehicles; rail (based on Amtrak data), airplanes (based on fuel records from the airport), and boats; construction equipment such as excavators, forklifts, various types of loaders, lawn and garden equipment; and portable generators and pumps. Data was obtained from the Climate Solutions Accelerator, the GTC, EPA MOVES model, and County records.
	Rail, Air, and Marine	
	Off-Road Equipment	
Energy Use (39%)	Residential Energy (Energy Use)	Emissions were calculated based on electricity use and fuel combustion, by sector. Energy included indirect emissions associated with the production of electricity and direct combustion emissions associated with the use of natural gas, propane, home heating oil, and wood for heating. Industrial energy also included fuel combustion generated point source emissions from EPA Title 5 identified source.
	Industrial Energy (Energy Use and Point Source Emissions from Fuel Combustion)	
	Commercial Energy (Energy Use)	
Process and Fugitive Emissions (11%)	Natural Gas and Refrigerants Losses	Emissions were calculated using HVAC and refrigerant use records, fugitive emissions from natural gas distribution, and emissions from chemical transformation of raw materials and fugitive emissions during industrial processes. Data was based on the number of residents and businesses in the County.
Waste Generation and Water Supply (8%)	Landfill	Emissions were generated based on tons of material landfilled (net emissions) and recycled and composted (net reduction in emissions) records obtained from WM[1] and the County. Emissions associated with the wastewater processing and water supply were based on the number of residents and businesses in the County.
	Compost and Recycling	
	Wastewater and Water Supply	
Agriculture, Forestry, and Land Use (1%)	Land Use and Acreage	Emissions were generated based on land use records obtained from Monroe County land use records based on GIS analysis of changing acreage and use, as well as USDA's county-based agriculture surveys.
Upstream Emissions (<1%)	Electric Power Transmission and Distribution Losses	Emissions generated based on Climate Solutions Accelerator data and a Grid loss factor: eGRID 2019, Eastern region Electric Power Transmission and Distribution Losses.

1 WM, formally known as Waste Management

Transportation

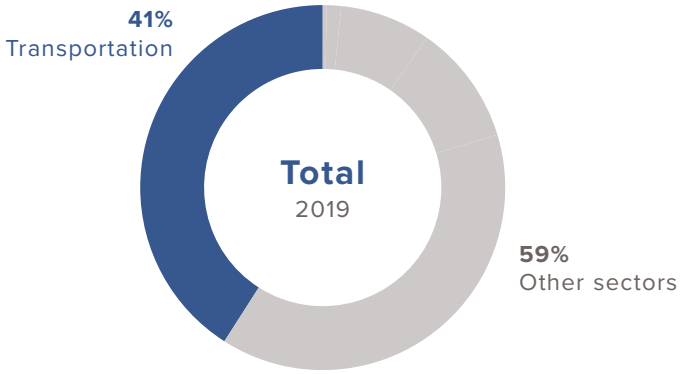
Transportation is the single largest contributor to emissions in Monroe County, accounting for 41%. Most emissions come from passenger cars and freight. Gasoline powered cars are the biggest sources of emissions, followed by diesel trucks.

Key Finding

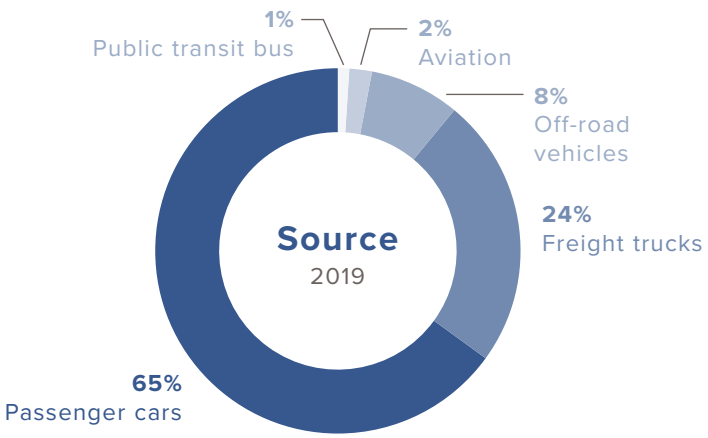
Transitioning to zero emission cars and trucks and reducing vehicle miles traveled will have the greatest impact on reducing emissions.

Want to learn more *about what the Rochester-Genesee Regional Transportation Authority is doing to transition its bus fleet to zero-emission vehicles? Check out page 55.*

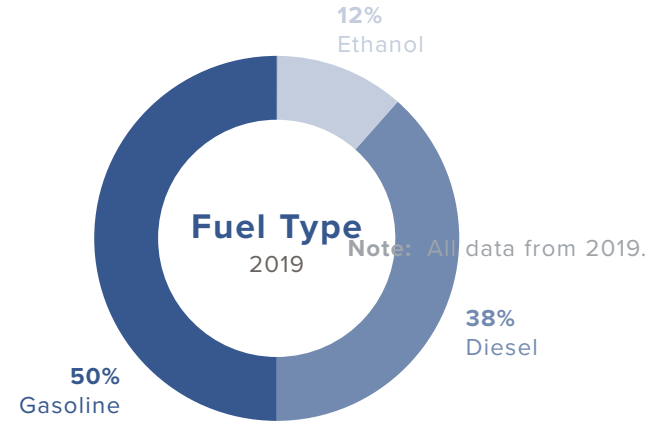
Figure 15. Monroe County Transportation Emissions Percentages



Transportation is the largest contributor *to total emissions, accounting for 41%.*



Most transportation emissions come from ***passenger cars (65%) and freight trucks (24%).***



Most transportation emissions come from ***gasoline-powered vehicles (58%).***

NOTE: All data from 2019.

Figure 16. Metric Tons of Carbon Dioxide Equivalent (CO_2e MT) by Source from the Transportation Sector in Monroe County in 2019

Gasoline powered cars are the biggest sources of emissions, *followed by diesel trucks.*

Energy Use

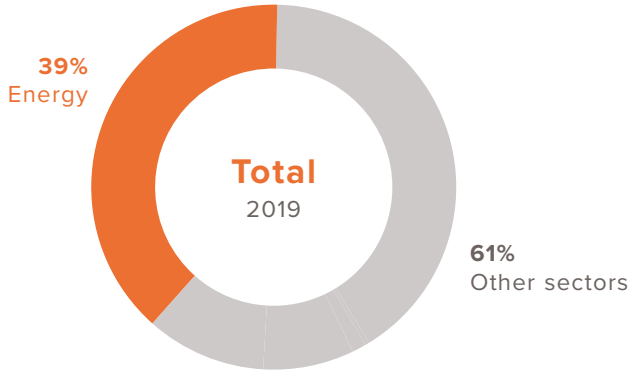
Energy use makes up 39% of total emissions in Monroe County. Residential energy use is the largest contributor to emissions at 43%, followed by industrial and commercial energy use at 31% and 26%.

Most energy emissions come from natural gas-powered sources. This suggests that most emissions are resulting from heating needs. There are several ways to reduce heating demands including through weatherizing buildings (i.e., better insulation and building envelopes), transitioning to renewable heat sources like geothermal, and using more energy efficient heating systems like heat pumps.

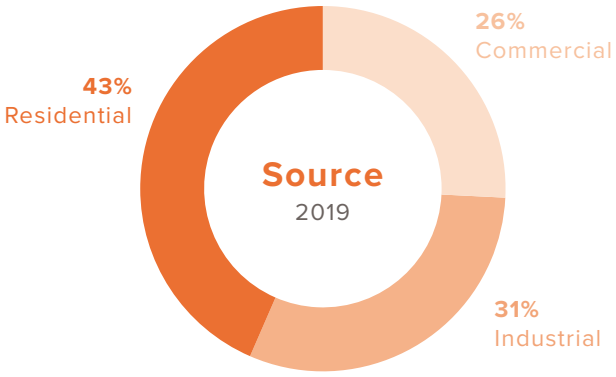
Key Finding

Mitigating heating demands will have the greatest impact on reducing emissions from energy use. Better weatherization of buildings, transitioning to renewable energy options, and using energy efficient heating systems can help mitigate heating demands.

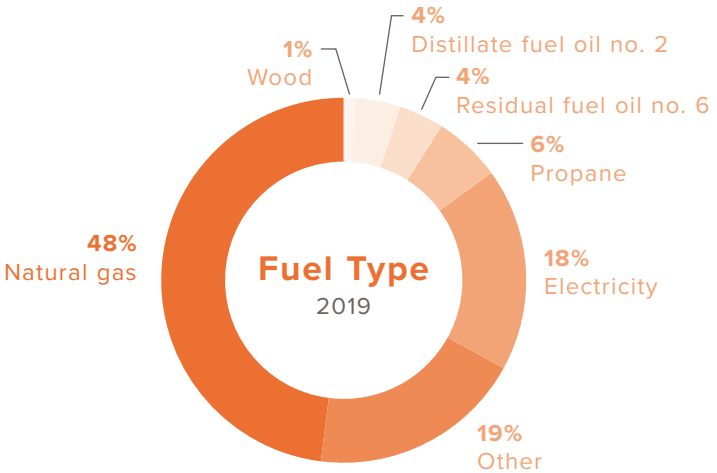
Figure 17. Monroe County Energy Use Emissions Percentages



***Energy is the second largest contributor** to total emissions, accounting for 39%.*



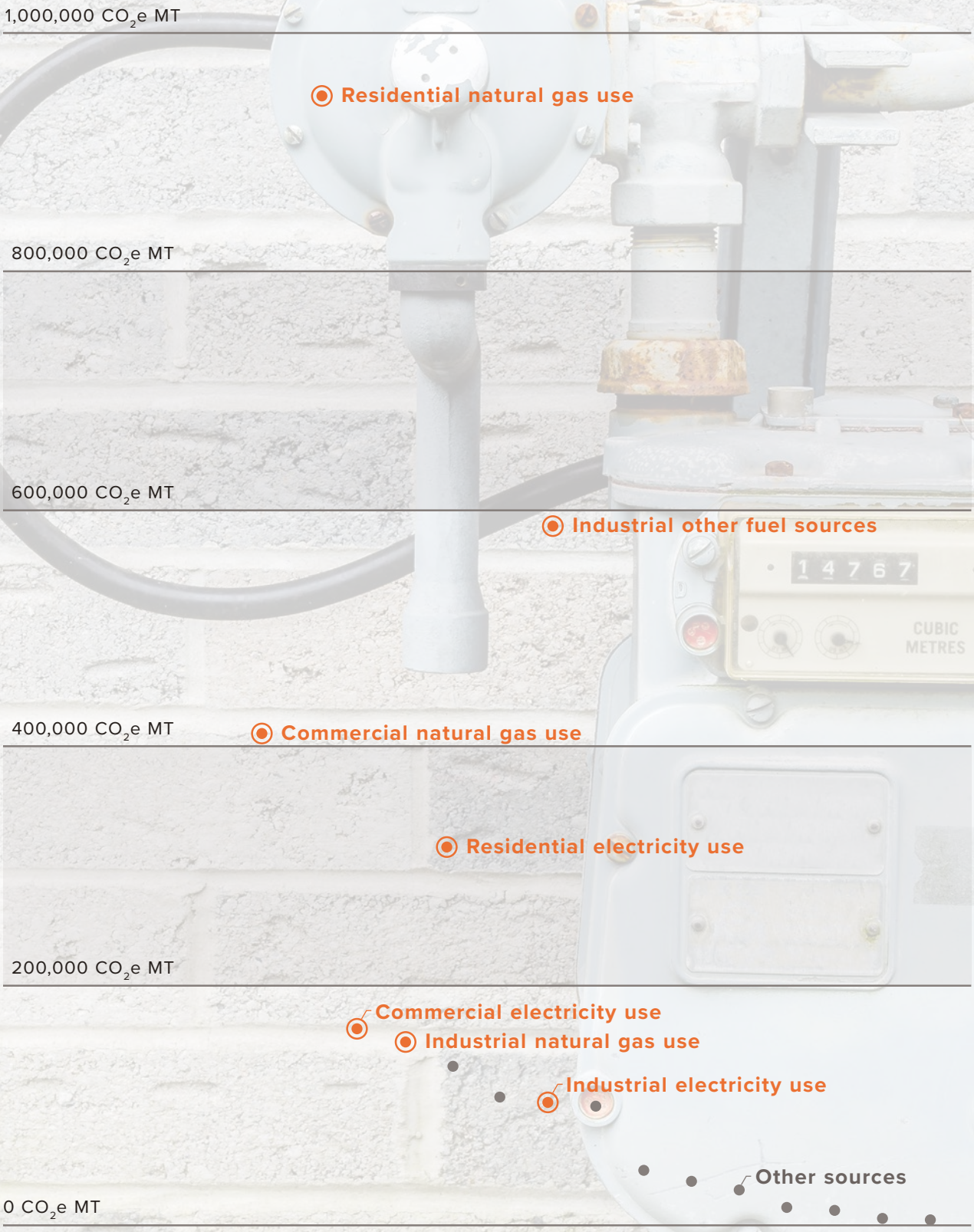
*Most energy emissions come from **residential energy use (43%).***



*Most energy emissions come from **natural gas-powered sources (48%).***

NOTE: All data from 2019.

Figure 18. Metric Tons of Carbon Dioxide Equivalent (CO_2e MT) by Source from the Energy Use Sector in Monroe County in 2019



Natural gas sources account for most *residential and commercial emissions.*

Process and Fugitive Emissions

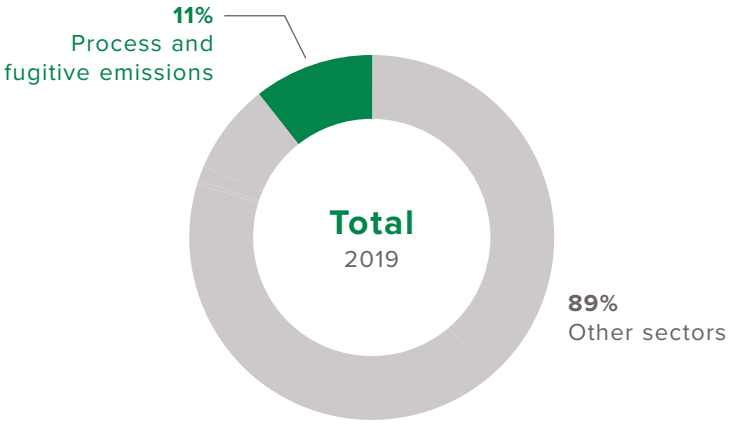
Process and fugitive emissions make up 11% of total emissions in Monroe County. These types of emissions result from the intentional or unintentional release of GHGs. Process emissions are generated from the production of raw materials. Fugitive emissions come from the production, processing, transmission, storage and use of fuels or other substances, often through leaks in joints, seals, and in pipelines. Examples include HFCs from refrigeration leaks and leaks in natural gas distribution systems.

Refrigerants are the largest source of process and fugitive emissions in Monroe County. Emissions from refrigerants are expected to grow in Monroe County and across the country as climate change increases the number of days requiring air conditioning.

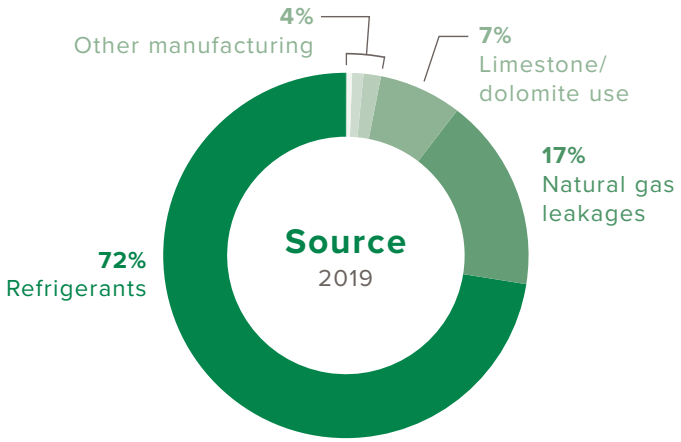
Key Finding

Reducing refrigerant use and better managing refrigerants will have the greatest impact on reducing emissions.

Figure 19. Monroe County Process and Fugitive Emissions Percentages



Process and fugitive emissions are the third largest contributor *to total emissions, accounting for 11%.*



Most process and fugitive emissions come from ***refrigerants (72%) and natural gas leakages (17%).***

NOTE: All data from 2019.

Waste Generation and Water Supply

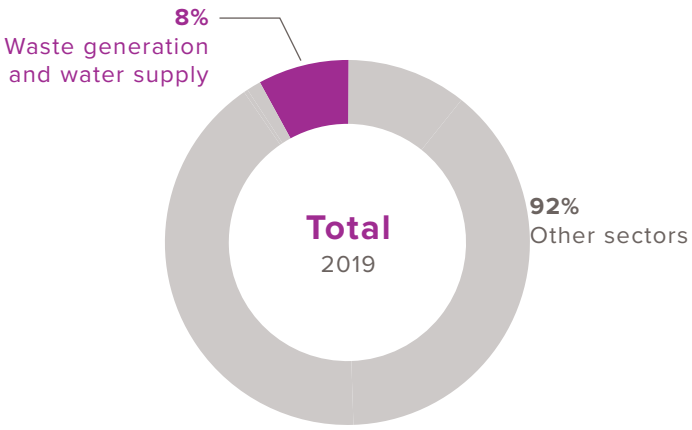
Waste generation and water supply emissions account for 8% of total emissions in Monroe County. Almost all emissions in this sector come from solid waste operations (99%). Direct methane emissions from the Mill Seat and High Acres landfills (both owned by WM) are the largest source of emissions in this sector, accounting for 96% of all emissions. The next largest sources of emissions also result from waste operations – solid waste collections at 2% and landfill gas (LFG) flaring/combustion at 1.5%. Emissions from wastewater and water supply operations are minimal, accounting for less than 1%.

Though not reflected in the data used for this community-wide GHG inventory (2019), WM has recently achieved emissions reductions by upgrading its gas collection and control systems. By year end 2023, Mill Seat Landfill reduced its landfill emissions by 22% from 2021 baseline levels and High Acres Landfill reduced its landfill emissions by 46% from 2021 baseline levels.[1]

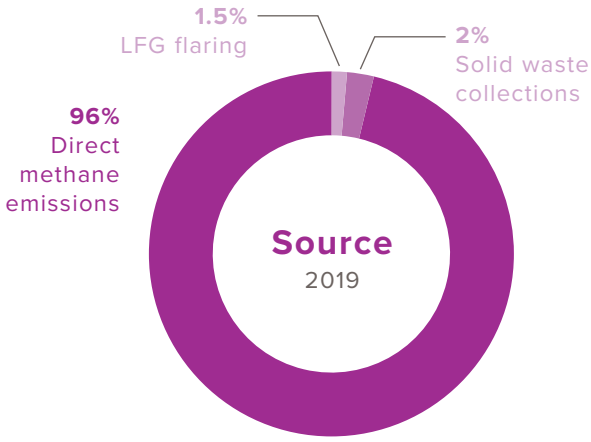
1 WM 2023 Sustainability Report. Page 8.

***Want to learn more** about WM's sustainability initiatives? Check out page 83.*

Figure 20. Monroe County Waste Generation and Water Supply Emissions Percentages



*Waste generation and water supply **makes up 8% of total emissions.***



*Most waste emissions come from **direct methane emissions (96%).***

Key Finding

Continuing to reduce methane emissions from landfills will have the greatest impact on reducing overall emissions.

NOTE: All data from 2019.

Agriculture, Forestry, and Land Use

Agriculture, forestry, and land use account for 1% of total emissions in Monroe County. Most emissions in this sector come from fertilizer use (50%), followed by livestock (29%) and dairy (21%).

Key Finding

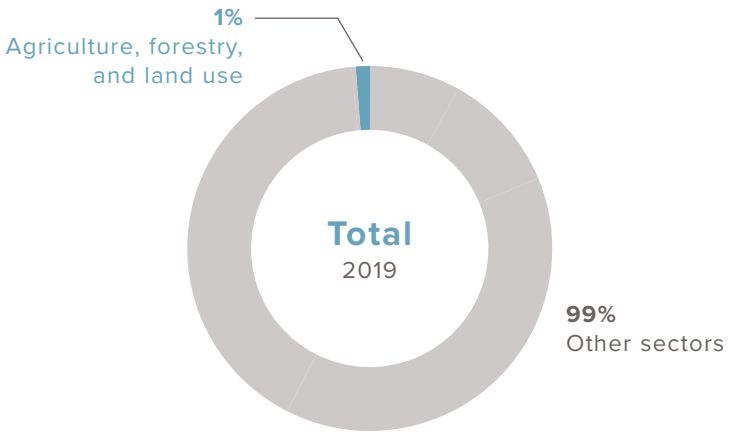
Increasing use of sustainable agriculture practices such as managing fertilizer use will have the greatest impact on reducing emissions.

Want to learn more *about climate resilient farming techniques being used in Monroe County? Check out page 72.*

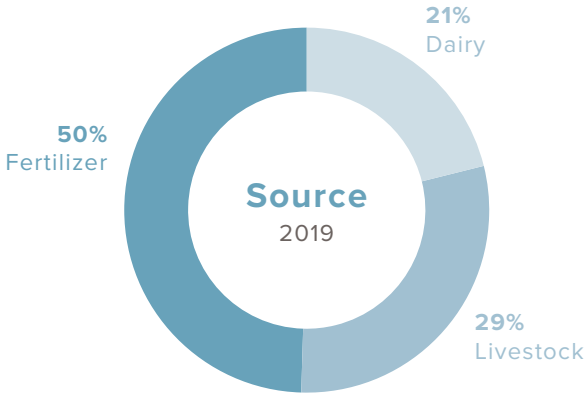
Though not reflected in this community-wide GHG inventory, Monroe County's tree canopy sequesters around 400,000 MT CO_2e every year. In 2019, this meant that the tree canopy removed about 5% of total community-wide emissions from the atmosphere.

Want to learn more *about the benefits of Monroe County's tree canopy? Check out page 70.*

Figure 21. Monroe County Agriculture, Forestry, and Land Use Percentages



*Agriculture, forestry, and land use account for **1% of total emissions.***



Most agricultural emissions come from fertilizer (50%), *followed by livestock (29%), and dairy (21%).*

NOTES: All data from 2019.
Emissions from tractors and other agricultural equipment are included in the transportation sector and not in the agriculture, forestry, and land use sector. If emissions from agricultural vehicles were included in the agriculture, forestry, and land use sector, they would account for less than 1% of total emissions.

Upstream Emissions

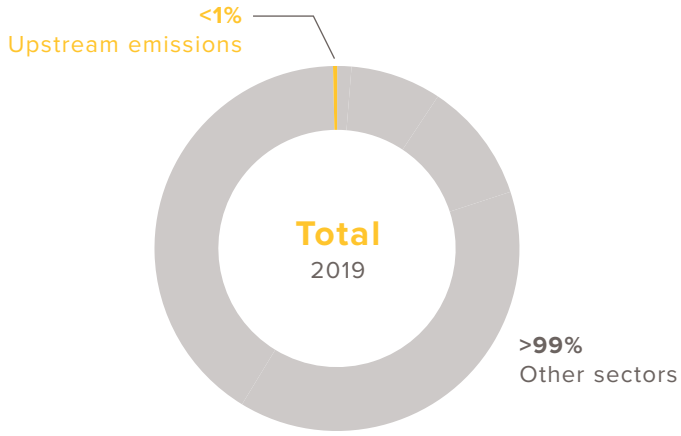
Upstream emissions account for less than 1% of total emissions in Monroe County. Upstream emissions include the transmission and distribution (T&D) impacts of purchased electricity used by the community, as well as the emissions associated with extracting, producing, and delivering the fossil fuels used to generate electricity.

Most upstream emissions in Monroe County are related to energy distribution to residential users.

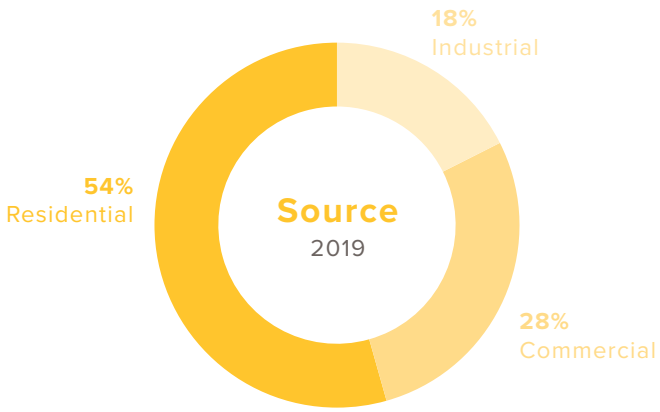
Key Finding

Transitioning to renewable energy sources will have the greatest impact on reducing upstream emissions.

Figure 22. Monroe County Upstream Emissions Percentages



*Upstream emissions make up **less than 1% of total emissions.***



*Upstream emissions from distribution to **residential users account for the most emissions (54%).***

NOTE: All data from 2019.

"Business as Usual" Forecast

The "business as usual" (BAU) forecast estimates future emissions in Monroe County through the year 2050 assuming today's status quo continues unmitigated into the future. This means that the BAU projection assumes **no additional actions** will be taken within the Monroe County boundary to reduce emissions beyond what is already regulated or policies that have already been adopted as of 2023. The BAU projection will be used as the baseline against which to measure potential emissions reductions from the strategies proposed in Part 5.

The BAU forecast includes the following assumptions:

- **Monroe County's population will grow** to 768,123 by 2050.[1]
- All sales or leases of new light-duty passenger vehicles in New York will be **zero-emission vehicles** by 2035.[2]
- All sales or leases of new medium- and heavy-duty vehicles will be **zero-emission vehicles** by 2045.[2]
- **Transportation emissions from on-road passenger and heavy-duty vehicles will decrease** by 1.5% per year through 2050 because of increased fuel efficiency and electric vehicle use.
- **Vehicle miles traveled will increase** for all vehicle types.
- **New York's grid will produce 100% zero-emission electricity** by 2040.[3]

The BAU projects that emissions in Monroe County will decrease through 2050 without any additional actions being taken. It should be emphasized that the BAU projection relies on achievement of the State's ambitious goals for zero-emission vehicles and a zero-emission grid. If these goals are not met, future emission reductions are likely to be lower.

Key Finding

If New York State's ambitious emissions reduction goals are met, emissions in Monroe County are projected to decrease 32.5% by 2050.

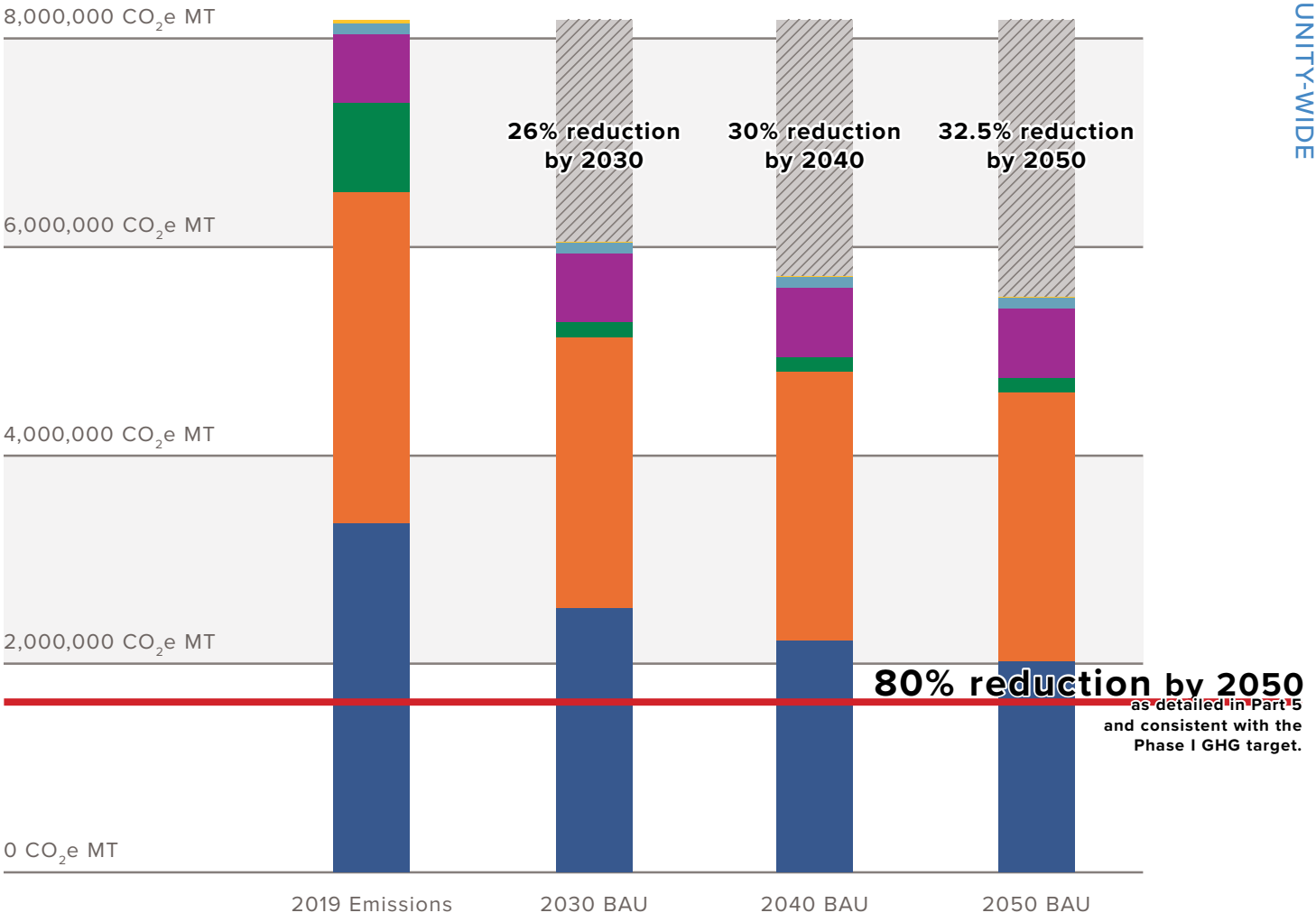
The strategies proposed in Part 5 are anticipated to result in additional reductions beyond the BAU baseline.

1 Based on the Regional Population Forecasts County, City, Town and Village Projections for the Genesee/Finger Lakes Region out to the year 2050 prepared by the Genesee/Finger Lakes Regional Planning Council (2013, Revised 2015).

2 Based on New York's Clean Transportation Roadmap prepared by NYSERDA (2021). The roadmap also calls for decreases in aviation, rail and marine vessels emissions but as the regulations around those sources are less developed, emission reductions are not assumed in this BAU scenario.

3 Included as a goal in the 2019 Climate Leadership and Community Protection Act (CLCPA). The state is already projected to achieve renewable energy for 66% of the grid based on the current pipeline of renewables under contract and in development projects. Therefore, the BAU assumes the state achieves this goal.

Figure 23. "Business as Usual" Forecast by Sector for Monroe County in Metric Tons of Carbon Dioxide Equivalent (CO_2e MT)



	2019 Emissions (CO_2e MT)	2030 BAU (CO_2e MT)	2040 BAU (CO_2e MT)	2050 BAU (CO_2e MT)
Transportation	3,347,100	2,532,750	2,223,916	2,017,852
Energy Use	3,166,408	2,597,632	2,570,954	2,582,188
Process and Fugitive Emissions	870,589	148,597	149,658	150,595
Waste Generation and Water Supply	658,199	656,077	660,872	665,110
Agriculture, Forestry, and Land Use	102,917	102,917	102,917	102,917
Upstream Emissions	29,748	2,564	276	30
Total:	8,174,961	6,040,537	5,708,593	5,518,692

The photograph shows a solar array installed on August 2021 and located on land owned by the Monroe County Water Authority (MCWA) at the corner of Penfield Road and Watson Hulbert Road in Penfield.

Part 5

Goals & Strategies

The goals and strategies identify how Monroe County and its community partners may take action to reduce GHG emissions and climate impacts in our region.

Joining Forces to Address Global Challenges

In response to the pressing need to address climate change, Monroe County is dedicated to establishing specific GHG reduction goals and developing practical strategies that engage all community segments. Phase II of the Monroe County CAP broadens the scope from county operations to include community-wide efforts, tackling GHG emissions across multiple sectors such as housing, industry, transportation, and infrastructure. This community-wide effort commits to an ambitious target of reducing greenhouse gas (GHG) emissions by 80% below 2019 levels by 2050, marking a decisive step toward sustainability. The goals and strategies of the Phase II CAP outline a collaborative approach, involving both the County and the community, to achieve the reduction target across the focus areas in Monroe County.

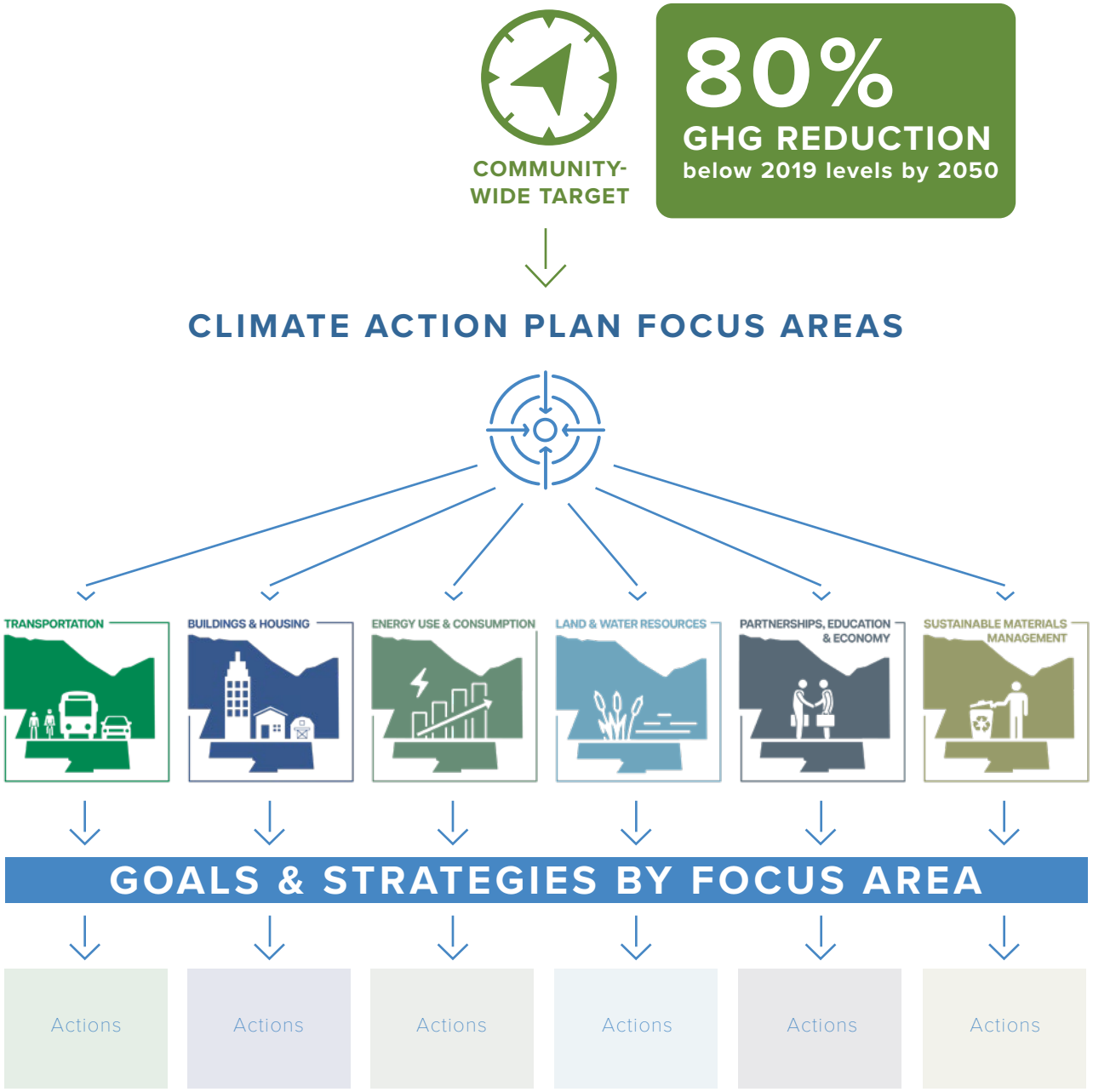
The participation of residents and stakeholders directly informed the development of this plan through the contribution of ideas for action and refinement of the overall goals and strategies. Stakeholders and individuals engaged in this process covered a wide range of perspectives and interests, including potential community partners such as municipalities, businesses, educational institutions, nonprofits, and climate action focused organizations.

Goal & Strategies Framework

The goals and strategies of the Phase II CAP provide a dynamic framework that outlines necessary steps for achievement of the community-wide target for GHG reduction. This structured approach ensures efficient and effective resource allocation. Elements of the framework include focus areas, goals, strategies and actions. Each element is defined as follows:

- **FOCUS AREA**: A sector or theme that has been identified as critical for addressing the environmental challenges in Monroe County. The focus areas help to guide the allocation of resources, development of policies, and implementation of strategic actions. They serve as the foundational elements around which this plan is structured.
- **GOAL**: A broad statement that outlines the County's ambition to reduce GHG emissions and diminish Monroe County's contribution to global climate change.
- **STRATEGY**: An aspect of the focus area where the goal can be applied to form specific actions.
- **ACTION**: Tangible steps that Monroe County and its community partners can take to achieve the outlined goals. This includes the development and execution of detailed plans, projects, policies, and programs.

Figure 24. Goals & Strategies Framework Diagram



NOTE: Throughout this process we have received feedback related to climate adaptation and resiliency measures. While some this input was not directly applicable to the GHG emissions reduction focus of this plan, it has been recorded and maintained for consideration as part of the County's forthcoming Climate Adaptation and Resiliency Plan effort.

ACTIONS TABLES

To achieve the goals of the CAP, each focus area has a detailed table with specific actions, organized by strategy. For each action item, the table specifies if it's applicable to Monroe County, municipalities, businesses, community organizations or individuals, for a coordinated approach to climate action. These tables can be pulled out and used as a checklist for action implementation by Monroe County and its community partners. The action tables that reflect the focus area goals and community-wide GHG target provide a structured strategy for Monroe County to make meaningful and measurable strides towards a sustainable and resilient future.

A closer look at...

Case Studies and Resources

To support the implementation of actions from the Phase II CAP goals and strategies framework, a variety of case studies and management practices have been highlighted within this section. These resources are identified with a magnifying glass symbol and include the following topics shown in Table 4:

Table 4. Closer Look Topics

Throughout the plan the magnifying glass with an associated page number(s) is used to reference related information available in a closer look page.

Transportation

The different modes of transportation (driving, public transit, bicycling, walking) connect us to homes, jobs, businesses, and the environment. Transportation networks and infrastructure are required to support these varying modes of transport. The modes of transportation used, the infrastructure to support them, and the travel distances between destinations directly impact our carbon footprint and greenhouse gas emissions.

The goals and strategies for the Transportation Focus Area include:

GOAL 1: Increase connectivity surrounding high trip potential and population centers.

GOAL 2: Reduce vehicle miles traveled.

GOAL 3: Increase zero emission personal and fleet vehicles, equipment, and facilities.

STRATEGY 1: Education & Awareness Campaigns

STRATEGY 2: Active Transportation Infrastructure & Public Transit

STRATEGY 3: Facilities & Amenities for Transportation Modes

STRATEGY 4: Electric & Alternative Transportation Incentives

STRATEGY 5: Transportation Planning & Policy Development

STRATEGY 6: Land Use Regulations

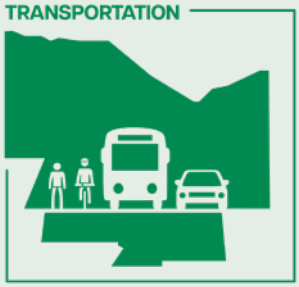
STRATEGY 7: Alternative Transportation & Reduction of Car Dependence

STRATEGY 8: Sustainable Development Features

TRANSPORTATION ACTIONS

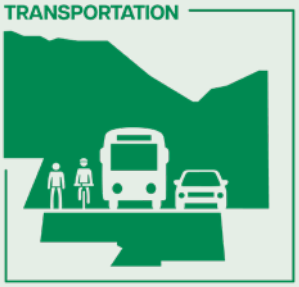
The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 5. Transportation Actions by Strategy



	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Education & Awareness Campaign					
• Consider supporting a county-wide educational campaign on the health benefits of using active transportation.	✓				
STRATEGY 2: Active Transportation Infrastructure & Public Transit					
• Implement the Monroe County Active Transportation Plan. *A closer look on page 54.*	✓				
• Increase bike infrastructure county-wide and improve the connectivity between bike infrastructure networks.	✓	✓			
• Work with municipalities to fill gaps in sidewalks on County roads with support of Monroe County DOT Municipal Sidewalk program.	✓	✓			
• Further develop online bike and trail maps across the County that link both on-road and off-road facilities.	✓				
• Improve maintenance of bike and pedestrian facilities within the county-wide network during all seasons, including plowing bike lanes during winter months.	✓	✓			
• Support efforts to expand public transit systems to increase frequency of services, increase awareness of locations and schedule, and reach of public transit county-wide.	✓			✓	
STRATEGY 3: Facilities & Amenities for Transportation Modes					
• Encourage bike storage and facilities at employment centers that are connected to bike networks.	✓	✓	✓	✓	✓
• Encourage replacement of traffic lights with roundabouts where feasible to reduce time idling and improve traffic safety.	✓	✓			
STRATEGY 4: Electric & Alternative Transportation Initiatives					
• Increase use of electric bikes and scooters.	✓	✓	✓	✓	✓
• Increase private electric vehicle (EV) ownership through local, state, federal or private grant opportunities, prioritizing incentives for low-moderate income community members.	✓	✓	✓	✓	✓

Table 5. Transportation Actions by Strategy (continued)



	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
• Support the development of electric car sharing programs.	✓	✓	✓	✓	✓
• Complete a county-wide EV plan. Identify appropriate locations for installation of additional Level 2 and Level 3 charging stations.	✓	✓	✓	✓	
• Implement the installation of additional Level 2 and Level 3 charging stations, in accordance with County and/or local plans and studies.	✓	✓	✓	✓	
STRATEGY 5: Transportation Planning & Policy Development					
• Continue to implement Monroe County Complete Streets policy to reduce traffic congestion.	✓				
• Advocate for greater state and federal funding for public transit and multi-modal transportation infrastructure.	✓	✓	✓	✓	✓
STRATEGY 6: Land Use Regulations					
• Provide resources to municipalities to incentivize higher density development to promote walkability and development along existing public transit routes.	✓	✓			
• Implement County of Monroe Industrial Development (COMIDA) policy to incentivize higher density development and development along existing public transit routes to enhance walkability and accessibility.	✓				
STRATEGY 7: Alternative Transportation & Reduction of Car Dependence					
• Encourage employers to reduce car dependence through hybrid work environments, shuttle services to employees outside of public transit services, and other means.	✓	✓	✓	✓	✓
• Encourage a reduction of single passenger personal vehicle trips under 5 minutes through an educational campaign.	✓	✓	✓	✓	✓
• Reinforce road user safety education, especially to provide consideration to alternative transportation users.	✓	✓	✓	✓	✓
STRATEGY 8: Sustainable Development Features					
• Incentivize high density and large developments to provide EV charging stations to residents and businesses.	✓	✓			

A closer look at...

Active Transportation Plan

Monroe County and the Genesee Transportation Council partnered to develop a Countywide Active Transportation Plan (CATP) for Monroe County. Adopted in 2023, the CATP provides an equity-focused, data-driven framework for improving the County's non-motorized transportation network. One element of the CATP that supports the goals of this Plan is the enhancement of bicycle infrastructure. By creating a more accessible bicycle network, residents may choose to bike instead of drive for local trips and commutes. The benefits of this transition will be significant fuels savings, GHG emissions reductions, and enhanced quality of life.

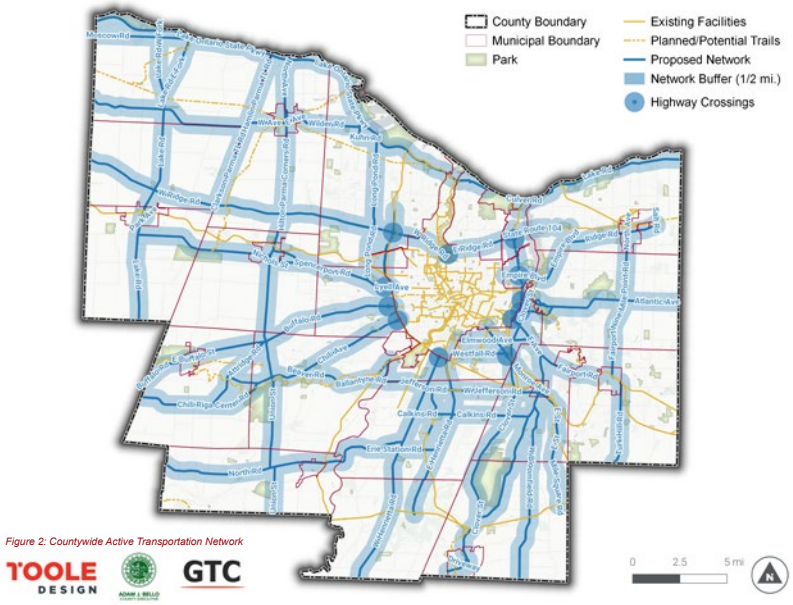


Figure 2: Countywide Active Transportation Network

Currently there are...
2,640 directional miles of

County roads
11% include bike facilities

43 Miles of Bike Lanes

150 Miles of Bike Paths

4 Miles of Cycle Tracks

The CATP recommends a full bicycle network of 498 miles. The proposed high coverage and high needs scenario networks total 183 miles, increasing bicycle infrastructure by 60%.

Want to know more?
Visit CATP website: www.monroecounty.gov/planning-catp

Following the methodology of the Florida Department of Transportation "Conserve by Bicycling and Walking Study" we can quantify GHG emission reductions from the potential new bicycle commuters using the enhanced bicycle facilities recommended in the CATP.

Currently 1 per 275 workers are bicycle commuters (or 0.3%)

Average Commute length is 3 miles

.18 Gallons of fuel are used per mile

Each gallon of fuel emits 19.4 pounds of carbon dioxide

A 60% increase in bicycle infrastructure would increase bicycle commuters to approximately 1 per 55 workers (or 1.8%). If those 1.8% of commuters biked to work just 50% of the time...

then nearly 3.6M three-mile trips by car would be converted to bicycle...

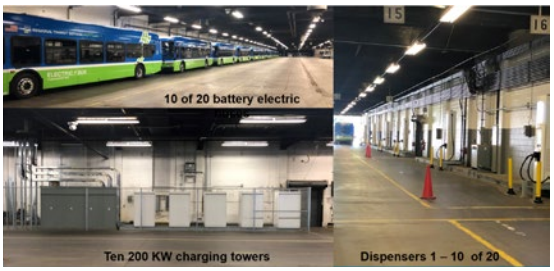
and over 650K gallons of fuel would be saved...

RESULTING IN A REDUCTION OF 12.5M POUNDS OF CARBON DIOXIDE EMISSIONS ANNUALLY

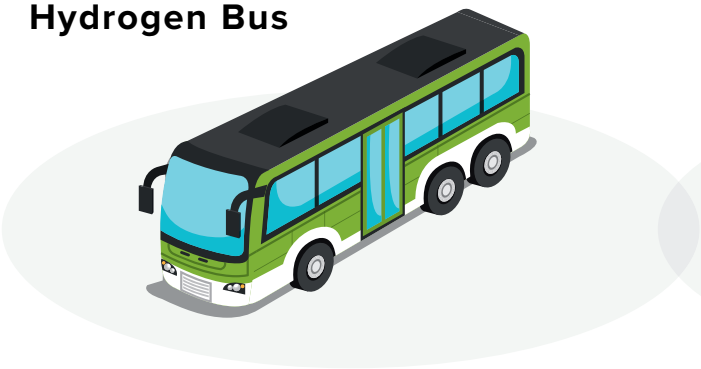
A closer look at...

RTS's Green Fleet - A Case Study

The Rochester-Genesee Regional Transportation Authority (RGRTA) provides fixed-route, on-demand, paratransit and deviated fixed-route service to the Greater Rochester area, Monroe County and the seven surrounding counties. RGRTA is currently transitioning their fixed-route fleet to zero-emission and currently has 20 battery-electric buses in service. Given the significant operational challenges experienced with battery-electric buses in a cold-weather transit use case, RGRTA is pivoting to hydrogen fuel cell technology as a better zero-emission solution. RGRTA is installing a portable liquid hydrogen fueling station and will be putting 2 hydrogen fuel cell buses in service in 2024. The portable fueler will be able to support 10 to 15 buses until a permanent hydrogen fueling station can be built.

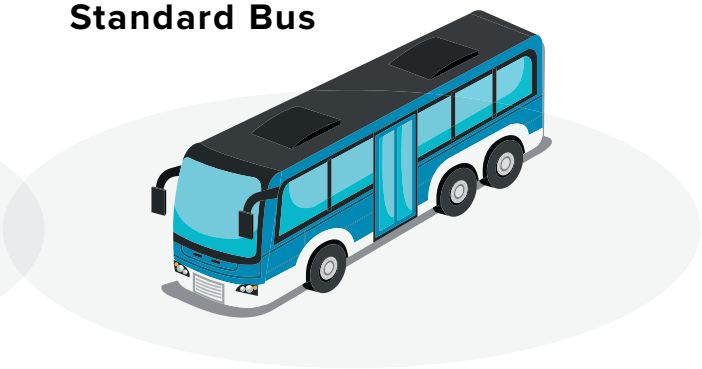


Hydrogen Bus



- Annual Emissions **0 metric tons CO_2**
- Fuel Economy **7 to 9 mpg**
- Range **300 miles**
- Maintenance Costs **$225,000 per year**

Standard Bus



- Annual Emissions **22 metric tons CO_2**
- Fuel Economy **5 to 6 mpg**
- Range **500 miles**
- Maintenance Costs **$300,000 per year**

Want to know more?
Learn more about hydrogen vehicles on the EPA's website at **epa.gov/greenvehicles/hydrogen-transportation**.

Buildings & Housing

Includes commercial, industrial, and residential buildings we live and work in. Buildings vary in appearance, footprint, and density across rural, suburban, and urban areas. The types of buildings, their construction methods, and daily usage patterns impact the environment, energy consumption, and micro-climates.

The goals and strategies for the Building & Housing Focus Area include:

GOAL 1: Consider existing development, redevelopment, and new development scenarios to reduce or eliminate GHG emissions.

GOAL 2: Reduce energy use of buildings powered by fossil fuels, and transition to renewable energy sources where possible.

GOAL 3: Implement green building infrastructure and renewable energy generation policies on new development and encourage the retrofitting of existing buildings and land.

STRATEGY 1: Urban Planning & Development

STRATEGY 2: Workforce Development & Training

STRATEGY 3: Educational Campaigns & Community Engagement

STRATEGY 4: Land Use Regulations

STRATEGY 5: Renewable Energy & Building Retrofits

BUILDING & HOUSING ACTIONS

The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 6. Buildings & Housing Actions by Strategy

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Urban Planning & Development					
• Work with County of Monroe Industrial Development Agency (COMIDA) and Monroe County Industrial Development Corporation (MCIDC) to encourage redevelopment of areas targeted for infill that are within public transit or walkable neighborhoods.	✓	✓			
• Work with COMIDA to implement a scoring policy to encourage high density development/infill.	✓	✓			
• Develop a target use of renewable energy sources in new development, retrofits, and rehabilitation projects for projects with COMIDA/MCIDC support.	✓				
STRATEGY 2: Workforce Development & Training					
• Provide workforce development services to connect community members with jobs in energy efficiency fields (i.e., online job board, training services).	✓		✓	✓	
• Expand workforce training and education in relevant fields such as vocational programs, pre-apprenticeship, and apprenticeship programs in skilled trades like Electricians, HVAC/R industries.	✓		✓	✓	
• Provide support for contractors to complete NYSERDA (New York State Energy Research and Development Authority) paperwork on projects.	✓				
• Provide support to increase contractor workforce with Building Performance Institute (BPI) certification.	✓		✓	✓	
STRATEGY 3: Educational Campaigns & Community Engagement					
• Provide community-wide education on rebates and incentives related to grant funding for climate-related improvements. Partner with trusted contractors to educate customers on available rebates and incentives.	✓		✓	✓	

Table 6. Building & Housing Actions by Strategy (continued)

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
• Support a county-wide educational campaign on the health benefits of housing upgrades and resources (i.e., Rochester Energy Efficiency and Weatherization program).	✓	✓		✓	✓
STRATEGY 4: Land Use Regulations					
• Explore the benefits of modifying local land use regulations to allow multi-family units to be built on single-family lots and increasing mixed-use development zoned areas to create more walkable areas. Assist and incentivize municipalities willing to modify local land use regulations.		✓			
• Provide resources for land use regulations to increase development density in targeted areas by re-evaluating and reducing minimum lot sizes, required setbacks, and parking requirements.	✓	✓			
STRATEGY 5: Renewable Energy & Building Retrofits					
• Increase renewable energy use in buildings, including conversions to heat-pumps and aiming for net-zero buildings.	✓	✓	✓	✓	✓
• Explore opportunities for new development to connect with renewable energy sources, in line with New York State requirements for advancing zero emission construction in new buildings.	✓	✓	✓	✓	✓
• Encourage the accommodation of historic building adaptations in local codes to allow for opportunities to increase energy efficiency in historic preservation districts and leverage related funding programs.	✓	✓			
• Encourage increased inspection frequency, thoroughness, and performance requirements of insulation and weatherizing practices in residential homes and apartment buildings.		✓			✓
• Consider supporting benchmarking and disclosure programs to help renters and buyers identify energy efficient properties.	✓	✓		✓	✓
• Encourage the sharing of information about state weatherization and energy efficiency programs with local residents, organizations, and businesses.	✓	✓	✓	✓	✓
• Support education of municipalities and other eligible organizations for green energy grant-funding and assist with grant applications.	✓	✓		✓	

A closer look at...

Passive House Design - A Case Study

Passive House is one of several building systems, like LEED or Energy Star, that certify sustainable, energy efficient buildings. Passive House design techniques achieve high levels of energy efficiency by controlling elements of the indoor environment, such as temperature, indoor air quality, moisture levels, and the amount of sunlight that gets in. These design techniques reduce the building's heating and cooling demands, significantly lower energy costs, and can cut carbon emissions by over 40%.

Local Spotlight

Midvale Commons, Perinton

A 76-unit affordable senior housing complex designed by SWBR to achieve Passive House "Plus" Certification.

High-Performance Windows

Triple-pane windows and well-insulated frames minimize heat transfer.

Airtight Building Envelope

Edges, corners, and connections are sealed to prevent conditioned air from escaping.

Image Source: SWBR

Heat-Recovery Ventilation

A continuous supply of fresh, filtered air provides healthy indoor air quality and a consistent temperature.

Continuous Insulation

Framing cavities are filled with high-performance insulation and rigid insulation is applied to the exterior to prevent heat transfer.

Reduced Thermal Bridging

Advanced framing and insulation techniques reduce energy loss through solid objects.

Want to know more?

Visit Phius's website (phius.org), the leading authority on Passive House design in the U.S., to learn more about Passive House design principles.

Energy Use & Consumption

The type and quantity of energy sources used have a direct impact on climate change due to their associated greenhouse gas emissions. Transitioning away from fossil fuels (gas, oil, coal) towards more sustainable energy alternatives like solar, wind, and geothermal will reduce climate impacts. The practical solution involves shifting to electricity-powered technologies while simultaneously decarbonizing the sources of electricity generation. The following actions will guide the County and its communities toward reducing GHG emissions and climate impacts from energy use and consumption.

The goals and strategies for the Energy Use & Consumption Focus Area include:

GOAL 1: Identify opportunities to reduce energy use and convert to renewable energy sources.

GOAL 2: Support municipalities and connect individuals to potential resources and programs for transitioning from fossil fuels to renewable energy.

STRATEGY 1: Energy Initiatives

STRATEGY 2: Education & Outreach

STRATEGY 3: Technical & Financial Assistance

STRATEGY 4: Recognition Programs

STRATEGY 5: Development & Assessment Tools

STRATEGY 6: Planning & Policy

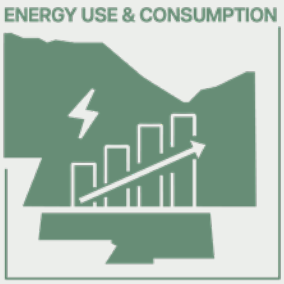
STRATEGY 7: Renewable Energy & Infrastructure

STRATEGY 8: Consumer & Utility Engagement

ENERGY USE & CONSUMPTION ACTIONS

The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 7. Energy Use & Consumption Actions by Strategy



	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Energy Initiatives					
• Provide resources for local development review boards to consider incentivizing coverage of solar panels above parking areas.	✓	✓			
• Incentivize the installation of solar panels above parking areas and rooftops.	✓	✓	✓	✓	
• Identify potential sites that may be suitable for incentivized renewable energy generation projects.	✓	✓			
• Identify potential locations for battery storage facilities.	✓	✓			
STRATEGY 2: Education & Outreach					
• Provide educational material on energy conservation, fuel switching, and energy use reduction practices.	✓	✓	✓	✓	✓
• Expand outreach for C-PACE[1] financing and similar programs.	✓	✓	✓	✓	
• Develop a county-wide toolkit that facilitates sustainable practices among local organizations through resources, training, networking, incentives and/or performance tracking tools.	✓		✓	✓	
• Implement a toolkit to guide community partners in efforts to reduce energy use and consumption (including example Sustainability Plans, suggestions for actions/areas of opportunity, available local/state/federal grants to fund energy audits and other activities).	✓				
STRATEGY 3: Technical & Financial Assistance					
• Provide technical assistance to businesses, organizations, and institutions to develop energy reduction goals, seek funding, etc.	✓	✓	✓	✓	
• Create a database of renewable energy resources, incentives, and tax credits, and connect residents and businesses to these resources.	✓	✓	✓	✓	
• Encourage municipalities to consider community choice aggregation and demand response programs. *A closer look on page 64.*	✓	✓	✓	✓	✓

1 https://www.nyserda.ny.gov/All-Programs/Commercial-Property-Assessed-Clean-Energy-PACE-Financing-Resources

Table 7. Energy Use & Consumption Actions by Strategy (continued)

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 4: Recognition Programs					
• Recognize residents, and community and business leaders for their achievements in energy use reduction and sustainability.	✓	✓	✓	✓	✓
• Recognize businesses and organizations that achieve sustainable goals and objectives.	✓	✓	✓	✓	✓
STRATEGY 5: Development & Assessment Tools					
• Develop a tool that includes metrics and benchmarking to assist community partners with their energy use goals.	✓	✓	✓	✓	
• Consider incorporating evaluations of increased electric energy demand with ongoing infrastructure maintenance and improvement programs.	✓	✓	✓	✓	
STRATEGY 6: Planning & Policy					
• Incentivize municipalities, employers, and community organizations to develop robust sustainability plans with measurable outcomes.	✓	✓	✓	✓	
• Consider supporting diversification of energy generation and supply models county-wide. *A closer look on page 63.*	✓	✓	✓	✓	✓
• Consider incentivizing geothermal HVAC systems county-wide.	✓	✓	✓	✓	
• Provide incentives to homeowners and businesses to convert to solar energy.	✓	✓	✓	✓	✓
• Consider supporting development of community thermal energy networks.	✓	✓	✓	✓	
STRATEGY 7: Renewable Energy & Infrastructure					
• Support shifting public buildings and schools to renewable energy sources.	✓	✓		✓	✓
• Explore opportunities for the use of agrivoltaics on renewable energy sites where practicable. *A closer look on page 65.*	✓	✓			
• Identify the gap between existing and projected needs for electrified heating systems and electric vehicle (EV) charging stations related to the county-wide energy grid.	✓				
STRATEGY 8: Consumer & Utility Engagement					
• Support shift to electric small equipment and tools (leaf blowers, lawn mowers).	✓	✓	✓	✓	✓
• Promote conversion to LED lighting.	✓	✓	✓	✓	✓

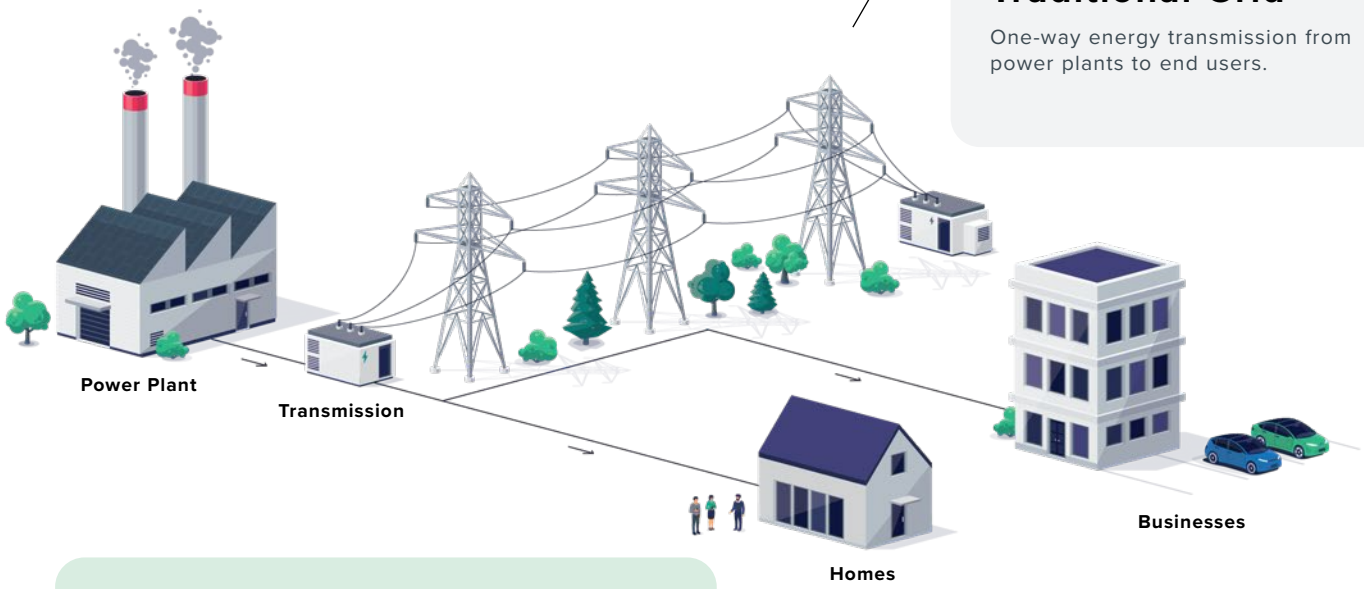
A closer look at...

Decentralizing the Grid

Traditionally, our power grids have been built as centralized grids, with large power plants that produce electricity and deliver it to homes and businesses through a series of transformers and power lines. Traditional power plants often depend on non-renewable sources like fossil fuels and experience significant electricity loss during transmission. Decentralized grids help solve these problems by bringing power generation closer to where it is used. They facilitate the integration of renewable energy sources like solar and wind into the grid, use batteries to store power, and enable the feeding of excess energy back into the grid. These elements collectively contribute to a significant reduction in our carbon footprint.

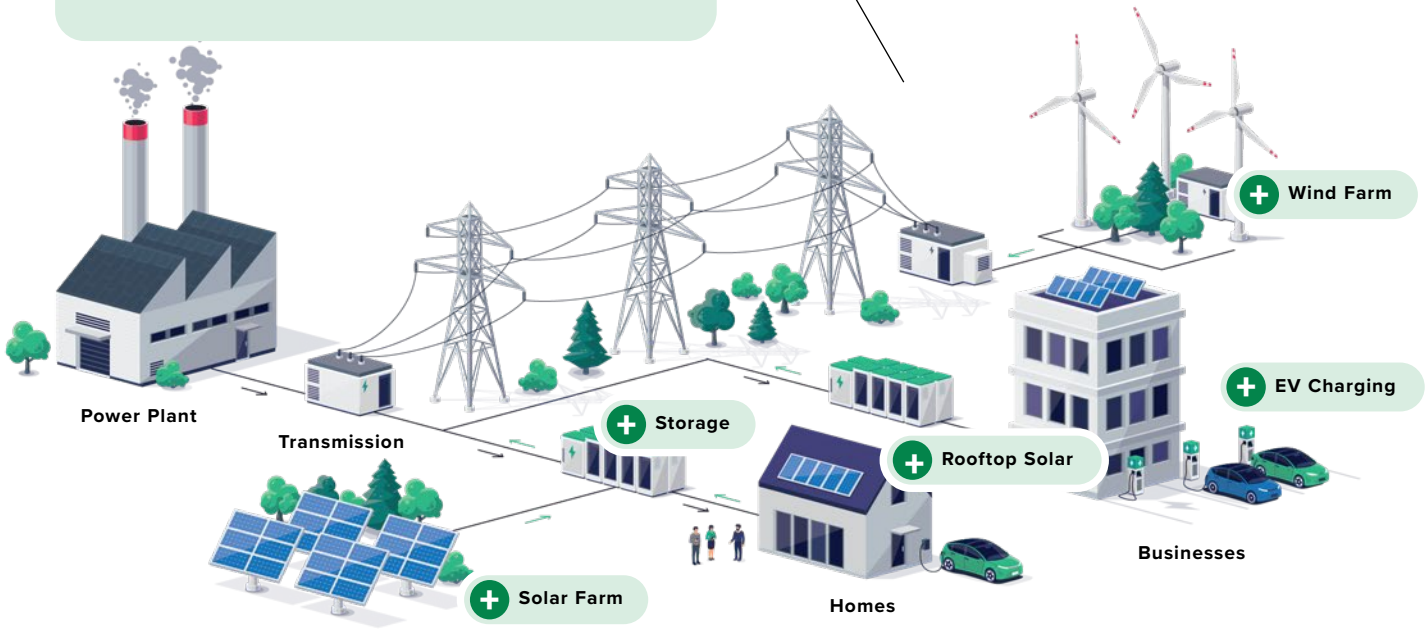
Traditional Grid

One-way energy transmission from power plants to end users.



Decentralized Grid

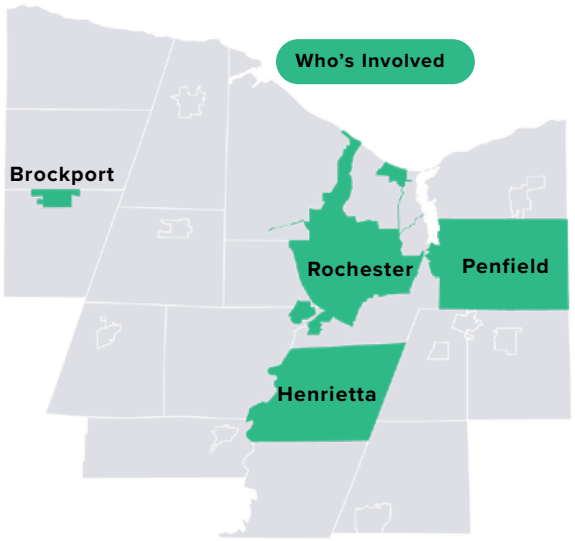
Decentralized grids allow energy to flow both ways, from power plants to homes and businesses and back thanks to renewable technologies like rooftop solar panels and battery storage systems.



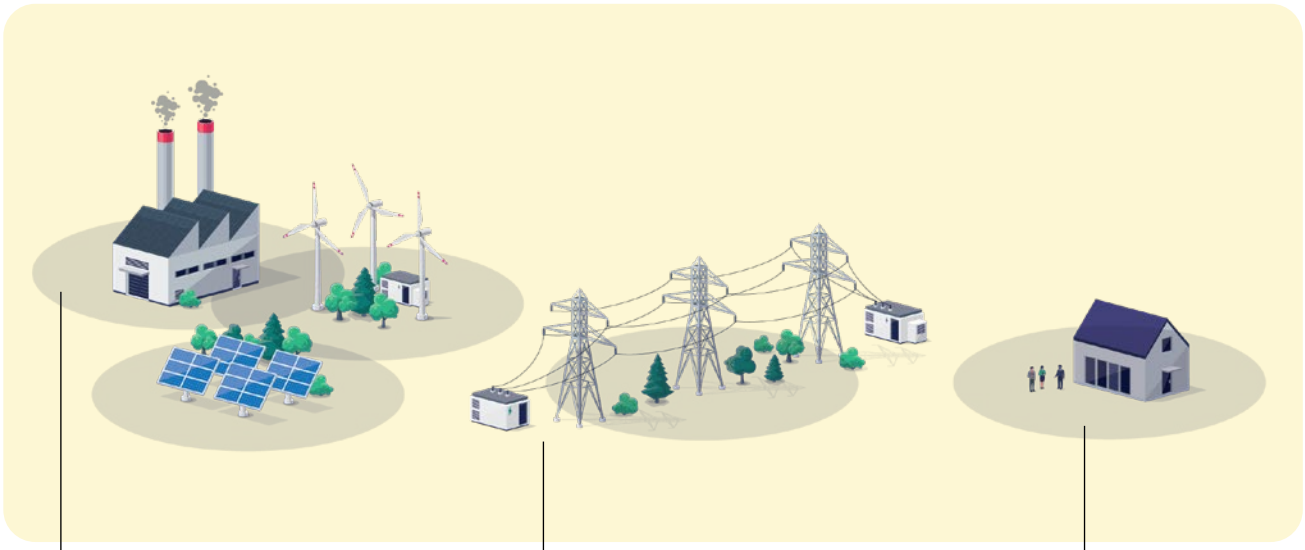
A closer look at...

Community Choice Aggregation

Community Choice Aggregation (CCA) allows local municipalities choose where the energy comes from for their community. It's a program to purchase power in bulk for virtually all homes and small businesses within the participating jurisdiction. A CCA can allow whole communities to participate in the clean energy economy by ensuring that a greater percentage of electricity is coming from renewable sources. Because CCAs can purchase energy at wholesale prices, customers often see reduced rates. CCA participation is optional and customers will have the opportunity to opt out.



Want to know more?
Find out more about how CCA's work on the **EPA's website**.



How it Works

Supply

Participating municipalities choose where they want to purchase electricity from, which may include renewable sources, like wind and solar, along with more traditional sources.

Delivery

RG&E and National Grid continue to deliver energy, maintain power lines, and respond to service outages using their existing utility networks.

Customer

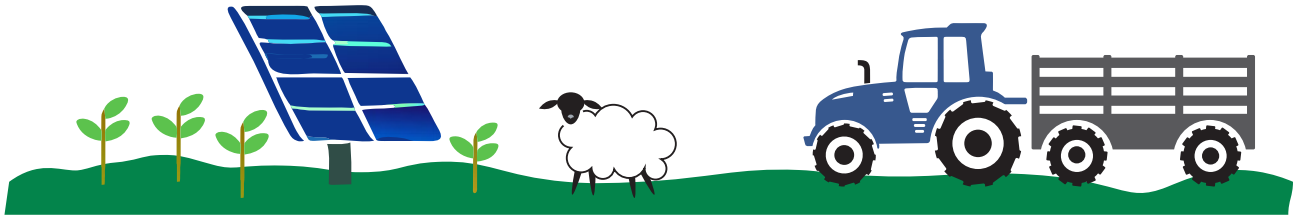
Homeowners who have opted in to the CCA will receive energy from the CCA supply sources. Consumers oftentimes see savings because the CCA can purchase energy at wholesale rates.

What does this mean in New York State?
NYSERDA offers several resources with specific guidance for how CCAs operate in New York State.

A closer look at...

Agrivoltaics

Agrivoltaics, the innovative practice of co-locating agriculture and solar energy production, represents a promising intersection of renewable energy and sustainable agriculture. While its potential benefits are increasingly recognized, such as land use efficiency, crop protection, and energy independence, agrivoltaics remains an evolving industry that requires further development and refinement. In New York State, where agricultural lands are valuable and renewable energy goals are ambitious, agrivoltaics holds particular promise. However, challenges such as land competition, aesthetic concerns, and the need for tailored regulatory frameworks highlight the importance of continued research, investment, and collaboration to unlock the full potential of agrivoltaics in the state.



Pros

- **Climate Resilience**: Solar panels can protect crops from extreme weather, enhancing agricultural resilience.
- **Community Benefits**: Agrivoltaic projects foster local economic development, job creation, and community resilience.
- **Dual Land Use**: Maximizes agricultural land productivity by co-locating with renewable energy generation.
- **Water Conservation**: Solar panels reduce soil evaporation, potentially saving water in regions with limited availability.
- **Income Diversification**: Farmers gain additional revenue streams through solar leasing, stabilizing income against fluctuating agricultural prices.
- **Energy Independence**: Increased solar energy production reduces fossil fuel dependency, promoting local and state energy autonomy.

Cons

- **Initial Investment**: High infrastructure costs pose barriers to entry for farmers and investors in agrivoltaic systems.
- **Land Competition**: Competition between agriculture and solar energy raises land prices and displaces traditional farming practices.
- **Aesthetic Concerns**: Some communities oppose solar installations due to perceived visual impact, creating regulatory hurdles.
- **Maintenance Challenges**: Regular maintenance of solar panels may be challenging and expensive for farmers or small-scale operations.
- **Biodiversity Impact**: Improperly managed solar installations can disrupt local ecosystems and wildlife habitats.
- **Crop Compatibility**: Not all crops are suitable for cultivation under solar panels, limiting agricultural integration in agrivoltaic systems.

Want to know more?
Visit https://www.nyserda.ny.gov/PutEnergyToWork/Industry-Energy-Solutions/Agriculture/Agrivoltaics for more information.

Land & Water Resources

Monroe County has a wealth of open space and water resources (parks, streams, rivers, canals, Lake Ontario). There is a direct link between water quality in Monroe County and the Great Lakes water system. Water resources, open spaces, and trees help regulate stormwater, wastewater, and GHG emissions. These natural resources are vulnerable to impacts from development and human intervention.

The goals and strategies for the Land & Water Resources Focus Area include:

GOAL 1: Protect and conserve existing open spaces, agricultural lands, and natural areas.

GOAL 2: Improve access to and awareness of local natural resources at both a micro and macro scale to build environmental stewardship community-wide.

GOAL 3: Mitigate and reduce heat island impacts from the built environment.

STRATEGY 1: Policy Guidance & Support for Municipalities

STRATEGY 2: Environmental Conservation & Land Management

STRATEGY 3: Biodiversity, Habitat Restoration & Habitat Connectivity

STRATEGY 4: Green Infrastructure & Land Use

STRATEGY 5: Water Management & Conservation

STRATEGY 6: Community Engagement & Education

LAND & WATER RESOURCE ACTIONS

The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 8. Land & Water Resources Actions by Strategy

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Policy Guidance & Support for Municipalities					
• Provide guidance to municipalities on climate smart development practices and land use decisions through the development of green code or promotion of existing regional and state codes.	✓	✓			
• Provide municipalities guidance/support to offer local incentives for green infrastructure like fee discounts, development incentives, rebates and installation financing, and awards and recognition programs.	✓	✓			
STRATEGY 2: Environmental Conservation & Land Management					
• Identify natural ecosystems and open space and opportunities for protection through planning and policies.	✓	✓			
• Identify opportunity areas for ecorestoration that could offset and sequester emissions from energy use. *A closer look on page 69.*	✓	✓	✓	✓	✓
• Support programs to increase tree cover, establish tree canopy goals across the County, and consider creating a tree fund, prioritizing planting trees in vulnerable areas. Consider supporting an expansion of the City of Rochester's Reforest Rochester Fund. *A closer look on pages 70 and 71.*	✓	✓	✓	✓	✓
• Support programs to conserve more land in collaboration with land trust organizations and to conserve more wooded lots.		✓	✓	✓	✓

Table 8. Land & Water Resource Actions by Strategy (continued)

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 3: Biodiversity, Habitat Restoration & Habitat Connectivity					
• Use the Monroe County Environmental Management Council (EMC) to provide recommendations for increasing biodiversity and protecting pollinators and birds.	✓	✓			
• Support local groups and organizations involved with habitat restoration and provide guidance on educational material and signage at restoration sites.	✓	✓	✓	✓	✓
• Explore opportunities to expand habitat areas, open spaces, and native ecosystems. Encourage maintenance based on best practices.	✓	✓	✓	✓	✓
• Provide education on the conversion from lawn space to native plantings on both public and private property.	✓	✓	✓	✓	✓
STRATEGY 4: Green Infrastructure & Land Use					
• Explore opportunities to increase green infrastructure to reduce stormwater runoff from large impervious spaces county-wide.	✓	✓	✓	✓	✓
• Encourage initiatives that support no-mow or low-mow lawns and native plantings.	✓	✓		✓	✓
• Provide resources to municipalities to encourage farmland protection in accordance with the County's agricultural land use planning efforts. *A closer look on page 72.*	✓	✓			
• Identify potential green space expansion, areas to be preserved as green space county-wide, and opportunities for higher density development.	✓	✓			
• Consider supporting development of brownfields for clean energy generation.	✓	✓	✓		
STRATEGY 5: Water Management & Conservation					
• Identify grants and educational resources for businesses and homeowners to install rainwater collection and graywater systems.	✓	✓	✓	✓	✓
STRATEGY 6: Community Engagement & Education					
• Create youth and community programs for volunteer maintenance of local green spaces.		✓	✓	✓	✓

A closer look at...

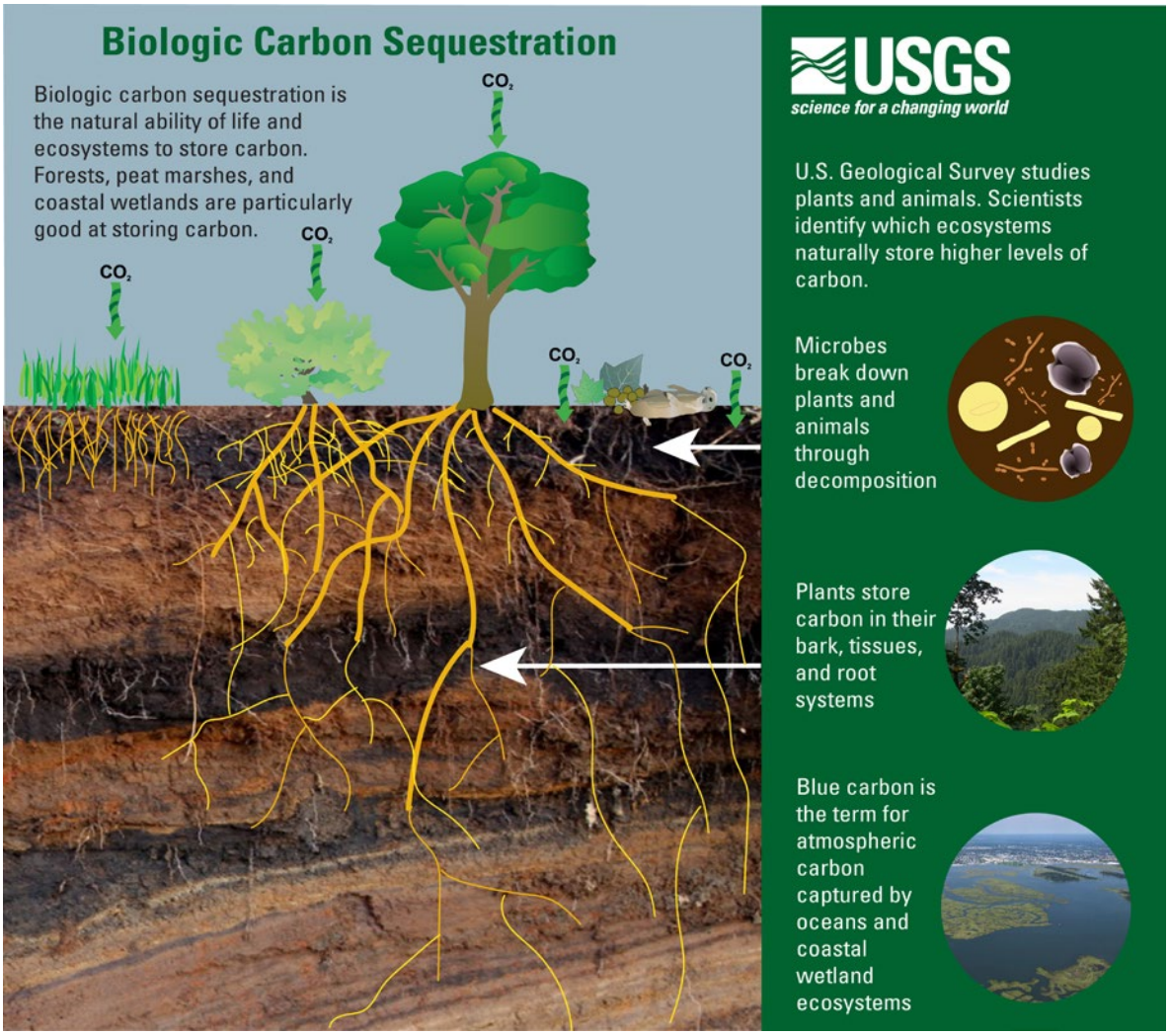
Ecosystem Restoration & Carbon Sequestration

CO_2 emissions have amplified the greenhouse effect, capturing heat, raising temperatures, contributing to excessive rainfalls, floods, droughts, heatwaves, and wildfires. Therefore, reducing GHG emissions is critical, but needs to be paired with efforts to restore the ecosystems that moderate our climate. Ecosystem restoration can help address the worst effects of climate change directly, quickly, and locally.

» Mycorrhizal soil fungi and native plant species form partnerships that are crucial to the emergence and functioning of ecosystems that help cool the planet.

» Roughly 75% of terrestrial carbon is stored below ground and mycorrhizal fungi are the entry point of carbon into soil food webs.

» Globally, more than 13 gigatons of CO_2 is transferred from plants to fungi annually, turning the soil beneath our feet into the biggest carbon sink in the world.



Source: USGS National and Regional Climate Adaptation Science Centers (CASCs)
https://www.usgs.gov/media/images/biological-carbon-sequestration#:~:text=Biological%20carbon%20sequestration%20is%20the,particularly%20good%20as%20storing%20carbon.

A closer look at...

Expanding the Tree Canopy

Trees in Monroe County provide significant environmental benefits, including carbon sequestration, removal of air pollutants, and avoided runoff. Planting more trees will help expand Monroe County's tree canopy and increase the benefits it can provide. The chart below looks at how the tree canopy might change in the future and what this will mean for Monroe County's environment.

Today

Almost one-third of Monroe County's land area is covered by trees. Every year, this tree canopy provides the following environmental benefits:

approximately
8 million trees

450,000 tons
of CO_2 sequestered

3,500 tons
of air pollutants removed

800 mil. gallons
of avoided runoff

$41 million
in savings from CO_2 sequestration, air pollution removal, and avoided runoff

Tomorrow?

If 1 out of every 2 single- or two-family homes in Monroe County planted a tree in the next 5 years, tree canopy benefits could increase by:

+119,000 trees

+6,400 tons
of CO_2 sequestered

+19 tons
of air pollutants removed

+14 mil. gallons
of avoided runoff

$553,000
in savings from CO_2 sequestration, air pollution removal, and avoided runoff

USFS Grant

Monroe County received a U.S. Forest Service (USFS) grant to plant 8,645 trees over the next 2 years. These new trees will provide the following benefits:

+8,645 trees

+465 tons
of CO_2 sequestered

+1.4 tons
of air pollutants removed

+1 mil. gallons
of avoided runoff

+$40,000
in savings from CO_2 sequestration, air pollution removal, and avoided runoff

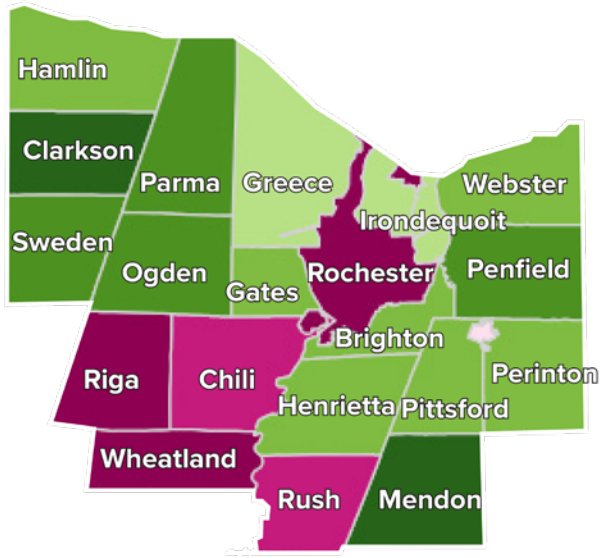
Try it for yourself!
The data above were generated by iTree, a free tool from USFS that estimates tree canopies and tree benefits. Visit **itreetools.org** to try it out!

A closer look at...

Priority Tree Planting Locations

Based On Climate Vulnerability Factors

An online tool known as itree can be used to estimate the long-term environmental benefits from a tree canopy for carbon sequestration, air quality, stormwater runoff, and energy savings. Custom scenarios can be used to determine priority areas for tree planting.



To better understand vulnerable populations in Monroe County that could benefit from tree canopy, the following factors were input:

- **High Water Quality Risk Index**
- **Low Carbon Sequestration**
- **High Population in Poverty**
- **High Acute Respiratory Illness**

The highest priority areas for tree canopy, based on the categories above, include **Riga, Rochester, Wheatland, and Chili.**

A closer look at...

Green Infrastructure

Green infrastructure refers to a network of natural and semi-natural spaces and systems that deliver a wide array of benefits to urban areas. This approach uses vegetation, soils, and natural processes to manage water and create healthier urban environments. Key components include:

- Rain gardens
- Green roofs
- Permeable pavements
- Urban tree canopies

POTENTIAL BENEFITS

- **Enhances Biodiversity**: Supports a variety of flora and fauna.
- **Improves Water Quality**: Filters pollutants from runoff.
- **Reduces Urban Heat**: Lowers temperatures in urban areas.
- **Boosts Mental Health**: Green spaces contribute to overall well-being.

A closer look at...

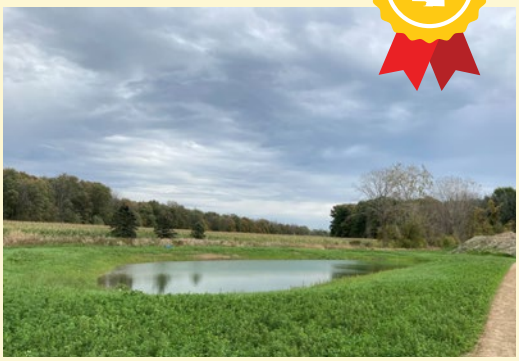
Climate Resilient Farming

New York State's Climate Resilient Farming (CRF) Program provides grant funds to increase the resiliency of farms to flooding, drought, and other impacts of climate change. Grant funds can also be used to reduce greenhouse gas emissions from farms and mitigate the impact of agricultural operations on climate change. The Monroe County Soil and Water District has implemented a number of projects with CRF funding. Several local success stories are listed below.

Local Spotlight

Irrigation System

Grant funds were used to install 2,200 feet of irrigation pipe on a dairy farm. This irrigation system will help the farm deal with increasingly common drought conditions brought on by climate change.



Local Spotlight

Irrigation Reservoir

Grant funds were used to create a 0.6-acre irrigation reservoir on a dairy farm. The reservoir can store over 500,000 gallons of water, which can be used to irrigate the farm's alfalfa fields during periods of drought.

Local Spotlight

Biomass Planting

Grant funds were used to convert 60 acres of farmland to hay production. The hay field is planted with oats and alfalfa. Converting this land from cash crops to permanent crop makes it easier for carbon to be sequestered in the soil over time.

Future Opportunity for Funding

Cover Cropping

Cover crops, like legumes, cereals, and grasses, are grown to enhance soil health and water quality between cash-crop plantings. They increase resiliency by improving water infiltration, sequestering carbon, and reducing erosion among numerous other benefits.

Want to know more?
Interested in the CRF Program? Visit **agriculture.ny.gov/soil-and-water/climate-resilient-farming** for more information.

Partnerships, Education & Economy

Our quality of life has always been linked to nurturing existing partnerships and fostering new ones. Our success in reducing individual and collective climate impacts will be directly related to understanding what initiatives have or are taking place and opportunities for social, educational, and economic sector partnerships for implementation.

The goals and strategies for the Partnership, Education & Economy Focus Area include:

GOAL 1: Identify and foster connections between private and public organizations, local and county governments, and regional initiatives.

GOAL 2: Increase awareness and access to online platforms, tools, and networks to leverage partnerships between these groups.

STRATEGY 1: Community Engagement

STRATEGY 2: Educational Development

STRATEGY 3: Partnerships & Collaboration

STRATEGY 4: Economic Development & Business Support

STRATEGY 5: Educational & Informational Resources

PARTNERSHIPS, EDUCATION & ECONOMY ACTIONS

The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 9. Partnerships, Education & Economy Actions by Strategy

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Community Engagement					
• Support county-wide community campaigns in partnership with existing community groups working on commercial and residential building and vehicle electrification, solar, and other forms of clean energy.	✓	✓	✓	✓	✓
• Work with and support local organizations, schools, and employers to plant trees, preserve mature trees, and identify renewable projects.	✓	✓	✓	✓	✓
• Support community organizations serving underrepresented populations within the County to assist with the accessibility of affordable clean energy and energy efficiency improvements in disadvantaged communities through informational and funding resources.	✓	✓		✓	✓
• Encourage local agencies to collaborate to identify climate-vulnerable populations and develop programs to address their needs.	✓	✓		✓	
• Develop a Climate Action Toolkit to provide a “roadmap for success” for businesses and organizations, guiding them in implementing effective sustainability strategies.	✓	✓	✓		
STRATEGY 2: Educational Development					
• Develop educational materials about the health impacts associated with greenhouse gases and climate change.	✓	✓		✓	
STRATEGY 3: Partnerships & Collaboration					
• Foster partnerships with local educational institutions and industries to innovate technologies and siting for renewable energy projects that preserve open space and productive agricultural land.	✓	✓	✓	✓	

Table 9. Partnerships, Education & Economy Actions by Strategy (continued)

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
• Foster partnerships with educational institutions and industry leaders that have training programs to support and attract a labor force skilled in green technologies.	✓	✓	✓	✓	
• Consider developing working groups for focus area action implementation.	✓	✓	✓	✓	✓
STRATEGY 4: Economic Development & Business Support					
• Identify, support, and protect local economic drivers such as outdoor tourism, recreational assets, and agriculture.	✓	✓	✓	✓	✓
• Work with economic development agencies to highlight available programs and resources to support businesses and create jobs related to addressing climate change.	✓	✓	✓	✓	
• Support the local business community in establishing a Sustainable Business Roundtable to help guide and facilitate the implementation of sustainable practices.	✓		✓	✓	
STRATEGY 5: Educational & Informational Resources					
• Encourage municipal officials, residents, and commercial entities to explore renewable energy options such as battery storage and load shifting.	✓	✓	✓	✓	✓
• Provide educational resources supporting regenerative economics. *A closer look on page 76.*	✓	✓	✓	✓	
• Help identify funding opportunities for climate action available to all stakeholders, including individuals.	✓	✓	✓	✓	✓

A closer look at...

WNY Sustainable Business Roundtable - A Case Study

The Western New York Sustainable Business Roundtable (SBR) is a dynamic network of forward-thinking businesses committed to promoting environmentally and economically sustainable business practices. Proudly serving the Western New York area, the SBR brings together organizations from all sectors to exchange ideas, support, and foster partnerships. The mission of SBR is to foster collaboration that enables member businesses to create, build and act on sustainability goals, grow prosperity, and promote healthy communities.

MORE INFO >> **www.wnysustainablebusiness.org/about-us**

A closer look at...

Regenerative Economy

A regenerative economy is one that is low carbon, resource-efficient, and socially inclusive. In a green economy, both public and private investments focus on activities, infrastructure, and assets that lead to lower carbon emissions and pollution, improved energy and resource efficiency, and the protection of biodiversity and ecosystem services.

CLICK HERE TO LEARN MORE

5 PRINCIPLES OF A REGENERATIVE ECONOMY

Wellbeing

Enables all people to create & enjoy prosperity.

Justice

Promotes equity within & between generations.

Planetary Boundaries

Safeguards, restores & invests in nature.

Efficiency & Sufficiency

Geared to support sustainable consumption & production.

Good Governance

Guided by collaborative, accountable, & resilient institutions.

METHODS OF IMPLEMENTATION

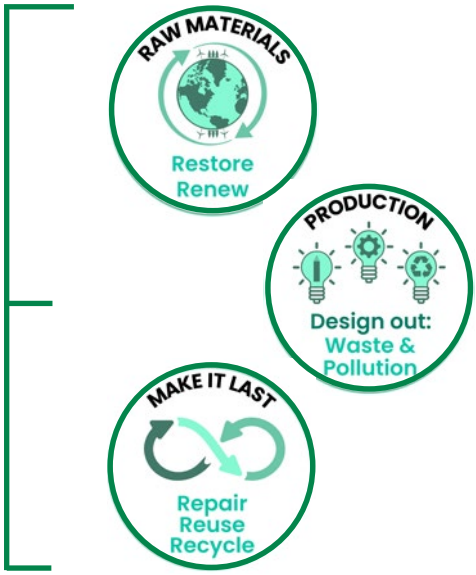
01 Transition from mineral-dependent processes.

02 Divest from fossil fuels and prioritize renewable energy sources.

03 Rethink production, consumption, and resource management with environmental sustainability at the forefront.

04 Implement waste reduction strategies during production.

05 Offset fossil fuel impacts with carbon sequestration.



Sustainable Materials Management

Products have a life cycle consisting of production, transportation, use, and ultimately disposal. The impact of each phase of this cycle may vary from the amount of resources used to produce it, emissions created during production, transportation and use, and the amount of waste created upon disposal. Activities that lessen impacts include reducing, reusing, recycling, and composting materials.

The goals and strategies for the Sustainable Materials Management Focus Area include:

GOAL 1: Support, connect, and enhance access and awareness of diverting waste from landfills.

GOAL 2: Develop waste reduction and minimization programs that incorporate techniques of reduction, reuse, recycling, composting and organics recycling.

GOAL 3: Increase innovative re-purposing of waste byproducts and consider opportunities to harvest waste products for energy.

STRATEGY 1: Waste Reduction Programs

STRATEGY 2: Reuse Initiatives

STRATEGY 3: Sustainable Procurement Policies

STRATEGY 4: Recycling Enhancement & Education

STRATEGY 5: Business Practices & Corporate Responsibility

STRATEGY 6: Infrastructure & Resource Efficiency

SUSTAINABLE MATERIALS MANAGEMENT ACTIONS

The following is a summary of potential actions that may be initiated by Monroe County, municipalities, businesses, community organizations or individuals with an interest in furthering the goals and strategies of this Community-wide Climate Action Plan. For some actions, the County may be a partner in implementation through supportive measures such as assistance securing funding, serving as a coordinator or connector of stakeholders, and/or providing informational resources and guidance, as appropriate.

Table 10. Sustainable Materials Management Actions by Strategy

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
STRATEGY 1: Waste Reduction Programs					
• Finalize and implement recommendations of the Organics Management Plan.	✓				
• Provide educational material, guidance and support to organizations on the benefits of reducing and diverting organic waste. *A closer look on pages 80 and 81.*	✓	✓	✓	✓	✓
• Support community groups with their waste reduction goals.	✓	✓	✓	✓	✓
• Explore deconstruction opportunities for salvaging construction and demolition (C&D) materials.	✓	✓	✓	✓	✓
STRATEGY 2: Reuse Initiatives					
• With support of the Recycling Advisory Committee (RAC), further explore reuse education and opportunities in the community.	✓	✓	✓	✓	
• Support and promote repair cafes and reuse centers.	✓	✓	✓	✓	✓
• Encourage restaurants to use reusable dishes and accept customers clean containers for take-out, when practicable.	✓	✓	✓	✓	✓
• Reduce food waste and support food donation network to increase food security.	✓	✓	✓	✓	✓
• Educate and encourage consumers and businesses to use reusable products, like refillable containers, the reuse or up-cycling of used goods, goods repair, etc.	✓	✓	✓	✓	✓
STRATEGY 3: Sustainable Procurement Policies					
• Explore green procurement policies and programs and offer community partners opportunities to participate.	✓	✓	✓	✓	✓

Table 10. Sustainable Materials Management Actions by Strategy (continued)

	MONROE COUNTY	MUNICIPALITIES	BUSINESSES	COMMUNITY ORGANIZATIONS	INDIVIDUALS
• Explore more circular solutions (such as a virtual material marketplace) for appliances, textiles, building materials, electronics, furniture, and office supplies.	✓	✓	✓	✓	✓
STRATEGY 4: Recycling Enhancement & Education					
• Continue efforts to educate the community on how to recycle right to reduce contamination.	✓	✓	✓	✓	✓
• Expand reused, recycled, or recovered materials through the WM[1]/ Monroe County ecopark.	✓	✓	✓	✓	✓
• Expand education campaign about the WM[1]/Monroe County ecopark and the services it provides to the public.	✓	✓	✓	✓	✓
STRATEGY 5: Business Practices & Corporate Responsibility					
• Incentivize increased usage of sustainable packaging.	✓	✓		✓	
• Encourage businesses to track waste, energy, and water data and recognize/celebrate those achieving waste reduction/diversion goals.	✓	✓	✓	✓	✓
• Encourage partnerships to provide technical assistance to support pilot programs on organics management/waste reduction.	✓	✓	✓	✓	
STRATEGY 6: Infrastructure & Resource Efficiency					
• Identify grant opportunities for electrification of refuse fleets and the use of more efficient routes.	✓	✓	✓		

1 WM, formally known as Waste Management.

A closer look at...

Organic Recycling & Food Waste

What is Organics Recycling?

Organics is a general term that includes food waste (food scraps, inedible items like eggs shells, fruit/vegetable peels, coffee grounds and more) and yard waste (leaves, grass/plant clippings, and more). Described by the NYSDEC, the organic matter and nutrients in these materials leads to the useful products (e.g., compost, biogas, digestate, etc.) created at organics recycling facilities.[1]

1 New York State Department of Environmental Conservation (DEC). "Organic Materials Management." https://dec.ny.gov/environmental-protection/recycling-composting/organic-materials-management

Source: EPA

Food waste management is a subset of the broader organics category and includes composting, which has a variety of benefits:

- Produces compost, a useful end-product that can improve the quality of soil and promote the expansion of flower and vegetable gardens that will benefit the community as well as wildlife.
- Adding compost to soil reduces the need for chemical fertilizers which can be expensive and can pollute our water bodies or harm wildlife.
- By collecting and composting organics, more waste can be diverted from landfills, reducing its landfill disposal costs.

The adjacent Wasted Food Scale from the EPA shows prioritized actions for reducing food waste that goes into a landfill. Reducing food waste is highlighted as critical opportunity for climate action by the EPA and the USDA because of the link between food waste and methane, a potent greenhouse gas.

Source: USDA & EPA

Want to know more?

Read *Food Waste and Methane: What's the Connection?* By the U.S. Department of Agriculture (USDA) and the United States Environmental Protection Agency (EPA).
Available at: https://www.usda.gov/sites/default/files/documents/1211C-USDA-Methane-Infographic.pdf

A closer look at...

Food Scraps Collection Pilot Program - A Case Study

Monroe County and the Town of Pittsford partnered to offer a Food Scraps Recycling pilot program to participating Pittsford households. Residents drop-off their food scraps on a regular basis at the Town's Dog Park. Food scraps are regularly transported to an anaerobic digester, which is an airtight chamber that uses bacteria to break down the food scraps. This process gives off biogas, which is used to generate electricity and is sold back to the grid.[1]

Goals of the Monroe County Food Scraps Recycling Pilot Program for Town of Pittsford Households:

- Increase food waste diversion at County-owned facilities.
- Divert food waste from landfill disposal.
- Develop a working model for residential food scraps collection with a County/municipal partnership that can be easily replicated.
- Provide proof of concept and identify solutions for implementing food waste diversion programs.
- Data collected used in development of Organics Management Plan.

1 https://www.townofpittsford.org/food-scraps-recycling

Program Participation in the Town of Pittsford

Cumulative Data as of February 19th, 2024:

2,725 recorded drop-offs

435 Total Individual Users

Most drop-offs on a single day **(37)**:
Saturday, November 4th, 2023

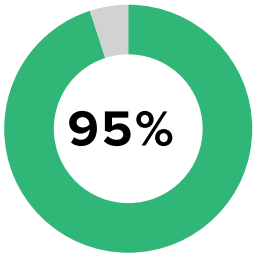
Pounds Diverted:
Based on September through January Invoices
67,440 POUNDS

Want to know more?
Interested in the CRF Program? Visit **www.townofpittsford.org/food-scraps-recycling** for more information.

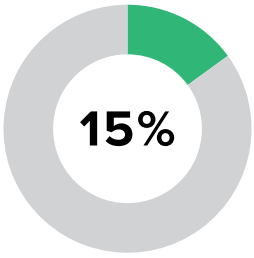
A closer look at...

Textile Recycling - A Case Study

The textile industry is a major contributer to global pollution and waste. Textile production accounts for 20% of global wastewater and 8% of greenhouse gas emissions, and textile waste makes up 6% of global waste generation each year. In the U.S., the average American throws away approximately 82 pounds of clothes per year. Each of these pieces of clothing can take up to 200-plus years to decompose in a landfill! Reusing and recycling textiles can help promote sustainability in the textile industry. Re-sellers like Goodwill sell donated clothing to keep it out of landfills. Textiles that aren't resold can be recycled and turned into other goods like cleaning rags and home insulation.



95% of textiles can be recycled



but only 15% are actually recycled

Local Spotlight
Goodwill of the Finger Lakes

Image Source: Goodwill

Shirts
Recycled into cleaning rags

Denim
Recycled into home insulation

Socks
Recycled into pillow stuffing

Shoe Soles
Recycled into paving material

Want to know more?
Learn more about the environmental issues caused by textile waste by **clicking here**.

A closer look at...

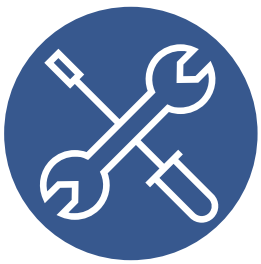
WM's Sustainability Report

WM's 2023 Sustainability Report offers a insight into the company's dedicated efforts towards environmental stewardship and sustainability. The "Energy is Renewable" chapter underscores WM's strategic initiatives to innovate in renewable energy production, significantly reduce greenhouse gas emissions, and transition towards a more sustainable operational model. Through leveraging advanced technologies for waste-to-energy conversion, committing to ambitious emissions reduction targets, and emphasizing the recycling and re-purposing of materials, WM not only addresses its environmental impact but also sets a precedent for responsible waste management practices. The report highlights the following key achievements in renewable energy sourcing:

WM'S IMPACT

Over $2 billion in growth investments in recycling and renewable energy infrastructure from 2022 through 2026 to further sustainability goals.

WM's services in 2022 potentially avoided more than three times the GHG emissions generated by operations, also creating four times more renewable electricity than used.



WM operates the Monroe County Ecopark, Mill Seat, and High Acres.

Innovation for Climate Progress

- Leveraging advanced technologies to convert waste decomposition in energy, powering communities and reducing carbon footprint.
- Achieved a 10% reduction in Scope 1 and 2 GHG emissions year-over-year.
- Utilizing landfill gas as a renewable energy source, thus generating biogas and renewable energy.

Emissions Reductions & Targets

- Aims to reduce absolute Scope 1 and 2 GHG emissions by 42% by 2031 from a 2021 baseline.
- Reduced landfill emissions by 10% from 2021 due to upgrades in gas collection and control systems.
- Increased beneficial use of captured landfill gas to 45% in 2022, generating significant renewable energy.
- Transitioned over 60% of WM's collection fleet to compressed natural gas vehicles by 2022.

Climate Impacts & Strategy

- WM is addressing climate change by setting science-based targets for GHG emissions reduction and offering services like recycling and renewable energy generation to help customers reduce their carbon footprint.
- In 2022, direct Scope 1 and 2 GHG emissions were reduced by 10% over a 2021 baseline, with a significant portion of landfill gas captured for beneficial use.

Landfill Gas & Emissions Management

- Landfills are a major focus for emissions reduction efforts, contributing over 90% of WM's direct emissions.
- Major steps were taken in 2022 to reduce landfill gas emissions, including enhanced gas collection and control systems.
- Increased the amount of landfill gas captured for beneficial use to 45% and plans to increase this to 65% by 2026.

Fleet Transition to Alternative Fuels

- Over a decade, WM has transitioned its fleet to use alternative fuels, significantly reducing emissions.
- Over 60% of the fleet has been converted to alternative fuel vehicles, including compressed natural gas vehicles, with a plan to increase this further.

Electricity Usage & Efficiency

- Electricity use constitutes about 1% of WM's total carbon footprint, with efforts to increase energy efficiency and source renewable electricity.
- In 2022, 42% of WM's electricity came from renewable sources.

WM, formally known as Waste Management.

Want to know more?
Visit https://drive.google.com/file/d/1ktbW-3bvrhgdd57skQi2QBzkjPoTIugp/view for the full report.

The photograph shows an aurora borealis over a frozen Lake Ontario in March of 2015.

Image Credit: darosenbauer
flickr.com/photos/129340267@N07/16852646992/in/photostream/

Part 6

Next Steps

The effectiveness of the CAP is in its implementation. The following details key elements that support next steps for climate action across Monroe County.

County Next Steps

The completion of this Community-wide CAP has served the County in a number of ways. The process not only helped provide a baseline picture for Scope 3 GHG emissions, but also provided an opportunity to more meaningfully engage the public and stakeholders in a conversation about climate action. This planning process supported increased awareness of climate action efforts already underway within Monroe County and established several connections with community partners that will help lay the foundation for implementation.

It should be noted that this document is not the end, but the start of a process, and therefore should be viewed as an ever evolving framework for the achievement of the community-wide GHG reduction goal.

In support of this, there are a few critical next steps necessary for the County to maintain and advance this Climate Action Plan in the years to come. This includes:

- Updating the Community-wide GHG Inventory every 5 years. This update may be in tandem with the GHG inventory of the Monroe County Phase I (Government Operations) CAP, to provide a cohesive picture of Scope 1, 2, and 3 emissions over time.
- Establishing an advisory body to guide implementation of this CAP. This will also serve to maintain compliance with the Climate Smart Communities (CSC) requirement for certified communities: PE1 Action - CSC Task Force.
- Increasing the community-wide awareness of the plan and its applicability to municipalities, businesses, community organizations, and residents. This may be broader efforts to share the overall Phase II CAP as well as the educational actions outlined under the various action plan strategies.
- Continuing conversations with community partners and stakeholders to leverage existing and future efforts. Collaboration will be key to reduce duplication of effort and promote the sharing of resources, bringing efficiency to and maximizing the effectiveness of implementation strategies.
- Taking advantage of funding resources. Details provided on the next page.

Funding Opportunities

Obtaining necessary funding is critical step in implementing climate action. To introduce the funding opportunities available to municipalities, businesses, community organizations and individuals, the following funding matrix was prepared for the Phase II CAP. This matrix was designed as a tool to initiate a funding search for projects or initiatives that are ready for implementation. As New York State implements the Climate Act legislation's ambitious GHG reduction levels, the landscape of funding opportunities is likely to evolve. Among the developing opportunities is the State's Cap-and-Invest Program, which will invest proceeds in programs that drive emission reductions in an equitable manner, and maintain the competitiveness of New York businesses and industries.[1] Furthermore, in May of 2024, Governor Kathy Hochul announced nearly $300 million in climate resiliency funding to support new grant opportunities made available to build upon New York's sustained investments to protect communities from the devastating impacts of climate change, particularly those communities most vulnerable to pollution, flooding, extreme heat and other effects of a warming climate.[2]

1 New York State Cap-and-Invest website, https://capandinvest.ny.gov/ Accessed June 10, 2024.
2 New York State Governor Kathy Hochul website, https://www.governor.ny.gov/news/governor-hochul-announces-nearly-300-million-investment-climate-resiliency-during-major Accessed June 10, 2024.

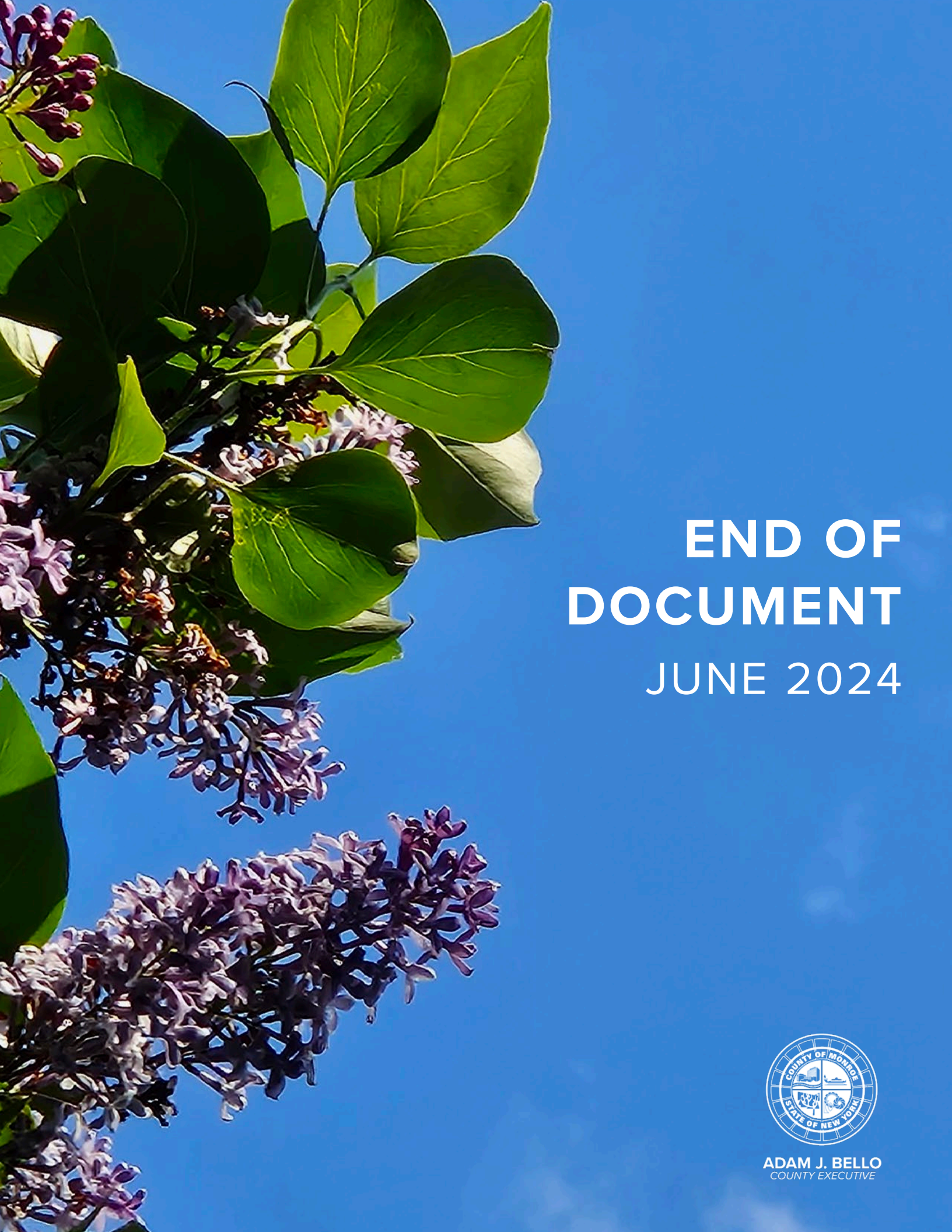
Table 11. Potential Funding Opportunities Matrix

Program Name	Project Type	Eligible Entities	Funding Entity	More Information
Climate Smart Communities (CSC) Grants*	A variety of GHG mitigation, climate change adaption and CSC certification action projects.	Municipalities	NYS DEC	https://dec.ny.gov/environmental-protection/climate-change/resources-for-local-governments/grants-for-climate-action#CSC
Clean Energy Communities (CEC) Grants	Action and designation grants for clean energy projects.	Municipalities (DACs may be eligible for additional grant funding)	NYSERDA	https://www.nyserda.ny.gov/All-Programs/Clean-Energy-Communities
Multifamily Buildings Low-Carbon Pathways Program	Low-carbon retrofit of multifamily buildings.	Businesses or Individuals (multifamily building owners)	NYSERDA	https://www.nyserda.ny.gov/All-Programs/Multifamily-Buildings-Low-Carbon-Pathways-Program
Municipal Zero-Emission Vehicle Rebate Program	Purchase or lease of eligible zero-emission vehicles for fleet use.	Municipalities	NYS DOS	https://dec.ny.gov/sites/default/files/2024-04/2024zevcvfactsheetgeneral.pdf

Table 11. Potential Funding Opportunities Matrix (continued)

Program Name	Project Type	Eligible Entities	Funding Entity	More Information
Municipal Zero-Emission Vehicle Infrastructure Grant Program	Purchase and installation of electric vehicle supply equipment (EVSE) or hydrogen fuel cell filling station components available primarily for public use.	Municipalities	NYS DOS	https://extapps.dec.ny.gov/docs/administration_pdf/22zevinfs.pdf
Charge Ready 2.0	Installing electric vehicle (EV) charging stations at public facilities located within a DAC or a workplace or multi-unit dwelling location.	Municipalities, businesses or community organizations	NYSERDA	https://www.nyserda.ny.gov/All-Programs/ChargeNY/Charge-Electric/Charging-Station-Programs/Charge-Ready-NY
Clean Green Schools Initiative	Reduction of school energy loads, building decarbonization, improvement of indoor air quality (IAQ) and provision of clean energy educational opportunities.	Community organizations (public schools)	NYSERDA	https://www.nyserda.ny.gov/All-Programs/Clean-Green-Schools-Initiative
NYS Clean Heat	Heat pump purchase (can be combined with low interest financing & tax credits through the Inflation Reduction Act).	Individuals	NYS Clean Heat (work with participating contractor)	https://cleanheat.ny.gov/stacking-your-cost-savings/
Drive Clean Rebates for Electric Cars	Purchase or lease of a new electric car.	Individuals	NYSERDA	https://www.nyserda.ny.gov/All-Programs/Drive-Clean-Rebate-For-Electric-Cars-Program/How-it-Works
New York Climate Resilience Grant Program	To support the conservation of climate resilient lands.	Municipalities and Community Organizations*	The Nature Conservancy	https://crcs.tnc.org/pages/ny-climateresilience
Climate Pollution Reduction Grants Program	To develop and implement ambitious plans for reducing greenhouse gas emissions and other harmful air pollution.	Municipalities**	EPA	https://www.epa.gov/inflation-reduction-act/climate-pollution-reduction-grants

*Non-profit 501(c)(3) conservation and community organizations, municipalities, tribal entities and local and state agencies.
**States, local governments, tribes, and territories.



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JUNE 2024

ADAM J. BELLO
COUNTY EXECUTIVE