

**PHASE I**



**GOVERNMENT OPERATIONS**

**CLIMATE  
ACTION  
PLAN**

**MONROE  
COUNTY**

**New York**

**July 2022**

**EXECUTIVE  
SUMMARY**



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COUNTY EXECUTIVE

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## ■ What is a Climate Action Plan?

A climate action plan is a comprehensive, strategic effort to address and reduce greenhouse gas emissions in the atmosphere and the related environmental and climatic impacts associated with rising GHGs. GHG Inventories can happen at the state, regional, and community level (village, city, town or county scale).

## ■ What is a Government Operations Climate Action Plan?

Communities are encouraged to prepare GHG inventories for governmental operations. Phase I of the Monroe County Climate Action Plan (CAP) focuses on reducing GHG emissions from County-run sites, facilities, and operations. GHG inventories can include direct emissions (i.e. emissions that occur physically within a boundary, such as burning natural gas in a building), indirect emissions (i.e. emissions from electricity power plants based on the amount of electricity consumed within the inventory boundary), and other indirect or “upstream” emissions that a community has no control over.

## ■ What is the difference between the County’s Phase I and Phase II CAPs?

Monroe County is stepping into a leadership position and making firm commitments to a more resilient and sustainable future for our community by analyzing and understanding their current carbon footprint and developing a strategic action plan for climate change adaptation and mitigation at the County-government level.

Once this portion of the Climate Action Planning process has been completed (Phase I), the County will turn its eye to the emissions produced community-wide. This includes those outside of the direct control of the County government (Phase II). Phase II will provide a more robust understanding of the full scale of emissions-producing activities and infrastructure in the County, such as private industry operations and land use. Both phases are integral planning efforts to develop a deep understanding of where we are, where we’d like to go, and how we intend to foster a more sustainable future.

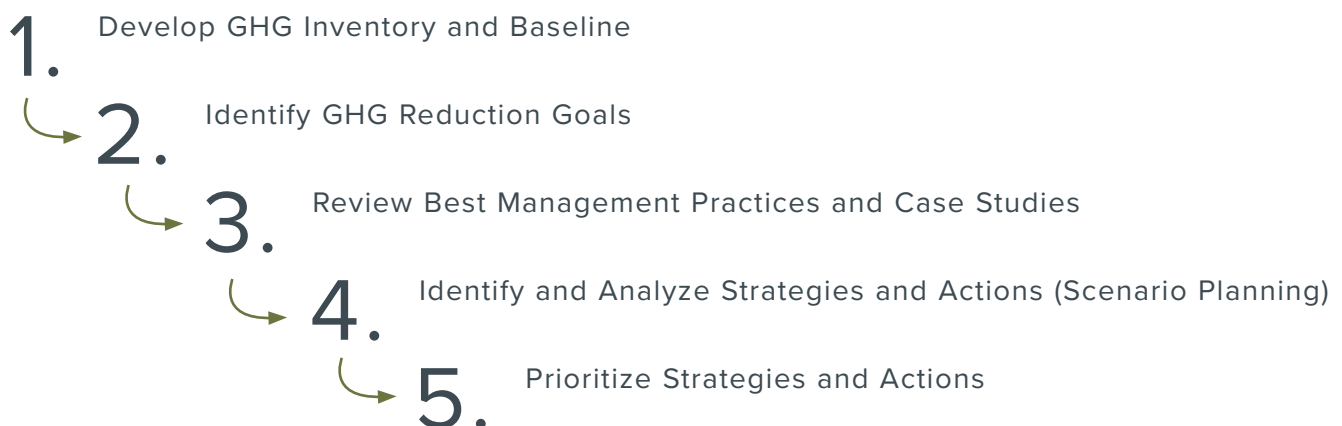


# Why does the County need a CAP?

The goal of the Climate Action Plan for Government Operations is to examine GHG emissions from Monroe County-run sites, facilities, and operations, and develop strategies to mitigate future GHG emissions. The purpose of the Plan is to identify a strategy for Monroe County to decrease greenhouse gas emissions associated with its operations to reach a certain GHG reduction target over a defined timeframe. This Phase identifies strategies and recommendations to:

- Improve sustainability, reduce greenhouse gas (GHG) emissions, and strengthen resiliency of Monroe County facilities;
- Create goals, actions, and policies that are innovative and achievable for addressing mitigation and adaptation from government operations standpoint;
- Advance County certification in NYSDEC’s Climate Smart Communities (CSC) program alongside participating communities in Monroe County;
- Identify opportunities to satisfy the requirements of the New York State Energy Research and Development Authority (NYSERDA)’s Clean Energy Communities (CEC) program alongside CSC certification actions;
- Build on recent sustainability successes in County operations, from Clean Fleets to the County’s Green Building Initiative;
- Create a plan that builds consensus and momentum to spur action and provides a clear path for transitioning to Phase II: Countywide Climate Action Plan; and
- Provide a long-term vision for Monroe County with actionable pathways.

## What is the process for the CAP?



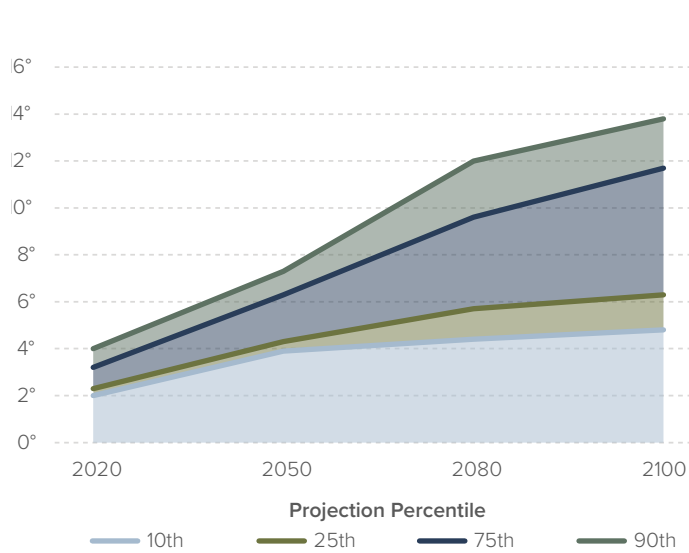
# Existing Climate Conditions

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. Greenhouse gases (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<sup>i</sup>. These impacts have devastating implications for all facets of our natural environment and society. Monroe County, similar to other areas of New York State, is seeing effects such as increased precipitation, more frequent and intense storm events, and increased shoreline erosion<sup>ii</sup>.

*The average temperature in Rochester, NY has increased by 0.32° F between 1901 – 2012, and Rochester has experienced 2.32 fewer days below 32° F per decade.*

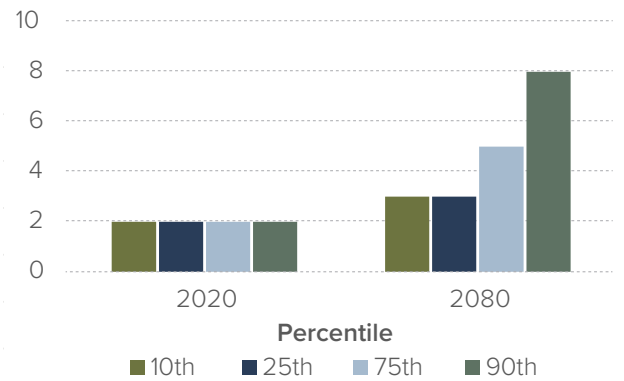
# Projected Climate Conditions

The Integrated Assessment for Effective Climate Change Adaptation in New York State (ClimAID) aims to provide information on New York’s climate vulnerability to help inform the development of climate action strategies and encourage further research. The ClimAID report was developed in 2008 by NYSERDA and updated in 2014. The report projects that Western New York will be impacted by increased flooding, heat, and precipitation. Higher temperatures and sea level rise are extremely likely for New York State communities<sup>ii</sup>.

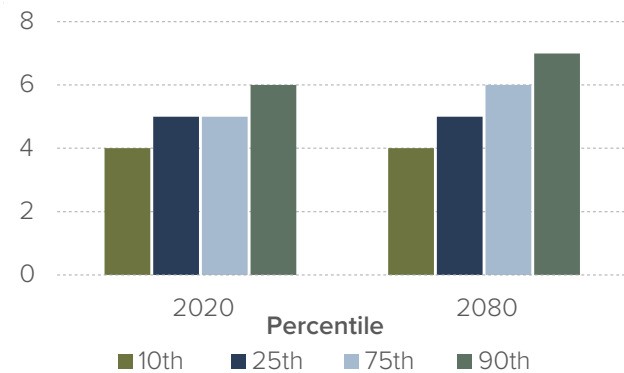


**Figure I. Projected Temperature Changes in Region 1 (Western New York) Source: ClimAID**

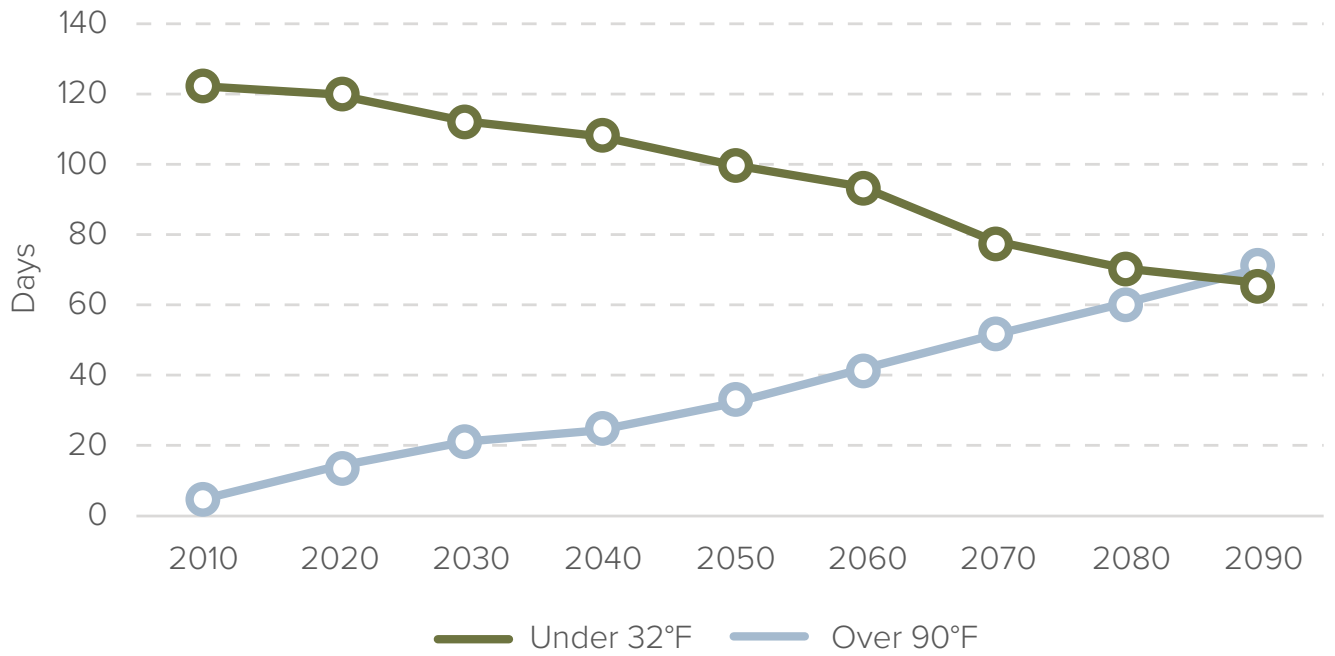
Sources:  
 (i) U.S. Environmental Protection Agency. 2016. Climate change indicators in the United States, 2016. Fourth edition. EPA 430-R-16-004. www.epa.gov/climate-indicators  
 (ii) Horton, R., D. Bader, C. Rosenzweig, A. DeGaetano, and W. Solecki. 2014. Climate Change in New York State: Updating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



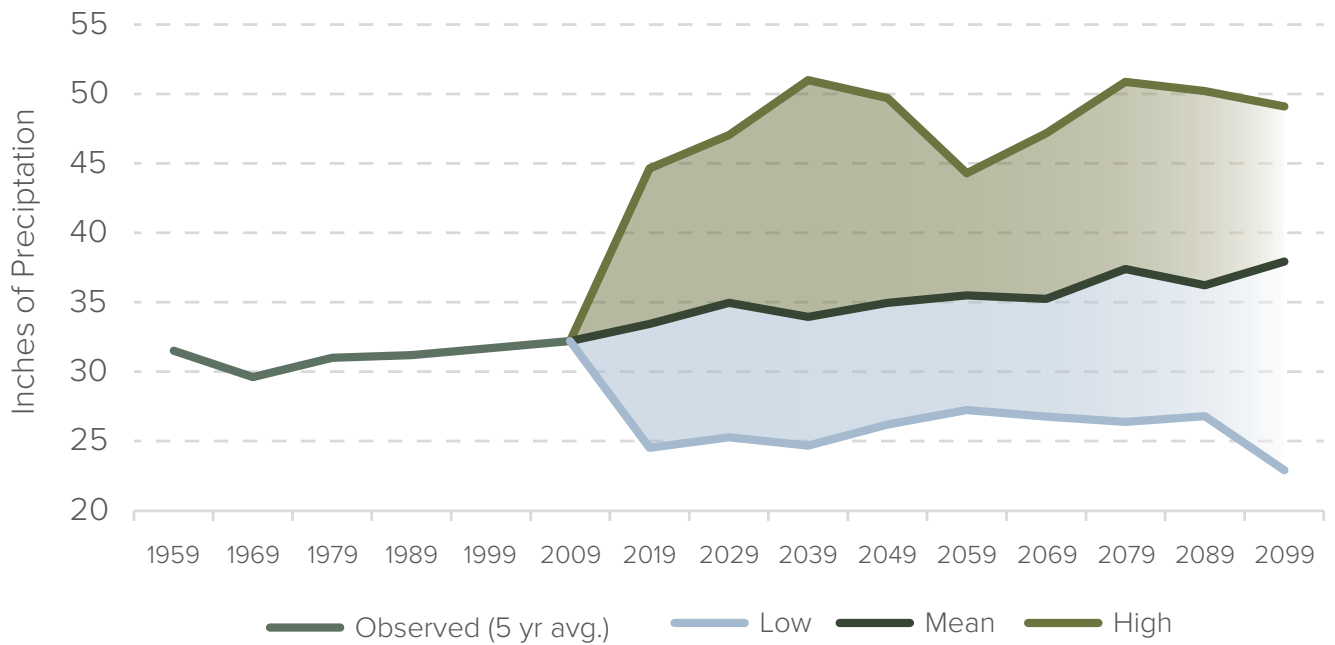
**Figure II. Number of Heat Waves**



**Figure III. Days with over 1" of Rainfall**



**Figure IV: Projected Shifts in Extreme Temperature Days Source: NYCCSC**



**Figure V: Projected Average Precipitation (Inches) Source: NYCCSC**

# Baseline GHG Inventory

As a first stage in the process to develop the Monroe County CAP, a baseline inventory of the County operations GHG emissions was developed. A baseline GHG emissions inventory is essential to understand the extent to which current County government operations are contributing to overall emissions, and which sectors have the largest impact on the County's carbon footprint.

ICLEI USA's online tool, ClearPath, was used to calculate the baseline County emissions inventory. The ClearPath tool inventories all energy usage within the County's organizational boundaries (as defined by ICLEI), and converts it to metric tons of CO<sub>2</sub>-equivalent (MTCO<sub>2</sub>E) using EPA conversion factors. 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 is the most appropriate year for Monroe County's baseline inventory.

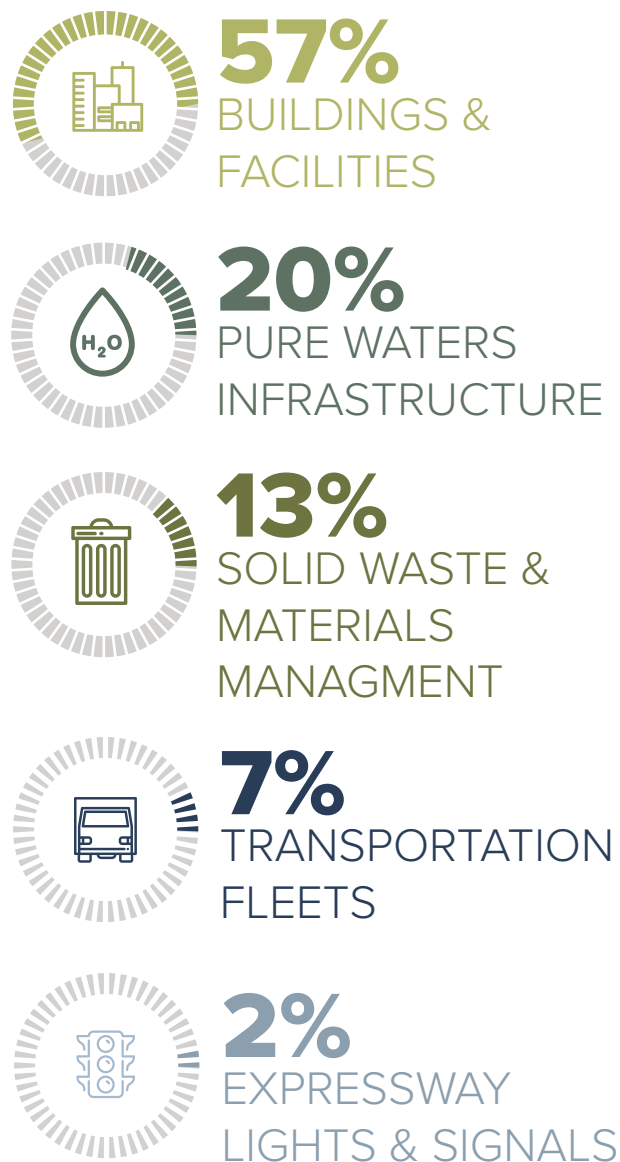
Following the categorization of GHG emissions by scope as detailed in the ICLEI protocols, all Scope 1 emissions (direct emissions with the exception of biogenic sources) and Scope 2 emissions (indirect emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling) were considered. Scope 3 emissions (indirect emissions that occur because of government operations, but from sources not owned or controlled by the County) were not included.

The County's emissions were calculated based on data provided by the County by sector, resulting in a total current annual emissions of

# 45,632

**Metric Tons of Carbon Dioxide Equivalent (MTCO<sub>2</sub>E)**

The breakdown of emissions by sector is presented in Figure VI.



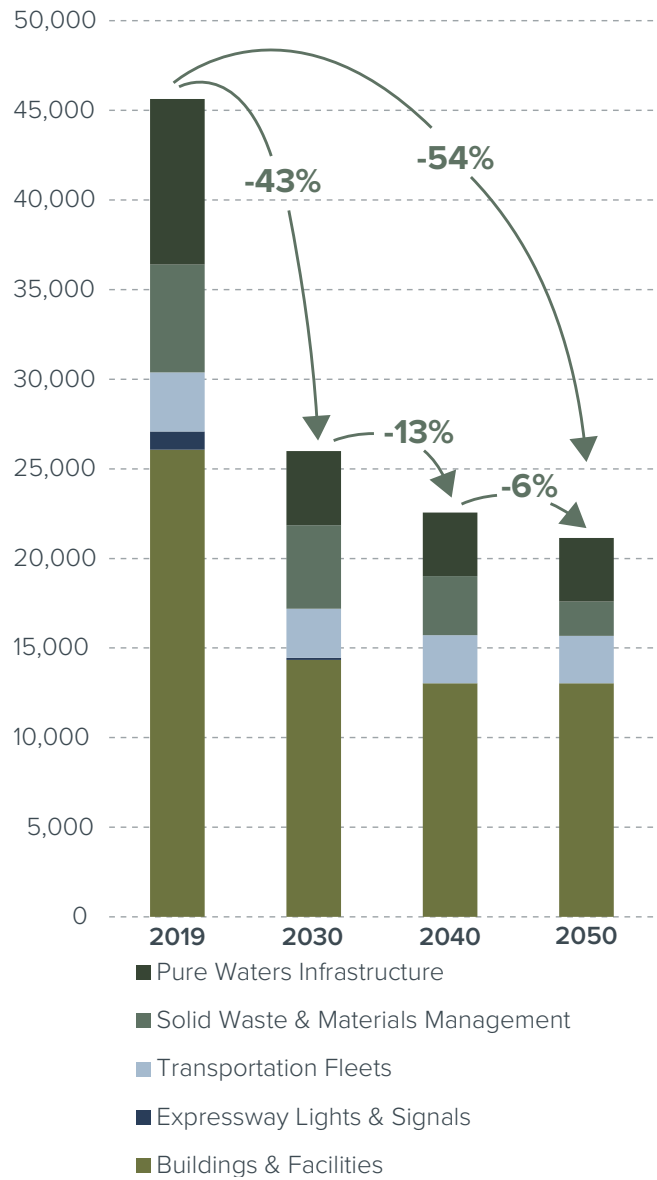
\*the remaining 1% is divided among each sector.

**Figure VI. Baseline Emissions by Sector**

## Business as Usual (BAU) Forecast

Following the Baseline Inventory, a Business as Usual (BAU) Forecast was developed in order to project future emissions should no mitigation actions be undertaken by the County. As a result, the BAU does not assume any reductions in consumption across any sector. However, it does factor in reduction strategies that are beyond the County’s control. These include federal vehicle emission standards and state clean power goals. Federal vehicle emissions standards are projected to increase by 1.8% every five years. New York State clean power goals assume 100% zero-emission grid electricity by the year 2040.

The results of this BAU forecast are shown in Figure VII. Based on this analysis, the County can anticipate a 54% reduction in emissions levels by 2050. It should be emphasized that this scenario relies on achievement of the State’s ambitious reduction goals. If these are not met, the BAU forecast is very likely to yield a lesser reduction. It should be noted that the County purchases its electricity through New York Independent System Operator (NYISO), which has made a commitment to the State’s clean power goals.



**Figure VII. BAU Scenario Reductions**

Sector	MTCO <sub>2</sub> E			
	2019	2030	2040	2050
Buildings & Facilities	26,073	14,342	13,037	13,037
Expressway Lights & Signals	1,004	121	0	0
Transportation Fleets	3,295	2,735	2,686	2,643
Solid Waste & Materials Management	6,035	4,661	3,288	1,914
Pure Waters Infrastructure	9,225	4,138	3,546	3,546
<b>Total</b>	<b>45,632</b>	<b>25,997</b>	<b>22,557</b>	<b>21,140</b>

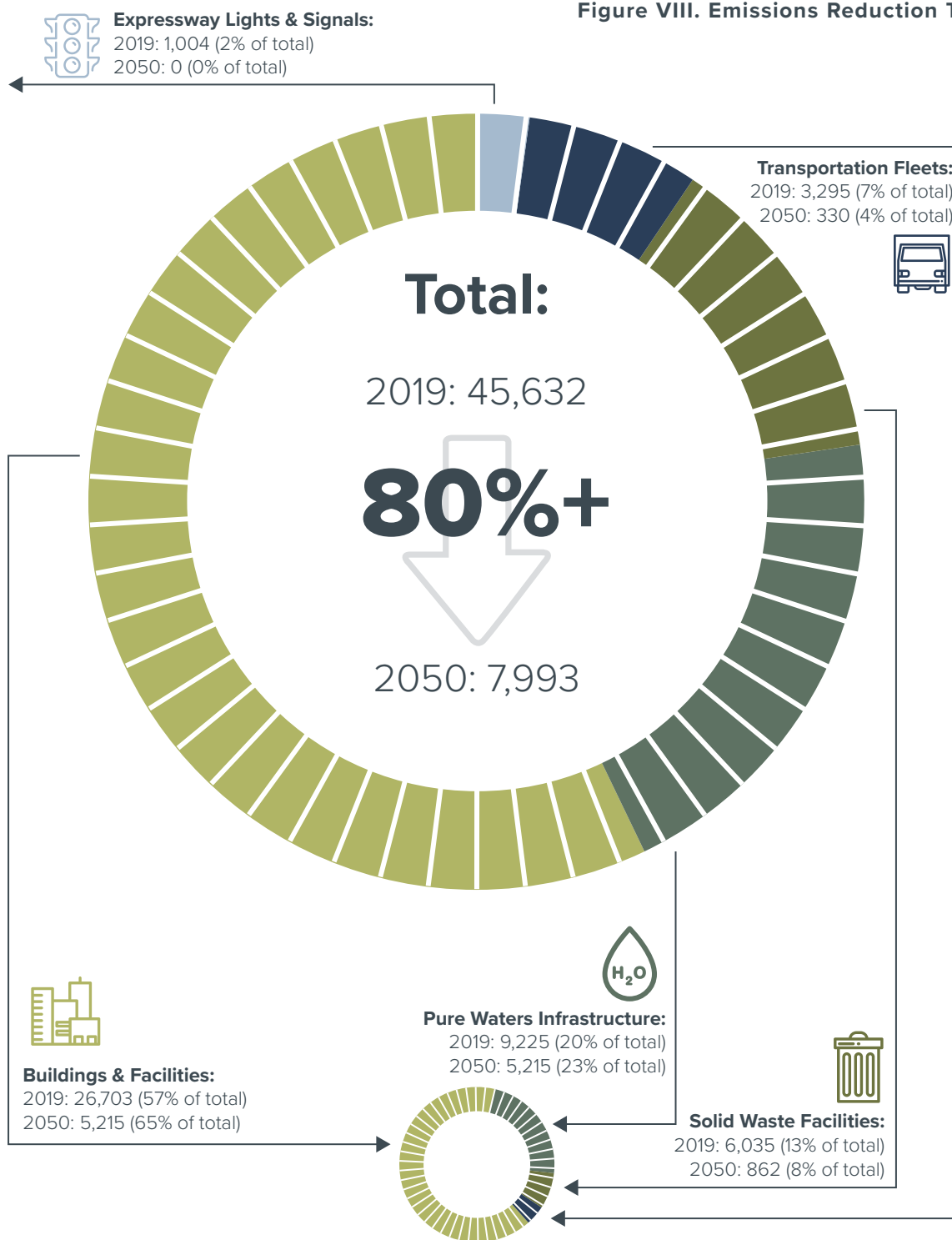
**Table I. Business as Usual GHG Emissions Forecasts for Monroe County**



# Emission Reduction Targets

Based on the Clearpath analysis, the following targets were set for each sector; resulting in an **overall target for GHG emission reductions of 80% below 2019 levels by 2050**. These targets were established based on assumptions for several variables, which are described in further detail in the full CAP document.

Figure VIII. Emissions Reduction Targets



# Emission Reduction Goal Framework

To guide the County’s Phase I CAP efforts, a comprehensive Goal Framework was developed, which identifies goals, reduction targets, and supporting implementation plans by sector. The emission reduction goal framework reflects Monroe County’s commitment to undertake its own climate change mitigation and adaptation efforts, above and beyond that of the BAU forecast assumptions. The reduction targets in this Plan account for the implementation of both low and high impact/cost actions by the County to increase energy efficiency, reduce energy and natural gas consumption, transition to clean energy and fuel sources, and capture methane. This framework is a compilation of both emissions reduction and adaptation strategies from current County initiatives, the NYS DEC Climate Smart Communities program, and other comparable municipal climate action plans. The framework is comprised of the following components:

- **Goal:** A general statement that describes the aspiration of the County to reduce Monroe County’s GHG emissions and local contribution to climate change.
- **Target:** The quantification of a goal, specifying the potential reduction in emissions based on an aggressive implementation scenario modeled using the ICLEI ClearPath tool.
- **Action:** A specific initiative which may be undertaken by the County to accomplish a goal. It can take the form of a plan, project, policy, or program. For the purposes of this Plan, actions are categorized into one of three tiers:
  - **Tier 1:** A direct, measurable action
  - **Tier 2:** A step to prepare for and/or support a Tier 1 action
  - **Tier 3:** A broader policy or program providing guidance for a series of actions

Figure IX. Goal Framework



Each action has three metrics: Impact, Timeframe, and Investment:

<p><b>Impact:</b> The estimation of effect an action is likely to have with respect to reducing GHG emissions.</p> <ul style="list-style-type: none"> <li>• <b>Low:</b> Little to no impact</li> <li>• <b>Moderate:</b> May have some impact</li> <li>• <b>High:</b> Significant impact; has greatest potential for impact</li> </ul>	<p><b>Timeframe:</b> The estimated period of time it will take to undertake and/or complete a specific action, policy, or measure.</p> <ul style="list-style-type: none"> <li>• <b>Short:</b> 1-3 years</li> <li>• <b>Medium:</b> 3-6 years</li> <li>• <b>Long:</b> 6+ years or ongoing effort</li> </ul>	<p><b>Investment:</b> The estimated level of County financial and human resources necessary to implement an action.</p> <ul style="list-style-type: none"> <li>• <b>Low:</b> Achievable within existing budget; and/or normal staff capacity</li> <li>• <b>Moderate:</b> May require additional capital or operational funding; and/or additional staff or contractual support</li> <li>• <b>High:</b> Requires allocation of additional funding; and/or additional staff or contractual support</li> </ul>
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## PRIORITY ACTIONS

In order to develop a prioritization of the identified climate actions, each of the three metrics was assigned a score, which was then used to calculate the estimated ability of such action to achieve the best outcome relative to all other actions in that sector:

- 1:** Estimated to be **91-100% effective** in achieving best outcome
- 2:** Estimated to be **81-90% effective** in achieving best outcome
- 3:** Estimated to be **71-80% effective** in achieving best outcome
- 4:** Estimated to be **61-70% effective** in achieving best outcome
- 5:** Estimated to be **60% or less effective** in achieving best outcome

Because the primary goal of this CAP is to reduce County GHG emissions, the prioritization analysis gave the highest weight to Impact values, followed by Investment and then Timeframe. This allowed for consideration of high impact actions, while still balancing the financial, human, and time demands they may require.

While the implementation plan has been prioritized based on the three metrics described above, it is built upon assumptions. The County recognizes that in order for a full evaluation of the impact of these actions, additional data must be collected. More detailed data and quantitative analysis may cause shifts in County priorities and timeframe for implementation as more information is made available.

# Implementation Actions

The recommended actions identified for each sector are presented in the tables on the following pages, alongside their priority rankings. For a full evaluation of the impact of these actions, additional data must be collected. More detailed data and quantitative analysis may cause shifts in County priorities and timeframe for implementation as more information is made available.

**Table II. Buildings & Facilities Implementation Actions**

Priority	Description
1	Institute procedures and/or training to encourage facility managers and municipal employees to improve heating, cooling and lighting use efficiency.
1	Install additional solar photovoltaic (PV) system(s).
2	Install/update building energy management systems for lighting and HVAC equipment.
2	Lower building temperature settings to adjust for localized floor heating systems. Heat the people spaces not the entire building volume.
2	Optimize day light with window shades that allow light from the top section of windows near roofing level.
2	Upgrade efficiency of outdoor lighting on County properties.
2	Participate in district energy programs, i.e. district heating and cooling.
3	Provide Radiant Electric heat in offices under the desk area. Control these localized heating systems with wireless smart thermostats.
3	Update 2012 inventory of current building energy use to serve as benchmark and identify priority properties.
3	Require new County buildings to be net zero carbon emissions.
3	Increase the proportion of renewable energy used in County government buildings.
4	Assess feasibility of small wind turbine system(s) for County-owned properties.
4	Complete renewable energy feasibility studies.
4	Complete interior lighting upgrades for 100% of County buildings.
4	Green the lifecycle of office equipment.
4	Install geothermal heating and cooling system(s).
4	Retro-commission low-performing buildings.
4	Install alternative energy technology (e.g. battery storage, hydrogen fuel cell emergency generation) on County property.
5	Install water efficient fixtures.
5	Create plan for upgrading HVAC equipment based on building inventory, maintenance schedule, and planned improvements.
5	Consider purchasing RECs to offset emissions from buildings and facilities.

**Table III. Expressway Lighting & Signals Implementation Actions**

Priority	Description
1	Convert any remaining traffic signals and blackout signs from incandescent to LED bulbs.
2	Identify areas where light pollution may be a concern. Align with LED replacement program, where appropriate.
2	Develop transition plan for lighting and signal facilities based on inventory of existing energy use, maintenance schedule, and planned infrastructure improvements.
4	Upgrade to more energy efficient LED bulbs on the off-expressway lighting system.
5	Reduce energy use through reducing hours of operation and/or number of lights.
5	Assess feasibility of transitioning to Solar Photovoltaic (PV) powered street and emergency lighting as technology advances.

**Table IV. Pure Waters Infrastructure Implementation Actions**

Priority	Description
1	Incorporate energy efficiency as a key component of equipment specifications for improvement of wastewater systems.
2	Continue to look for changes to process operations to improve energy efficiency in wastewater conveyance and treatment.
2	Evaluate/model potential methane, nitrous oxide, and carbon dioxide emissions from specific WRRF processes, especially if onsite biosolids stabilization or nitrification/denitrification requirements are added to future SPDES permits.
3	Evaluate feasibility of emergency power generation alternatives that rely upon renewable energy sources, such as hydrogen for emergency generators.
4	Evaluate existing biosolids disposal methods and identify potential alternatives/ improvements for biosolids management, dewatering, stabilization, and methane recovery.
4	Continue an energy efficient retrofit of facilities, especially pumping and aeration processes.
4	Improve energy efficiency of existing equipment.

**Table V. Solid Waste & Materials Management Implementation Actions**

Priority	Description
1	Update the County’s Existing Green Procurement Policy.
1	Evaluate processing capacity for composting of food waste organics.
1	Participate in EPA WasteWise program.
2	Maximize the diversion of organic waste from County facilities to disposal and the beneficial reuse of the organic material.
2	Incorporate reuse and deconstruction policies in Solid Waste Management Plan.
3	Perform a solid waste audit of County facilities operations.
3	Establish a Green Office Challenge that includes a reduction in office waste.
3	Cap Gloria Drive inactive landfill to prevent fugitive methane emissions and consider methane recovery options.
4	Develop and implement a paper use reduction policy and procedures – Under broader sustainability measures (sustainability committee); e.g. efforts to go paperless.
4	Purchase biodegradable cleaning supplies in accordance with Green Procurement Policy.
4	Consider adopting a zero waste policy for County facilities and parks, including recycling, repurposing, and composting components. Expand current recycling/trash policy and procedures. Investigate feasibility of an organic waste program for County buildings/facilities.
4	Reduce waste generation and increase recycling at County facilities.
4	Reduce and/or eliminate single-use plastics within County facilities.

**Table VI. Transportation Fleets Implementation Actions**

Priority	Description
1	Eliminate unnecessary vehicle idling through policy action, reduction technologies, and zero emission vehicle use.
2	Certify County fleet mechanics to maintain and repair EVs.
2	Require fuel use reports from County contractors and incorporate emission reduction standards into County contracts.
2	Increase alternative fuel use for County-owned vehicles (hydrogen, etc.).
2	Reduce trips taken by County vehicles.
2	Improve fleet deployment and monitoring.
3	Deploy solar Electric Vehicle Supply Equipment (EVSE).
3	Identify opportunities for cross-department use of County fleet through a Fleet Efficiency Policy including fleet right-sizing.

**Table VII. Transportation Fleets Implementation Actions (Continued)**

Priority	Description
3	Purchase EVs for Sheriff’s Department (passenger vans, patrol fleet, etc.).
3	Purchase electric grounds maintenance equipment.
3	Offset emissions from vehicle fleet and transit operations (Renewable Energy Credits, carbon credits, etc.).
4	Install additional Level 2 (AC) and Level 3 (DC) EV charging stations to support fleet operations.
4	Continue preventative fleet maintenance program for County-owned vehicles.
4	Quantify and track vehicle miles traveled for County fleet.

## Expansion of Climate Action Planning

### Administering & Monitoring the CAP

Crucial to the successful implementation of this Phase I CAP is the development of an effective monitoring and evaluation system. This will allow for the County to track progress towards its climate action goals and enhance transparency and accountability. Furthermore, continual monitoring will allow the County to shift operations as necessary based on evaluation of outcomes over time. A well-considered monitoring process should be developed based on the following steps, adapted from the C40 Cities Climate Action Planning Resources:

1. Defining Indicators
2. Collecting & Monitoring Data
3. Evaluating Outcomes
4. Reporting & Readjusting

Proposed reporting and evaluation timeframes:  
 Implementation Plan Progress Report: **Annual**  
 GHG Inventory Update and CAP Review: **2025, and every 5 years thereafter**



**Figure X. Monitoring Process Source: C40 City Monitoring, Evaluation and Reporting Guidance**

## Building on other Plans & Initiatives

Monroe County is currently undertaking several important planning initiatives that have direct influence on this CAP, and vice versa. In order to develop a clear roadmap for future actions, policies, and capital spending in the County, each of these Plans must speak to and support the others. Three of the most significant and relevant efforts include Plan Forward - the County’s Comprehensive Plan, the Countywide Active Transportation Plan, and Bring Monroe Back - Monroe County Recovery Plan.

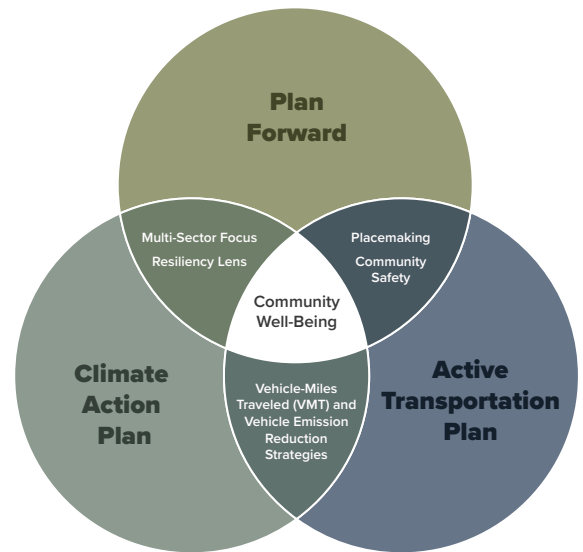


Figure XI. County Plan Coordination

## County Level Mitigation, Adaptation and Resilience

Both mitigation and adaptation strategies are needed to manage and fight climate change. Due to the focus of this Plan on reducing GHG emissions, the majority of actions are focused on mitigation efforts. To compliment this Plan, the County should consider undertaking various climate adaptation and resiliency planning efforts to better understand how to respond to, manage, and protect itself from the current and near term effects of climate change on our community.

These efforts would focus on identifying crucial assets and determining their vulnerabilities to the impacts of climate change such as flooding, extreme heat, or major weather events. They would also outline strategies that the County could take to increase the resiliency of its facilities and other assets to preserve the integrity of County operations to the greatest extent possible. Climate adaptation and resiliency planning efforts that may be undertaken and implemented directly by Monroe County include:

- » Conducting a Climate Vulnerability Analysis for County facilities (including ability to meet future regulations related to wastewater and stormwater infrastructure).
- » Developing a Climate Adaptation and Resiliency Plan for County properties.
- » Coordinating climate drivers in the County Hazard Mitigation Plan (including Heat Emergency Plan and Flood Mitigation Plan).
- » Facilitating NFIP Community Rating System participation through Monroe County Stormwater Coalition.
- » Developing a shade structures policy for County facilities in conjunction with a Natural Resources Inventory
- » Incorporating sustainability and resiliency efforts in the County Parks Master Plan, including nature-based carbon capture opportunities.
- » Creating a Forest Management Plan and identifying strategies to utilize and improve protection and management of trees.



## Community-wide GHG Inventory & CAP (Phase II)

The County’s efforts to develop the Phase I Governmental Operations CAP is an important first step in planning for a more sustainable and resilient Monroe County. It identifies essential actions that are directly within the County’s control, and sets up the County as a role model and champion of sustainable practices.

To expand on this work, the County is undertaking a community-wide GHG inventory and CAP to better understand emissions from the County and all its stakeholders -- including residential, commercial, industrial, municipal, and all other energy dependent activities that occur within Monroe County.

This effort, called the Phase II CAP, will have a much larger scope of emissions sources inventoried and the potential actions for climate change mitigation and adaptation. It will also require a significant amount of community buy-in and public support in order to successfully implement the Plan’s recommendations.

Together, the Phase I and Phase II CAPs will create a comprehensive roadmap for the Monroe County government and its community partners to reduce our region’s overall contribution to climate change and provide for a more healthy sustainable future.

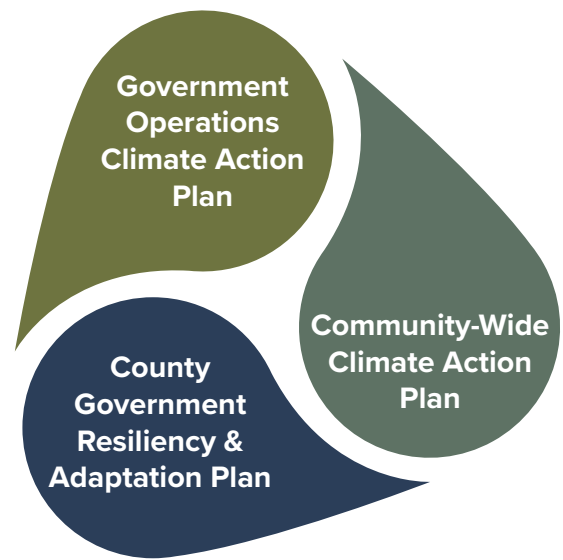


Figure XII. Climate Planning Coordination

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**ADAM J. BELLO**  
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Climate Action Plan Phase 1  
Now Available as a Document