C. CLIMATE CHANGE MITIGATION + ADAPTATION

INTRODUCTION

Climate change is being caused by the excessive build-up of greenhouse gas emissions (GHGs) in the Earth's atmosphere and is one of the most critical challenges facing our world today.

While Upstate New York will not experience some of the most visible negative impacts of climate change like rising sea levels and increased forest fires, we will experience other direct impacts of climate change, including higher temperatures, increased precipitation, more extreme weather events and storms, and even climate refugees. Average temperatures are expected to rise six degrees Fahrenheit by the 2050s, which may result in more heat-related illnesses and deaths, potentially worsen air and water quality, and impact the viability and productivity of local agriculture. Increasing precipitation and extreme weather in combination with rising temperatures will also place additional stress and maintenance needs on local building stock and public infrastructure.

It is important to note that one of the greatest ways that a community can reduce its carbon footprint and become more resilient is to encourage compact, mixed-use, and walkable land use patterns. The very nature of a city is far more environmentally-friendly than suburban-style sprawl that is more resource intensive (per capita and per square mile) and auto dependent. *Rochester 2034* contains an overarching theme to grow the population of the city, with a particular emphasis on walkability and mixed-use development, which in effect can make the region more resilient in the face of climate change.

KEY TAKEAWAYS

- Local governments play an important role in preparing for and responding to the effects of climate change.
- The *Rochester Climate Action Plan* set a goal of reducing community-wide greenhouse gas emissions 40% below 2010 levels by 2030, and 80% by 2050.
- The City is now developing a *Climate Change Resilience Plan* to identify and prioritize specific climate change adaptation strategies we should pursue.
- The City is working to reduce greenhouse gas emissions associated with municipal operations (via city buildings, vehicle fleets, street lights, etc.) and grow access to renewable energy and energy efficiency for city residents and businesses.
- It is important to pursue energy efficiency improvements and initiatives that switch residential and commercial buildings over to run on clean, renewable energy because buildings are a significant source of local emissions.

PUBLIC COMMENT

"No new building should be built unless it uses "green" materials and is environmentally friendly."

PUBLIC COMMENT

"Please make composting part of everyone's services. Many residents already do this, but for a fee. Make it affordable and accessible to all!"

PUBLIC COMMENT

"More composting and stormwater runoff treatment would be great to see. We need to preserve our lake systems as much as possible!"

LOCAL LEADERSHIP

States and cities are increasingly stepping up to assess potential impacts and identify proactive strategies that they can take to address climate change. Recognizing that a sustainable environment is the basis upon which we can create a vibrant, healthy city, the City of Rochester has been proactive in this arena:

2007 Signed the U.S. Conference of Mayor's Climate Protection Agreement.

2010 Joined the NYS Department of Environmental Conservation's Climate Smart Communities program, which helps the City leverage technical and financial resources available through state and federal programs.

2011 Completed a GHG inventory for baseline year 2008 and set a goal to reduce GHG emissions from municipal operations to 20% below the 2008 baseline by 2020.

2012 Joined the United States Department of Energy's (DOE) Better Buildings Challenge (BBC), which pledges a 20% reduction in building Energy Use Intensity (EUI) from a 2009 baseline by 2020.

2015 Joined the Compact of Mayors, a cooperative effort among mayors and city officials around the world to help reduce greenhouse gas emissions and track progress.

2017 Completed the Community-wide Climate Action Plan which set a goal to reduce community-wide GHG emissions 20% by 2020 and 40% by 2030, from a 2010 baseline. Completed new 2-megaWatt solar field with 7,800 solar panels on a portion of the former Emerson Street landfill, to provide energy for a number of City facilities, including City Hall and the City's Operations Center on Mt. Read Blvd.

ONGOING Development of Climate Change Resilience Plan to implement strategies and actions to prepare for and adapt to the impacts of climate change.

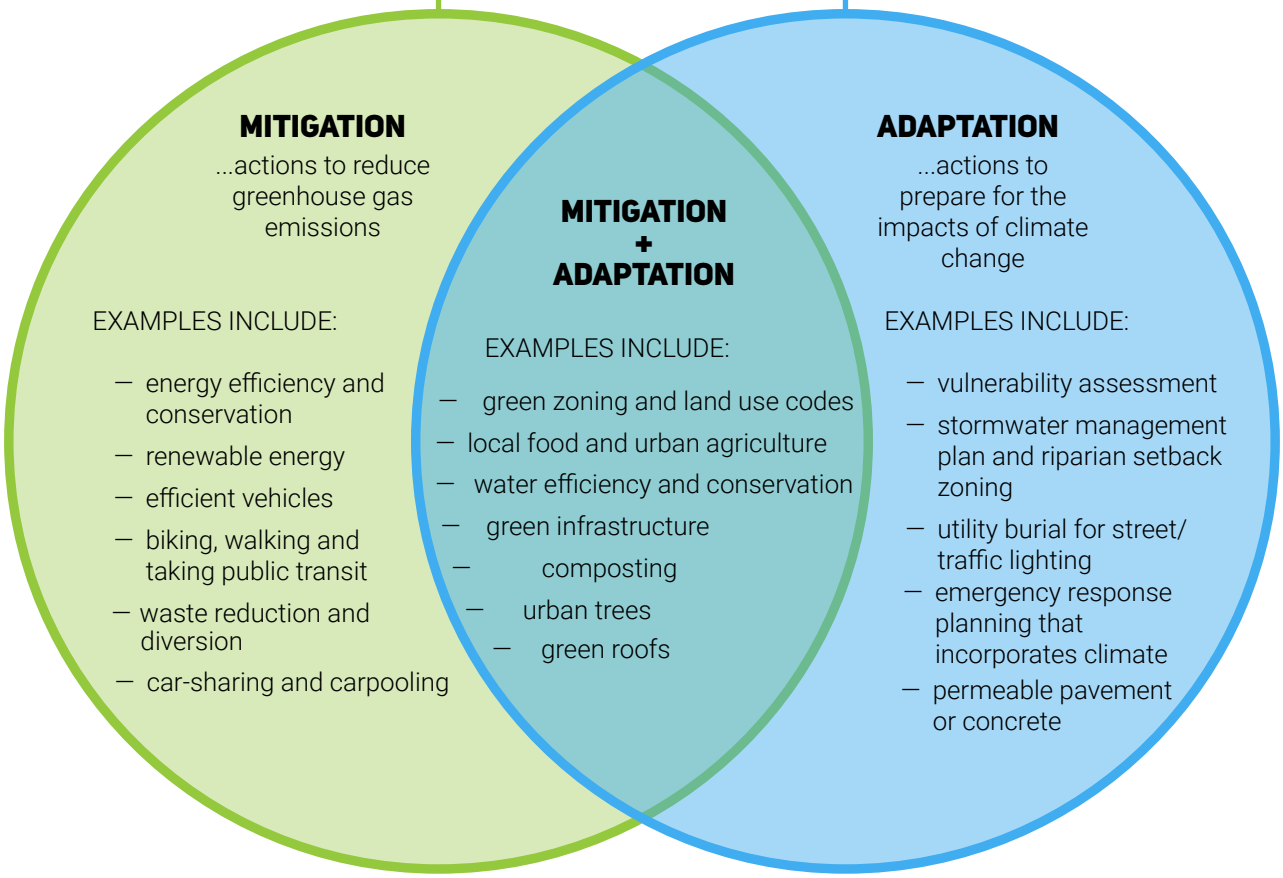
ONGOING Installation of various bicycle infrastructure elements (bike lanes, protected lanes, bike boulevards, bike share system, bike parking/storage, bike maintenance stations) to encourage this cleaner, healthier mode of transportation. See Initiative Area 2, The Placemaking Plan and Section 4E, Transportation, for additional recommendations that foster sustainable land use and transportation practices.

PROACTIVE CLIMATE ACTION PLANNING

In addition to the efforts above, the City's Office of Energy and Sustainability has led a number of climate action planning processes since 2009. Climate action planning is a proactive, strategic effort to address growing concentrations of GHGs in the atmosphere. Deliberate planning and action measures can greatly reduce the amount of GHGs produced and generate numerous community benefits, such as lower utility costs and improved environmental and public health. Climate action planning typically organizes policy/program responses in two major categories:

Mitigation aims to address the root cause of climate change by reducing greenhouse gas (GHG) emissions directly.

Adaptation identifies measures to help communities adjust to actual or expected future conditions associated with climate change impacts.



Source: Center for Clean Air Policy

PROACTIVE CLIMATE ACTION PLANNING CONTINUED

Both approaches are necessary because, even if emissions significantly decrease in the next decade, adaptation measures will still be needed to deal with the changes already set in motion. The City's Office of Energy and Sustainability has worked with numerous internal and external partners to complete several plans related to climate adaptation and mitigation:

- **Municipal Operations Climate Action Plan.** Completed in 2013, this plan focused on the City's municipal facilities, fleet and operations. It outlines policies and implementation activities intended to help the City reduce its own GHG emissions 20% by 2020.

- **City of Rochester Energy Master Plan.** Completed in 2015 as part of the Five Cities Energy Plans Initiative in collaboration with the NY Power Authority (NYPA). The Plan is intended to strengthen the reliability and resiliency of energy infrastructure, spur clean energy investment, and reduce energy consumption.

PUBLIC COMMENT

"The sooner we move to a more sustainable energy source, the better. That is the way of the future. Rochester can get there and be a leader in this movement."

COMMUNITY SHARED SOLAR

Due to a variety of factors, including the cost, location, condition, and the size of a roof, not everyone is able to install solar panels. Alternative business models, like shared solar (or community solar), offer residents and businesses the chance to invest in solar together, benefiting directly from the energy produced by one solar array. By aggregating customer demand, shared solar programs can reduce the financial and technical barriers of individually installing solar equipment.

PROACTIVE CLIMATE ACTION PLANNING CONTINUED

→ **Rochester Climate Action Plan (CAP).**
Completed in 2017, the CAP is a community-wide plan that identifies a community-wide goal of reducing Rochester's GHG emissions 40% below 2010 levels by 2030, and 80% by 2050. In order to achieve this goal, the CAP identifies 35 implementation actions divided across five focus areas:

1. ***Energy Use and Supply –*** including mitigation actions related to increasing commercial and residential energy efficiency, increasing renewable energy utilization by residents and businesses, and fuel switching to convert residential, commercial and industrial natural gas consumption to clean electricity.

2. ***Transportation –*** including mitigation actions that help to promote multi-modal transportation, reduce vehicle miles traveled, increase walking, biking, and transit utilization, and support more people and fleets using alternative fuel vehicles.

3. ***Waste and Materials Management –*** including mitigation actions to reduce and divert waste from landfills, such as composting, recycling, and community education.

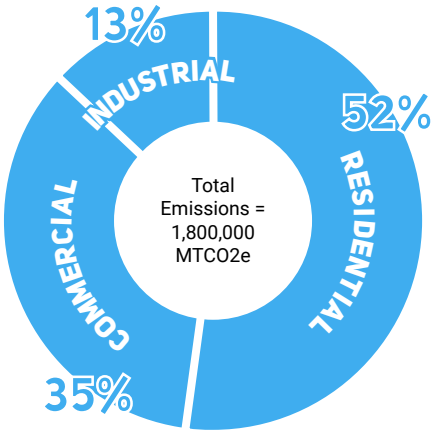
4. ***Clean Water –*** including adaptation actions such as developing a green infrastructure portfolio standard and integrated water management practices

5. ***Land Use –*** including adaptation actions such as promoting coordinated land use and transportation planning, transit-supportive development, redevelopment of brownfields and vacant/underutilized property, urban agriculture, eco-districts, and parks and open space planning.

The CAP included an updated GHG inventory, which identified the residential sector as the largest source of local GHG emissions (52%), closely followed by the commercial sector (35%). As such, many of the implementation actions identified in the CAP are targeted towards homeowners, landlords and tenants, and commercial property owners or tenants.

The CAP also makes a commitment to ongoing monitoring of performance (emissions and emissions reductions), as well as plans for implementation. The City's Office of Energy and Sustainability staff will convene working groups to review implementation, assess new funding and partnership opportunities, and identify subsequent climate planning needs.

Rochester Emissions by Sector, 2014



Source: Rochester Climate Action Plan

PROACTIVE CLIMATE ACTION PLANNING CONTINUED

→ **Climate Vulnerability Assessment.** Completed in 2018, this study expanded on the adaptation and resiliency components of the CAP. It provides several high-level insights into Rochester's strengths, challenges, and opportunities as it prepares for changing climate conditions. It identifies several short-term strategies to address local infrastructure, natural resource, and socioeconomic vulnerabilities. It also calls for the development of a Climate Change Resilience Plan to identify, assess, and prioritize specific adaptation strategies or actions, moving forward.

THE NEW YORK STATE LEADERSHIP AND COMMUNITY PROTECTION ACT (CLCA)

CLCA was signed into law in June 2019 to mitigate the impacts of climate change, build resilience and promote environmental justice across New York. The act will prioritize reducing greenhouse gas emissions by 2040, requiring 70% of electric generation to be produced by renewable energy sources by 2030, creating green jobs and protecting vulnerable communities, and building climate change resilience across the state.

COMMUNITY CHOICE AGGREGATION (CCA)

CCA is a municipal energy procurement model that replaces the utility with the municipality as the default supplier of electricity for homes and small businesses. By pooling demand, communities are able to choose cleaner energy sources and negotiate lower rates with private suppliers.

To implement CCA, the City of Rochester would be required to adopt local legislation authorizing the program, select a CCA program administrator, develop an implementation plan and data protection plan for the Public Service Commission, and contract with an energy supplier to provide clean, renewable energy to all participating customers. NYSERDA offers technical assistance for municipalities pursuing CCA legislation. A CCA can also be implemented with a group of municipalities operating under an inter-municipal agreement.

C. CLIMATE CHANGE MITIGATION + ADAPTATION [CC]

ACTION PLAN

GOAL		STRATEGIES	PARTNERS
CC-1 **Mitigate and adapt to climate change through coordinated planning, plan implementation, and performance monitoring.**	CC-1a	Implement the Rochester Climate Action Plan (CAP), using data and analysis to monitor and report progress towards our goal of reducing GHG emissions 40% by 2030, and 80% by 2050: — Develop annual memo or report on status of each CAP strategy and action — Update GHG Inventory at least once every 5 years (2020, 2025, 2030) and report current emissions by major sector (e.g. residential, business, transportation, etc.) — Continue to evaluate the City's climate plans and goals to ensure alignment with the goals of the New York State Climate Leadership and Community Protection Act (CLCA)	**City,** Community Groups/Funders
	CC-1b	Develop and implement a Climate Change Resilience Plan that identifies strategic actions to help the City and community become more resilient, and better prepare for and adapt to future climate change impacts in our region. Include analysis of potential for population change from climate refugees.	**City,** Community Groups/Funders, Monroe County
	CC-1c	Encourage partners and the local research and science community to evaluate potential climate change impacts to water quality, supply, and infrastructure that includes analysis and recommendations for a regional approach to proactive watershed management.	**City,** Monroe County, GFLRPC, Community Groups/Funders

Notes:

1. Partners listed in bold are recommended to lead the implementation of that strategy.
2. For a list of partner acronyms see Appendix A.

GOAL		STRATEGIES	PARTNERS
CC-1 **Mitigate and adapt to climate change through coordinated planning, plan implementation, and performance monitoring.**	CC-1d	Work with community partners to implement existing plans that help Rochester adapt to and mitigate the impacts of climate change by promoting transportation choices, integrating transportation and land use decision-making, and remediating and redeveloping brownfields, including: — Finger Lakes Regional Sustainability Plan — Comprehensive Access and Mobility Plan — Transit Supportive Corridors Study — 14621 Brownfield Opportunity Area Plan — Lyell-Lake-State Street Brownfield Opportunity Area Plan — Vacuum Oil-South Genesee River Corridor Brownfield Opportunity Area Plan — Bulls Head Brownfield Opportunity Area and Revitalization Plan	**City,** Monroe County, NYS, Developers, GFLRPC
	CC-1e	Conduct a study to explore benefits, costs, and strategic opportunities to reduce solid waste, including topics such as municipal composting of food scraps and waste reduction incentives like "pay-as-you-throw."	**City,** Monroe County
	CC-1f	Commission a study to analyze the feasibility of expanding renewable energy sources within the City's electricity supply, including solar, wind and Geothermal power.	**City,** RG&E, Renewable Energy Developers, Community Groups/Funders

C. CLIMATE CHANGE MITIGATION + ADAPTATION [CC]

ACTION PLAN

GOAL		STRATEGIES	PARTNERS
CC-1 **Mitigate and adapt to climate change through coordinated planning, plan implementation, and performance monitoring.**	CC-1g	Evaluate energy density/intensity by geography (e.g. neighborhood or district) to inform program and outreach campaign planning, as well as investment priorities.	**City,** RG&E, NYS, US Dept. of Energy
	CC-1h	Support the implementation of neighborhood-scale sustainable development projects, such as ecodistricts and block/district geothermal systems. Seek lessons learned and apply to other areas if/as possible.	**City,** Greentopia, Community Groups/Funders
CC-2 **Use City authority, facilities, policies, operations, and investment to help achieve climate action planning goals.**	CC-2a	Continue working to implement a Community Choice Aggregation Model of energy management to offer cleaner, cheaper electricity for residents.	**City,** Community Groups/Funders
	CC-2b	Expand the existing solar field on the former Emerson Street Landfill and identify additional options to expand renewable energy within the City's electricity supply.	**City,** Renewable Energy Developers, RG&E
	CC-2c	Support the implementation of community shared solar options and programming, particularly where it could benefit low-moderate income residents, and work with partners to make community solar available in Rochester.	**City,** Renewable Energy Developers, Community Groups/Funders
	CC-2d	Authorize the City to participate in New York State's Property Assessed Clean Energy (PACE) financing program to help commercial property owners finance capital costs for energy improvement projects and renewable energy installations.	**City,** Business Community, NYS

Notes:

1. Partners listed in bold are recommended to lead the implementation of that strategy.
2. For a list of partner acronyms see Appendix A.

GOAL		STRATEGIES	PARTNERS
CC-2 **Use City authority, facilities, policies, operations, and investment to help achieve climate action planning goals.**	CC-2e	Incentivize renovated and newly constructed buildings to obtain net-zero, LEED, or other green building certification or standards.	**City,** Developers
	CC-2f	Continue to convert the City's streetlights to LED, and install lighting controls where feasible.	**City, NYS**
	CC-2g	Explore the option of converting the City's development-related codes into a Unified Development Code to better integrate land use and transportation decision-making.	**City**
	CC-2h	Continue to acquire and remediate selected brownfield sites for future re-use and/or redevelopment.	**City,** NYS, EPA
	CC-2i	Expand the city's multi-modal transportation facilities and continue to install electric vehicle charging ports and bicycle parking on City-owned parking lots and other facilities.	**City**
	CC-2j	Design and implement green infrastructure construction specifications for use in right-of-way improvement projects, including continued use of permeable pavement.	**City**
	CC-2k	Expand investments in rain gardens or stormwater planters in areas surrounded by impervious materials to reduce the amount of storm water runoff. Encourage permeable surface materials when creating new or replacement parking lots and other hard surfaces.	**City**
	CC-2l	Encourage companies to utilize clean fuel, low-emission vehicles for their fleets through participation in programs such as the State Voucher Incentive Fund and EPA's SmartWay program.	**City,** NYS, EPA, Fleet Partners

C. CLIMATE CHANGE MITIGATION + ADAPTATION [CC]

ACTION PLAN

GOAL		STRATEGIES	PARTNERS
CC-3 **Work with property owners and community development partners to improve building energy performance and sustainability.**	CC-3a	Collect, analyze, and share data to educate different target audiences (e.g., homeowners, renters, landlords, business owners, institutional property owners, developers) about the individual and community benefits of improving building energy performance and sustainability.	**City,** RG&E, NYS, Community Groups/Funders
	CC-3b	Expand the Sustainable Homes Rochester clean heating and cooling campaign model to develop a targeted outreach campaign, technical assistance programs, and incentives that help homeowners of various income levels understand the benefits and financing opportunities available to support energy efficiency and renewable energy improvements in their homes.	**City**, RG&E, NYS, RENEW, Housing Organizations, Community Groups/Funders, Homeowners
	CC-3c	Develop a targeted outreach campaign, technical assistance programs, and incentives that help renters and landlords – particularly for low-moderate income tenants and the landlords who rent to them – to understand the benefits and financing opportunities available to support energy efficiency and renewable energy improvements in their units.	**City,** Housing Organizations, NYS, RG&E, Community Groups/Funders
	CC-3d	Develop a targeted outreach campaign, technical assistance programs, and incentives to help various commercial/institutional groups – such as businesses, schools, hospitals, churches, universities, etc. – understand the benefits and financing opportunities available to support energy efficiency and renewable energy improvements for their properties.	**City**, RG&E, NYS, Community Groups/Funders
	CC-3e	Create a Voluntary Commercial Building Energy Benchmarking and Disclosure program, to encourage competition between businesses to conserve energy.	**City**, Business Community, Community Groups/Funders

Notes:

1. Partners listed in bold are recommended to lead the implementation of that strategy.
2. For a list of partner acronyms see Appendix A.

GOAL		STRATEGIES	PARTNERS
CC-3 **Work with property owners and community development partners to improve building energy performance and sustainability.**	CC-3f	Increase support for the adoption of rooftop solar installations. Target financial support to homeowners, renters/ landlords, and business property owners in underserved communities.	**City,** Renewable Energy Developers, NYS, US Dept. of Energy, Community Groups/Funders
	CC-3g	Promote the distribution and use of sustainable development resources, including the *City of Rochester Sustainable Development Guide* and the *City of Rochester Green Infrastructure Retrofit Manual*, by local developers and infrastructure project leads.	**City,** Developers, Community Groups/Funders, Building/Property Owners
	CC-3h	Encourage installation of landscaping (including planting trees), electric vehicle charging stations, bicycle parking, bikeshare, carshare, and emerging transportation alternatives on private property and in new development.	**City,** Developers
CC-4 **Develop broad outreach campaigns and community programs that educate people and support them living more sustainable lives.**	CC-4a	Develop targeted education and community engagement campaigns on specific issues related to the personal and community benefits of environmental sustainability: — Recycling and waste reduction, including universal wastes and electronics. — Energy and water conversation — Beneficial electrification/fuel-switching — Benefits and options for walking, biking, transit and other transportation alternatives — Availability of tax credits and benefits of electric or other low-emission vehicles — Anti-idling education	**City,** Monroe County, RG&E, Community Groups/Funders
	CC-4b	Continue to support beneficial electrification through education, incentives, upgrading City facilities, and incorporating it into a Requests for Proposals scoring process.	**City,** Monroe County, Community Groups/Funders, Business Community