DRAFT

City of Manassas Climate Action Plan

Local Actions and Policies to Improve Air Quality and Reduce Greenhouse Gas Emissions in the City of Manassas

Approved by

[Local Authority]

[Reference to Public Record]

[Reference to Further Information]

Produced by

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Credits and Acknowledgments

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Executive Summary

In 2020, Manassas City (City) adopted the 2040 Manassas Comprehensive Plan. This plan identifies the City's goals, objectives, and strategies of a shared vision for the future. Today, the plan serves as a tool for the City to guide its residents and officials in planning for land use, housing, economic development, transportation, and environmental sustainability.

On environmental sustainability, the plan's goal is to achieve a sustainable and resilient city that values the environment, encourages access to nature, and provides a safe, pleasant, and healthy community for residents of all ages, abilities, and incomes. The plan lists several objectives and strategies to achieve its environmental sustainability goal, including an air quality and emissions objective that seeks to create a more safe and secure future by encouraging the reduction of fossil fuel consumption and emissions that are harmful to human health and the environment.

To meet the plan's environmental sustainability goal of improved air quality and emissions, the City embarked upon creating a sustainability plan. This Climate Action Plan (CAP) is the first phase of the sustainability plan and it expands upon the vision in the Comprehensive Plan by establishing specific goals for air quality and emissions, modeling historic and projected emissions, and identifying specific actions, policies, and strategies.

This CAP was developed with input from a community-based task force and led by George Mason University and City staff. The task force met on four occasions from September 2022 to April 2023. The purpose of these meetings was to educate and inform the task force about the City's emissions and potential strategies, actions, and policies and seek consensus on recommendations for the City to meet air quality and emissions goals.

This CAP adopts the regional goal of greenhouse gas emissions reductions established by the Metropolitan Washington Council of Governments in its 2030 Climate and Energy Action Plan (published in 2020), which calls for 50 percent greenhouse gas emission reductions from 2005 levels by 2030 and 80% reduction by 2050. The results of modeling the City's greenhouse gas emissions found that, in 2005, the City emitted 632,203 million metric tons of carbon dioxide equivalent (MTCO2eq). The target goal is to emit no more than 316,812 MTCO2eq by 2030, which represents a 50 percent reduction from the 2005 baseline.

The task force identified 14 air quality and emission targets and approximately 30 specific actions that City should take to meet its environmental sustainability goals identified in the Comprehensive Plan. The goals and actions represent strategies, policies, and actions across several air quality and emission categories, including clean electricity, zero energy buildings, zero emission vehicles, travel behavior, sequestration, and zero waste. The task force goals and action recommendations were evaluated for emission reduction effectiveness, feasibility of implementation, cost effectiveness, health and equity benefits, and other co-benefits.

In phase II, the City will also embark upon a similar process to address risk hazards that are associated with changes in our climate, also referred to as adaptation. This effort will likely resemble the process of this plan in terms of modeling and stakeholder engagement and will be issued in the future.

Introduction

The goal of improved air quality and reduced emissions presents a human and environmental opportunity to improve our lives, as well as to enhance our economic health in the form of more jobs, increased property values, improved quality of life, and promotion of sustainable business entrepreneurship. Numerous studies on the impacts of elevated greenhouse gas emissions have found that the consequences to our lives include extreme heat and drought, flash flooding, more intense storms, sea level rise, and increased vector-borne diseases. These events have an economic and personal toll on lives. Yet, these events also present opportunities to create a healthier, safer, and higher quality of life. The City has a unique opportunity to make changes in ways that create jobs and benefit all residents. Action is required at all levels, and local governments have an important role to play in building low-carbon communities.

When discussing air quality and emissions, specifically greenhouse gases such as carbon dioxide and methane in the atmosphere, it is important to note that this result is primarily from burning fossil fuels and land use changes. Scientific studies have confirmed that human activities have unequivocally caused an increase in carbon emissions.[1] The energy, industry, and transportation sectors have dominated these emissions increases. With the current trajectory of population growth, urbanization, and reliance on personal vehicles, global transportation emissions are expected to double by 2050. Given the critical impacts of these greenhouse gases emissions on humanity, the time to act to reduce these emissions is now.

With more than 80 percent of Americans living in urban areas, cities play a powerful role in addressing air quality and emissions. The design of cities—how we use our land, how we design our buildings, how we get around—greatly impacts the amount of energy we use and the volume of greenhouse gases emissions we produce. In the next 20 years, another 1.5 billion residents will enter the world's cities. It is critical that cities like Manassas demonstrate that it is possible to dramatically reduce greenhouse gas emissions while creating more vibrant and prosperous places to live and do business.

Purpose, Scope, and Process Behind the Climate Action Plan

The City is joining an increasing number of local governments committed to addressing climate change at the local level. The City recognizes the risk that air quality and emissions pose to its constituents and is acting now to reduce the greenhouse gas emissions of both its government operations and the community at-large through the innovative strategies, policies, and actions laid out in this CAP. Furthermore, it is recognized that the City will need to address existing risk hazards such as flash flooding and extreme heat and adapt its systems and infrastructure to new conditions in Phase II. Ultimately, local action is needed to reduce the City's contribution toward the problem and adapt to its current and future effects. This CAP takes advantage of common-sense approaches and cutting-edge policies that our local government is uniquely positioned to implement – actions that can reduce energy use and waste, improve air quality, preserve our local landscape and history, and in many other ways benefit the City for years to come.

Purpose

By creating a clear course of action so that everyone has a role in creating and achieving air quality goals, this CAP drives and coordinates local efforts toward a reduction in greenhouse gas emissions by 50 percent below 2005 emission levels by 2030. This goal is consistent with a regional effort of our neighboring jurisdictions, under the

[1] IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

guidance of the Metropolitan Washington Council of Governments (MWCOG). The MWCOG includes over 300 elected officials from 24 local governments in Washington DC, Maryland, and Virginia, representing about 5.7 million people and one of the nation's largest economies.

The CAP is a framework for developing and implementing actions that reduce the City's greenhouse gas emissions. It provides guiding objectives and strategies to realize the City's air quality and emissions goals.

Equity and inclusion concepts and components are interwoven throughout the recommended actions. Low-income populations, communities of color, people with disabilities, elders, refugees and immigrants, and other frontline communities often bear the brunt of climate impacts without the necessary infrastructure and support systems, and without gaining any of the benefits of a clean and sustainable future. Inequity correlates with greater vulnerability to physical challenges, making many in the City disproportionately at risk from natural disasters and the impacts of climate change. Creating a resilient community means addressing the social inequities that cause disparities in health outcomes, income, educational attainment, and more.

Scope

Mitigation

This Plan includes objectives and strategies for reducing greenhouse gas emissions resulting from local government and community-wide activities within the City. It addresses the major sources of emissions in the City and sets forth specific recommended actions in seven (7) focus areas that both City government and the community can implement together to achieve greenhouse gas reductions.

- Clean Electricity
- Zero Energy Buildings
- Zero Emission Vehicles
- Travel Behavior
- Planning
- Sequestration
- Zero Waste

The Plan creates a framework to document, coordinate, measure, and adapt efforts moving forward. In addition to listing actions, the Plan discusses how each action will be implemented via timelines and assignment of responsibilities to City departments, staff, or community partners where known.

Adaptation

The City will address the topic of adaptation in the future (Phase II).

Process

In August 2021, George Mason University (GMU) contacted officials in the City about a potential pilot project involving sustainability planning for the City. This CAP represents the first phase which focuses on air quality and emission targets. Phase II will address climate risks. GMU decided to self-fund the project with funding from the Schar School of Government and Policy (Center for Energy Science and Policy). GMU selected and contracted with ICLEI – Local Governments for Sustainability USA to help guide both GMU and the City through the process. ICLEI (International Council for Local Environmental Initiatives) has over 30 years of experience working with local jurisdictions and universities in developing local sustainability plans. The planning team consisted of four City employees, two GMU adjunct professors, one GMU student, and the ICLEI team.

In September 2021, both GMU and the City began the project. Both entities signed a Memorandum of Understanding to guide the process, which was finalized in December 2021 (see Appendix A). The task force was selected and appointed by City officials and comprised of eleven (11) community members who represent relevant interest and expertise and served on the following City committees or commissions.

- Planning Commission
- Solid Waste Committee
- Utility Commission
- Manassas Business Council
- Economic Development Authority/Historic Resources Board
- Manassas Regional Airport Commission
- Beautification Committee
- Parks & Recreation Committee
- Architectural Review Board
- School Board
- Neighborhood Representative

A list of task members is available in Appendix B.

The process for developing the Plan was guided by four principles:

- Integrity: reflect science-based, practical, and achievable options.
- Collaboration: incorporate multidisciplinary expertise and promote cross-department coordination, including in areas such as equity, health, and economic development.
- Transparency: strive for full and open communication and integration of public views and comments, with particular attention on low-income and marginalized communities.
- Understanding: strive to ensure public understanding of concepts and goals and seek to educate the public.

The roles and responsibilities of each of the three teams were defined as follows:

<u>Task Force Members</u>

- Provide recommendations for the public and city leaders.
- Work collaboratively to represent the interests of the City as a whole, balancing various stakeholder points of view.
- Weigh constraints, costs, and opportunities in decisions.
- Attend all meetings and contribute to plan development.

<u>George Mason University</u>

- Conduct GHG inventory.
- Organize and implement planning meetings.
- Evaluate scenarios for various strategies, actions, and policies.
- Assist the Task Force in reaching consensus on a final plan.
- Provide background and best practices information.
- Research issues for the Task Force.
- Draft final Climate Action Plan.

<u>ICLEI</u>

- Train planning team on GHG modeling, stakeholder engagement, and plan development.
- Assist in developing planning and mitigation scenarios and customizing reduction strategies.
- Assist GMU in developing stakeholder engagement strategy, implementing and monitoring plan, and finalizing plan.

While the City has already begun to reduce greenhouse gas emissions through a variety of existing actions, this CAP is a critical component of its comprehensive approach to further reduce the City's emissions and meet regional goals. The approach used in the CAP was developed by ICLEI – Local Governments for Sustainability, USA and consists of five milestones for mitigating greenhouse gas emissions.

Mitigation/Sustainability
Milestone One: Conduct a baseline emissions inventory and forecast
Milestone Two: Adopt an emissions reduction target for the forecast year
Milestone Three: Develop a local Sustainability Plan
Milestone Four: Implement the Sustainability Plan
Milestone Five: Monitor progress and report results

Figure 1: (a) Five Milestones for Climate Mitigation (left) (b) Five Milestones for Climate Adaptation (right)

Vision Statements and Objectives

The 2040 Comprehensive Plan includes a chapter on Environmental Sustainability and Health, which identifies the following goal:

> **Manassas will be a sustainable and resilient city that values the environment, encourages access to nature, and provides a safe, pleasant, and healthy community for residents of all ages, abilities, and incomes.**

To support this goal of Environmental Sustainability and Health, the plan lists seven (7) strategies but only 1 relates to this CAP, as follows:

- #5: Create a more safe and secure future by encouraging the reduction of fossil fuel consumption and emissions that are harmful to human health and the environment.

The strategy for creating "a more safe and secure future by encouraging the reduction of fossil fuel consumption and emissions that are harmful to human health and the environment" includes the following sub-objectives:

5(a): Encourage new development to design, construct, and operate with a reduced emissions footprint by encouraging high performance, green buildings, green sites, and green neighborhood standards and practices, such as the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification program, Earthcraft, Energy Star, or other similar systems.

5(b): Create policy and financial incentives to encourage increased building and site performance that reduces greenhouse gas emissions and the City's overall carbon footprint.

5(c): Promote compact block and street networks and a built environment that facilitates walking, biking, and bus riding to provide alternatives to the use of single occupancy vehicles and reduce greenhouse gas emissions.

5(d): Encourage the use of renewable energy by reducing regulatory barriers and providing resources for the installation of solar and geothermal equipment.

5(e): Reduce vehicle-related emissions through increased fuel efficiency, reduced vehicle miles traveled, fleet downsizing, anti-idling efforts, and use of alternative fuel sources.

5(f): Support the use of energy efficient transportation by encouraging the siting of, and promoting the availability of, electric vehicle charging stations and expanding the availability of bicycle facilities throughout the City.

5(g): Encourage citywide waste prevention, recycling, and composting to reduce greenhouse gas emissions by expanding education and outreach programs, encouraging the purchase and use of recycled products, and requiring recycling plans for commercial and multifamily residential projects.

Greenhouse Gas Inventory Development

For a full report on the City's greenhouse gases emissions (GHG) inventory, see the following report.

Conducting a GHG inventory is important because it provides the task force with a means to understand, in quantitative metrics, where to focus its strategies, actions, and policies. Further, a GHG inventory provides a pathway to assist in most effectively meeting the CAP's goals. GMU used ICLEI's ClearPath tool to complete the GHG inventory. ClearPath uses the internationally accepted Global Protocol for Community-Scale Greenhouse Gas Emission Inventories for translating municipal data into carbon dioxide equivalent emissions.

Two GHG inventories were evaluated for the Plan: (1) the Community Inventory conducted by the Metropolitan Washington Council of Governments (MWCOG) and (2) the Local Government Operations conducted by GMU. Where the CAP refers to GHG inventory emissions, it includes both Community and Local Government GHGs which encompasses modeling work conducted by MWCOG and GMU, thus it is referred to as "Community-Wide."

If the City follows past trends and makes no changes in policies from now until 2030 ("business as usual" scenario), the City is projected to emit 511,812 MTCO2eq in 2030 (see Figure 1). The major contributors include commercial energy and transportation and mobile sources (green and yellow bands below).

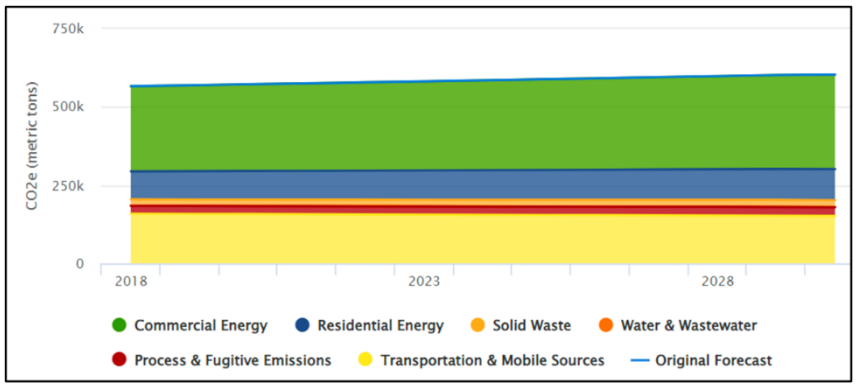


Fig. 1: Business as Usual Case Scenario of Manassas City Community GHG Emissions Forecast, 2018-2030 (MWCOG; GMU)

The GHG emissions inventory "business as usual" scenario arrived at this estimate based on the following assumptions:

- No change in energy use for buildings, streetlights and traffic signals, and electric power production (changes in business-as-usual energy usage for these would only be expected if additional facilities are constructed).
- Community population growth applied to water utility energy use, fleet vehicles, fuel used by airplanes at the Manassas airport, employee commute, and government solid waste generation. These services are assumed to scale with population growth.

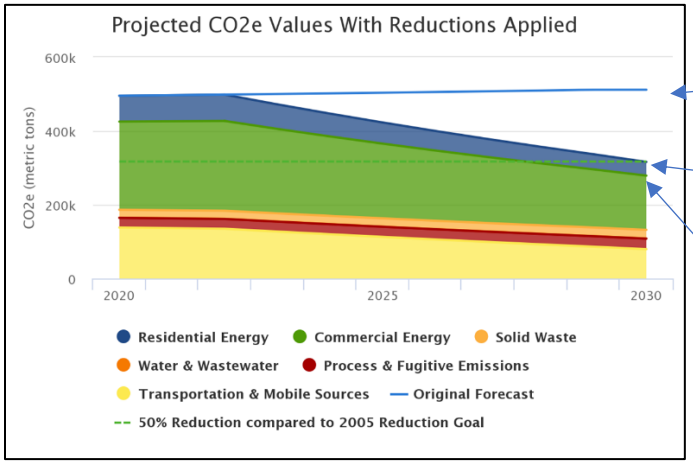
- No change to electricity emissions factors, consistent with the community forecast.
- Vehicle fuel efficiency CAFE standards were applied to on road gasoline fleet vehicles and to employee commute. No change in carbon intensity was applied to diesel fleet vehicles and off-road equipment.

The year 2005 is the baseline for the goal of 50% by 2030 (compared to 2005). However, 2020 is the baseline for the modeling assessment. Typically, a 2005 baseline year is common because it was a year marked by high emissions; however, the City has more recent emissions data that can be used to assess its emissions since 2005. The most recent data on the City's GHG emissions, from 2020, found that the City emitted 495,719 MTCO2eq, a decrease of over 20 percent from 2005 levels. Consequently, the City would project emissions reductions from this lower baseline (see Figure 2).

Sector	2005	2020	2030 Business as Usual	2030 Planning Scenario
Commercial Energy	283,700	239,012	• Population Growth 0.9% annually through 2030 • Carbon Intensity of the Grid remains unchanged thru 2030 • NHTSA's Corporate Average Fuel Economy (CAFE)	146,983
Process & Fugitive Emissions	16,300	26,147		28,485
Residential Energy	122,687	70,160		37,175
Solid Waste	17,811	21,654		16,821
Transportation & Mobile Sources	191,400	138,384		79,712
Water & Wastewater + AFOLU	305	248 + 114		271
MTCO2eq (Total)	**632,203**	**495,719**	**511.812**	**309,447**

Fig. 2 Community wide GHG Emissions Forecast w/ Planning Scenario (2020 baseline). Note AFOLU is Agriculture, Forestry and Other Land Use

As mentioned above, the CAP goal is to achieve a 50 percent reduction from 2005 levels, by 2030. Therefore, the target emission reduction is at least 316,102 MTCO2eq by 2030 (632,203/2=316,102). The CAP recommends strategies and actions that will meet this goal (see Figure 3).



Business as Usual Case Scenario, 511,812 $MTCO_{2eq}$

Dashed blue line represents 50% target relative to 2005, 316,102 $MTCO_{2eq}$

Proposed strategies (explained in next section) results in emissions of 309,477 MTCO2eq by 2030

Fig 3. Community wide GHG Emissions Planning Scenario (2020)

Task Force Recommendations

The task force reviewed and approved the following reduction targets for the CAP The total emissions from these goals equal 196,248 MTCO2eq, which exceeds the 50 percent emission reduction goal of 316,102 MTCO2eq by 6,626 MTCO2eq.

Goals	Total $MTCO_2eq$ Reduced	Rationale
Electric emissions intensity reduction 8%/yr - residential	24,749	Manassas Electric Util. Co. can aggressively employ grid carbon intensity reductions (2018-2020 reductions average 8%)
Electric emissions intensity reduction 8%/yr - commercial	92,170	Manassas Electric Util. Co. can aggressively employ grid carbon intensity reductions (2018-2020 reductions average 8%)
Heat pumps - residential - 5% of housing units per year	7,020	Federal incentives encourage retrofitting Avg. lifespan of HVAC 10-15 years [45% of all housing units will convert to heat pumps between 2023-2030]
Heat pumps - commercial - 5% of floor area per year	12,008	Federal incentives encourage retrofitting Avg. lifespan of HVAC 10-15 years
VMT reduction 2%/year (16% in 2030) per capita - diesel (freight vehicles)	2,413	By 2030, expanding the rate of telework to 20 percent and implementing other TDM strategies, such as pricing commuter parking regionwide and ensuring a majority of employees receive monthly transit benefits, could reduce VMT by 6 percent and SOV trips by 20 percent.
VMT reduction 2%/year (16% in 2030) per capita - gasoline (passenger vehicles)	22,634	
EV - 15% of gasoline vehicles in 2030	19966	Pre-IRA estimates for total EV's on road was 8-10%. With estimates of 50% new car sales to be EV by 2030, that # could approach 15%
Solid waste - 3%/year reduction in waste sent to landfill (24% over 8 years)	4833	Can include increased food and/or green waste composting
Solar PV - commercial 2MW/year	4,252	Equates to 20 commercial bldgs./year, 100-kw each. 373 commercial establishments currently → 160 commercial business will convert by 2030
Solar PV - residential - 500kW/year	1,061	Equates to (50 houses/yr, 10kw each)
Low Income Weatherization Program	1,739	500 Homes per year
Energy Efficiency Education and Assisted Energy Audits	3,355	Assumes 1000 households participating Savings of 619 Kwh per home per year and 56 Therms
Convert Streetlights to LED	124	900 public streetlights left to be converted
Retrofitting of Public Buildings	48	10,000 sq. ft per year of 100.000 sq. ft.

The task force reviewed and approved the following actions to meet these targets. Action items marked with an asterisk (*) are modeled in the community wide GHG inventory.

CATEGORY CLEAN ELECTRICITY

STRATEGY: Reduce intensity of electric grid emissions		
Action	Time Frame	Responsible Government Office
• *City will adopt a target and secure commitments to **reduce electric grid emissions** by at least 8% per year for residential and 8% per year for commercial.	Medium-Term: by 2030 (Virginia Clean Economy Act requires 40% renewables by 2030, and 100% renewables by 2045, thus this goal gradually begins this process).	TBD

CATEGORY: ZERO ENERGY BUILDINGS

STRATEGY: Deploy renewable energy and energy efficient technologies		
Action	Time Frame	Responsible Government Office
• *City will inform and educate population about costs, benefits, and programs for installing **heat pumps** with deployment target of 5% of residential housing units and 5% of commercial floor area. This will include outreach to local energy installers and a permit fee waiver or reduction.	Medium-Term: by 2030 (The Inflation Reduction Act includes tax credits and rebates that can cover up to 100% of the costs, depending on household eligibility).	TBD
• *City will inform and educate population about costs, benefits, and programs for installing **rooftop solar** with deployment target of 50 home installations and 20 commercial installations per year from 2023-2030. This will include outreach to local rooftop solar installers.	Medium-Term: by 2030 (The Inflation Reduction Act Tax provides tax credits to cover up to 30% of the installation costs).	TBD
• *City will inform and educate population about costs, benefits, and programs for low-income **weatherization** program	Medium-Term: by 2030 (The Inflation Reduction Act provides tax credits and rebates for a range of home improvements that reduce energy leakage).	TBD

with a deployment target of 500 homes per year.		
• *City will complete **streetlights conversion to LED** (light-emitting diode) lighting with a goal of 900 conversions.	Short-Term: by 2025 (This is an existing City capital project which will complete conversion to the remaining 900 lights).	TBD
• City will conduct information sessions, as well as deploy and promote an **interactive online tool,** to assist population with calculating energy savings from various energy efficiency retrofits.	Continuous	TBD
• *City will inform and educate population about costs, benefits, and programs for **energy audits and demand reduction technologies** (e.g., insulation, HVAC, water heaters) for 1000 households, and subject to appropriation, offer a subsidy for energy audits.	Continuous (The Inflation Reduction Act can cover the costs of home energy audits so that an inspector can identify the best improvement options).	TBD
• City will inform population through education and outreach on **residential geothermal energy technology**.	Continuous	TBD

CATEGORY: ZERO ENERGY BUILDINGS

STRATEGY: Increase energy efficiency and onsite renewable energy use in existing and new buildings		
Action	Time Frame	Responsible Government Office
• City will evaluate and install **solar photovoltaic systems** on 35% of City-owned buildings over medium term and 70% over long-term.	35% goal by 2030; 70% long-term goal by 2045.	TBD
• City will encourage **passive solar design** for new buildings, or alternatively, provide incentives for new	Continuous	TBD

building construction to provide this.		
• City will build market demand for **net-zero energy (green) buildings** through Master Plans, developer proffers and bids, incentives, education, demonstration projects, partnerships, and recognition.	Continuous	TBD
• City will encourage adopting **Building Energy Performance Standards** for existing commercial and multifamily buildings.	Continuous	TBD
• City will require **electric vehicle charging stations** for new building construction, or alternatively, encourage and offer incentives for new building construction to provide this.	Continuous Inclusion in DCSMs	TBD
• City will support authorization of **Commercial Property Assessed Clean Energy** (C-PACE) tool that can finance energy efficiency and renewable energy improvements on commercial property.	Continuous	TBD

CATEGORY: ZERO EMISSION VEHICLES

STRATEGY: Support use of high-efficiency vehicles and develop a community electric vehicle charging network		
Action	Time Frame	Responsible Government Office
• *Number of **electric vehicles** reaches 15% of gasoline vehicles in 2030.	15% by 2030	TBD
• City will encourage and promote the use of **electric delivery vehicles** within City limits by creating parking	Continuous	TBD

incentives (e.g., premiere parking spots).		
• City will convert its city-owned vehicles to cleaner and more efficient fuel options (e.g., electric, hybrid, plug-in hybrid) at the end of the vehicle's useful life.	Continuous	TBD
• City will create and promote incentives for installing **electric vehicle charging stations** in existing residential buildings (incl. multi-family commercial—apartments, non-garage townhomes) and commercial buildings, with focus on equitable distribution of charging stations.	Continuous Requirements in code.	TBD
• City will deploy **electric vehicle charging stations** on city-owned facilities, at parks, and parking lots.	Continuous	TBD
• City will evaluate plans to **deploy solar canopy** over parking lots for electric vehicle charging.	Continuous	TBD

CATEGORY: TRAVEL BEHAVIOR

STRATEGY: Increase travel by walking, biking, and public transit; encourage public transportation, with a goal of vehicle miles travel reduction of 2% per year for both freight and passenger vehicles		
Action	Time Frame	Responsible Government Office
*Reduce vehicle miles traveled by 2%/year (16% in 2030) per capita – for *diesel (freight vehicles)* and require EV diesel vehicles in certain zones. *Reduce vehicle miles traveled by 2%/year (16% in 2030) per	16% by 2030	TBD

capita – for *gasoline (passenger vehicles).*		
City will evaluate plans to **increase bike lanes, paths, and sidewalks** to commercial areas; and improve lighting on trails and bus stops with **solar lighting**.	Continuous	TBD
City will work with OmniRide to **implement more bus routes and greater frequency**, as well as greater frequency with VRE.	Continuous	TBD

CATEGORY: PLANNING

STRATEGY: Implement policies and regulations that support the deployment of renewables and energy efficiency		
Action	Time Frame	Responsible Government Office
• City will **identify and revise land use regulatory barriers** for implementing rooftop solar to promote this technology.	Continuous	TBD DCM responsibility.
• *City will conduct an **energy audit of all City owned and controlled facilities** with the goal of identifying, planning, and implementing energy efficiency technologies and processes. 10,000 square feet/year.	Continuous	TBD

CATEGORY: SEQUESTRATION

STRATEGY: Maintain a robust urban forest on city-owned lands and encourage healthy and increased tree canopy on privately owned properties		
Action	Time Frame	Responsible Government Office
• City will educate, encourage, and promote **vegetative and native plantings** (trees, shrubs) to offset energy costs of heating and cooling.	Continuous	TBD DCSM issue
• City will expand education and incentives to support tree planting and maintenance, environmentally friendly landscape conversions, and management of non-native invasive plants on private and public property.	Continuous	TBD
• City will work with organizations to **measure and map urban heat islands** to mitigate exposure to extreme heat.	Continuous	TBD

CATEGORY: ZERO WASTE

STRATEGY: Adopt a sustainable material management program to waste system		
Action	Time Frame	Responsible Government Office
• *Solid waste - 3%/year reduction in waste sent to landfill (24% over 8 years).	Continuous	TBD

• City will **encourage waste prevention, recycling, and composting** to reduce greenhouse gas emissions by expanding education and outreach programs, encouraging the purchase and use of recycled products, and requiring recycling plans for commercial and multifamily residential projects.	Continuous	TBD
• City will increase education and engagement about **food waste and waste reduction options**.	Continuous	TBD

Implementation

The federal government provides support for implementing CAPs. Below is a list of potential federal programs that the City can pursue.

Air Quality & GHG Reduction

TITLE (SECTION IN THE LAW)	AMOUNT	MECHANISM	FOCUS AREA	WHO IS ELIGIBLE?	AGENCY	TIMEFRAME FOR NEXT STEPS
GHG Air Pollution Plans & Implementation Grants (§60114)	$5 billion	Grants	Cross-cutting	State, municipal, and tribal governments	EPA	Spring 2023
GHG Reduction Fund (§60103)	$27 billion	Grants and loans	Cross-cutting	State and local governments, non-profit financial institutions	EPA	Spring 2023
Environmental and Climate Justice Block Grants (§60201)	$3 billion	Grants	Cross-cutting	Community-based non-profit organizations, including partnerships with local and tribal governments or universities	EPA	Not specified
Air Pollution Monitoring & Screening (§60105)	$280 million	Grants	Air pollution	State, local, and tribal governments	EPA	Not specified
Grants to Reduce Air Pollution at Ports (§60102)	$3 billion	Grants	Air pollution at ports	Ports and state, local, tribal governments with jurisdiction over ports	EPA	Not specified
Neighborhood Access and Equity Grant Program (§60501)	$3 billion	Grants	Transportation	State and local governments, metropolitan planning organizations	DOT	Not specified
Clean Electricity Production Tax Credit (§13101 and §13701)	$62 billion (estimated but uncapped)	Tax credits	Electricity generation	Electricity producers, including municipal electric utilities and other non-tax paying entities	Treasury	Extension is immediate; significant modifications take effect in 2025
Clean Electricity Investment Tax Credit (§13102 and §13702)	$65 billion (estimated but uncapped)	Tax credits	Electricity generation	Individuals, businesses, and non-tax paying entities who invest in clean-electricity projects	Treasury	Extension is immediate; significant modifications take effect in 2025

Housing

TITLE (SECTION IN THE LAW)	AMOUNT	MECHANISM	FOCUS AREA	WHO IS ELIGIBLE?	AGENCY	TIMEFRAME FOR NEXT STEPS
Environmental Product Declarations Assistance (§60112)	$250 million	Grants	Construction material manufacturers	Businesses, states, local, and tribal governments, and non-profit organizations	EPA	Not specified
Home Owner Managing Energy Savings (HOMES) Program (§50121)	$4.3 billion	Rebates	Housing energy retrofits	Individuals and owners of multifamily buildings; administered by State Energy Offices	DOE	DOE must approve state plans by August 2024
High-Efficiency Electric Home Rebate program (§50122)	$4.5 billion	Rebates	Housing electrification	Individuals and owners of multifamily buildings; administered by State Energy Offices	DOE	DOE must approve state plans by August 2024
Residential Energy Efficiency Tax Credit (§13301)	$12.5 billion (estimated but uncapped)	Tax credits	Housing energy retrofits	Individuals who install energy upgrades in their primary residence	Treasury	Effective 2023
Residential Clean Energy Tax Credit (§13302)	$22 billion (estimated but uncapped)	Tax credits	Housing energy systems	Individuals who install renewable energy systems	Treasury	Effective immediately (except addition of battery storage takes effect in 2023)
New Energy Efficient Home Tax Credit (§13304)	$2 billion (estimated but uncapped)	Tax credits	New housing	Contractors who build energy-efficient new houses or multifamily housing	Treasury	Extension effective immediately; new eligibility and higher incentives take effect in 2023
Improving energy or water efficiency or climate resilience of affordable housing (§30002)	$1 billion (loans up to $4 billion)	Grants and loans	Affordable housing	Owners of public or affordable housing	HUD	Not specified
Energy efficient commercial buildings deduction (§13303)	$360 million (estimated but uncapped)	Tax credits	Commercial buildings	Owners of commercial buildings, including non-tax-paying entities	Treasury	Higher incentive levels take effect 2023
Assistance for Latest and Zero Building Energy Code Adoption (§50131)	$1 billion	Grants	Building code adoption	State and local governments that have authority to adopt codes	DOE	Not specified (states to submit plans)

Resilience and Workforce Training

TITLE (SECTION IN THE LAW)	AMOUNT	MECHANISM	FOCUS AREA	WHO IS ELIGIBLE?	AGENCY	TIMEFRAME FOR NEXT STEPS
Urban and Community Forestry Assistance Program (§23003)	$1.5 billion	Grants	Forestry	State, local, and tribal governments or nonprofits	Forest Service	Not specified, but annual grant solicitation expected spring 2023
Investing in Coastal Communities and Climate Resilience (§40001)	$2.6 billion	Grants	Coastal resilience	Coastal and Great Lakes states, local, and tribal governments, nonprofits, universities	NOAA	Not specified
Reclamation Domestic Water Supply Projects (§50231)	$550 million	Grants	Water supply infrastructure	Not specified but will likely include local drinking water suppliers	DOI	Not specified
Drought Mitigation in the Reclamation States (§50233)	$4 billion	Grants	Water use reduction projects and programs	Public entities in AZ, CA, CO, ID, KS, MT, NE, NM, NV, ND, OK, OR, SD, UT, WA, WY	DOE	Not specified

Clean Vehicles

TITLE (SECTION IN THE LAW)	AMOUNT	MECHANISM	FOCUS AREA	WHO IS ELIGIBLE?	AGENCY	TIMEFRAME FOR NEXT STEPS
Clean Heavy-Duty Vehicles (§60101)	$1 billion	Grant	Electric and zero emission vehicles	State, local, and tribal governments; school districts and school transportation authorities	EPA	Spring 2023
Clean Vehicle Tax Credit (§13401)	$7.5 billion (estimated but uncapped)	Tax credits	Electric and zero emission vehicles	Individuals	Treasury	Most provisions take effect in 2023
Credit for Previously Owned Clean Vehicles (§13402)	$1.3 billion (estimated but uncapped)	Tax credits	Electric and zero emission vehicles	Individuals	Treasury	Available starting in 2023
Commercial Clean Vehicles (§13403)	$3.6 billion (estimated but uncapped)	Tax credits	Electric and zero emission vehicles	Business and non-tax-paying entities, including municipalities	Treasury	Available starting in 2023
Tax credit for alternative refueling property (§13404)	$3.6 billion (estimated but uncapped)	Tax credits	Electric and zero emission vehicle charging/ refueling systems	Business, individuals, and non-tax-paying entities, including municipalities	Treasury	Available starting in 2023

Monitoring

Establishing a monitoring process enables the City to track the impacts of the actions included in the CAP and compare estimated impacts to what is achieved in terms of energy savings, renewable energy production, and greenhouse gas emissions reduction. Assessing the implementation status of the actions will determine whether the action is performing well and identify corrective measures. This process is also an opportunity to understand barriers to implementation and identify best practices or new opportunities in moving forward.

Starting in 2024, progress reports are to occur on an annual basis and will include status updates on each action within this plan, including any known metrics of impact (e.g. reduction in residential kWh and the corresponding greenhouse gas emissions). Every 3 years, the City will also include an updated community GHG inventory to illustrate progress towards the reduction target(s) and allow the City to evaluate the need for any modification to the original targets, objectives, and/or actions of this Plan.

Appendix A [placeholder for GMU-MC MOU]

Appendix B

TASK FORCE MEMBERS

Planning Commission (Chair) – Elaine Trautwein

Solid Waste Committee - Samantha Tungul

Utility Commission - Mr. Courtney Tolson

Manassas Business Council - Carmela Patrick

EDA/HRB- Marc Olsen

Manassas Regional Airport Commission- Richard Seraydarian

Beautification Committee - Melony Kent & Brittany Dismuke

Parks & Recreation Committee – Mike Freeland

ARB - Sean Portner

School Board Member - Jill Spall

Neighborhood Representative – Barbara Warren