



CITY OF ROCKVILLE



CLIMATE ACTION PLAN



Approved by Rockville
Mayor and Council
January 10, 2022

City of Rockville Climate Action Plan Acknowledgements

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This action plan was prepared by the City of Rockville Department of Public Works, Environmental Management Division. Internal assistance was provided by the Public Information Office, the Department of Housing and Community Development, the Department of Planning and Development Services, the Recreation and Parks Department, Human Resources, Procurement, Police, Information Technology, and Finance. The Environment Commission and committees provides ongoing leadership on plan development. The Planning Commission, Rockville Pedestrian Advocacy Committee, Rockville Bicycle Advisory Committee, Traffic and Transportation Commission, Human Services Advisory Commission, Human Rights Commission, Recreation and Park Advisory Board, Rockville Chamber of Commerce and the Lincoln Park Civic Association also provided key input. Special thanks to Montgomery County, the Washington Metropolitan Council of Governments, and Cadmus for their technical contributions to this action plan.

I. Mayor and Council Resolution

Resolution 01-22 approved by Mayor and City Council January 10, 2022

A RESOLUTION to approve a Climate Action Plan to equitably reduce greenhouse gas emissions and strengthen resiliency and develop a framework to oversee and monitor progress.

WHEREAS, the United Nations Intergovernmental Panel on Climate Change found that human activity has unequivocally warmed the planet, largely from burning fossil fuels (coal, petroleum, methane), which, if continued unabated, will cause increasingly dire risks of harm to life and safety, the environment, infrastructure, and quality of life of communities; and

WHEREAS, climate change poses serious impacts around the world – more intense heat waves, droughts, coastal storms and heavy downpours – and some effects are already being felt in the City of Rockville and Montgomery County in the form of hotter summers, inland flooding, increased threats from wind and storms and the potential for compounding effects; and

WHEREAS, scientists, policymakers, business leaders, public health experts and economists recognize that immediate, bold actions will reduce the long-term risks from climate change; and

WHEREAS cities across the nation, recognizing the gravity of climate change, are taking leadership roles to reduce greenhouse gas emissions and increase energy efficiency, renewable energy, sustainable transportation, foster a regenerative economy, and prepare to adapt to the adverse impacts of climate change to protect infrastructure, the environment, and communities, especially the most vulnerable; and

WHEREAS, Maryland's 2030 Greenhouse Gas Reduction Act Plan outlines measures to achieve a goal of 50% reductions by 2030, recognizing that developed nations will need to reduce emissions to net zero as early as 2045, and calls for the state to ensure that equity and environmental justice are key principles of climate policies moving forward; and,

WHEREAS, the Metropolitan Washington Council of Governments completes greenhouse gas community-scale inventories for all 24 local government members and published the Metropolitan Washington 2030 Climate and Energy Action Plan that establishes priority collaborative actions for area governments and partners to work on together over the next ten years to move the region towards meeting regional climate mitigation and resiliency goals; and

WHEREAS, the Mayor and Council previously signed on to the U.S. Mayors' Climate Protection Agreement (2006), joined the International Council for Local Environmental Initiatives (ICLEI) (2007), approved the Strategy for a Sustainable Rockville (2007), joined the Sustainable Maryland Certified Program (2012) and recertified in 2015, 2018 and 2021, joined Maryland Smart Energy Communities and established an energy efficiency and a renewable energy goal for municipal facilities and operations (2013), established climate change as a Mayor and Council priority (2016-present); signed the "We Are Still In" pledge to support the goals of the Paris Climate Agreement and resolved to develop a climate action plan (2017); and

WHEREAS, Rockville's greenhouse gas emissions have already reduced 20% since 2005, but more action is needed to achieve 50% by 2030, with about 99% of emissions derived from the community and 1% from City operations; and

WHEREAS, Rockville's Comprehensive Plan, adopted August 4, 2021, recommends the creation of a Climate Action Plan as well as progressive policies to guide the city's growth, development, and quality of life over the next twenty years, including in the areas of land use, transportation, housing, recreation and parks, and the environment; and

WHEREAS, the climate change impacts in Rockville will be most acutely felt by children, seniors, low income populations, people with disabilities, non-native English speakers, residents with unstable economic or housing situations, and racial and ethnic minorities; and

WHEREAS, through resolution 10-21, recognizing the pivotal role of governmental institutions in addressing systemic racism, the Mayor and Council committed to applying a pro-active racial and ethnic equity lens to decision-making and to policies, practices and programs, and the Climate Action Plan falls under this purview; and

WHEREAS, Rockville engaged with community stakeholders to identify a list of municipal and community actions that are tailored to Rockville, that leverage partnerships and opportunities when possible, and are flexible to allow the City to take advantage of new technology or funding opportunities as they arise;

NOW, THEREFORE, THE MAYOR AND COUNCIL OF ROCKVILLE, DO HEREBY PROCLAIM:

1. The City of Rockville approves the Climate Action Plan to equitably reduce greenhouse gas emissions and strengthen resiliency and development a framework to oversee and monitor progress.
2. All City departments will coordinate to implement actions to achieve the following goals:
 - a. Reduce GHG emissions from the community and municipal government operations at least 50 percent below 2005 levels by 2030 to be on track to reach net zero by or before 2050;
 - b. Improve the capacity of our community, homes, businesses, and natural environment to prevent, withstand, respond to, and recover from climate change impacts such as rising temperatures, more frequent and intense heat waves, drought, heavy rainfall and severe storms; and
 - c. Incorporate equity in implementation and conduct inclusive engagement to reduce environmental disparities and protect and empower vulnerable communities.
3. Plan implementation will involve strategic City leadership and new or expanded investment in clean energy technologies, capital improvements, programs and services, policies and ordinances, and staff capacity (new positions, adjusted positions, and expanded expertise).
4. The Director of Public Works will work with the Environment Commission, Traffic and Transportation Commission, Rockville Bicycle Advisory Committee, Rockville Pedestrian Advocacy Committee, Planning Commission, Human Services Advisory Commission, Human Rights Commission, and Recreation and Park Advisory Board to support Climate Action Plan community engagement and implementation.
5. The Director of Public Works will work with all departments to develop an approach to measure and track progress, which may include annual budget metrics and periodic progress updates, in order to allow the Mayor and Council to gauge plan performance.
6. This resolution shall take effect immediately upon its adoption.

II. Executive Summary

Rockville's first Climate Action Plan (CAP) provides overall priority strategies to equitably reduce greenhouse gas (GHG) emissions and prepare the community to adapt to a changing climate. These actions are needed to set the City on a path to meet at least 50% emissions reductions (from 2005) by 2030, approach carbon neutrality by 2050, and protect the community from climate-related effects. Actions are also designed to highlight City leadership and promote established community values. Many actions provide multiple benefits in the areas of environmental quality, economic vitality, safety, health, and equity. Implementing the plan will involve many City programs and departments. The plan intends to leverage existing partnerships and resources where possible, but many actions require additional staff and funding to be implemented. To help offset costs, the plan will remain flexible to enable the City to take advantage of new opportunities as they arise. Investing in Rockville's clean energy future and climate resilient future will provide benefits for generations to come.

Rockville's Climate Commitments and Progress

Rockville joined many other governments and organizations around the world in supporting the goals of the Paris Climate Agreement. This plan will help facilitate the City's progress. Although this is the City's first Climate Action Plan, many projects, programs, and policies have been implemented over the past decade and more are in the works. The City has robust green building codes, bicycle and pedestrian infrastructure, and many environmental incentive and volunteer programs. The Rockville community has been excelling in clean energy with over 750 solar installations, 87 million kilowatt-hours of green power purchased, and over 2,000 electric vehicles registered in the City. City facilities have made incremental progress, with one renewable energy installation at Thomas Farm Community Center (geothermal), one electric and one hybrid fleet vehicle, and energy efficiency upgrades at nine facilities. Further, Rockville purchases renewable energy credits for 100% of municipal electricity use. All these accomplishments are significant, yet to reach at least 50% reduction by 2030, more actions are needed. This plan helps provide a framework.

How the Plan Was Developed

The Climate Action Plan development process included a background and process presentation to the Mayor and Council and several boards and commissions in 2020, and public engagement consisting of two surveys and public comment with over 600 responses and 20 virtual events in 2021. Feedback reflected strong overall support for this initiative and many thoughtful comments. A consultant conducted a climate projections analysis and cost-benefit analysis for select measures. Additional climate resilience and equity data was compiled. This input and analysis were incorporated in the initial Draft Climate Action Plan. Staff from multiple departments were invited to provide feedback on the draft plan to shape actions and implementation. Additional public comment and Mayor and Council instruction further refined the plan which was adopted in January 2022. Implementation will occur through 2030 as the actions are provided the necessary resources.

Rockville Greenhouse Gas Emissions

Rockville's community greenhouse gas inventory illustrates the global-warming gases produced by activities within the city limits as well as emissions resulting from electricity use within the jurisdiction. The inventory does not include emissions from purchased goods that are manufactured outside the City due to data limitations. Rockville's total emissions fell by more than 20% since 2005 due to more efficient buildings and electric generation switching from coal to natural gas and renewable energy sources. Over 58% of emissions are generated from buildings, 36% from transportation, and the remainder from other fugitive

sources. Municipal emissions generate about 1% of the total emissions, from the energy used by City facilities, water and wastewater services, fleets, and street and traffic lights.

Greenhouse Gas Reduction Goals

Rockville's greenhouse gas reduction goal aspires to exceed the State of Maryland and the Council of Governments' goal of a 50% greenhouse gas reduction below 2005 levels by 2030. This will position the City to strive to become carbon neutral towards mid-century as recommended by international scientists and policy analysts at the United Nations in line with Paris Agreement goals. Additionally, Montgomery County is working toward a more ambitious goal and the City can leverage partnerships to further advance the long-term goal of carbon neutrality.

Greenhouse Gas Reduction Pathway

With the assistance of a technical consultant, Cadmus, the City defined a potential pathway to achieving a 50% emissions reduction from 2005 baseline by 2030 – an emissions reduction of about 300,000 metric tons carbon dioxide equivalent – and identified levels of implementation needed from each sector.

Rockville's emission reduction potential in the short term is mainly associated with a few of the most impactful actions, such as a cleaner grid, solar electricity generation, cleaner cars, energy efficiency and Federal hydrofluorocarbon (HFC¹) and methane reduction measures. Two-thirds of the reductions rely on cleaning the electricity grid through more ambitious Maryland Renewable Portfolio Standards and account holders purchasing renewable energy through an electricity provider. Rockville has at least some advocacy influence over these areas. Other beneficial actions include land use policy in the Comprehensive Plan, transportation, bicycle, and pedestrian improvements, planting trees, encouraging and incentivizing residential and commercial energy upgrades and solar systems, reducing waste, encouraging and facilitating electric vehicle adoption, and upgrading Rockville's own fleet, facilities, and streetlights. The table below summarizes the emissions reduction action levels and their percent contribution towards the 2030 goal.

Strategy	Percent contribution to 2030 goal
Increasing the Renewable Portfolio Standard to 50% renewable	41%
Additional community green power purchases (27%)	27%
Commercial energy upgrades (400 retrofits)	8%
Increasing federal HFC reductions	7%
Electric vehicle conversions (2,000 vehicles)	7%
Additional solar installations (1,800 installations)	5%
Residential energy upgrades (4,000 retrofits)	2%
Land use and transportation (2,000 new households near transit)	2%
Municipal actions (13 facility upgrades, 50 fleet EV conversions, 2,500 streetlights, and solar installations)	1%
Tree and forest management (3,000 trees planted)	0.1%
Waste reduction (180 tons)	0.02%

¹ Hydrofluorocarbons (HFCs) are a powerful greenhouse gas emitted incidentally ('fugitive emissions') through use of certain refrigerants.

Climate Impacts, Resilience, and Equity

Changes in climate and weather patterns are already occurring globally and in Rockville. These effects have potential infrastructure, ecosystems, and health and equity implications. Reducing greenhouse gas emissions heads off the worst climate change impacts in the long-term, but some effects are inevitable in the short term. Maryland communities are already experiencing more frequent flooding, severe storm damage, and health effects from increased temperatures, poor air quality, and shifts in vector-borne diseases that pose economic, health and environmental challenges. Assessing these impacts helps the City better prepare, adapt, and recover from both everyday changes and extreme events.

Climate projections typically include two future scenarios, one for high global greenhouse gas emissions and one for low emissions which provide a sense of the difference that reducing emissions can make. An evaluation of studies found the following are the most prominent direct climate changes of concern in the region near Rockville. Ranges shown reflect the modeled low emissions to high emissions projections.

Rising temperatures

- The number of days per summer with a heat index over 95°F is projected to double in coming decades and could triple to a range of 77 to 106 days each summer by 2100.
- The average number and length of heat waves could double.

Concentrated precipitation

- Historical data shows that the amount of precipitation falling in the heaviest 1% of events has increased 71% in about the last 50 years.
- Today's 100-year 24-hour rain event (8 inches) could contain 10 to 16 inches of precipitation by the end of the century.

Drought

- Moderate to severe water supply shortages are expected during severe droughts due to climate changes and increased demand by 2050 unless water supply enhancements, including the Travilah Quarry, are developed.

Wind and storm events

- Generally, with a warmer atmosphere fueling storms and holding more moisture, the number and severity of extreme weather events is projected to increase (e.g., more concentrated rainfall events, high winds, hurricanes, nor'easters, hail, tornados, thunderstorms, ice storms, and other storm-related conditions).

Sea level rise

- Although not a direct impact to Rockville, sea level could increase by 1.5 to 6.5 feet or more by 2100, which is an additional concern in Maryland and the broader DC metro region of which Rockville is a part.

Vulnerability Assessment for Buildings, Infrastructure, City Services, Ecosystems, and Health

Rockville compiled climate data and analyzed local and national studies, including Montgomery County's Climate Action Plan, to build local knowledge of what climate change means for our community and to identify potential gaps in preparedness.

Buildings, infrastructure, and City services are already observing the impacts of extreme precipitation. Buildings, the power grid, transportation systems, water treatment, and stormwater facilities are expected to be increasingly stressed by summer heat, local inland drainage flooding and stream flooding, debris from storms, energy costs from increased cooling needs, moisture, and drainage problems near buildings. Many planning assumptions rely on historic weather data which is no longer a prediction for the future. For example, stormwater facilities are designed using historic rainfall patterns. Current FEMA floodplains do not include future flood risk. Further, FEMA's studies do not evaluate inland drainage or smaller stream flooding risks. Outdoor parks and recreation programs and services may also need to adjust operations for higher temperatures and extended heat waves. Rockville will need to continue to work with community partners to evaluate climate impacts, prepare for hazards and continuity of operations, and protect critical infrastructure, stormwater and drainage infrastructure, and utilities. Monitoring supply chain and other beyond-the-boundary disruptions will be part of ensuring the region's overall preparedness.

Ecosystems and the environment are affected by climate change-worsened stressors in the form of increased heat, pests, storms, and wind. These changes affect forests, streams, and urban trees. Ecosystem health and biodiversity is important not only for economic, recreational, stress-relieving benefits, but also for its role in buffering weather and development impacts in urban, suburban, and rural areas. Trees and vegetation provide shade to reduce heat impacts, absorb carbon dioxide, filter water and air pollutants, buffer the wind, and reduce cooling bills for nearby properties. However, urban parks need to be managed to increase their value to the City. A holistic strategy to protect the health of natural assets can increase resilience for all species residing in Rockville.

Climate change has many implications for public health. It is expected to increase the frequency of heat related illnesses and injuries, including heat exhaustion and heat stroke, respiratory illness, and cardiovascular illness which are worsened by heat waves, reduced air quality, and increased allergens including weeds and mold. Vector-borne diseases and foodborne illness are also expected to increase in occurrence. Any public health impacts will likely disproportionately affect more vulnerable community members including the elderly, children, people with disabilities or pre-existing conditions, outdoor workers, and low-income households. Outdoor workers must be protected from weather hazards and employers and human resources need proper training, planning, and preparedness to ensure worker safety in extreme heat. As heat waves intensify and persist, training is needed to identify prevention strategies and warning signs for heat illness and other associated heat-related health issues. The City can ensure adequate emergency services and mitigation measures are in place such as improving access to affordable air conditioning, increasing shading, ensuring adequate access to cooling centers to help protect the community from the impacts extreme heat and other health-related impacts.

Social Vulnerability and Racial Equity

Climate change affects everyone but tends to have outsized impacts on some of the same communities that have suffered disproportionate health and economic impacts from the COVID-19 pandemic – low-income groups, communities of color, the elderly, and people with disabilities. Racial inequities that have been instituted, wittingly or not, across a broad range of national and local policies have caused health, income, education, wealth, and food access disparities and left many Rockville residents particularly more vulnerable to climate change. Although some historic disparities have improved over time, others have only worsened due to increased income inequality and the pandemic. Other cultural differences (such as immigration status, LGBTQIA identity, language) can cause barriers to health and access to services. Although vulnerable populations are dispersed throughout the City, neighborhoods to the south and east are particularly vulnerable. The City must work with its partners to prepare to assist vulnerable

populations, especially in extreme events and emergencies. Incorporating these equity considerations is an important part of the plan.

Strategies that seek to bolster infrastructure performance, support ecosystem services, improve operations, protect the health of employees and residents alike, and provide adequate emergency management services are critical to increasing Rockville's resilience to climate change.

Rockville Climate Actions

Rockville utilized best practices, consultant's projections, and community values to develop a suite of 42 climate actions. These actions address the main GHG sources identified in the community inventory, strengthen community resiliency, promote equity, and guide CAP public involvement and oversight. Some actions are low or no cost, but several require additional City investments in funding and staff resources for implementation. Once established, the plan will require ongoing resources for implementation. While the City is working with regional partners on several actions, the following highlights some of the main climate actions, by name and Action ID (C=community action; M=municipal action), that require City leadership, investment and oversight to create or expand programs, projects or plans to support greenhouse gas reduction, resiliency, and equity goals.

Energy Efficiency

- Expand the low and moderate income (LMI) home repair and weatherization program to increase energy efficiency, resiliency, and renewable energy opportunities (C-02)
- Expand the home energy efficiency outreach program to increase participation in utility energy audits and rebates (C-05)
- Complete energy assessments of City facilities and develop a strategic plan to reduce facility energy consumption (M-01)
- Convert City-owned streetlights to energy efficient LED (light-emitting diode) (CIP TA22) (M-02)

Renewable Energy

- Promote private solar and geothermal installations through the solar co-op program, streamlined permitting, and expanding access to low-to-moderate income residents (C-09)
- Identify and install feasible solar photovoltaic systems on City property (M-04)

Transportation

- Develop a Rockville Community Electric Vehicle Readiness Plan (C-11)
- Promote a regional electric vehicle purchasing cooperative (C-13)
- Expand active transportation and shared micro-mobility network by implementing improvements in the Bicycle Master Plan and Vision Zero Plan (C-14)
- Adopt and implement a Pedestrian Master Plan (C-15)
- Convert the City fleet to cleaner and more efficient fuel sources (M-06)
- Establish a new Capital Improvement Project to expand electric vehicle charging infrastructure on City property to serve employees, fleet and the community (M-07)

Land Management

- Implement the Comprehensive Plan to steer the densest development/redevelopment to mixed-use, transit served locations, reduce VMT and emissions, and conserve/restore environmental areas (C-16)

- Expand education and incentives to support tree planting and maintenance, environmentally friendly landscape conversions, and management of non-native invasive plants on private property (C-17)
- Develop a Green Space Management Plan for public lands to assess and restore trees, forests, meadows, stream valleys and wetlands (M-09)

Materials and Waste

- Develop a food waste compost drop-off program for residents (C-18)
- Expand residential recycling and waste reduction outreach program to increase compliance and waste diversion (C-19)
- Develop a City Sustainable Procurement Policy (M-10)

Resiliency

- Incorporate climate resilient building and infrastructure design features in new buildings and retrofits (C-20)
- Work with Montgomery County and state agencies to provide cooling centers, resilience hubs, and other services to strengthen community resiliency (C-22)
- Increase tree planting, green, cool and photovoltaic roofs, and cool pavements on public and private property (C-24)
- Continue to assess the vulnerability of Rockville critical infrastructure, facilities, and services and prioritize improvements, including updates to the City's Emergency Operations Plan (EOP) and Continuity of Operations Plan (COOP) (M-11)
- Assess Rockville's risk of flooding and develop a Flood Resiliency Master Plan (M-13)
- Develop and implement Heat Illness Prevention Plans for various City services and operations (M-14)

Public Education and Oversight

- Work with community partners to conduct an inclusive public engagement campaign to reduce emissions and adapt to climate change (C-25)
- Develop metrics and performance indicators for climate actions to establish a data-driven assessment and reporting process (C-26)
- Incorporate climate mitigation, resiliency, and equity considerations into the City's budget prioritization process (M-15)
- Develop an interdepartmental climate action team to implement and track plan progress (M-16)

Plan Implementation

Implementation requires fostering community engagement, multidepartment coordination, a budget process that appropriates necessary resources, metrics to monitor and communicate progress, and a system for plan oversight, reassessment and updates to meet continually evolving conditions. This plan was preceded by the City's active sustainability program. The plan builds upon many of the projects and activities that are already underway, which will continue in tandem with plan finalization. The actions listed are a starting point to set in motion the programs, plans, and projects that reduce emissions and foster resilience. This plan is meant to be flexible to take advantage of new technologies and other opportunities as they arise. Many actions are under the City's authority yet achieving this goal will require everyone's involvement. Additional actions at the federal, state, and county level should be leveraged to support the plan's successful implementation.