DRAFT WASHINGTON-ARLINGTON-ALEXANDRIA, DC-VA-MD-WV METROPOLITAN STATISTICAL AREA PRIORITY CLIMATE ACTION PLAN (PCAP)

Prepared for the U.S. EPA as a deliverable through the Climate Pollution Reduction Grants (CPRG) Program, Section 60114(a) of the Inflation Reduction Act

January 25, 2024

This draft PCAP contains information still under development and going through quality and editorial review. Information in this draft should not be construed as final and may be updated in a later version of the PCAP.

DISCLAIMER

This project has been funded wholly or in part by the United States Environmental Protection Agency (EPA) under assistance agreement 5D - 95316301 – 0 to the Washington D.C. Department of Energy and Environment (DOEE). DOEE engaged the Metropolitan Washington Council of Governments (COG) through a subgrant (GAN-FY23-COG-189) to develop this Priority Climate Action Plan (PCAP). The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

COG is an independent, nonprofit association that brings area leaders together to address major regional issues in the District of Columbia, suburban Maryland, and Northern Virginia. COG's membership is comprised of 300 elected officials from 24 local governments, the Maryland and Virginia state legislatures, and U.S. Congress.

The Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area (MSA) PCAP was developed to meet the requirements of the Climate Pollution Reduction Grants (CPRG) program, Inflation Reduction Act Section 60114(a). It does not replace or supersede the COG 2030 Climate and Energy Action Plan, rather it provides a set of priorities for the MSA that will enable governments and other stakeholder in the region to seek competitive implementation funding through the CPRG program, Inflation Reduction Act Section 60114(b).

CREDITS

COG staff responsible for CPRG program deliverables include:

- Jeffrey King, Director, Climate, Energy, and Air Programs
- Maia Davis, Senior Environmental Planner
- Alissa Boggs, Environmental Planner
- Kelsey Boatwright, Associate Researcher
- Robert Christopher, Environmental Planner
- Timothy Masters, Environmental Planner

COG would also like to acknowledge the contributions of ICF and PRR, Inc, whose staff worked closely with COG and stakeholders to develop the PCAP.

ACKNOWLEDGMENTS

COG deeply appreciates the contributions of the CPRG Steering and Technical Committees, COG Committees and multiple stakeholders across the MSA.

Steering Committee Roster

- Brittany Whited, District of Columbia DOEE
- Allison Tjaden, Maryland Department of Environment (MDE)
- Deron Lovaas, Maryland Department of Transportation (MDOT)
- Virginia Burke, MDOT
- Tom Ballou, Virginia Department of Environmental Quality (DEQ)
- Erin Belt, Virginia Department of Transportation (VDOT)
- Beth Groth, Charles County
- Kristin Mielcarek, Frederick County
- Sarah Kogel-Smucker, Montgomery County
- Erica Bannerman, Prince George's County
- Jenny Willoughby, City of Frederick
- Michelle Bailey-Hedgepeth, Bladensburg
- Erik Valentine, City of College Park
- Anthony Berger, City of Gaithersburg
- Luisa Robles, City of Greenbelt
- Demetra McBride, Arlington County
- Bill Eger, Arlington County
- Lorien Lemmon, Clarke County
- Joe Kroboth, Loudoun County
- Giulia Manno, Prince William County
- Garrey Curry, Rappahannock County
- Bonnie Jewell, Rappahannock County
- Andy Young, City of Falls Church
- Matt Arcieri, City of Manassas
- Cristi Bickham, Washington Suburban Sanitary Commission (WSSC) Water
- Joseph Beach, WSSC Water

Technical Committee Roster

- Jenn Hatch, DOEE
- Allison Tjaden, MDE
- Vimal Amin, MDE
- Deron Lovaas, MDOT
- Virginia Burke, MDOT
- Angela Conroy, DEQ
- Tom Ballou, DEQ
- Erin Belt, VDOT
- Kristin Mielcarek, Frederick County
- Lindsey Shaw, Montgomery County
- Erica Bannerman, Prince George's County
- Michele Blair, City of Laurel
- Amanda Campbell, City of Rockville
- Dorothy Estrada, City of Takoma Park
- Drew Stilson, Arlington County
- Kate Daley, Fairfax County
- John Morrill, Fairfax County
- Marc Aveni, Loudoun County
- Andy Young, City of Falls Church
- Stefanie Kupka, City of Fairfax
- Dale Medearis, PhD, Northern Virginia Regional Commission (NVRC)
- Richard Moore, ConnectedDMV
- Chris Peot, DC Water
- Maureen Holman, DC Water
- Kate Roetzer, Washington Metropolitan Area Transit Authority (WMATA)
- Diane McGahagan, WSSC Water
- Fred Lees, WSSC Water
- Robert Taylor, WSSC Water

Other stakeholders who provided contributions include Common Grain Alliance (CGA), D.C. Sustainable Energy Utility (SEU), District of Columbia City Council, Faith Alliance for Climate Solutions (FACS), Frederick County, Division of Solid Waste and Recycling, Georgetown University, Greater Washington Region Clean Cities Coalition (GWRCCC), Hola Cultura, Institute for Local Self-Reliance, Institute for Local Self-Reliance (ILSR), Maryland Clean Energy Center (MCEC), Maryland Department of Agriculture, Maryland Energy Administration (MEA), Maryland Energy Innovation Institute, Maryland Forestry Foundation, Montgomery County Food Council, Montgomery County Solid Waste Advisory Committee, Neighborhood Sun, Northern Virginia Regional Commission (NVRC), Potomac Electric Power Company (Pepco), Prince George's County Food Equity Council, Prince George's Soil Conservation District, Prince William County Public Schools, Public citizens, Rappahannock Electric Cooperative, Sierra Club (Virginia Chapter), Southern Environmental Law Center (SELC), University of Maryland (UMD), Virginia Property Assessed Clean Energy (PACE), Voters for Animals, Washington Gas of WGL, Washington Metropolitan Area Transit Authority (WMATA), and WSSC.

COG would like to acknowledge the contributions of multiple COG and Transportation Planning Board (TPB) committees, including the Air and Climate Public Advisory Committee (ACPAC), the Built Environment and Energy Advisory Committee (BEEAC, the Chief Equity Officers Committee (CEOC), the Climate Energy and Environmental Policy Committee (CEEPC), the Food and Agriculture Regional Member (FARM) Policy Committee, the Metropolitan Washington Air Quality Committee (MWAQC), the Metropolitan Washington Air Quality Committee Technical Advisory Committee (MWAQC-TAC), the Regional Electric Vehicle Deployment (REVD) Working Group, the Transportation Planning Board Community Advisory Committee (TPB-CAC), and the Transportation Planning Board Technical Committee (TPB-Tech).

TABLE OF CONTENTS

DISCLAIMER I
CREDITS I
ACKNOWLEDGMENTS II
TABLE OF CONTENTS IV
ACRONYMS LIST 1
EXECUTIVE SUMMARY 3
1 INTRODUCTION 4
1.1 CPRG Program Overview 4
1.1.1 The Inflation Reduction Act 4
1.1.2 Purpose and Intent of the CPRG 4
1.2 PCAP Overview and Definitions 4
1.3 Scope of the PCAP 6
1.4 Approach to Develop the PCAP 7
1.4.1 GHG inventory and GHG Reduction Targets 7
1.4.2 Identifying and Engaging Stakeholders 7
1.4.3 Community Survey 10
1.4.4 Equity and LIDAC Priorities 10
1.4.5 Continued Engagement 12
1.4.6 Priority GHG Reduction Measures 12
2 METROPOLITAN WASHINGTON'S CLIMATE CONTEXT 13
2.1 GHG Inventory 13
2.1.1 EMISSIONS ACTIVITIES 15
2.1.2 GHG Inventory METHODOLOGY 16
2.2 Business-As-Usual Projections 16
2.3 GHG Reduction Targets 16
3 METROPOLITAN WASHINGTON LIDACS 17
3.1 Metropolitan Washington's LIDACs 17
3.2 Climate Impacts and Risks to Metropolitan Washington's LIDACs 18
3.3 Engaging with Metropolitan Washington's LIDACs 21
3.4 Benefits of GHG Reduction Measures to Washington's LIDACs 21
4 GHG REDUCTION MEASURES 22
4.1 Buildings and Clean Energy 22
4.1.1 Accelerate the deployment of energy efficiency solutions and decarbonization of residential, institutional, municipal, and commercial buildings. 22
4.1.2 Accelerate the deployment of clean and renewable energy. 25
4.1.3 Study, plan for, and deploy district energy and microgrid opportunities. 27
4.2 Transportation 30
4.2.1 Provide and promote new and expanded opportunities to reduce vMT through public transportation, non-motorized travel, micromobility, shared travel options, and Development. 30
4.2.2 Accelerate the deployment of low-emission transportation, fuels, and vehicles. 33

4.2.3 Accelerate the deployment of off-road/non-road electric equipment. 36
4.3 Waste 37
4.3.1 Reduce GHG emissions from waste and wastewater treatment. 37
4.4 Land Use 40
4.4.1 Accelerate the expansion of the regional tree canopy and reduce tree canopy loss. 40
4.5 CROSS-CUTTING ENABLING ACTIONS 42
5 NEXT STEPS 44
APPENDIX A. GHG INVENTORY, BAU, AND GHG REDUCTION MEASURE QUANTIFICATION 1
APPENDIX B. METROPOLITAN WASHINGTON CLIMATE AND ENERGY PLANS AND TARGETS 1
REGIONAL 1
DISTRICT OF COLUMBIA 1
MARYLAND 1
VIRGINIA 2
WEST VIRGINIA 4
APPENDIX C. IDENTIFICATION OF LIDACS IN THE WASHINGTON-ARLINGTON-ALEXANDRIA, DC-VA-MD-WV MSA 1
APPENDIX D. PROJECT IDEAS SUBMITTED TO COG 1
APPENDIX E. COMMUNITY CLIMATE PRIORITIES SURVEY RESULTS 1
Community Priorities 1
Equity and LIDAC Priorities 2
Barriers 3
Project Emphasis 3
Conclusion 4

ACRONYMS LIST

ACPAC	Air and Climate Public Advisory Committee
ATV	All-terrain vehicles
BAU	Business as usual
BEEAC	Built Environment and Energy Advisory Committee
BEPS	Building energy performance standards
BIPOC	Black, Indigenous, and People of Color
CBO	Community-based organizations
CCA	Community choice aggregation
CCAP	Comprehensive Climate Action Plan
CECAP	Community-wide Energy and Climate Action Plan
CEEPC	Climate Energy and Environmental Policy Committee
CEOC	Chief Equity Officers Committee
CGA	Common Grain Alliance
CHP	Combined heat and power
CMAQ	Congestion Mitigation and Air Quality
COG	Council of Governments
CPRG	Climate Pollution Reduction Grants
CSNA	Climate Solutions Now Act
DOE	Department of Energy
DOEE	Department of Energy and Environment
DPOR	Department of Professional and Occupational Regulation
EEA	Equity Emphasis Areas
EV	Electric vehicles
FACS	Faith Alliance for Climate Solutions
FARM	Food and Agriculture Regional Member
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GCoM	Global Covenant of Mayors
GGRA	Greenhouse Gas Reduction Act
GHG	Greenhouse gas
GWRCCC	Greater Washington Region Clean Cities Coalition
HUD	Housing and Urban Development
ILSR	Institute for Local Self-Reliance
IPCC	Intergovernmental Panel on Climate Change
IRA	Inflation Reduction Act
LIDAC	Low-Income Disadvantaged Community
MCEC	Maryland Clean Energy Center
MDE	Maryland Department of Environment
MEA	Maryland Energy Administration
MSA	Metropolitan Statistical Area
MWAQC	Metropolitan Washington Air Quality Committee

NVRC	Northern Virginia Regional Commission
PACE	Property Assessed Clean Energy
PCAP	PRIORITY CLIMATE ACTION PLAN
REC	Renewable energy certificate
REVD	Regional Electric Vehicle Deployment
RHE	Rockville Housing Enterprises
SELC	Southern Environmental Law Center
SEU	Sustainable Energy Utility
STBG	Surface Transportation Block Grant
TPB	Transportation Planning Board
VMT	Vehicle miles traveled
WMATA	Washington Metropolitan Area Transit Authority
WSSC	Washington Suburban Sanitary Commission
WVSWMB	WV Solid Waste Management Board
ZEV	Zero-emission vehicle

EXECUTIVE SUMMARY

To be included in the final PCAP

1 INTRODUCTION

The Metropolitan Washington Council of Governments (COG) developed this Priority Climate Action Plan (PCAP) for the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area (MSA) to meet the requirements of the U.S. Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants (CPRG) program. The CPRG program provides funding to states, local governments, tribes, and territories to develop and implement plans for reducing greenhouse gas (GHG) emissions and other harmful air pollution.

The Washington D.C. Department of Energy and Environment (DOEE) awarded COG a subgrant to lead the development of this PCAP and the other required CPRG planning deliverables for the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA (metropolitan Washington region), including a Comprehensive Climate Action Plan (CCAP, due mid-2025) and Status Report (due 2027).

1.1 CPRG Program Overview

1.1.1 THE INFLATION REDUCTION ACT

The Inflation Reduction Act (IRA), signed into law on August 16, 2022, directs federal funding to reduce carbon emissions, lower healthcare costs, and improve taxpayer compliance. The IRA contains provisions that directly or indirectly address climate change, including reduction of U.S. GHG emissions and promotion of adaptation and resilience to climate change impacts.[1] The law represents the largest investment toward addressing climate change in United States history, investing approximately $369 billion in energy security and climate change programs over the next 10 years.[2]

1.1.2 PURPOSE AND INTENT OF THE CPRG

The CPRG program, authorized under Section 60114 of IRA, provides $5 billion in grants to states, local governments, tribes, and territories to develop and implement plans for reducing GHG emissions and other harmful air pollution. The program consists of two phases: planning and implementation. The planning phase provides $250 million in noncompetitive planning grants for state and local agencies, tribes, and territories to develop a PCAP, CCAP and Status Report. The second phase provides $4.6 billion for competitive grants to eligible applicants to implement GHG reduction measures identified in a PCAP.

1.2 PCAP Overview and Definitions

This PCAP identifies high priority, ready-to-implement GHG reduction measures that will provide significant GHG reductions and other benefits to the metropolitan Washington region and the communities within it. A measure being included within a PCAP is a pre-requisite for agencies and organizations within an MSA or state to compete for implementation grant funding in the second phase of the CPRG program. Accordingly, the measures identified in this PCAP are designed to be broad enough to encompass regional and local priorities for addressing climate pollution.
The PCAP also serves as a starting point for a larger, more comprehensive region-wide climate planning effort to be conducted through 2024 and 2025 (CCAP).

---

[1] CRS. "Inflation Reduction Act of 2022 (IRA): Provisions Related to Climate Change," October 3, 2022. https://crsreports.congress.gov/product/pdf/R/R47262.

[2] Senate Democrats. "Summary: The Inflation Reduction Act of 2022," July 27, 2022. https://www.democrats.senate.gov/imo/media/doc/inflation_reduction_act_one_page_summary.pdf.

Table 1 outlines the required, encouraged, and not required information for a PCAP[3] and where the relevant information may be found within the document.

Table 1. Crosswalk of CPRG PCAP requirements to Metropolitan Washington Region PCAP Section

PCAP Required Elements	Metropolitan Washington Region PCAP Section
GHG Inventory	See Section 2.1
Quantified GHG Reduction Measures	See Section 4
Low-Income Disadvantaged Community (LIDAC) Benefits Analysis	See Sections 1.4 and 3, Section 4 within each measure
Review of Authority to Implement	See Section 4 within each measure
PCAP Encouraged/Not Required Elements	
GHG Emissions Projections	See Section 2.2
GHG Reduction Targets	See Section 2.3
Benefits Analysis for Full Geographic Scope and Population	Not included
Intersection with Other Funding Availability	See Section 4 within each measure
Workforce Planning Analysis	Not included
Next Steps/Future Budget and Staffing Needs	See Section 5

Definitions

Greenhouse Gas (GHG): GHGs include the air pollutants carbon dioxide (CO_2), hydrofluorocarbons (HFCs), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).
Greenhouse gas (GHG) Inventory: A list of emission sources and sinks and the associated emissions quantified using standard methods.
GHG Reduction Measure: Implementable actions that reduce GHG emissions or enhance carbon removal. Measures that enhance "carbon removal" are those that increase the removal of carbon dioxide from the atmosphere through, for example, the uptake of carbon and storage in soils, vegetation, and forests.
Benefits: Direct changes in air pollution (e.g., $PM_{2.5}$, VOCs) that result from a GHG reduction measure.
Co-Benefits: Positive effects beyond the stated goal of a GHG reduction measure (e.g., improved public health outcomes, economic benefits, increased climate resilience).
Low Income Disadvantaged Community (LIDAC): Communities with residents that have low incomes, limited access to resources, and disproportionate exposure to environmental or climate burdens. LIDACs are any Census tract that is included as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST) and/or any census block group that is at or above the 90th percentile for any of EJScreen's Supplemental Indexes when compared to the nation or state, and/or any geographic area within Tribal lands and indigenous areas as included in EJScreen. These tools identify LIDACs by assessing indicators for categories of burden: air quality, climate change, energy, environmental hazards, health, housing, legacy pollution, transportation, water and wastewater, and workforce development.

[3] US EPA. "Climate Pollution Reduction Grants Program: Formula Grants for Planning," March 1, 2023. https://www.epa.gov/system/files/documents/2023-02/EPA%20CPRG%20Planning%20Grants%20Program%20Guidance%20for%20States-Municipalities-Air%20Agencies%2003-01-2023.pdf

1.3 Scope of the PCAP

This PCAP covers the geographic area outlined in Figure 1. The MSA crosses three states (Maryland, Virginia, West Virginia) and the District of Columbia and extends beyond COG's usual geography. Each state has developed its own PCAP and COG and the local governments within the metropolitan Washington region are coordinating with state CPRG leads to align GHG reduction priorities.

Figure 1. Jurisdictions included in the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. Not listed but mapped jurisdictions include Arlington County (VA), Alexandria City (VA), Fairfax City (VA), Falls Church (VA), Fredericksburg City (VA), Manassas City (VA), and Manassas Park City (VA).

1.4 Approach to Develop the PCAP

1.4.1 GHG INVENTORY AND GHG REDUCTION TARGETS

COG regularly prepares a GHG inventory using the ICLEI ClearPath tool. COG was able to leverage and expand its existing GHG inventory and projections to cover the entire MSA. COG used the existing 2005–2020 GHG inventory for portions of the MSA that fall within COG's geographic scope (see Figure 1). For counties and cities outside of this (see Figure 1), COG sought other data sources and approaches to prepare a 2020 GHG inventory for the MSA. Additional information on the GHG inventory may be found in Section 2.1 and Appendix A.

COG and many of the communities within the MSA already have established GHG reduction targets. These are reflected within the PCAP in Section 2.3 and Appendix B. During the CCAP development COG will work with members within and outside of the region to establish an MSA-wide GHG reduction target(s).

1.4.2 IDENTIFYING AND ENGAGING STAKEHOLDERS

COG has conducted significant engagement with stakeholders and community representatives during PCAP development through meetings with agencies and organizations throughout the MSA. Engagement has included meetings, communications, and coordination between COG and local and regional climate change and community leaders to ensure that both regional perspectives and local needs are reflected in the plan.

CPRG Committee Guidance

COG formed CPRG technical and steering committees to advise on GHG emission reduction priority projects, programs, and measures (see Acknowledgments Section for a list of committee members). These committees include related state and local governments and agencies, industry professionals, community-based organizations (CBOs), and advocacy groups in and beyond the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. The priority projects provided by these groups informed the measures included in this PCAP.

Technical committee meetings and steering committee meetings were held from November 2023 through February 2024, to review PCAP requirements, CCAP requirements, and implementation grant evaluation criteria, and to hold discussions on prioritizing projects, programs, and measures. Emphasis was put on best ways to collaborate among local governments and communities. The committees are comprised of local and state government staff, and other key stakeholders and will continue to meet to advise on the CPRG program through 2027, when the program concludes.

Other COG Committees

In addition to the CPRG technical and steering committees, COG holds regular meetings with local and regional committees representing climate and environmental concerns and industries with significant impact on GHG emissions. These committees include:

- Air and Climate Public Advisory Committee (ACPAC)
- Built Environment and Energy Advisory Committee (BEEAC)
- Chief Equity Officers Committee (CEOC)
- Climate Energy and Environmental Policy Committee (CEEPC)
- Food and Agriculture Regional Member (FARM) Policy Committee

- Metropolitan Washington Air Quality Committee (MWAQC)
- Metropolitan Washington Air Quality Committee Technical Advisory Committee (MWAQC-TAC)
- Regional Electric Vehicle Deployment (REVD) Working Group
- Transportation Planning Board (TPB)
- Transportation Planning Board Community Advisory Committee (TPB-CAC)
- Transportation Planning Board Technical Committee (TPB-Tech)

Industry, Utilities, Other Government Partners, and Stakeholders

In addition to COG's meetings with the technical and steering committees and the standing TPB and TPB committees, a succession of meetings, conversations, and emails were held to gather information, identify priorities, and make connections to inform the PCAP. Some of the organizations that attended meetings or engaged with COG include:

- D.C. Sustainable Energy Utility (SEU)
- District of Columbia City Council
- Potomac Electric Power Company (Pepco)
- Frederick County Division of Solid Waste and Recycling
- Georgetown University
- Greater Washington Region Clean Cities Coalition (GWRCCC)
- Institute for Local Self-Reliance
- Maryland Clean Energy Center (MCEC)
- Maryland Department of Agriculture
- Maryland Energy Administration (MEA)
- Maryland Energy Innovation Institute
- Maryland Forestry Foundation
- Montgomery County Solid Waste Advisory Committee
- Neighborhood Sun
- NVRC
- Public citizens
- Prince William County Public Schools
- Rappahannock Electric Cooperative
- Southern Environmental Law Center (SELC)
- Virginia Property Assessed Clean Energy (PACE)
- Washington Gas of WGL
- WMATA
- Washington Suburban Sanitary Commission (WSSC)

PCAP-specific engagement sessions were held with the Agricultural, Working Lands, Food, and Solid Waste regional stakeholder group and with regional higher education institution's sustainability directors serving the metropolitan Washington region.

LIDAC and Tribal Engagement

PCAP engagement included communication with organizations representing LIDACs. LIDACs are a primary consideration for selection of priority regional climate pollution reduction projects, programs, and measures.

Along with the activities described below, ongoing engagement includes a questionnaire to partners and committees on outreach activities with LIDAC representatives and organizations. The questionnaire is focused on attaining an overall understanding of what LIDAC engagement has been done within the last one to two years to inform climate action plans, priority projects, community climate/energy goals, and to understand the needs and priorities identified by LIDAC community members. Responses from this questionnaire will be used to inform the CCAP Community Engagement Plan.

Community engagement webinars were held during development of the PCAP and attended by non-governmental organizations and government representatives representing LIDAC interests. Some of the organizations that attended meetings or engaged with COG include:

- Common Grain Alliance (CGA)
- Faith Alliance for Climate Solutions (FACS)
- Greater Washington Region Clean Cities Coalition (GWRCCC)
- Hola Cultura
- Institute for Local Self-Reliance (ILSR)
- Montgomery County Food Council
- Prince George's County Food Equity Council
- Prince George's Soil Conservation District
- Sierra Club, Virginia Chapter
- University of Maryland (UMD)
- Voters for Animals

These representatives expressed interests in priority GHG reduction measures that align with meeting the needs of communities, specifically communities that include people who use English as a second language, people impacted by environmental impacts on food security, communities overburdened by climate change, air quality, transportation GHG emissions and pollution, and communities impacted by waste infrastructure such as landfills, incineration sites and trash/recycling collection facilities. Input from representatives also encouraged programs for climate-related workforce development, access to EVs and infrastructure, projects that increase access to public transit and decrease vehicle miles traveled (VMT), and programs to provide clean, efficient, and renewable energy such as solar and weatherization programs.

Additionally, COG held separate meetings with the Accokeek Foundation and the SELC. Drawing insights from these discussions and collaborations with state partners experienced in working with state tribes and tribal communities, COG is actively developing a comprehensive tribal outreach plan. This plan aims to foster relationships with tribes and tribal communities, ensuring inclusivity throughout the CCAP development and for CPRG implementation grants. As part of these efforts, COG is committed to ongoing outreach to community members, seeking their input to better understand climate priorities and integrating this valuable perspective into the planning process.

During development of the CCAP, a thorough Community Engagement Plan will have a focus on diversity, equity and inclusion, meeting or exceeding the EPA's expectations for engagement with LIDAC for the CPRG planning grants and resulting in meaningful engagement. Through the CCAP Community Engagement Plan, COG will engage with communities identified in the LIDAC Benefits Analysis and in COG's EEAs to further understand community priorities identified in the PCAP and other potential areas for the CCAP. To accomplish this, COG will identify and engage the appropriate individuals/organizations with a focus on a diverse and representative group of stakeholders. COG will consider whose voices should be represented in meetings and whose voices might be missing. Community stakeholders will include populations that have historically been marginalized, underserved, or left out of climate planning conversations. Partnering with CBOs can establish a conduit for input and engagement for different community sectors, particularly among underserved community members. Detailed information on Washington area LIDACs can be found in Section 3 and Appendix C.

1.4.3 COMMUNITY SURVEY

To capture a larger perspective of communities in the MSA, COG disseminated the CPRG Community Climate Priorities survey to assess community-wide climate priorities. The survey was shared through multiple online channels, extending beyond formal committees to include distribution through social media, the COG CPRG and main COG websites, local representatives, and community-based/non-governmental organizations. The survey gained responses from 86 participants from 13 different jurisdictions within the MSA, encompassing a diverse range of individuals, organizations, coalitions, and agencies.

Participants were asked to prioritize strategies for mitigating climate change by ranking mitigation strategies. The eight strategies included in the PCAP were ranked by the community in the following order of importance:

1. Land Use
2. Energy Efficient and Clean Energy Buildings
3. Increasing Supply of On-site Clean Energy
4. Transit Options
5. Increasing Off-site Clean Energy
6. Transportation Technology
7. Waste Reduction, Composting, and Recycling
8. Carbon Removal and Sequestration

Participants reflected on specific equity priorities: the main takeaways are described below, and details are in Appendix E.

1.4.4 EQUITY AND LIDAC PRIORITIES

Participants placed notable emphasis on environmental justice, particularly concerning the needs of LIDACs. Concerns included air and water quality, greenspace availability, and overall quality of life that underscored the importance of ensuring that climate initiatives benefit people who have historically faced disproportionate environmental burdens.

Community engagement and empowerment emerged as significant aspects of equity impacts. The responses highlighted the community's call for public support, ensuring investment returns to

communities, and involving communities in project planning and decision-making. This theme also encompassed a focus on creating employment opportunities and supporting local environmental initiatives within historically underserved populations. Together, these themes conveyed the community's perspective on the most important equity impacts to achieve in the context of climate action.

In addition to overall themes on workforce development and access to infrastructure, the topic of food security recurred throughout the comments as a priority. Comments included support for local agricultural and food security initiatives such as community composting and neighborhood farming.

When assessed on what emissions reduction projects would have the most positive impact on LIDACs and historically underrepresented communities, respondents outlined initiatives tailored to the unique needs of these communities. Key strategies included the promotion of non-car travel, featuring expanded bike lanes, improved bus availability, and pedestrianized streets aimed at enhancing safety and accessibility. Additionally, there was a strong emphasis on reuse and repair initiatives, again emphasizing reducing waste and promoting local employment.

Affordable housing near transit emerged as a significant strategy, with respondents emphasizing the importance of funding for such initiatives. Respondents also emphasized the importance of implementing energy efficiency projects in multifamily and commercial buildings as a crucial step toward reducing energy consumption and emissions.

In summary, respondents delineated a comprehensive set of emissions reduction projects, addressing transportation, waste management, energy efficiency, and community development, reflecting a commitment to sustainability and economic well-being within these communities.

Barriers

When polled on what barriers hinder their organizations from advancing energy efficiency planning and climate change initiatives, the most prevalent challenges included limited access to program funding, followed closely by the high cost of alternatives. Time constraints were also identified, and others noted barriers such as limited knowledge, and limited access or the inconvenience of programs. Comments emphasized the need for more accessible and user-friendly information and resources. Participants also mentioned specific barriers related to their expertise or organizational focus. Respondents underscored financial considerations and high capital costs, the need for services to guide individuals through the process, and limited access to utility services and infrastructure.

These findings underscore a range of impediments that individuals and organizations encounter and highlight the diverse array of obstacles faced by organizations, emphasizing the importance of tailored solutions to address their unique circumstances, especially in LIDAC and underserved communities.

Project Emphasis

When responding to the question about advancing projects within COG's eight identified areas for climate action strategies, participants provided project ideas aligned with the key focus areas:

- Equity and Inclusive Clean Energy Transition
- Renewable Energy and Sustainable Transportation

- Waste Reduction and Recycling Initiatives

These common themes underscored the community's strong emphasis on inclusivity, environmental sustainability, and climate resilience in shaping climate action strategies.

1.4.5 CONTINUED ENGAGEMENT

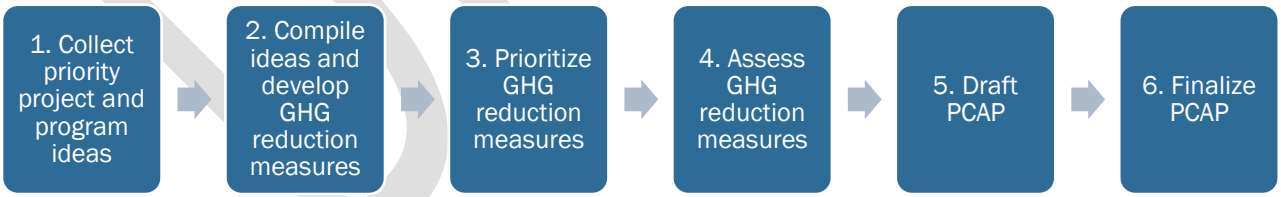
During the PCAP development, COG strived for inclusivity and building relationships with sister agencies, jurisdictions throughout the MSA, tribes, industry partners and community CBOs representing LIDACs. COG will continue to broadly engage the public during the development of the CCAP, with a focus on addressing environmental justice concerns and supporting historically underrepresented and overburdened communities. COG will use the responses of the survey and input from the listening sessions and many meetings to inform the CCAP Community Engagement Plan and will continue to seek engagement from a diverse audience during climate mitigation planning.

1.4.6 PRIORITY GHG REDUCTION MEASURES

Many cities and counties within the MSA, COG, and the states that the MSA crosses have already engaged in significant climate planning efforts and action. Plans such as the *Metropolitan Washington 2030 Climate and Energy Action Plan,*[4] the *National Capital Region Transportation Planning Board Mitigation Study of 2021,*[5] the *Tree Canopy Management Strategy,*[6] and climate action and energy plans from local governments such as Montgomery County (MD), Prince George's County (MD), Frederick County (MD), the City of Frederick (MD), the City of Alexandria (VA), the City of Falls Church (VA), Arlington County (VA), Fairfax County (VA), Prince William County (VA), Loudoun County (VA), and Washington D.C. provided a solid foundation of planned and ongoing actions to reduce GHG emissions for the PCAP. Appendix B lists existing local, regional, and state plans.

To identify, prioritize, and analyze GHG reduction measures COG used the process outlined in Figure 2. The stakeholder engagement activities discussed above were done continuously across all the steps discussed below.

Figure 2. COG's Process to Develop and Assess Priority GHG Reduction Measures



1. Collect priority project and program ideas. COG used multiple mechanisms to collect ideas for GHG reduction priorities across the MSA. COG reviewed existing plans and climate actions across the region. As discussed above, COG developed and distributed a project survey to CPRG Technical and

[4] https://www.mwcog.org/documents/2020/11/18/metropolitan-washington-2030-climate-and-energy-action-plan/

[5] https://www.mwcog.org/tpb-climate-change-mitigation-study-of-2021/

[6] https://www.mwcog.org/committees/regional-tree-canopy-workgroup/

Steering Committee members to complete or share with other stakeholders (see responses in Appendix D). COG also ran a public survey to collect ideas on community climate priorities posted on its CPRG website (see above and also Appendix E).[7] Lastly, COG presented to and held discussions with a number of stakeholders on existing COG committees and external stakeholders.

2. Compile ideas and develop GHG reduction measures. COG compiled existing plans and actions, and responses to both the project and community climate priorities surveys. COG then reviewed these ideas to group by relevant GHG inventory sector, identify themes, and group similar ideas to form broader GHG reduction measures. COG prepared an annotated draft list of measures. To be as inclusive as possible, COG did not explicitly cut any ideas from the initial draft measures list.

3. Prioritize GHG reduction measures. The annotated draft list of measures was shared with the Technical and Steering Committees and other stakeholders for review through smaller discussions, webinars, and email. Specifically, COG asked for a review and feedback to identify any potential gaps reviewers saw in line with their priorities, and to identify any potential measures to deprioritize. Using this feedback COG finalized the list of GHG reduction measures presented in this PCAP.

4. Assess GHG reduction measures. As a next step COG began to assess GHG reduction measures in line with PCAP requirements, such as quantified GHG reductions, authority to implement, LIDAC benefits, and other information (e.g., available funding, key implementors). COG sought input on many of these analysis elements in the initial project survey. Using the survey results, combined with other relevant information already in existing plans, and based on continued discussions with stakeholders, COG assessed GHG reduction measures. Additional information on quantification of GHG reductions may be found in Appendix A.

5. Draft PCAP. COG drafted the PCAP using information from the previous steps and shared a version with both the CPRG Technical and Steering Committees for review and posted a version publicly online for other stakeholder comments and feedback.

6. Finalize PCAP. COG reviewed comments and feedback on the PCAP, addressed many of these, filled in any remaining required information, and completed the PCAP.

2 METROPOLITAN WASHINGTON'S CLIMATE CONTEXT

2.1 GHG Inventory

COG developed a GHG inventory of priority sources of GHG emissions within the MSA for the year 2020 (

[7] https://www.mwcog.org/environment/programs/climate-pollution-reduction-grants-cprg-program/

Table 2). A detailed methodology including data resources for the preparation of this inventory are contained in Appendix A. Gross GHG emissions for the MSA were 61.4 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 2020. Net GHG emissions amounted to 54.2 $MMTCO_2e$ after accounting for the sequestration of GHG emissions attributed to the MSA's forests and trees.

Table 2. MSA GHG Emissions Inventory

Emissions Type	Emissions Activity or Source	Sub-Activity Source	2020 MSA Total Emissions ($MTCO_2e$)
BUILDINGS			**33,079,836**
Residential Energy	Emissions from Grid Electricity	Residential Electricity	6,887,936
	Emissions from Stationary Fuel	Residential Natural Gas	4,656,374
		Residential Fuel Oil	248,908
		Residential LPG	104,879
Commercial Energy	Emissions from Grid Electricity	Commercial Electricity	13,491,249
	Emissions from Stationary Fuel Combustion	Commercial Natural Gas	3,968,236
		Commercial Fuel Oil	62,663
		Commercial LPG	30,194
Process and Fugitive Emissions	Fugitive Emissions from Natural Gas Distribution	Natural Gas Fugitive Emissions	251,260
	Other Process and Fugitive	Hydrofluorocarbon (HFCs)	3,378,137
TRANSPORTATION			**23,994,733**
Transportation and Mobile Emissions	On-Road Transportation (National Emissions Inventory [NEI])	On-Road Mobile Emissions	19,946,011
	Emissions from Off-Road Vehicles (NEI)	Off-Road Mobile Emissions	2,194,931
	Aviation Travel	Passenger Air Travel	1,814,955
	Rail Transportation	Rail Transportation	38,836
WASTE			**2,090,407**
Solid Waste	Waste Generation	Landfill Waste Generation	1,390,042
	Combustion of Solid Waste Generated by the Community	Combustion of Solid Waste	618,679
Water and Wastewater	Fugitive Emissions from Septic Systems	Septic System Emissions	60,427
	Nitrification/Denitrification Process N_2O Emissions from Wastewater Treatment	Sewer System Emissions	14,873
	Process N_2O from Effluent Discharge to Rivers and Estuaries	N_2O Effluent Discharge Emissions	6,386

Emissions Type	Emissions Activity or Source	Sub-Activity Source	2020 MSA Total Emissions ($MTCO_2e$)
LAND USE			(4,921,268)
Agriculture	Emissions from Agricultural Activities	Enteric Fermentation	493,279
		Manure Management	139,287
		Ag Soils	539,978
Forests and Trees Outside of Forests	Average Annual Emissions	Forests Converted to Non-Forests	500,205
		Disturbances in Forests Remaining Forests	253,207
		Loss of Trees Outside Forests	307,305
	Average Annual Removals	Forests Remaining Forests	(5,018,124)
		Non-Forests Converted to Forests	(104,368)
		Trees Outside Forests	(2,032,037)
GROSS GHG EMISSIONS (ALL SECTORS)			61,398,238*
NET GHG EMISSIONS (ALL SECTORS)			54,243,709*

* Totals may differ due to rounding.

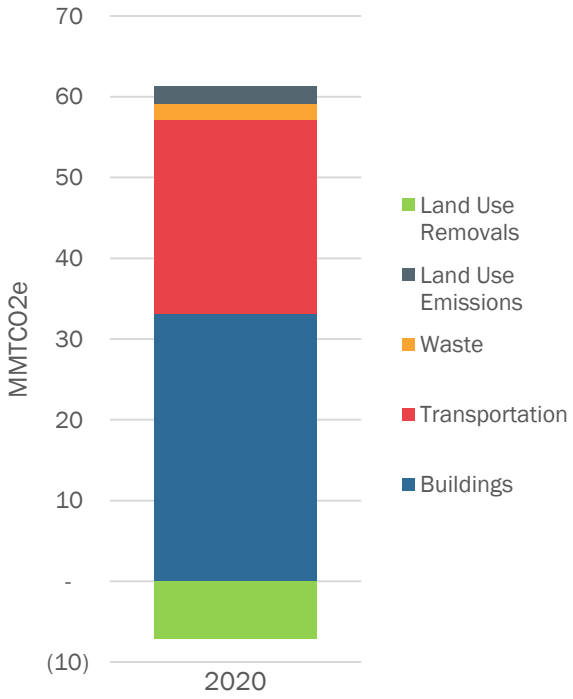
2.1.1 EMISSIONS ACTIVITIES

The GHG inventory represents GHG-emitting activities undertaken by residents, businesses, industry, visitors, and government located in the MSA. Approximately 50% and 40% of the MSA's GHG emissions come from residential and commercial building energy consumption and transportation, respectively. The remainder of GHG emissions comes from other activities and sources including solid waste, wastewater treatment, agriculture, and fugitive emissions (Figure 3).

2.1.2 GHG INVENTORY METHODOLOGY

The MSA inventory and previous COG inventories have been developed to be compliant with the U.S. Communities Protocol for Accounting and Reporting Greenhouse Gas Emissions (USCP), Global Protocol for Community Scale Greenhouse Gas Inventories (GPC), and Global Covenant of Mayors (GCoM) reporting framework. COG mainly follows the calculation guidance from USCP as the USCP identifies sources of data widely available to communities in the US. COG uses ICLEI's ClearPath tool Community Scale Inventory Module for preparing GHG inventories, which is consistent with both US and global accounting protocols.

Figure 3. 2020 MSA GHG Emissions by Activity



COG made every effort to capture a complete and accurate picture of GHG trends across the MSA, while also providing for a consistent methodology that is replicable across communities and inventory years. The GHG inventories follow an activities-based approach, meaning emissions are calculated based on the result of activities happening in the local communities. Local results are totaled to create a picture for the region as a whole. For a detailed description of the methodology, see Appendix A.

2.2 Business-As-Usual Projections

Business-as-usual (BAU) projections provide a baseline scenario for future GHG emissions. BAU projections take into account driving factors such as growth in population, housing and commercial development and the impact they will have on future GHG emissions. BAU projections reflect policies and practices that have been in place and implemented to-date to reduce GHG emissions, but do not incorporate any additional GHG emission reductions from anticipated future action.

The MSA BAU scenario for this PCAP projected emissions out to 2050. Based on the assumptions used, total emissions overall remained flat between 2020-2050. Figure 4 shows the region's anticipated BAU emissions projected out to 2050. See Appendix A for a summary of BAU assumptions.

Figure 4. MSA Business-As-Usual Projections

Under development

2.3 GHG Reduction Targets

The COG Board previously established specific GHG emission reduction goals of 10 percent below BAU projections by 2012 (bringing regional emission back down to 2005 levels), 20 percent by 2020 and 80 percent by 2050 (below the 2005 baseline). In 2019, COG became a Signatory to the Global Covenant of Mayors for Climate and Energy (GCoM). Based on review of the GCoM framework of global best practices for climate planning and updated Intergovernmental Panel on Climate Change

(IPCC) recommendations, and a recommendation from the COG CEEPC, the Board approved new 2030 climate goals including:

- The climate mitigation goal of 50 percent GHG emission reductions below 2005 levels by 2030.
- The climate resilience goal of becoming a Climate Ready Region and making significant progress toward becoming a Climate Resilient Region by 2030.

To be Climate Ready by 2030, all local governments must assess current and future climate risks, and be actively integrating climate planning across government plans, operations, and communications. To fully be a Climate Resilient Region, the region must have the ability to adapt to disturbances caused by current and future, acute and chronic climate impacts and successfully maintain essential functions.

Along with the COG goals, local governments across the MSA and the states the MSA crosses have established goals. Appendix B lists existing local, regional and state climate and energy goals and plans. During the CCAP development COG will work with members within and outside of the region to establish an MSA-wide GHG reduction goal(s).

3 METROPOLITAN WASHINGTON LIDACS

CPRG planning guidance specifies that a PCAP LIDAC analysis needs to include:

- LIDACs in the MSA, as identified using Census block or tract IDs.
- Specific climate impacts or risks to which LIDACs are vulnerable.
- Expected benefits to LIDACs associated with PCAP GHG reduction measures.
- A summary of planned and/or ongoing engagement with representatives and residents of LIDACs to inform PCAP and CCAP development and implementation.

The sections below provide information to meet each of these requirements or reference where in the PCAP to find the relevant information.

3.1 Metropolitan Washington's LIDACs

The metropolitan Washington region is composed of diverse cities and counties with varying demographics such as education levels, income, and unemployment.

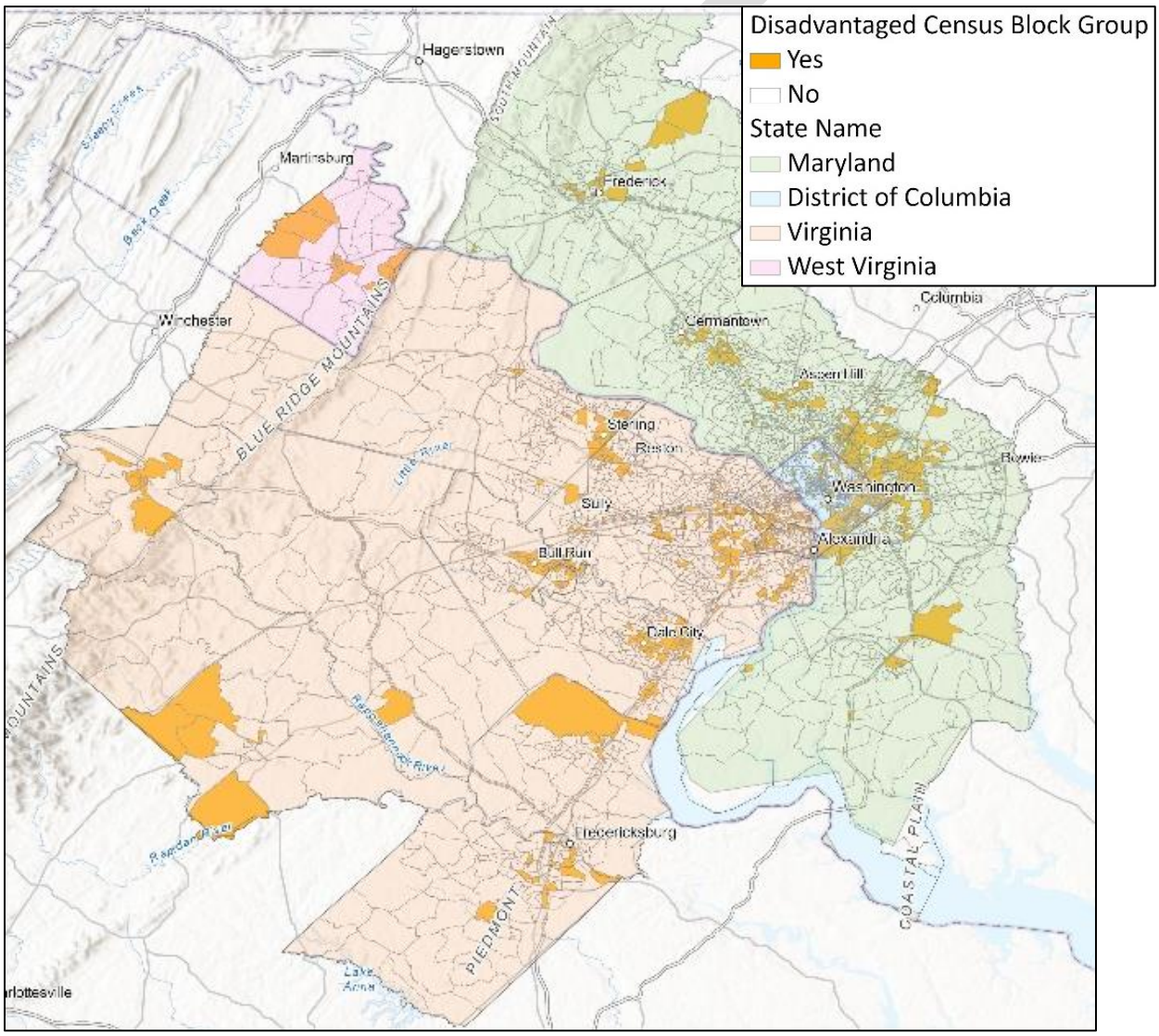
- Education levels vary across the MSA, with four percent of the overall population lacking a high school diploma. However, in Low-Income, Disadvantaged, and Underserved Communities, this percentage increases to eight percent.[8]
- Economic diversity is evident in the region's median household incomes. The simple average median income across the MSA counties is approximately $125,000. However, within LIDAC communities, the median household income for all MSA counties is about 30% less on average at about $85,000, and in Virginia counties it increases to $98,000.[8]
- Unemployment rates also show variations. The District of Columbia experiences the highest overall unemployment rate in the metropolitan Washington region at 5% but rises to 10% in LIDAC communities within the District.[8] Recognizing the disparities highlighted in the demographic

[8] Census Bureau. American Community Survey. 2022. https://www.census.gov/data/developers/data-sets/acs-5year.html

information across the MSA, particularly within LIDAC communities, shows the importance of engaging with these communities.

COG used EJScreen (an EPA environmental justice screening tool) to visualize and identify Census block groups that EPA designates as disadvantaged in the state (see Figure 5). In the metropolitan Washington region 25% of Census block groups are identified as disadvantaged. Of these disadvantaged Census block groups, 34% are in Maryland, 25% are in D.C., 40% are in Virginia, and 1% are in West Virginia. A full list of the Census Block IDs that are identified as LIDACs in the MSA is included in Appendix C.

Figure 5. LIDACs in the Metropolitan Washington Region as Identified Using EJScreen



3.2 Climate Impacts and Risks to Metropolitan Washington's LIDACs

Social systems inequitably distribute negative impacts from climate risks on Black, Indigenous, and People of Color (BIPOC) individuals and communities, low-income households, unhoused individuals,

rural communities, and agricultural workers.[9] Not only do these communities experience the most severe impacts of climate change, but they are also the least able to prepare for and respond to these impacts due to a lack of resources and socio-political power. According to a 2021 EPA analysis, racial and ethnic minorities are particularly vulnerable to climate change impacts, especially Black and African American individuals.[10]

Minority and low-income communities are more likely to suffer the consequences of climate change due to heightened exposure to climate risks and inaccessibility to resources, such as adequate infrastructure and proper insurance. Many factors contribute to this inequality, including historical discriminatory practices in housing, education, and employment. Pre-existing health status and living conditions are two key components of climate vulnerability, which are often determined by economic power, social policies, political influence, and structural racism.[11]

Within the Washington MSA, the most prevalent climate risks are extreme heat, extreme precipitation events, sea level rise, and storm surge. These climate risks were evaluated as part of *Climate Ready DC: the District of Columbia's 2016 Plan to Adapt to a Changing Climate* (which applies specifically to "The District") as well as the Metropolitan Washington *2030 Climate and Energy Action Plan* published in 2020. Additionally, as a part of its regular planning and programming, COG's Transportation Planning Board (TPB) has developed Equity Emphasis Areas (EEAs) throughout the COG region to elevate equity and inform future growth and investment decisions. Analysis of the EEAs show significant overlap with LIDACs. COG's evaluation determined that communities within LIDACS are particularly vulnerable to climate risks.

In D.C, average annual temperatures have risen 2°F over the last 50 years and are projected to continue rising in the future. Historically, the average summer high was 87°F. By 2080, this number is projected to increase to 93°F (in a low-emissions scenario) or 97°F (in a high emissions scenario). In addition to rising average temperatures, climate change is leading to more intense and frequent heat waves. In 2012, a record-breaking heatwave hit the region and temperatures exceeded 95°F for 11 days. Currently, D.C. experiences 30 "dangerously hot days" (days exceeding 95°F) a year; by 2080, projections indicate that there will be 40-75 of these days. The number of extreme heat days and heat waves is projected to increase across the whole MSA as well; the number of days per year with temperatures above 95°F could reach around 40 days by 2080 under a low-emissions scenario, and around 60 days by 2080 under a high emissions scenario.[12]

---

[9] Marino, E.K., K. Maxwell, E. Eisenhauer, A. Zycherman, C. Callison, E. Fussell, M.D. Hendricks, F.H. Jacobs, A. Jerolleman, A.K. Jorgenson, E.M. Markowitz, S.T. Marquart-Pyatt, M. Schutten, R.L. Shwom, and K. Whyte, 2023: Ch. 20. Social systems and justice. In: Fifth National Climate Assessment. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. https://doi.org/10.7930/NCA5.2023.CH20

[10] EPA. 2021. Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. U.S. Environmental Protection Agency, EPA 430-R-21-003. www.epa.gov/cira/social-vulnerability-report

[11] Patnaik, A., Son, J., Feng, A., Ade, C., 2020. Racial Disparities and Climate Change. Princeton Climate Action. https://psci.princeton.edu/tips/2020/8/15/racial-disparities-and-climate-change

[12] A high emissions scenario refers to a Shared Socio-economic Pathway (SSP) that represents the upper boundary of radiative forcing (for example, SSP5-8.5 represents a pathway with an additional radiative forcing of 8.5 W/m^2 by 2100). Under a high emissions scenario, there is intensified exploitation of fossil fuel resources and a more energy-intensive global lifestyle (Böttinger, M. and Kasang, D. The SSP

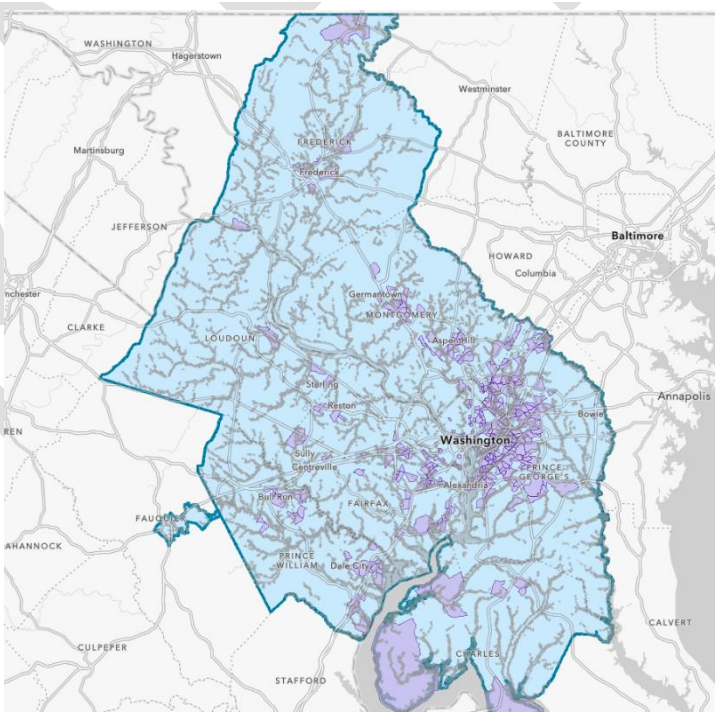
The median number of extreme heat days a year in the MSA is 8.61 days; the median in LIDACs is 8.75 days, demonstrating disparities between communities. Urban heat island effects will put populations residing in urban areas at even greater risk of the health effects of extreme heat. More frequent and severe droughts will also impact the Potomac River and put vulnerable populations in danger due to agricultural and water system disruptions.

Although annual amounts of precipitation have not changed significantly, seasonal rates have as fall and winter rates have increased while summer rates have decreased. Additionally, the frequency and intensity of extreme precipitation events is increasing. Today's 1-in-100-year precipitation event could become a 1-in15-year event by late-century for the MSA.

Sea level rise is a problem for low-lying areas in the MSA, particularly in LIDACs. Water levels for the Potomac and Anacostia Rivers (which are both tidal and border LIDACs) have risen 11 inches in the past 90 years. This has resulted in a 300% increase in nuisance flooding along the riverfront. By 2080, there could be up to 3 feet and 5 inches of additional sea level rise. Coastal storms such as hurricanes also create flooding events, and climate model projections indicate that hurricanes will become more intense in the future. The threat of stronger hurricanes combined with rising sea levels puts the region at very high risk of flooding.

Overall, individuals in EEAs will continue to be more at risk of these climate hazards. EEAs will be more impacted by inland and coastal flooding as well. About 60% of EEAs lie in FEMA 100-year floodplains (about 1 million people total) (see **Error! Reference source not found.**), and more than 10% of EEAs (100,000 people) will be impacted by a 6-foot sea level rise. Many of these same trends are likely to pervade across the entire MSA.

Figure 6. Equity Emphasis Areas and Inland Flooding Zones for the COG region (gray areas indicate 100- and 500-year FEMA flood zones, while purple areas indicate EEAs).



Scenarios. Deutsches Klimarechenzentrum. https://www.dkrz.de/en/communication/climate-simulations/cmip6-en/the-ssp-scenarios#:~:text=SSP585%3A%20With%20an%20additional%20radiative%20forcing%20of%208.5,CMIP5%20scenario%20RCP8.5%2C%20now%20combined%20with%20socioeconomic%20reasons.)

3.3 Engaging with Metropolitan Washington's LIDACs

Organizations representing LIDACs were engaged in the creation of this PCAP; consideration of LIDACs is a priority when it comes to selecting climate pollution reduction projects, programs, and measures. Organizations representing LIDACs attended community engagement webinars where they discussed which programs best aligned with their community's needs. Additionally, COG drafted and disseminated the CPRG Community Climate Priorities survey to assess community-wide priorities. This survey asked participants to prioritize strategies for climate change mitigation. Responses highlighted community engagement and empowerment and public support to achieve climate action. Food security was also identified as a priority issue. Through these survey responses and continued engagement with sister agencies, jurisdictions within the MSA, tribes, industry partners, and community CBOs representing LIDACs, COG will create a comprehensive Community Engagement Plan focusing on environmental concerns and supporting historically underrepresented and overburdened communities. Additional information on engagement with LIDACs is presented in Section 1.4.

3.4 Benefits of GHG Reduction Measures to Washington's LIDACs

Summary of benefits by sector under development. Additional information on the benefits of each GHG reduction measure for LIDACs in the MSA are presented as a part of each measure below in Section 4.

4 GHG REDUCTION MEASURES

4.1 Buildings and Clean Energy

4.1.1 ACCELERATE THE DEPLOYMENT OF ENERGY EFFICIENCY SOLUTIONS AND DECARBONIZATION OF RESIDENTIAL, INSTITUTIONAL, MUNICIPAL, AND COMMERCIAL BUILDINGS.

Decarbonizing buildings through energy efficiency, fuel switching, adaptive reuse, and other actions are a high priority for the MSA. Building energy consumption accounted for approximately 50% of GHG emissions in the metropolitan Washington region in 2020. This measure focuses on increasing opportunities for owners and users of all building types to access and install technologies to decrease overall energy consumption, increase energy efficiency, and reduce GHG emissions from the built environment. It covers both market rate and low/moderate income customers and private and public buildings.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR(S)

This measure will reduce GHG emissions in the buildings inventory sector. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **State and local governments.** Government organizations such as the District of Columbia DOEE, Maryland Green Building Council, Maryland Department of the Environment, Maryland Energy Administration, Virginia Department of Housing and Community Development, and others offer programs to provide funding and technical assistance for energy efficiency and electrification projects. This may include departments of energy, environment, housing, school districts, and others.
- **Energy utilities.** Utilities serve as providers of existing energy efficiency and buildings decarbonization programs to rate-payers.
- **Businesses, hospitals, private schools, universities, data centers, places of worship**. These entities will implement building improvements and design/build decarbonized buildings.
- **Property owners, developers, renters**. As end users, homeowners, property owners, developers, and renters can make behavior changes and decisions that affect building efficiency. While property owners and developers generally have more control over changes to and within buildings, renters can also make behavior and other changes that will result in GHG reductions.
- **Contractors and equipment service providers.** These partners provide the services and equipment to decarbonize buildings.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Create voluntary and/or mandatory benchmarking programs for buildings.
- Improve building energy performance standards (BEPS).
- Strengthen green building policies and energy codes. Implementing strengthened codes, including "stretch codes," can encourage the mitigation of air pollutants from buildings.
- Conduct energy audits and site assessments. By conducting these assessments, implementers can collect information on which areas of the building inventory, if any, need additional support in achieving improved energy efficiency and decarbonization, and have the highest potential to result in energy savings.
- Facilitate net zero building development. Prioritizing low-emissions practices across the lifecycle (in construction, maintenance, and end of life) of new buildings and retrofits to existing buildings can yield more integrated emissions savings.
- Expand or create new programs and incentives for retrofits and upgrades to single and multifamily homes (e.g., building efficiency retrofits including window replacements, insulation, more efficient and/or electric appliances, hybrid or all-electric heat pumps or more efficient gas heat pumps).
- Implement energy efficiency and fuel switching in data centers and other large energy users (e.g., hospitals), including implementing solutions to reduce the use of back up diesel generators and transitioning to cleaner alternatives.
- Expand and/or create new programs for retrofits and incentives and upgrades to municipal and government buildings, including public schools, government buildings, and operations (e.g., building efficiency and electrification retrofits, street lighting and stadium lighting retrofits, microgrids).
- Plan for and address electric panel upgrades in residential and commercial properties to support electrification.

Some of these activities are already underway to varying degrees across the metropolitan Washington region. For example, the Maryland Climate Solutions Now Act of 2022 requires the Maryland Department of the Environment (MDE) to develop BEPS.[13] MDE must develop standards for buildings that, among other requirements, achieve:

- A 20% reduction in net direct GHG emissions by January 1, 2030 compared with 2025 levels for average buildings of similar construction.
- Net-zero direct GHG emissions by January 1, 2040.

Buildings subject to BEPS in Maryland are 35,000 square feet or larger (excluding the parking garage area). Owners of buildings subject to BEPS will need to report data to MDE each year beginning in 2025. Historic properties, public and nonpublic elementary and secondary schools, manufacturing buildings, and agricultural buildings are exempt.

Furthermore, in January 2024, Montgomery County, Maryland issued a transmittal packet of proposed BEPS regulations to the County Council. The regulations will be considered by the County Council in 2024.[14]

[13] https://mde.maryland.gov/programs/air/ClimateChange/Pages/BEPS.aspx

[14] https://www.montgomerycountymd.gov/green/energy/beps.html

Other activities may be further behind in implementation due to limited funds, potential authority limitations, and other barriers such as lack of education/awareness and workforce and supply chain limitations. Most of the activities can be implemented or expanded in the near term.

AUTHORITY TO IMPLEMENT

Maryland and D.C. have enacted legislation mandating BEPS, but Virginia law does not currently allow local governments to establish BEPS or related policies such as energy benchmarking. Energy code implementation across the region is governed by state law, which with some variations limits local governments' ability to implement codes different from that adopted at the state level. All other activities mentioned above can be implemented or are being implemented through existing voluntary or regulatory programs.

GEOGRAPHIC COVERAGE

This measure will reduce GHG emissions across the entire MSA.

FUNDING SOURCES

Example potential funding sources include:

- U.S. Department of Energy (DOE) Energy Efficiency and Conservation Block Grants
- DOE Home Efficiency Rebates and Home Electrification and Appliance Rebates
- DOE State Energy Program
- U.S. Department of Housing and Urban Development (HUD) Green and Resilient Retrofit Program
- DOE and State Weatherization Assistance Programs
- Washington DC Sustainable Energy Utility (SEU)
- DC Green Bank
- Montgomery County Green Bank

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

Potential metrics to track the progress of this measure include:

- Number of units retrofitted, disaggregated by residential, institutional, municipal, and commercial buildings
- Square footage retrofitted, disaggregated by residential, institutional, municipal, and commercial buildings
- Number of units constructed as net zero, high efficiency or electric, disaggregated by residential, institutional, municipal, and commercial buildings
- Square footage of buildings constructed as net zero, high efficiency or electric, disaggregated by residential, institutional, municipal, and commercial buildings

4.1.2 ACCELERATE THE DEPLOYMENT OF CLEAN AND RENEWABLE ENERGY.

This measure aims to accelerate the development of on-site solar energy, complemented by battery storage and microgrids (where feasible), by expanding upon successful existing community-based programs (e.g., Solarize NoVA, SUN-Switch, and Capital Area Solar Switch) and introducing new initiatives and technologies, such as agrivoltaics. Where on-site solar installation and use is not feasible, off-site solar and other renewable power resources through aggregation options such as community solar, retail choice, and community choice aggregation (CCA) could be used. This measure also includes the use of solar energy for local government operations.

COG's Commitment to Renewable Energy
Briefed on recommendations from the COG CEEPC, the COG Board endorsed a goal of 250,000 solar rooftops in the region by 2030, with additional goals that call on local jurisdictions to pursue solar installations on government facilities, explore renewable energy for 100 percent of government operations, and support community-wide efforts to deploy solar, including programs for low-income residents, efficient zoning and permitting processes, and incentives. Currently, there are approximately 73,000 solar energy installations in the region.
Note: This does not cover the entire CPRG MSA.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR(S)

This measure will reduce GHG emissions in the buildings sector. It may also reduce emissions in the transportation sector if electric vehicles are charged using distributed renewable energy sources. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **State and local governments.** Governments can install and procure renewable energy on or for public facilities, create solar ordinances and updated zoning ordinances, and develop policies to support renewable energy.
- **Utilities.** As providers of large-scale renewable energy and as actors in renewable energy credit markets, utilities can work with entities to negotiate for and procure renewable energy.
- **CBOs.** Engaging with local CBOs can help ensure that on-site solar initiatives address the specific needs and concerns of local communities. These organizations can also play a role in raising awareness and promoting community participation, e.g., in community solar programs.
- **Private sector partners.** Collaboration with private sector entities — including solar developers, financiers, building owners, and technology providers — is crucial for implementing on-site solar installations. Public-private partnerships can lead to greater funding and heightened expertise for these projects.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Expand the reach of existing programs, such as Solarize NoVA, SUN-Switch, and Capital Area Solar Switch programs.
- Map solar opportunities across the MSA to determine potential priorities and investments.
- Provide clean energy feasibility assessments at key facilities (e.g., university campuses, hospitals).
- Incorporate community energy infrastructure needs, goals, and strategies in master plans, comprehensive plans, and small area plans.
- Adopt solar-ready new construction ordinances or incentive programs.
- Provide or promote incentives to encourage installation of solar in the community and for battery storage.
- Install renewable energy systems on schools and municipal infrastructure.
- Implement battery storage pilot initiatives at public facilities.
- Provide technical assistance and support for negotiating and navigating power purchase agreements, CCA, and community solar.
- Examine the possibility of regional demand aggregation.
- Attempt cooperative purchasing initiatives or energy purchasing consortia.
- Develop new state or local policies to help overcome barriers to CCA adoption.
- Leverage existing cooperative purchasing programs, such as the Mid-Atlantic Purchasing Team and COG Cooperative Procurement Program, to fast-track local implementation.
- Establish PPA(s) to provide clean electricity to local government facilities, potentially aggregating demand with other local jurisdictions or large local businesses to reduce cost.
- Implement and share best practices from CCA pilot programs, where applicable.

Many of these activities are ongoing and will continue to be implemented throughout the region but need to be scaled. Other activities, such as developing new policies to overcome CCA adoption barriers, still need to be implemented and depend on existing authorities. Some of these planned activities can commence in a shorter timeframe, contingent upon available resources (e.g., regional solar opportunity mapping), whereas others may take more time (e.g. adopting solar-ready ordinances) and may be location-dependent.

AUTHORITY TO IMPLEMENT

The authority to implement on-site renewable energy falls on state and local governments in partnership with utilities and the private sector. Programs like Solarize NoVA, SUN-Switch, and Capital Area Solar Switch operate at the building scale, and the implementation authority for voluntary participation rests with individual building owners. On-site solar development is pursued where feasible, but off-site options, such as community solar, retail choice, and CCA, come into play when on-site solutions are not viable. The authority for off-site renewables, particularly community solar, is governed by state law. Utilities in the metropolitan Washington region can offer voluntary renewable energy certificate (REC) purchases, while community solar, retail choice, and CCA require specific state legal authorizations, each addressed by Maryland, DC, and Virginia laws in their respective domains. Retail choice, allowing customers to choose alternative energy suppliers, is authorized in Maryland and DC but not in Virginia, except for large electricity users. CCA, allowing local governments to seek energy supplies independently, is legally authorized in Maryland and Virginia, subject to state legal provisions similar to those for community solar.

GEOGRAPHIC COVERAGE
This measure will reduce GHG emissions across the entire MSA.

FUNDING SOURCES
Example funding sources include:

- DOE State Energy Program
- HUD Green and Resilient Retrofit Program
- EPA Greenhouse Gas Reduction Fund
- Washington DC SEU
- Montgomery County Green Bank

LIDAC BENEFITS
Under development

SAMPLE METRICS FOR TRACKING PROGRESS
- Number of solar rooftops
- Amount of distributed solar capacity installed
- Amount of distributed solar capacity installed in LIDACs

4.1.3 STUDY, PLAN FOR, AND DEPLOY DISTRICT ENERGY AND MICROGRID OPPORTUNITIES.
This measure focuses on targeted and strategic uses of district energy systems, with the opportunity to use with clean fuels (e.g., renewable gas generated from a landfill), and pair with microgrids. For large energy users (e.g., data centers) and campuses (e.g., hospitals, higher education facilities) district energy offers an opportunity for energy efficiency, GHG reductions, and resiliency. Microgrids can provide a form of energy resilience and independence due to their ability to "island" from the larger grid. This is especially important for critical infrastructure or near 24/7 large energy users when energy is needed during blackouts or other interruptions in service. These opportunities could be targeted in LIDACs areas and form the basis of community resilience hubs.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR
This measure reduces GHG emissions from the buildings sector. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **State and county government agencies** (e.g., Public Works, Department of the Environment). Local governments may need to adjust zoning regulations and state and local agencies may need to work through environmental permitting processes for systems.
- **Public Service Commissions, Utilities, Energy Suppliers**. Participation and/or approval by energy utilities (e.g., Pepco) and their regulators, is critical for microgrid owners and operators. Further, utilities and energy suppliers will need to fuel district systems running on clean or renewable gases.
- **Private sector**. Support from the private sector, including key implementers and partners mentioned above, will be required for feasibility assessments, construction planning and development, and potential maintenance and operations.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Support the identification and selection of high energy users and critical infrastructure for district energy and/or microgrid implementation.
- And engage with private sector partners interested in district energy and microgrid implementation solutions.
- Conduct site feasibility assessment and pre-construction planning.
- Partner on grant applications or provide contract support for project planning, feasibility, and implementation support.
- Support state incentives and opportunities to help facilitate district energy and microgrid development.
- Coordinate with state and local governments to reduce barriers to deployment.
- Work closely with regulators and utilities to deploy solutions.

The accomplishments of CEEPC and its members have also earned the region recognition as a White House Climate Action Champion. This designation made its members eligible for targeted federal technical assistance and grant funding from 2014–2016. One way COG leveraged this opportunity was to conduct local clean energy infrastructure assessments at six sites across the region to determine the feasibility of microgrids, combined heat and power (CHP), geothermal, or net zero energy development. Two examples of progress at these sites include the Falls Church School Campus is with geothermal energy and the Washington Hospital Center (microgrid deployment).

Montgomery County has installed a microgrid project at the County's Public Safety Headquarters as part of a comprehensive effort to ensure the resiliency of critical public services during major electric distribution system outages. The project installed a microgrid featuring an 800-kW CHP system. Montgomery County has also installed a microgrid at the County's Correctional Facility, which will reduce GHG emissions by 950 tons annually. In addition, Montgomery County has created Brookville Smart Energy Bus Depot, an integrated microgrid and electric bus charging infrastructure project.

Arlington County's Community Energy Plan includes a goal to ensure Arlington's energy resilience and includes policy actions that focus on developing resilient energy infrastructure, enhancing energy assurance, and assessing microgrid opportunities for critical services. Maryland has been extending programs to incorporate resiliency projects, e.g., MEA introduced in 2020 the Resilient

Maryland Program to provide funding for projects to increase microgrids and other distributed energy resource in order to improve energy resiliency.

NVRC commissioned a study on the legal viability of district energy systems in 2011, and many of these conclusions and opportunities still stand.[15] The study concluded that: there are clear existing paths for public and/or private establishment, ownership and operation of district energy systems; district energy systems will likely be subject to complex legal frameworks; depending on the ownership arrangements and system characteristics, the operation may be subject to limitations of powers of localities under the "Dillon Rule", to State Corporation Commission Regulation, and land use and environmental regulations; the Code of Virginia provides paths to development of district energy systems, but could be amended to provide more clarity about how district energy systems can be developed and operated.

AUTHORITY TO IMPLEMENT

Where microgrids or district energy systems interconnect with and/or displace infrastructure owned by energy utilities franchised under state law, utility participation and/or permission is typically required, which will also involve state regulatory commissions. Where municipally-owned utilities are involved, the authority typically resides within the local government. In certain situations, such as greenfield development, microgrid/district energy projects could be developed without utility involvement, though it is more likely that interconnection would be encouraged if not required.

GEOGRAPHIC COVERAGE

The actions within this measure are focused on the entire MSA area, but particular opportunities are focused in areas of high energy use, such as in high density data center populations (e.g., Loudoun and Prince William counties), schools, and hospitals.

FUNDING SOURCES

Example potential funding sources include:

- Energy Efficiency and Conservation Block Grants
- EPA Greenhouse Gas Reduction Fund
- MEA Resilient Maryland Program

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

- Number of approved/installed projects
- Capacity of microgrid capacity installed

[15] NVRC. https://www.novaregion.org/DocumentCenter/View/3050/NVRC-McGuire-Woods-District-Energy-White-Paper-Au?bidId=

4.2 Transportation

4.2.1 PROVIDE AND PROMOTE NEW AND EXPANDED OPPORTUNITIES TO REDUCE VMT THROUGH PUBLIC TRANSPORTATION, NON-MOTORIZED TRAVEL, MICROMOBILITY, SHARED TRAVEL OPTIONS, AND DEVELOPMENT.

The COG region is expected to add about 1.3 million people (and 18% increase) and 900,000 jobs by 2045. At the same time there is expected to be a 12.3% increase in VMT by residents in the region.[16] These numbers are even greater for the whole of the MSA, and vehicle trips are expected to continue to be the predominate mode of transportation. This measure aims to reduce the VMT by offering robust, reliable, and safe travel options. These options include active transportation methods (bicycling and walking), public transportation (trains and buses), shared transportation (carpools and vanpools), and micromobility (bicycle and scooter share). Other opportunities to telework and telehealth will also reduce VMT. Land use and development changes also are a part of this measure to reduce length of trips and create more micromboility opportunities.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR

This measure will reduce GHG emissions in the transportation sector. Emissions from the land use sector may also be impacted because of changes in development. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **Local governments and municipalities.** Responsible for land use planning and comprehensive planning; transportation planning, development and operations, including local transit; program development and administration (e.g., travel demand management programs), and local policies.
- **State Departments of Transportation.** Will be key partners in transportation infrastructure planning, development, and operations, such as rail and changes to roads to prioritize bus transportation along state routes, as well as policies related to toll roads.
- **Regional planning organizations and commissions.** Plan for, evaluate, and in some cases fund transportation infrastructure investments and programs. This includes **COG, TBP,** and other regional planning agencies across the MSA.
- **Private sector partners.** Private sector partners, such as land use owners, developers, and businesses play a key role in development decisions and design that affect the viability of using

[16] TPB. Visualize 2045. 2022. https://visualize2045.org/wp-content/uploads/2022/09/Viz2045Final-Report-6-15-22_hyperlinked_.pdf

alternatives to driving. Business can also implement telecommute policies and other policies that help manage travel demand.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Implement infrastructure improvements to support non-motorized travel (e.g., roadway design that make walking and biking safer, adding bicycle and pedestrian pathways, adding sidewalks, improving crosswalks, completion of the National Capital Trail Network).
- Provide improvements and enhancements in public transit service (e.g., expansion of bus or rail service, transit priority treatments, bus rapid transit, operational and service enhancements, bus stop improvements such as benches and bus shelters, transit station improvements, mobility hubs that bring together transit, bike sharing, and other options; bus and rail maintenance and investments to improve reliability and quality of service).
- Enhance micromobility options, including expansions of bike sharing, e-bike sharing, and scooter sharing.
- Improve first-mile last-mile connections to transit (e.g., shuttles, bicycle storage, bicycle and pedestrian connections to transit, on-demand transit).
- Support land use policies that encourage development near high-capacity transit stations and within activity centers, including design that supports walking, biking, and transit.
- Implement or expand policies that promote car/ride sharing and reducing vehicle travel, such as through reduced parking minimums, parking pricing, and congestion pricing, as well as HOV-3 free and other policies to encourage ridesharing.
- Implement incentives that encourage use of sustainable modes, such as incentives for purchasing e-bikes, or incentives for ridesharing and using transit, reduced or fare-free transit.
- Implement policies to manage travel demand, such as those that promote or require employer-based trip reduction, ridematching, and vanpool formation.

The TPB 2022 Resolution on the Adoption of On-Road Transportation Greenhouse Gas Reduction Goals and Strategies (TPB Resolution R18-2022) reflected many of these regional priorities more specifically. It adopted a set of priority strategies including:[17]

- Improve walk/bike access to all high-capacity transit stations.
- Increases walk/bike modes of travel, e.g., complete the National Capital Trail Network by 2030.
- Add additional housing united near high-capacity transit stations and in COG's Regional Activity Centers.
- Reduce travel times on all public transportation bus services.
- Implement transportation system management and operations improvement measures at all eligible locations by 2030.

It also included a set of strategies that were deemed not yet ready to be adopted by the TPB but for further study:

[17] June 2022 TPB meeting recap: Plan update, new climate goals approved - TPB News - News | Metropolitan Washington Council of Governments (mwcog.org)

- Take action to shift growth in jobs and housing from locations currently forecast to locations near high-capacity transit stations and in COG's Regional Activity Centers to improve the jobs-housing balance locally.
- Make all public bus transportation in the region fare-free by 2030.
- Make all public rail transportation in the region fare-free by 2030.
- Price workplace parking for employees – only in Activity Centers by 2030 and everywhere by 2050.
- Convert a higher proportion of daily work trips to telework by 2030 and beyond.
- Charge a new fee per VMT by motorized, private, passenger vehicles in addition to the prevailing transportation fees and fuel taxes.
- Charge a "cordon fee" (commuter tax) per motorized vehicle trip for all vehicles entering Activity Centers by 2030.

AUTHORITY TO IMPLEMENT

The actions associated with making changes to increase pedestrian and bicycle infrastructure can be administered by local and state jurisdictions. Policies that impact land use can similarly be administered by local jurisdictions though zoning codes and potential changes and developers can act on where to build based on these policies. Actions related to public transportation may need approvals from regional or state transportation agencies to be implemented and will need higher levels of authority depending on the scope and scale of changes to public infrastructure. Additional agencies and approvals will be needed for any actions related to charges such as congestion pricing and VMT pricing. Employers also play a key role in providing company policies to allow for teleworking. Of note, for this region is that there is a disproportionately high number of federal workers, so change in employe telework policies will be tied in part to federal agency employee policies.

GEOGRAPHIC COVERAGE

This measure will reduce GHG emissions across the entire MSA.

FUNDING SOURCES

Example potential funding sources include:

- Federal Transit Administration (FTA) Grants – Urbanized Area Formula Program
- FTA –Bus and Bus Facility Grants
- FTA – Capital Investment Grants
- Federal Highway Administration (FHWA) Carbon Reduction Program
- FHWA Congestion Mitigation and Air Quality Improvement (CMAQ) Program
- FHWA Highway Safety Improvement Program (HSIP)
- FHWA Surface Transportation Block Grant (STBG) Program

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

- VMT and VMT per capita

- Work mode share (percent of workers commuting by single occupant vehicle, rideshare, transit, bike, walk, telework, etc.)
- Transit ridership for bus and rail transit
- Active transportation and micro mobility uptake

4.2.2 ACCELERATE THE DEPLOYMENT OF LOW-EMISSION TRANSPORTATION, FUELS, AND VEHICLES.

The transportation sector accounts for approximately 40% of emissions in the metropolitan Washington region. To address these emissions, this measure aims to accelerate the deployment of low-emission transportation, fuels, and vehicles across all on-road sectors including light-, medium-, and heavy-duty vehicles from personal vehicles and both private and public fleets, including school and municipal bus fleets, and support the deployment of charging and fueling infrastructure.

Beyond electric vehicles (EVs) this measure also allows for flexibility in the use of green hydrogen, biodiesel, and other renewable or low-carbon fuels where options are not available or feasible, particularly for medium- and heavy-duty vehicles and buses.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTORS

This measure reduces GHG emissions from the transportation sector. The increase in EV adoption may also impact GHG emissions in the buildings sector depending on how chargers are tied to the built environment. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **COG** can support the aggregation of demand via the COG Cooperative Purchasing Program and local EV buying co-ops. This effort can also be supported by **Clean Cities and Washington Area New Dealers Association (WANADA). TPB** can coordinate efforts in the region and has set priority actions that are reflected in this measure.
- **Local transit agencies** are also key implementors in the transition of public transit fleets to clean fuel and EVs.
- **State and local governments** can transition municipal fleets to EVs or low-carbon fuel vehicles supported by the adoption of green fleet policies and plans and provide incentives or policies to support EV adoption. State agencies, with federal funding, are building out EV charging networks. Local governments can also implement community-wide buying co-ops for EVs for public and private fleets as well as personal vehicles.
- **Utilities** can provide incentives for transitioning to clean fuel vehicles (e.g., Pepco offers support for rideshare and electric bus charging infrastructure in Washington D.C.).

- **Private sector actors**, such as Uber and Lyft or ridesharing companies such as ZipCar, can procure and offer alternative fuel vehicles and provide EV charging infrastructure.
- **Grocery stores, shopping plazas, and gas and fueling stations**. These entities can work with state and local governments to bring publicly accessible charging and fueling stations to the region.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Implement systems to manage and use data on vehicle registrations and charging infrastructure (e.g., uptime) and fueling stations.
- Use cooperative purchasing and community buyer co-ops, as well as ride share and car share.
- Pass and implement ordinances that mandate or incentivize clean fuel infrastructure into development.
- Create and implement clean vehicle procurement policies.
- Plan for, develop, and procure EV charging networks, such as along Alternative Fuel Highway Corridors. Also, develop biofuels infrastructure.
- Develop incentive programs for EV chargers in multifamily, public and commercial, and rental properties.
- Create incentives and programs for EV and low-emissions vehicles. Incentives can include direct financial incentives or exemptions to certain restrictions (such as D.C.'s driving restriction exemption, HOV lane exemptions in Maryland and Virginia, or emissions testing exemption in Virginia).
- Provide training (e.g., through the Electric Vehicle Infrastructure Training Program) for installation and maintenance of EV charging and fueling infrastructure.
- Conduct regular analysis of the state of clean fuel infrastructure to address any gaps in charging/refueling needs that may hamper the rate of transition.
- Explore innovations in charging such as vehicle-to-grid regenerative power and solar tie-in to EV infrastructure.

The TPB 2022 Resolution on the Adoption of On-Road Transportation Greenhouse Gas Reduction Goals and Strategies (TPB Resolution R18-2022) reflected many of these regional priorities more specifically including:[18]

- Convert private and public sector light medium, and heavy-duty vehicles, and public transit buses to clean fuels, by 2030.
- Deploy a region-wide robust EV charging network (or refueling stations for alternative fuels) for light, medium, and heavy-duty vehicles.

[18] June 2022 TPB meeting recap: Plan update, new climate goals approved - TPB News - News | Metropolitan Washington Council of Governments (mwcog.org)

COG is already taking action to support these priorities. In the summer of 2023, a new Electric Vehicle Deployment Clearinghouse was unveiled.[19] A REVD Working Group was also established and is conducting a regional light-duty EV infrastructure study.[20]

AUTHORITY TO IMPLEMENT

Local jurisdictions have the authority to purchase vehicles for their fleets; such purchases have already been started across the MSA. In some instances, purchasing or procurement policies may need to be adjusted to prioritize low and no emissions vehicles. Private and personal purchasing of low and no emissions vehicles does not have any statutory limitations. Local zoning or code changes may need to be made for charging and fueling infrastructure. States are also using transportation funds to support the planning for and development of EV charging infrastructure.

GEOGRAPHIC COVERAGE

This measure will reduce GHG emissions across the entire MSA.

FUNDING SOURCES

Example potential funding sources include:

- IRA – Clean Vehicle Tax Credit
- IRA – Previously Owned Vehicle Tax Credit
- IRA – Clean Commercial Vehicle Tax Credit
- IRA – Alternative Fuel Vehicle Refueling Property Tax Credit
- FHWA National Electric Vehicle Infrastructure Formula Program (NEVI)
- FHWA Charing and Fueling Infrastructure Grants
- EPA Clean School Bus Program
- EPA Diesel Emissions Reduction Program
- EPA Clean Heavy-Duty Vehicle Program

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

- Number of EVs, and low-carbon fuel vehicles registered and/or purchased
- VMT by vehicle type and fuel
- Number of publicly accessible installed charging stations by type (e.g., Level 2 or DC Fast Chargers)
- Uptime hours
- Number of maintenance/repair workers trained

[19] COG unveils Electric Vehicle Deployment Clearinghouse - News Highlight - News | Metropolitan Washington Council of Governments (mwcog.org)

[20] Regional Electric Vehicle Deployment Working Group | Metropolitan Washington Council of Governments (mwcog.org)

4.2.3 ACCELERATE THE DEPLOYMENT OF OFF-ROAD/NON-ROAD ELECTRIC EQUIPMENT.

This measure focuses on accelerating the widespread adoption of electric off-road/non-road electric equipment through education and awareness campaigns and by implementing a comprehensive framework of incentives and assistance programs to make ownership more accessible and appealing. This equipment includes lawn and landscaping equipment, construction equipment, recreational vehicles like all-terrain vehicles (ATVs), and more. It also includes transitioning government owned and operated equipment to electric.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR

This measure reduces GHG emissions from the transportation sector. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCY(IES) AND PARTNERS

- State, county, and city government agencies. Local governments can create financial incentives for residents to purchase electric lawn care equipment and for construction companies to purchase electric construction equipment. They can also work with the private sector to educate consumers. Government agencies can put in place procurement policies for or contract for electric-powered off-road equipment.
- Private sector. Share information on equipment, join roadshows to demonstrate and give consumers access to equipment.
- Businesses and residents. Buy and use electric equipment.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Provide education and outreach campaigns to introduce new products or technologies to consumers and users (e.g., conduct a “roadshow”).
- Expand or create new incentive and technical assistance programs to promote and spread the use of electric equipment.

There are already examples of available incentives for this measure, that could be expanded upon. For example, the City of Bowie, Maryland has implemented a rebate for electric lawn care equipment for residents. Furthermore, the District of Columbia SEU has implemented a rebate for electric lawn mowers. Because this technology is readily available and programs already exist, this measure could be implemented in the near term.

AUTHORITY TO IMPLEMENT

Because these actions are typically incentive based rather than regulatory, the authority of state and local agencies to mount voluntary programs is typically within their charters. Actions such as regulating criteria air pollution emissions from off-road equipment for the purposes of complying with ambient air quality standards under state implementation plans or similar regulatory actions are not anticipated in this measure.

GEOGRAPHIC COVERAGE

The actions within this measure are focused on the entire MSA.

FUNDING SOURCES

Example potential funding sources include:

- U.S. EPA Clean Diesel Grant Program/Diesel Emissions Reduction Act

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

- Dollars of incentives used
- Number of pieces of electric equipment or electric off-road vehicles procured by local government

4.3 Waste

4.3.1 REDUCE GHG EMISSIONS FROM WASTE AND WASTEWATER TREATMENT.

The waste sector, which includes waste landfills and wastewater treatment facilities, generates high potency GHG emissions. To address emissions from the waste sector within the metropolitan Washington region, this measure aims to increase waste diversion, reduce waste, and reduce emissions at landfills, solid waste incinerators, and wastewater treatment plants. It also includes harnessing landfill gas (LFG) to generate electricity and heat. This measure covers both inorganic and organic waste.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR(S)

This measure reduces GHG emissions from the waste sector. GHG emissions from buildings and transportation may also decrease if LFG can be collected and used to generate electricity and heat. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	**Under development**

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCY(IES) AND PARTNERS

- **Local government departments of public works and/or water.** Oversees landfills, solid waste management and recycling, wastewater treatment operations and facilities.
- **VA Department of Professional and Occupational Regulation (DPOR)**. Oversees the Board for Waterworks and Wastewater Works Operators and On-site Sewage System Professionals, which licenses wastewater treatment facilities.
- **MD Department of the Environment**. Handles solid waste management and recycling in the state. MDE also oversees the Board of Waterworks and Waste System Operators, which sets standards for wastewater treatment plant operators.
- **WV Solid Waste Management Board (WVSWMB)**. State agency charged with helping local Solid Waste Authorities achieve their recycling goals through technical assistance and grants.
- **WV Department of Environmental Protection**. Oversees the Division of Water and Waste Management, which permits wastewater treatment facilities.
- **Local governments**. General oversight and policy implementation.
- **Private sector**. Including Solid Waste Authorities and privately-owned sanitation centers and wastewater treatment plants, and waste-related businesses support local and state governments in waste and wastewater treatment collection and management.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Proposed actions within this measure focus on increased access to composting, waste diversion practices, methane capture technology, and food waste reduction programs. These actions and programs will reduce waste sector emissions and provide multiple benefits to communities, including reduced air pollution and improved waste management in LIDACs. Actions to implement this measure could include, but are not limited to:

- Expand and offer new programs to increase composting and commercial composting infrastructure. Include different types of composting programs, such as yard trimmings and food waste.
    - Expand existing programs or establish new ones to enable using organic waste for compost, including yard trimmings and food waste, for curbside pickup. Collected organic waste will then be brought to a composting site, such as the Prince George's County's Organic Composting Facility in Maryland or Prince William County Eco-Park in Virginia, instead of being sent to landfills or waste-to-energy facilities such as the Covanta Fairfax incinerator. Compost can then be used to produce soil additives for growing foods and plants. Compost can be collected curbside in City or County-provided composting bins, as proposed below.
    - Provide residential compost bins**.** Provide free compost bins to residents, similar to how many Cities and Counties provide residents with recycling bins. Residents can pick up a compost bin at a city or County sanitation center. They can use the bins at their home to participate in a city or County-run curbside composting program, as described above, or to start their own at-home composting operation.
    - Encourage commercial composting. Establish an educational program to encourage businesses, including restaurants, universities, multi-resident buildings, and other entities to compost organics and food waste. Training and educational materials could highlight incentives such as GHG emissions reductions and cost-savings on waste hauling costs. Cities and Counties could provide training materials for businesses, and potentially subsidize the cost of on-site composting vessels. Pairing this with additional investment in industrial composting

facilities and an expanded compost collection program would further incentivize commercial composting.

  - Invest in industrial composting facilities. Invest in organics and food composting operations at existing and new solid waste facilities, including composting, mulching, and landfill facilities. Current composting facilities in the metropolitan Washington region include the Prince George's County's Organic Composting Facility in Maryland and the Prince William County Eco-Park in Virginia. Enhancing composting operations across the region would build capacity for a residential curbside composting program, as well as composting from commercial stakeholders with larger quantities of organic waste.
  - Support new infrastructure and transportation options for moving compost and organic waste to treatment or processing facilities.
- Improve practices and technologies to increase waste diversion.
  - Conduct waste education and public service campaigns. Educate the public to promote behavioral changes that encourage waste diversion at the source. Establish a public service campaign and disperse educational materials that encourage households to reuse and buy in bulk. Include education that focuses specifically on limiting single-use materials and food waste. Additionally, educate businesses on how they can reduce waste in their operations or implement composting systems, as described in the above action.
  - Product innovation and policy. Enact policies to ban or tax wasteful single-use packaging (e.g., plastic bags, plastic straws, polystyrene). Additionally, establish a program, potentially a grant, to promote research and develop new product designs to replace wasteful products sold and used in industrial processes in the region.
  - Establish landfill convenience center and waste transfer stations. Establish government owned waste transfer stations that will service homeowners, small haulers, and large haulers. Waste collected at this facility will be transferred to other jurisdictions for processing, recovery, and disposal. The facility will incorporate a citizen convenience center, which will assist with reuse and waste diversion initiatives. This action is being explored especially in Charles County, Maryland as their landfill nears capacity.
  - Create new cold storage systems to reduce food waste.
- Monitor, manage, and capture methane from landfills, food scrap/aerobic compost digester systems, and wastewater treatment plants for beneficial use.
  - Use methane capture technology. Introduce methane capture technologies, such as anaerobic digesters or LFG collection systems, via regional pilot or demonstration projects. Ensure project data can be easily tracked and monitored, and that projects can be scaled up if deemed effective.
  - Develop LFG-to-energy projects. Expand LFG treatment centers at landfills so that captured LFG can be converted into fuel for vehicles, electricity, and heating systems, rather than burned off.

There are limited barriers to implementing this measure and with proper funding and support many actions could be implemented in the near future.

AUTHORITY TO IMPLEMENT

The implementing authorities for this measure are state and county government agencies (e.g., Public Works, Department of the Environment, etc.) in partnership, where applicable, with private utilities, landfills, and composting facilities. Public waste management, demonstration projects,

waste-related policies, and public education campaigns can all be carried out under the existing powers of local governments. Support from the private sector, including key implementers and partners mentioned above, will be required for projects that expand to private landfills and wastewater treatment centers.

GEOGRAPHIC COVERAGE

The actions within this measure are focused on the entire MSA.

FUNDING SOURCES

- EPA Solid Waste Infrastructure Recycling Grant Program
- EPA Consumer Recycling Education and Outreach Grant Program
- U.S. Department of Agriculture Rural Energy for America Program Renewable Energy Systems & Energy Efficiency Improvement Guaranteed Loans and Grants

LIDAC BENEFITS

Under development

Benefits of Addressing Food Waste

Reducing, rescuing, and repurposing food waste can provide broader benefits to the region beyond GHG reductions. Addressing food challenges can bring health and nutritional benefits to LIDACs and reduce GHG emissions associated with food production and transportation, among many other benefits. Within the metropolitan Washington region, some jurisdictions have implemented the first stage of food waste prevention education campaigns (e.g., Montgomery County's Food Is Too Good To Waste campaign).

SAMPLE METRICS FOR TRACKING PROGRESS

- Weight of waste diverted from landfills or waste-to-energy facilities.
- Weight of waste composted.
- Number of people reached via waste diversion education programs and public service campaigns (e.g., clicks, views, webinar attendees, flier passed out).

4.4 Land Use

4.4.1 ACCELERATE THE EXPANSION OF THE REGIONAL TREE CANOPY AND REDUCE TREE CANOPY LOSS.

Trees and the canopy they create provide numerous environmental, economic, and social benefits. For example, tree canopy is important for mitigating the urban heat island effect and protecting communities from the increased temperatures that are a result of climate change and it also serves as a carbon sink (removing CO_2 from the atmosphere). This measure focuses on increasing tree canopies in urban and rural settings and preventing additional tree canopy losses. It involves planning, implementation, and management efforts on both private and public lands and working with community organizations and property owners to identify and implement strategies to increase tree canopy.

QUANTIFIED GHG REDUCTIONS AND RELEVANT GHG INVENTORY SECTOR

This measure reduces GHG emissions from the land use sector. Estimated GHG emissions reduction potential for this measure are:

GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Under development	Under development

Key assumptions, methods and data sources used to develop these quantified reduction estimates are provided in Appendix A.

KEY IMPLEMENTING AGENCIES AND PARTNERS

- **State department or divisions of natural resources or forestry.** Maintain and provide technical expertise and services for the maintenance and care of trees and other natural lands.
- **Chesapeake Tree Canopy Network.** Provides a platform for partners to share knowledge and best practices.
- **COG Regional Tree Canopy Subcommittee.** A subcommittee dedicated to the management of both the tree and forest canopy. COG and its municipal partners are currently working to determine an implementation path for its integrated urban tree canopy management approach.
- **Local governments.** Local governments operate various programs that enhance tree canopy by planting, maintaining, and monitoring the health of trees on public land and operating programs to incentivize private landowners to plant trees.
- **Community organizations.** Local organizations can help inform the strategic placement of trees to benefit LIDACs.
- **Private landowners.** Can choose to voluntarily increase tree canopy on their land.

IMPLEMENTATION ACTIVITIES AND MILESTONES

Actions to implement this measure could include, but are not limited to:

- Implement and expand partnerships with educational organizations to enable students to plant, monitor, and maintain trees. Teaching students how to manage trees (especially in LIDACs) can increase the public awareness of the benefits of tree canopy and expand capacity to plant and monitor trees.
- Support community gardens and small-scale urban agriculture.
- Review and strengthen local tree canopy-related policies and ordinances. Ensure that local policies are aligned to enable implementers to accelerate the expansion of tree canopy.
- Expand existing programs (e.g., the West Virginia Forestry Stewardship Program) or create new incentivizes for planting trees and forestry management on private land, communities, and developments.
- Provide plans and funds to increase tree canopy in public lands such as in parks and forests, as well as on publicly owned sidewalks, around public schools, libraries, and government owned buildings.

Many of these activities are ongoing but could be expanded or started in the coming years. COG has taken actions to promote increased tree canopy across the MSA. COG's *Tree Canopy Management Strategy*[21] describes the state of urban forest programs in the COG region as of 2018.

Beyond the COG region, states across the MSA have also focused on goals and actions to increase and maintain tree cover. For example, the Virginia Department of Forestry's 2019 strategic plan has six strategic goals, that focus on protecting the forest resources and the citizens of the Commonwealth from wildfire and reduce impacts to the forest from other threats and increasing the social, environmental, and economic benefits provided by trees and forests, among other priorities.[22]

AUTHORITY TO IMPLEMENT

Implementation authority for tree canopy expansion, preservation, or development on public land typically falls within the powers of the owning jurisdiction (e.g., a state natural resources or forestry agency). Public space tree planting and tree canopy maintenance falls to the owning jurisdiction. For private-owned land, consent of or actions from the landowner would be needed, and applicable covenants and zoning restrictions would need to be honored. Any applicable environmental regulations would also apply (e.g., managing stormwater and runoff).

GEOGRAPHIC COVERAGE

The actions within this measure are focused on the entire MSA area.

FUNDING SOURCES

Example potential funding sources include:

- U.S. Department of Agriculture (USDA)
- U.S. Forest Service Urban and Community Forestry Grant

LIDAC BENEFITS

Under development

SAMPLE METRICS FOR TRACKING PROGRESS

- Tree canopy cover area
- Number of trees planted
- Number of new tree planting programs

4.5 CROSS-CUTTING ENABLING ACTIONS

All the priority GHG reduction measures identified above may be enabled or enhanced through various cross-cutting actions, such as the following.

- **Public education and engagement.** Education, marketing and outreach, and real-time data will accelerate the deployment of GHG reduction technologies, facilitate behavior changes, and increase participation in climate and energy programs. Targeting education and engagement efforts on LIDAC through partnering with community leaders and CBOs that represent LIDACs will help bring additional benefits to these populations.

[21] https://www.mwcog.org/documents/tree-canopy-management-strategy/

[22] https://dof.virginia.gov/strategic-plan/

- **Build the clean energy workforce.** An expanded and well-trained workforce is critical to implement the breadth and depth of GHG reduction measures in this plan. This includes developing new programs or expanding existing ones to provide training, paid internships, and job opportunities for a clean energy workforce. Some of these opportunities should be focused in LIDACs to bring benefits to these communities.
- **Centralize resources to accelerate MSA-wide actions.** Deploying shared resources and funding through a centralized program for implementation-ready projects or pooling resources to accelerate climate action for a set list of climate actions and technologies that benefit multiple jurisdictions can create administrative and other efficiencies.
- **Clean energy financing.** Clean energy financing and incentives to increase clean energy, energy efficiency, and fuel switching will accelerate the deployment of GHG reduction measures by overcoming capital and funding barriers. Clean energy financing mechanisms may include green banks, green financing, interest rate buy downs, a revolving loan fund (e.g., green bonds, clean energy loans), Energy Savings Performance Contract, as well as grants and rebates.

5 NEXT STEPS

COG, DOEE, local governments, and other related entities across the MSA are eligible to participate in the general competition for CPRG implementation grants, competing against other entities nationally for up to $4.6 billion in funding through individual grants ranging from $2 million to $500 million each ($300 million is set aside for tribes and territories). Implementation grant applications are due April 1, 2024, with awards anticipated in 2024. For more information about the implementation grant applications and competition see: https://www.epa.gov/inflation-reduction-act/about-cprg-implementation-grants.

As the lead organization for CPRG planning deliverables, COG is also responsible for developing a CCAP by mid-2025 and a Status Report on CCAP progress in 2027.

The 2025 CCAP will include:

- An updated GHG inventory for the MSA
- BAU GHG emissions projections and an economy-wide GHG emissions reduction scenario
- GHG reduction targets for the MSA (short- and long-term)
- A comprehensive list of GHG reduction measures that address economy-wide emissions. Building on the PCAP, this will include the following for each measure:
    - Quantified estimates of GHG reduction and costs
    - Key implementing agency or agencies
    - Implementation schedule and milestones
    - Expected geographic location
    - Quantified estimates of co-pollutant reductions (e.g., $PM_{2.5}$, NOx, SO_2, VOCs, air toxics)
    - A more robust or quantified analysis of benefits for LIDACs
    - A review of the statutory or regulatory authority to implement the measure (and a schedule and milestones for key entities to obtain authority if not existing)
    - Identification of funding sources that have been secured for implementation
    - Metrics for tracking progress
- A workforce planning analysis

The 2027 CPRG Status Report will include:

- The implementation status of the quantified GHG reduction measures from the CCAP
- Relevant updated analyses or projections supporting CCAP implementation
- Next steps and future budget or staffing needs to continue CCAP implementation

COG will continue to meaningfully engage with stakeholders, including local governments, state governments, industry, community organizations, tribes, and the public throughout the development of the CCAP and in the implementation of climate actions throughout the MSA.

APPENDIX A. GHG INVENTORY, BAU, AND GHG REDUCTION MEASURE QUANTIFICATION

Under development

APPENDIX B. METROPOLITAN WASHINGTON CLIMATE AND ENERGY PLANS AND TARGETS

REGIONAL

- Transportation Planning Board Visualize 2045, 2022, goals are specific to the transportation sector:
    - 50 percent below 2005 levels by 2030
    - 80 percent by 2050
- National Capital Region Transportation Planning Board Mitigation Study, 2021
- Metropolitan Washington 2030 Climate and Energy Action Plan, 2020
    - 50 percent below 2005 levels by 2030
    - 80 percent by 2050

DISTRICT OF COLUMBIA

- Sustainable DC 2.0, 2019
    - 50 percent by 2030 below 2006 levels
    - Carbon neutral by 2050
- Clean Energy DC Plan, 2016
    - 50 percent by 2032 below 2006 levels
    - 80 percent by 2050

MARYLAND

City of Bowie

Updated Climate Action Plan, 2020

- 50 percent by 2030 below 2015 levels

Charles County

- Community climate plan began development in 2023

Frederick County

- Climate Emergency Resolution, 2020
    - 50 percent from 2010 levels by 2030
    - 100 percent by 2050
- Sustainable Frederick County, 2017
    - 25 percent reduction below 2007 levels by 2025

City of Greenbelt

- Sustainability Plan Framework, 2013
    - Meet State of MD and COG goals (COG goals noted above and MD goal of 25 percent below 2006 levels by 2020)

City of Laurel

- Phase II of developing a Sustainable Community Implementation Framework kicked off in 2023

Montgomery County

- Montgomery County Climate Action Plan, 2021
    - 80 percent below 2005 levels by 2027
    - 100 percent below 2005 levels by 2035

Prince George's County

- Climate Action Plan, 2022
    - 80 percent below 2008 levels by 2050

City of Rockville

- Climate Action Plan, 2022
    - 50 percent reduction below 2005 levels by 2030
    - Zero GHG emissions on or before 2050

City of Takoma Park

- Sustainability and Climate Action Plan, 2019
    - Does not establish new GHG goals but instead works toward being consistent with state, County, and COG plans.
- Sustainable Energy Action Plan, 2014
    - Does not establish new GHG goals but instead works toward being consistent with state and County plans.

State of Maryland

- Maryland Climate Pollution Reduction Plan, 2023
- The 2030 Greenhouse Gas Reduction Act (GGRA) Plan, 2021
    - The Act established the goals of 40% reduction below 2006 levels by 2030.
    - The Plan calls for achieving the target of 50% reduction below 2006 levels by 2030.
- The Climate Solutions Now Act (CSNA), 2022
    - The CSNA adjusted statewide GHG emission goals to include net zero carbon emissions by 2045.
    - The CSNA also calls for a reduction of statewide GHG emissions by 60% below 2006 levels by 2031.

VIRGINIA

City of Alexandria

- Energy and Climate Change Action Plan, 2023
    - Does not establish new GHG goals but affirms commitment to Paris Climate Agreement goals.

- Eco-City Alexandria Environmental Action Plan, 2019
    - 50 percent below 2005 levels by 2030
    - 80 - 100 percent below 2005 levels by 2050

Arlington County

- Community Energy Plan Roadmap, 2022
    - Supports CEP goal of county-wide carbon neutral by 2050
- Community Energy Plan Update, 2019
    - County-wide carbon neutral by 2050, compared to 2007 levels

City of Falls Church

- Community Energy Action Plan (CEAP), 2023
    - 50% below 2005 levels by 2030
    - 80% below 2005 levels by 2050
    - Net zero emissions by 2050

Fairfax County

- Resilient Fairfax Climate Adaptation and Resilience Plan, 2022
- CECAP Implementation Plan, 2022
    - Does not establish new GHG goals but instead works toward meeting CECAP goals
- Community-wide Energy and Climate Action Plan (CECAP), 2021
    - By 2030, 50 percent below 2005 levels
    - By 2040, 75 percent below 2005 levels
    - By 2050, carbon neutral

Loudoun County

- Loudoun County Energy Strategy, 2023
    - Supports state goal to become net zero by 2045 and achieve a carbon-free grid by 2050
- Loudoun County Energy Strategy, 2009
    - County-wide goal to reduce GHGs from 3.85 million metric ton to 3.0 million metric ton by 2040
    - Government operations goal to reduce emissions 15 percent between 2007 and 2012

City of Manassas

- Sustainability plan is currently under development

Prince William County

- Community Energy and Sustainability Master Plan, 2023
    - By 2030, 50 percent below 2005 levels
    - By 2035, use 100 percent renewable electricity county-wide

- By 2050, achieve carbon neutrality in government operations

Commonwealth of Virginia

- Virginia Clean Energy Plan, 2022
  - Ensure access to abundant, reliable, affordable, and clean energy so all Virginians can live, work and raise a family in a growing and thriving Commonwealth.
- Virginia Clean Economy Act, 2020
  - Mandates Dominion Energy Virginia and Appalachian Electric Power, produce 100 percent renewable electricity by 2045 and 2050, respectively.
  - Sets energy efficiency standards.
- Virginia 2018 Energy Plan
  - Plan mentions state commitment to Under2Coalition goal of reducing pollution and keeping global temperature rise under 2°C.

WEST VIRGINIA

- State of West Virginia 2018-2022 State Energy Plan, 2017

APPENDIX C. IDENTIFICATION OF LIDACS IN THE WASHINGTON–ARLINGTON–ALEXANDRIA, DC–VA–MD–WV MSA

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001000501	Prince George's County	MD	24033804001
District of Columbia	DC	11001001002	Prince George's County	MD	24033804002
District of Columbia	DC	11001001803	Prince George's County	MD	24033804002
District of Columbia	DC	11001001803	Prince George's County	MD	24033804102
District of Columbia	DC	11001001803	Prince George's County	MD	24033804102
District of Columbia	DC	11001001804	Prince George's County	MD	24033804300
District of Columbia	DC	11001001804	Prince George's County	MD	24033804300
District of Columbia	DC	11001001804	Prince George's County	MD	24033804400
District of Columbia	DC	11001001901	Prince George's County	MD	24033804400
District of Columbia	DC	11001001901	Prince George's County	MD	24033804600
District of Columbia	DC	11001001901	Prince George's County	MD	24033804801
District of Columbia	DC	11001001902	Prince George's County	MD	24033804801
District of Columbia	DC	11001002001	Prince George's County	MD	24033804801
District of Columbia	DC	11001002001	Prince George's County	MD	24033804802
District of Columbia	DC	11001002002	Prince George's County	MD	24033804802
District of Columbia	DC	11001002101	Prince George's County	MD	24033804900
District of Columbia	DC	11001002101	Prince George's County	MD	24033804900
District of Columbia	DC	11001002102	Prince George's County	MD	24033805000
District of Columbia	DC	11001002102	Prince George's County	MD	24033805000
District of Columbia	DC	11001002201	Prince George's County	MD	24033805000
District of Columbia	DC	11001002201	Prince George's County	MD	24033805101
District of Columbia	DC	11001002202	Prince George's County	MD	24033805101
District of Columbia	DC	11001002400	Prince George's County	MD	24033805201
District of Columbia	DC	11001002501	Prince George's County	MD	24033805201
District of Columbia	DC	11001002501	Prince George's County	MD	24033805202
District of Columbia	DC	11001002503	Prince George's County	MD	24033805202
District of Columbia	DC	11001002504	Prince George's County	MD	24033805202
District of Columbia	DC	11001002702	Prince George's County	MD	24033805500
District of Columbia	DC	11001002702	Prince George's County	MD	24033805500
District of Columbia	DC	11001002704	Prince George's County	MD	24033805601
District of Columbia	DC	11001002801	Prince George's County	MD	24033805601
District of Columbia	DC	11001002801	Prince George's County	MD	24033805601
District of Columbia	DC	11001002802	Prince George's County	MD	24033805602
District of Columbia	DC	11001002802	Prince George's County	MD	24033805602

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001002802	Prince George's County	MD	24033805602
District of Columbia	DC	11001002900	Prince George's County	MD	24033805700
District of Columbia	DC	11001002900	Prince George's County	MD	24033805700
District of Columbia	DC	11001003000	Prince George's County	MD	24033805700
District of Columbia	DC	11001003000	Prince George's County	MD	24033805801
District of Columbia	DC	11001003200	Prince George's County	MD	24033805801
District of Columbia	DC	11001003200	Prince George's County	MD	24033805802
District of Columbia	DC	11001003200	Prince George's County	MD	24033805802
District of Columbia	DC	11001003200	Prince George's County	MD	24033805904
District of Columbia	DC	11001003400	Prince George's County	MD	24033805904
District of Columbia	DC	11001003400	Prince George's County	MD	24033805906
District of Columbia	DC	11001003500	Prince George's County	MD	24033805906
District of Columbia	DC	11001003500	Prince George's County	MD	24033805907
District of Columbia	DC	11001003600	Prince George's County	MD	24033805907
District of Columbia	DC	11001003702	Prince George's County	MD	24033805908
District of Columbia	DC	11001003802	Prince George's County	MD	24033805909
District of Columbia	DC	11001004100	Prince George's County	MD	24033806000
District of Columbia	DC	11001004300	Prince George's County	MD	24033806000
District of Columbia	DC	11001004702	Prince George's County	MD	24033806000
District of Columbia	DC	11001004703	Prince George's County	MD	24033806100
District of Columbia	DC	11001004703	Prince George's County	MD	24033806501
District of Columbia	DC	11001004703	Prince George's County	MD	24033806501
District of Columbia	DC	11001004703	Prince George's County	MD	24033806501
District of Columbia	DC	11001004704	Prince George's County	MD	24033806601
District of Columbia	DC	11001004704	Prince George's County	MD	24033806601
District of Columbia	DC	11001004801	Prince George's County	MD	24033806601
District of Columbia	DC	11001004801	Prince George's County	MD	24033806602
District of Columbia	DC	11001004802	Prince George's County	MD	24033806602
District of Columbia	DC	11001004802	Prince George's County	MD	24033806602
District of Columbia	DC	11001004901	Prince George's County	MD	24033806711
District of Columbia	DC	11001004902	Prince George's County	MD	24033806712
District of Columbia	DC	11001005004	Prince George's County	MD	24033806713
District of Columbia	DC	11001005004	Prince George's County	MD	24033806713
District of Columbia	DC	11001005203	Prince George's County	MD	24033806713
District of Columbia	DC	11001005501	Prince George's County	MD	24033806714
District of Columbia	DC	11001005503	Prince George's County	MD	24033806714
District of Columbia	DC	11001005601	Prince George's County	MD	24033806800
District of Columbia	DC	11001005601	Prince George's County	MD	24033806900
District of Columbia	DC	11001005801	Prince George's County	MD	24033806900
District of Columbia	DC	11001005900	Prince George's County	MD	24033807000
District of Columbia	DC	11001006400	Prince George's County	MD	24033807000

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001006400	Prince George's County	MD	24033807000
District of Columbia	DC	11001006804	Prince George's County	MD	24033807000
District of Columbia	DC	11001007100	Prince George's County	MD	24033807000
District of Columbia	DC	11001007100	Prince George's County	MD	24033807301
District of Columbia	DC	11001007100	Prince George's County	MD	24033807305
District of Columbia	DC	11001007203	Prince George's County	MD	24033807305
District of Columbia	DC	11001007301	Prince George's County	MD	24033807404
District of Columbia	DC	11001007304	Prince George's County	MD	24033807405
District of Columbia	DC	11001007304	Prince George's County	MD	24033807407
District of Columbia	DC	11001007304	Prince George's County	MD	24033807409
District of Columbia	DC	11001007304	Prince George's County	MD	24033807410
District of Columbia	DC	11001007401	Prince George's County	MD	24033807500
District of Columbia	DC	11001007401	Prince George's County	MD	24033980000
District of Columbia	DC	11001007403	Arlington County	VA	51013100300
District of Columbia	DC	11001007403	Arlington County	VA	51013100700
District of Columbia	DC	11001007404	Arlington County	VA	51013101602
District of Columbia	DC	11001007406	Arlington County	VA	51013101603
District of Columbia	DC	11001007406	Arlington County	VA	51013101603
District of Columbia	DC	11001007407	Arlington County	VA	51013101701
District of Columbia	DC	11001007407	Arlington County	VA	51013101703
District of Columbia	DC	11001007407	Arlington County	VA	51013101704
District of Columbia	DC	11001007408	Arlington County	VA	51013101704
District of Columbia	DC	11001007408	Arlington County	VA	51013101705
District of Columbia	DC	11001007409	Arlington County	VA	51013101705
District of Columbia	DC	11001007409	Arlington County	VA	51013101803
District of Columbia	DC	11001007409	Arlington County	VA	51013101804
District of Columbia	DC	11001007502	Arlington County	VA	51013102001
District of Columbia	DC	11001007502	Arlington County	VA	51013102001
District of Columbia	DC	11001007502	Arlington County	VA	51013102002
District of Columbia	DC	11001007503	Arlington County	VA	51013102003
District of Columbia	DC	11001007503	Arlington County	VA	51013102003
District of Columbia	DC	11001007504	Arlington County	VA	51013102003
District of Columbia	DC	11001007504	Arlington County	VA	51013102100
District of Columbia	DC	11001007601	Arlington County	VA	51013102100
District of Columbia	DC	11001007601	Arlington County	VA	51013102200
District of Columbia	DC	11001007601	Arlington County	VA	51013102200
District of Columbia	DC	11001007601	Arlington County	VA	51013102200
District of Columbia	DC	11001007601	Arlington County	VA	51013102200
District of Columbia	DC	11001007603	Arlington County	VA	51013102200
District of Columbia	DC	11001007603	Arlington County	VA	51013102302
District of Columbia	DC	11001007603	Arlington County	VA	51013102400

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001007603	Arlington County	VA	51013102500
District of Columbia	DC	11001007604	Arlington County	VA	51013102701
District of Columbia	DC	11001007604	Arlington County	VA	51013102701
District of Columbia	DC	11001007604	Arlington County	VA	51013102702
District of Columbia	DC	11001007604	Arlington County	VA	51013102804
District of Columbia	DC	11001007605	Arlington County	VA	51013102804
District of Columbia	DC	11001007605	Arlington County	VA	51013102904
District of Columbia	DC	11001007605	Arlington County	VA	51013103000
District of Columbia	DC	11001007605	Arlington County	VA	51013103100
District of Columbia	DC	11001007703	Arlington County	VA	51013103200
District of Columbia	DC	11001007703	Arlington County	VA	51013103200
District of Columbia	DC	11001007703	Arlington County	VA	51013103200
District of Columbia	DC	11001007703	Arlington County	VA	51013103300
District of Columbia	DC	11001007707	Arlington County	VA	51013103300
District of Columbia	DC	11001007707	Arlington County	VA	51013103405
District of Columbia	DC	11001007707	Arlington County	VA	51013103503
District of Columbia	DC	11001007708	Arlington County	VA	51013103505
District of Columbia	DC	11001007708	Arlington County	VA	51013103505
District of Columbia	DC	11001007709	Arlington County	VA	51013103505
District of Columbia	DC	11001007709	Arlington County	VA	51013103602
District of Columbia	DC	11001007803	Arlington County	VA	51013103602
District of Columbia	DC	11001007803	Arlington County	VA	51013103800
District of Columbia	DC	11001007803	Arlington County	VA	51013103800
District of Columbia	DC	11001007803	Culpeper County	VA	51047930202
District of Columbia	DC	11001007804	Culpeper County	VA	51047930202
District of Columbia	DC	11001007804	Culpeper County	VA	51047930202
District of Columbia	DC	11001007804	Culpeper County	VA	51047930203
District of Columbia	DC	11001007806	Culpeper County	VA	51047930300
District of Columbia	DC	11001007806	Culpeper County	VA	51047930300
District of Columbia	DC	11001007807	Culpeper County	VA	51047930501
District of Columbia	DC	11001007807	Fairfax County	VA	51059415300
District of Columbia	DC	11001007808	Fairfax County	VA	51059415401
District of Columbia	DC	11001007808	Fairfax County	VA	51059415401
District of Columbia	DC	11001007808	Fairfax County	VA	51059415401
District of Columbia	DC	11001007809	Fairfax County	VA	51059415500
District of Columbia	DC	11001007809	Fairfax County	VA	51059416000
District of Columbia	DC	11001007901	Fairfax County	VA	51059420100
District of Columbia	DC	11001007901	Fairfax County	VA	51059420300
District of Columbia	DC	11001007901	Fairfax County	VA	51059420503
District of Columbia	DC	11001007901	Fairfax County	VA	51059420600
District of Columbia	DC	11001008802	Fairfax County	VA	51059420800

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001008802	Fairfax County	VA	51059421002
District of Columbia	DC	11001008802	Fairfax County	VA	51059421102
District of Columbia	DC	11001008802	Fairfax County	VA	51059421400
District of Columbia	DC	11001008803	Fairfax County	VA	51059421400
District of Columbia	DC	11001008803	Fairfax County	VA	51059421500
District of Columbia	DC	11001008804	Fairfax County	VA	51059421500
District of Columbia	DC	11001008804	Fairfax County	VA	51059421500
District of Columbia	DC	11001008903	Fairfax County	VA	51059421500
District of Columbia	DC	11001008903	Fairfax County	VA	51059421600
District of Columbia	DC	11001008903	Fairfax County	VA	51059421600
District of Columbia	DC	11001008904	Fairfax County	VA	51059421600
District of Columbia	DC	11001008904	Fairfax County	VA	51059421701
District of Columbia	DC	11001008904	Fairfax County	VA	51059421701
District of Columbia	DC	11001009000	Fairfax County	VA	51059421800
District of Columbia	DC	11001009000	Fairfax County	VA	51059421900
District of Columbia	DC	11001009000	Fairfax County	VA	51059422101
District of Columbia	DC	11001009102	Fairfax County	VA	51059422102
District of Columbia	DC	11001009102	Fairfax County	VA	51059422302
District of Columbia	DC	11001009102	Fairfax County	VA	51059422302
District of Columbia	DC	11001009102	Fairfax County	VA	51059430202
District of Columbia	DC	11001009203	Fairfax County	VA	51059430600
District of Columbia	DC	11001009203	Fairfax County	VA	51059430600
District of Columbia	DC	11001009204	Fairfax County	VA	51059430600
District of Columbia	DC	11001009204	Fairfax County	VA	51059430600
District of Columbia	DC	11001009302	Fairfax County	VA	51059430700
District of Columbia	DC	11001009400	Fairfax County	VA	51059431001
District of Columbia	DC	11001009503	Fairfax County	VA	51059431001
District of Columbia	DC	11001009507	Fairfax County	VA	51059431602
District of Columbia	DC	11001009508	Fairfax County	VA	51059440100
District of Columbia	DC	11001009508	Fairfax County	VA	51059440202
District of Columbia	DC	11001009510	Fairfax County	VA	51059440202
District of Columbia	DC	11001009510	Fairfax County	VA	51059440503
District of Columbia	DC	11001009510	Fairfax County	VA	51059440504
District of Columbia	DC	11001009511	Fairfax County	VA	51059440505
District of Columbia	DC	11001009601	Fairfax County	VA	51059450100
District of Columbia	DC	11001009602	Fairfax County	VA	51059450200
District of Columbia	DC	11001009602	Fairfax County	VA	51059450300
District of Columbia	DC	11001009602	Fairfax County	VA	51059450300
District of Columbia	DC	11001009603	Fairfax County	VA	51059450300
District of Columbia	DC	11001009603	Fairfax County	VA	51059450300
District of Columbia	DC	11001009603	Fairfax County	VA	51059450400

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001009604	Fairfax County	VA	51059450500
District of Columbia	DC	11001009604	Fairfax County	VA	51059450500
District of Columbia	DC	11001009700	Fairfax County	VA	51059450602
District of Columbia	DC	11001009700	Fairfax County	VA	51059450602
District of Columbia	DC	11001009700	Fairfax County	VA	51059450602
District of Columbia	DC	11001009801	Fairfax County	VA	51059450702
District of Columbia	DC	11001009802	Fairfax County	VA	51059450702
District of Columbia	DC	11001009802	Fairfax County	VA	51059450800
District of Columbia	DC	11001009803	Fairfax County	VA	51059451000
District of Columbia	DC	11001009803	Fairfax County	VA	51059451400
District of Columbia	DC	11001009803	Fairfax County	VA	51059451400
District of Columbia	DC	11001009804	Fairfax County	VA	51059451501
District of Columbia	DC	11001009804	Fairfax County	VA	51059451501
District of Columbia	DC	11001009807	Fairfax County	VA	51059451501
District of Columbia	DC	11001009807	Fairfax County	VA	51059451501
District of Columbia	DC	11001009807	Fairfax County	VA	51059451502
District of Columbia	DC	11001009810	Fairfax County	VA	51059451502
District of Columbia	DC	11001009810	Fairfax County	VA	51059451601
District of Columbia	DC	11001009811	Fairfax County	VA	51059451601
District of Columbia	DC	11001009811	Fairfax County	VA	51059451601
District of Columbia	DC	11001009811	Fairfax County	VA	51059451602
District of Columbia	DC	11001009903	Fairfax County	VA	51059451900
District of Columbia	DC	11001009903	Fairfax County	VA	51059452000
District of Columbia	DC	11001009904	Fairfax County	VA	51059452101
District of Columbia	DC	11001009904	Fairfax County	VA	51059452102
District of Columbia	DC	11001009904	Fairfax County	VA	51059452200
District of Columbia	DC	11001009905	Fairfax County	VA	51059452200
District of Columbia	DC	11001009905	Fairfax County	VA	51059452200
District of Columbia	DC	11001009905	Fairfax County	VA	51059452200
District of Columbia	DC	11001009906	Fairfax County	VA	51059452301
District of Columbia	DC	11001009907	Fairfax County	VA	51059452301
District of Columbia	DC	11001009907	Fairfax County	VA	51059452302
District of Columbia	DC	11001010202	Fairfax County	VA	51059452302
District of Columbia	DC	11001010202	Fairfax County	VA	51059452400
District of Columbia	DC	11001010400	Fairfax County	VA	51059452400
District of Columbia	DC	11001010400	Fairfax County	VA	51059452400
District of Columbia	DC	11001010400	Fairfax County	VA	51059452400
District of Columbia	DC	11001010500	Fairfax County	VA	51059452400
District of Columbia	DC	11001010500	Fairfax County	VA	51059452501
District of Columbia	DC	11001010601	Fairfax County	VA	51059452501
District of Columbia	DC	11001010602	Fairfax County	VA	51059452502

City/County	State	Census Tract ID	City/County	State	Census Tract ID
District of Columbia	DC	11001010602	Fairfax County	VA	51059452502
District of Columbia	DC	11001010602	Fairfax County	VA	51059452600
District of Columbia	DC	11001010800	Fairfax County	VA	51059452600
District of Columbia	DC	11001010800	Fairfax County	VA	51059452700
District of Columbia	DC	11001010900	Fairfax County	VA	51059452700
District of Columbia	DC	11001010900	Fairfax County	VA	51059452700
District of Columbia	DC	11001011001	Fairfax County	VA	51059452801
District of Columbia	DC	11001011100	Fairfax County	VA	51059452801
District of Columbia	DC	11001011100	Fairfax County	VA	51059461604
Charles County	MD	24017850202	Fairfax County	VA	51059461700
Charles County	MD	24017850709	Fairfax County	VA	51059461901
Charles County	MD	24017850801	Fairfax County	VA	51059461902
Charles County	MD	24017850901	Fairfax County	VA	51059471204
Charles County	MD	24017850901	Fairfax County	VA	51059471301
Charles County	MD	24017850901	Fairfax County	VA	51059471301
Charles County	MD	24017851004	Fairfax County	VA	51059471401
Frederick County	MD	24021750300	Fairfax County	VA	51059471402
Frederick County	MD	24021750300	Fairfax County	VA	51059480203
Frederick County	MD	24021750505	Fairfax County	VA	51059480801
Frederick County	MD	24021750505	Fairfax County	VA	51059480901
Frederick County	MD	24021750505	Fairfax County	VA	51059480901
Frederick County	MD	24021750506	Fairfax County	VA	51059480901
Frederick County	MD	24021750507	Fairfax County	VA	51059480901
Frederick County	MD	24021750507	Fairfax County	VA	51059480902
Frederick County	MD	24021750507	Fairfax County	VA	51059480902
Frederick County	MD	24021750508	Fairfax County	VA	51059480903
Frederick County	MD	24021750508	Fairfax County	VA	51059480903
Frederick County	MD	24021750508	Fairfax County	VA	51059480903
Frederick County	MD	24021750701	Fairfax County	VA	51059481000
Frederick County	MD	24021750702	Fairfax County	VA	51059481000
Frederick County	MD	24021750702	Fairfax County	VA	51059481103
Frederick County	MD	24021750702	Fairfax County	VA	51059481202
Frederick County	MD	24021750801	Fairfax County	VA	51059481202
Frederick County	MD	24021750801	Fairfax County	VA	51059481202
Frederick County	MD	24021750801	Fairfax County	VA	51059481400
Frederick County	MD	24021751600	Fairfax County	VA	51059482206
Frederick County	MD	24021753001	Fairfax County	VA	51059482302
Frederick County	MD	24021765100	Fairfax County	VA	51059490101
Frederick County	MD	24021767600	Fairfax County	VA	51059490104
Frederick County	MD	24021772200	Fairfax County	VA	51059491103
Frederick County	MD	24021773500	Fairfax County	VA	51059491201

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Frederick County	MD	24021775400	Fairfax County	VA	51059491303
Frederick County	MD	24021775400	Fairfax County	VA	51059491303
Montgomery County	MD	24031700310	Fairfax County	VA	51059491601
Montgomery County	MD	24031700313	Fairfax County	VA	51059491602
Montgomery County	MD	24031700613	Fairfax County	VA	51059491706
Montgomery County	MD	24031700706	Fairfax County	VA	51059491801
Montgomery County	MD	24031700710	Fauquier County	VA	51061930706
Montgomery County	MD	24031700713	Loudoun County	VA	51107610505
Montgomery County	MD	24031700713	Loudoun County	VA	51107610505
Montgomery County	MD	24031700713	Loudoun County	VA	51107610505
Montgomery County	MD	24031700713	Loudoun County	VA	51107610505
Montgomery County	MD	24031700720	Loudoun County	VA	51107611018
Montgomery County	MD	24031700721	Loudoun County	VA	51107611018
Montgomery County	MD	24031700721	Loudoun County	VA	51107611204
Montgomery County	MD	24031700723	Loudoun County	VA	51107611204
Montgomery County	MD	24031700723	Loudoun County	VA	51107611204
Montgomery County	MD	24031700724	Loudoun County	VA	51107611205
Montgomery County	MD	24031700724	Loudoun County	VA	51107611209
Montgomery County	MD	24031700724	Loudoun County	VA	51107611400
Montgomery County	MD	24031700725	Loudoun County	VA	51107611400
Montgomery County	MD	24031700725	Loudoun County	VA	51107611400
Montgomery County	MD	24031700726	Loudoun County	VA	51107611501
Montgomery County	MD	24031700726	Loudoun County	VA	51107611502
Montgomery County	MD	24031700727	Loudoun County	VA	51107611502
Montgomery County	MD	24031700728	Loudoun County	VA	51107611602
Montgomery County	MD	24031700728	Loudoun County	VA	51107611602
Montgomery County	MD	24031700729	Loudoun County	VA	51107611701
Montgomery County	MD	24031700731	Loudoun County	VA	51107611701
Montgomery County	MD	24031700732	Loudoun County	VA	51107611702
Montgomery County	MD	24031700732	Loudoun County	VA	51107611702
Montgomery County	MD	24031700812	Loudoun County	VA	51107611804
Montgomery County	MD	24031700813	Prince William County	VA	51153900201
Montgomery County	MD	24031700815	Prince William County	VA	51153900201
Montgomery County	MD	24031700815	Prince William County	VA	51153900202
Montgomery County	MD	24031700818	Prince William County	VA	51153900202
Montgomery County	MD	24031700818	Prince William County	VA	51153900202
Montgomery County	MD	24031700818	Prince William County	VA	51153900203
Montgomery County	MD	24031700819	Prince William County	VA	51153900203
Montgomery County	MD	24031700829	Prince William County	VA	51153900203
Montgomery County	MD	24031700832	Prince William County	VA	51153900301
Montgomery County	MD	24031700833	Prince William County	VA	51153900302

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Montgomery County	MD	24031700833	Prince William County	VA	51153900403
Montgomery County	MD	24031700834	Prince William County	VA	51153900403
Montgomery County	MD	24031700834	Prince William County	VA	51153900403
Montgomery County	MD	24031700901	Prince William County	VA	51153900404
Montgomery County	MD	24031700904	Prince William County	VA	51153900404
Montgomery County	MD	24031700904	Prince William County	VA	51153900404
Montgomery County	MD	24031701102	Prince William County	VA	51153900407
Montgomery County	MD	24031701102	Prince William County	VA	51153900407
Montgomery County	MD	24031701102	Prince William County	VA	51153900407
Montgomery County	MD	24031701102	Prince William County	VA	51153900409
Montgomery County	MD	24031701102	Prince William County	VA	51153900409
Montgomery County	MD	24031701216	Prince William County	VA	51153900410
Montgomery County	MD	24031701219	Prince William County	VA	51153900503
Montgomery County	MD	24031701219	Prince William County	VA	51153900503
Montgomery County	MD	24031701422	Prince William County	VA	51153900504
Montgomery County	MD	24031701505	Prince William County	VA	51153900504
Montgomery County	MD	24031701505	Prince William County	VA	51153900504
Montgomery County	MD	24031701509	Prince William County	VA	51153900601
Montgomery County	MD	24031701509	Prince William County	VA	51153900601
Montgomery County	MD	24031701509	Prince William County	VA	51153900602
Montgomery County	MD	24031701509	Prince William County	VA	51153900602
Montgomery County	MD	24031701509	Prince William County	VA	51153900602
Montgomery County	MD	24031701601	Prince William County	VA	51153900702
Montgomery County	MD	24031701602	Prince William County	VA	51153900702
Montgomery County	MD	24031701602	Prince William County	VA	51153900803
Montgomery County	MD	24031701602	Prince William County	VA	51153900901
Montgomery County	MD	24031701602	Prince William County	VA	51153900901
Montgomery County	MD	24031701702	Prince William County	VA	51153900901
Montgomery County	MD	24031701703	Prince William County	VA	51153900901
Montgomery County	MD	24031701900	Prince William County	VA	51153901013
Montgomery County	MD	24031701900	Prince William County	VA	51153901014
Montgomery County	MD	24031701900	Prince William County	VA	51153901015
Montgomery County	MD	24031702000	Prince William County	VA	51153901102
Montgomery County	MD	24031702000	Prince William County	VA	51153901203
Montgomery County	MD	24031702000	Prince William County	VA	51153901203
Montgomery County	MD	24031702101	Prince William County	VA	51153901208
Montgomery County	MD	24031702101	Prince William County	VA	51153901209
Montgomery County	MD	24031702101	Prince William County	VA	51153901211
Montgomery County	MD	24031702101	Prince William County	VA	51153901211
Montgomery County	MD	24031702301	Prince William County	VA	51153901212
Montgomery County	MD	24031702301	Prince William County	VA	51153901212

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Montgomery County	MD	24031702502	Prince William County	VA	51153901223
Montgomery County	MD	24031702503	Prince William County	VA	51153901227
Montgomery County	MD	24031702602	Prince William County	VA	51153901403
Montgomery County	MD	24031702604	Prince William County	VA	51153901403
Montgomery County	MD	24031702700	Prince William County	VA	51153901403
Montgomery County	MD	24031703207	Prince William County	VA	51153901403
Montgomery County	MD	24031703207	Prince William County	VA	51153901407
Montgomery County	MD	24031703207	Prince William County	VA	51153901407
Montgomery County	MD	24031703213	Prince William County	VA	51153901409
Montgomery County	MD	24031703213	Prince William County	VA	51153901416
Montgomery County	MD	24031703213	Prince William County	VA	51153901418
Montgomery County	MD	24031703214	Prince William County	VA	51153901418
Montgomery County	MD	24031703214	Prince William County	VA	51153901418
Montgomery County	MD	24031703214	Prince William County	VA	51153901419
Montgomery County	MD	24031703215	Prince William County	VA	51153901601
Montgomery County	MD	24031703215	Prince William County	VA	51153901702
Montgomery County	MD	24031703220	Prince William County	VA	51153901702
Montgomery County	MD	24031703301	Prince William County	VA	51153901702
Montgomery County	MD	24031703301	Prince William County	VA	51153901703
Montgomery County	MD	24031703301	Prince William County	VA	51153901703
Montgomery County	MD	24031703301	Prince William County	VA	51153901704
Montgomery County	MD	24031703302	Prince William County	VA	51153901704
Montgomery County	MD	24031703401	Prince William County	VA	51153901704
Montgomery County	MD	24031703403	Prince William County	VA	51153901704
Montgomery County	MD	24031703404	Prince William County	VA	51153901900
Montgomery County	MD	24031703404	Prince William County	VA	51153901900
Montgomery County	MD	24031703501	Spotsylvania County	VA	51177020108
Montgomery County	MD	24031703501	Spotsylvania County	VA	51177020201
Montgomery County	MD	24031703501	Spotsylvania County	VA	51177020202
Montgomery County	MD	24031703501	Spotsylvania County	VA	51177020202
Montgomery County	MD	24031703502	Spotsylvania County	VA	51177020204
Montgomery County	MD	24031703701	Spotsylvania County	VA	51177020305
Montgomery County	MD	24031703701	Spotsylvania County	VA	51177020307
Montgomery County	MD	24031703701	Spotsylvania County	VA	51177020311
Montgomery County	MD	24031704000	Spotsylvania County	VA	51177020313
Montgomery County	MD	24031706012	Stafford County	VA	51179010201
Prince George's County	MD	24033800102	Stafford County	VA	51179010211
Prince George's County	MD	24033800103	Stafford County	VA	51179010211
Prince George's County	MD	24033800109	Stafford County	VA	51179010215
Prince George's County	MD	24033800109	Stafford County	VA	51179010216
Prince George's County	MD	24033800206	Stafford County	VA	51179010216

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Prince George's County	MD	24033800206	Warren County	VA	51187020300
Prince George's County	MD	24033800209	Warren County	VA	51187020400
Prince George's County	MD	24033800209	Warren County	VA	51187020400
Prince George's County	MD	24033800210	Warren County	VA	51187020400
Prince George's County	MD	24033800210	Warren County	VA	51187020400
Prince George's County	MD	24033800211	Warren County	VA	51187020400
Prince George's County	MD	24033800211	Warren County	VA	51187020500
Prince George's County	MD	24033800218	Warren County	VA	51187020500
Prince George's County	MD	24033800408	Warren County	VA	51187020500
Prince George's County	MD	24033800412	Warren County	VA	51187020500
Prince George's County	MD	24033801003	Warren County	VA	51187020601
Prince George's County	MD	24033801404	Warren County	VA	51187020602
Prince George's County	MD	24033801404	Alexandria City	VA	51510200102
Prince George's County	MD	24033801405	Alexandria City	VA	51510200102
Prince George's County	MD	24033801405	Alexandria City	VA	51510200102
Prince George's County	MD	24033801409	Alexandria City	VA	51510200104
Prince George's County	MD	24033801500	Alexandria City	VA	51510200104
Prince George's County	MD	24033801500	Alexandria City	VA	51510200104
Prince George's County	MD	24033801702	Alexandria City	VA	51510200105
Prince George's County	MD	24033801702	Alexandria City	VA	51510200105
Prince George's County	MD	24033801704	Alexandria City	VA	51510200106
Prince George's County	MD	24033801704	Alexandria City	VA	51510200109
Prince George's County	MD	24033801704	Alexandria City	VA	51510200109
Prince George's County	MD	24033801707	Alexandria City	VA	51510200301
Prince George's County	MD	24033801707	Alexandria City	VA	51510200302
Prince George's County	MD	24033801707	Alexandria City	VA	51510200302
Prince George's County	MD	24033801808	Alexandria City	VA	51510200304
Prince George's County	MD	24033801901	Alexandria City	VA	51510200304
Prince George's County	MD	24033801906	Alexandria City	VA	51510200304
Prince George's County	MD	24033801906	Alexandria City	VA	51510200305
Prince George's County	MD	24033802001	Alexandria City	VA	51510200305
Prince George's County	MD	24033802002	Alexandria City	VA	51510200406
Prince George's County	MD	24033802103	Alexandria City	VA	51510200408
Prince George's County	MD	24033802104	Alexandria City	VA	51510200408
Prince George's County	MD	24033802107	Alexandria City	VA	51510200408
Prince George's County	MD	24033802107	Alexandria City	VA	51510200409
Prince George's County	MD	24033802204	Alexandria City	VA	51510200409
Prince George's County	MD	24033802301	Alexandria City	VA	51510200409
Prince George's County	MD	24033802301	Alexandria City	VA	51510200409
Prince George's County	MD	24033802301	Alexandria City	VA	51510200500
Prince George's County	MD	24033802404	Alexandria City	VA	51510200500

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Prince George's County	MD	24033802404	Alexandria City	VA	51510200500
Prince George's County	MD	24033802404	Alexandria City	VA	51510200600
Prince George's County	MD	24033802501	Alexandria City	VA	51510200703
Prince George's County	MD	24033802600	Alexandria City	VA	51510200802
Prince George's County	MD	24033802600	Alexandria City	VA	51510201100
Prince George's County	MD	24033802700	Alexandria City	VA	51510201204
Prince George's County	MD	24033802700	Alexandria City	VA	51510201205
Prince George's County	MD	24033802700	Alexandria City	VA	51510201205
Prince George's County	MD	24033802804	Alexandria City	VA	51510201206
Prince George's County	MD	24033802805	Alexandria City	VA	51510201206
Prince George's County	MD	24033802805	Alexandria City	VA	51510201206
Prince George's County	MD	24033802901	Alexandria City	VA	51510201602
Prince George's County	MD	24033802901	Alexandria City	VA	51510201802
Prince George's County	MD	24033802901	Alexandria City	VA	51510201805
Prince George's County	MD	24033803001	Fairfax City	VA	51600300100
Prince George's County	MD	24033803100	Fairfax City	VA	51600300100
Prince George's County	MD	24033803100	Fairfax City	VA	51600300200
Prince George's County	MD	24033803200	Fairfax City	VA	51600300500
Prince George's County	MD	24033803200	Fredericksburg City	VA	51630000201
Prince George's County	MD	24033803300	Fredericksburg City	VA	51630000301
Prince George's County	MD	24033803300	Fredericksburg City	VA	51630000400
Prince George's County	MD	24033803300	Fredericksburg City	VA	51630000400
Prince George's County	MD	24033803403	Fredericksburg City	VA	51630000500
Prince George's County	MD	24033803403	Fredericksburg City	VA	51630000500
Prince George's County	MD	24033803403	Manassas City	VA	51683910201
Prince George's County	MD	24033803403	Manassas City	VA	51683910202
Prince George's County	MD	24033803508	Manassas City	VA	51683910202
Prince George's County	MD	24033803508	Manassas City	VA	51683910202
Prince George's County	MD	24033803509	Manassas City	VA	51683910202
Prince George's County	MD	24033803509	Manassas City	VA	51683910301
Prince George's County	MD	24033803525	Manassas City	VA	51683910302
Prince George's County	MD	24033803602	Manassas City	VA	51683910401
Prince George's County	MD	24033803602	Manassas City	VA	51683910401
Prince George's County	MD	24033803605	Manassas City	VA	51683910401
Prince George's County	MD	24033803606	Manassas City	VA	51683910401
Prince George's County	MD	24033803606	Manassas Park City	VA	51685920100
Prince George's County	MD	24033803606	Manassas Park City	VA	51685920100
Prince George's County	MD	24033803608	Manassas Park City	VA	51685920100
Prince George's County	MD	24033803608	Manassas Park City	VA	51685920201
Prince George's County	MD	24033803610	Jefferson County	WV	54037972300
Prince George's County	MD	24033803612	Jefferson County	WV	54037972300

City/County	State	Census Tract ID	City/County	State	Census Tract ID
Prince George's County	MD	24033803612	Jefferson County	WV	54037972300
Prince George's County	MD	24033803613	Jefferson County	WV	54037972401
Prince George's County	MD	24033803613	Jefferson County	WV	54037972401
Prince George's County	MD	24033803613	Jefferson County	WV	54037972401
Prince George's County	MD	24033803700	Jefferson County	WV	54037972402
Prince George's County	MD	24033803700	Jefferson County	WV	54037972505
Prince George's County	MD	24033803801	Jefferson County	WV	54037972505
Prince George's County	MD	24033803803	Jefferson County	WV	54037972505
Prince George's County	MD	24033803803	Jefferson County	WV	54037972506
Prince George's County	MD	24033803900	Jefferson County	WV	54037972701
Prince George's County	MD	24033803900	Jefferson County	WV	54037972701
Prince George's County	MD	24033803900	Jefferson County	WV	54037972701
Prince George's County	MD	24033804001			

APPENDIX D. PROJECT IDEAS SUBMITTED TO COG

Under development

APPENDIX E. COMMUNITY CLIMATE PRIORITIES SURVEY RESULTS

The Metropolitan Washington COG has undertaken a robust initiative to formulate a PCAP and a CCAP for the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. As part of the EPA CPRG Program, COG is dedicated to addressing climate change by integrating priority measures and projects to reduce carbon and GHG pollutants across various industries.

To capture a larger perspective of communities in the MSA, COG disseminated the CPRG Community Climate Priorities survey to assess community-wide climate priorities. The survey was shared through multiple online channels, extending beyond formal committees to include distribution through social media, the COG CPRG and main COG websites, local representatives, and community-based/non-governmental organizations. The survey gained responses from 86 participants from 13 different jurisdictions within the MSA, encompassing a diverse range of individuals, organizations, coalitions, and agencies.

COMMUNITY PRIORITIES

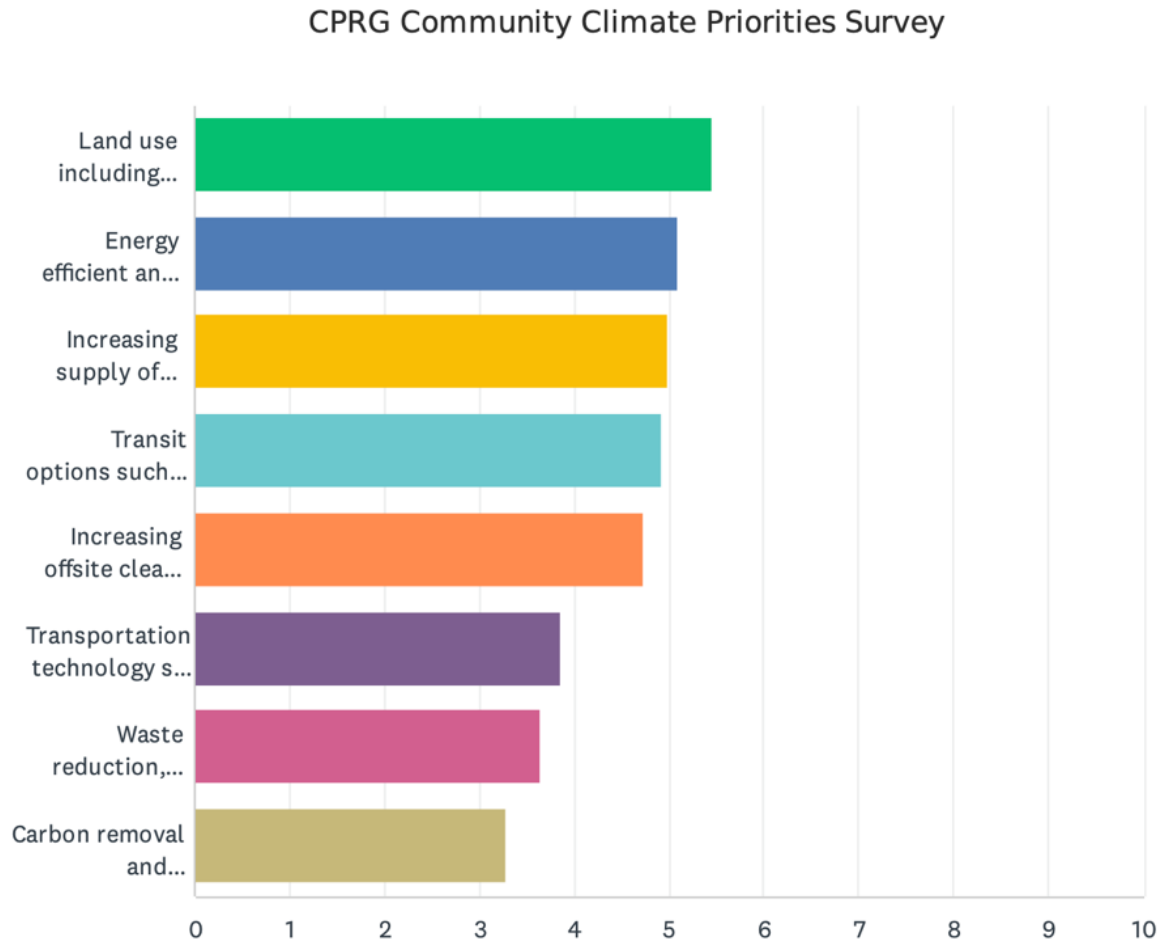
Participants were assigned the task of prioritizing GHG reduction strategies based on their perceived importance in mitigating climate change. The rankings of these strategies were averaged to generate an overall score. The following outlines the ranked strategies based on community input, listed from highest to least priority:

1. **Land Use** (including development planning, land conservation, and environment protection): 23.26% (Score 5.45)
2. **Energy Efficient and Clean Energy Buildings**: 17.44% (Score 5.09)
3. **Increasing Supply of On-site Clean Energy** (e.g., rooftop solar): 10.47% (Score 5.00)
4. **Transit Options** (such as increased use of public transportation, bike and pedestrian travel options, and reduction of travel): 17.44% (Score 4.93)
5. **Increasing Off-site Clean Energy** (e.g., community solar, utility-supplied energy): 9.30% (Score 4.74)
6. **Transportation Technology** (such as clean fuels and Low/Zero Emission Vehicles): 5.81% (Score 3.86)
7. **Waste Reduction, Composting, and Recycling**: 11.63% (Score 3.64)
8. **Carbon Removal and Sequestration** (including green infrastructure such as trees and wetlands): 4.65% (Score 3.28)

These results are also displayed in Figure 7.

These rankings reflect the community's prioritization of strategies to mitigate climate change. It's evident that land use, energy efficient buildings, and on-site clean energy supply are considered top priorities, with an emphasis on sustainable development and clean energy initiatives.

Figure 7. Results from COG's Community Climate Priorities Survey



EQUITY AND LIDAC PRIORITIES

The community responses outlined two overarching themes in response to questions that polled equity impact priorities. There was a notable emphasis on environmental justice, particularly concerning the needs of Low-Income and Disadvantaged Communities (LIDACs). Concerns included air and water quality, greenspace availability, and overall quality of life that underscored the importance of ensuring that climate initiatives benefit people who have historically faced disproportionate environmental burdens.

Community engagement and empowerment emerged as significant aspects of equity impacts. The responses highlighted the community's call for public support, ensuring investment returns to communities, and involving communities in project planning and decision-making. This theme also encompassed a focus on creating employment opportunities, supporting local initiatives such as community composting and neighborhood farming, and fostering a sense of ownership and agency within historically underserved populations. Together, these themes conveyed the community's perspective on the most important equity impacts to achieve in the context of climate action. When assessed on what emissions reduction projects would have the most positive impact on communities that are low-income, disadvantaged, and overburdened, or have been historically underrepresented in planning processes, respondents outlined initiatives tailored to the unique needs of these communities. Key strategies identified included the promotion of non-car travel,

featuring expanded bike lanes, improved bus availability, and pedestrianized streets aimed at enhancing safety and accessibility. Additionally, there was a strong emphasis on reuse and repair initiatives, such as community-engaged compost programs and durable materials reuse infrastructure, with the goal of reducing waste and promoting local employment.

Affordable housing near transit emerged as a significant strategy, with respondents emphasizing the importance of funding allocation for such initiatives. Respondents also emphasized the importance of implementing energy efficiency projects in multifamily and commercial buildings as a crucial step toward reducing energy consumption and emissions. In summary, respondents delineated a comprehensive set of emissions reduction projects, addressing transportation, waste management, energy efficiency, and community development, reflecting a commitment to sustainability and economic well-being within these communities.

BARRIERS

Respondents identified several barriers hindering their organizations from advancing climate change initiatives and energy efficiency planning. The most prevalent challenges included limited access to program funding, cited by 37.21% of respondents, followed closely by the high cost of alternatives at 36.05%. Time constraints were identified by 34.88% of respondents, while 29.07% specified other barriers not covered in the provided options. Limited knowledge was noted as a challenge by 20.93% of respondents, and 19.77% indicated limited access or inconvenience of programs as a barrier. These findings underscore a range of impediments that individuals and organizations encounter, providing valuable insights into considerations of the multifaceted challenges associated with energy efficiency planning.

Some survey respondents highlighted personal challenges such as time constraints and limited knowledge, emphasizing the need for more accessible and user-friendly information and resources. Others mentioned specific barriers related to their expertise or organizational focus, such as the lack of transparency on data center energy use, obstacles in rezoning industrial space, and challenges related to living in an apartment where residents may feel limited control over larger-scale initiatives.

Additionally, respondents underscored financial considerations, including the high capital cost, the need for concierge services to guide individuals through the process, and limited access to utility services and infrastructure. These nuanced insights highlight the diverse array of obstacles faced by organizations, emphasizing the importance of tailored solutions to address their unique circumstances.

PROJECT EMPHASIS

When responding to the question about advancing projects within the COG's eight identified areas for climate action strategies, participants provided a diverse range of project ideas aligned with the key focus areas: Planning, Equity, Clean Electricity, Zero Energy Buildings, Zero Emission Vehicles, Mode Shift and Travel Behavior, Zero Waste, and Sequestration.

Their input reflected emphasizing the need for projects that span urban planning, social equity, renewable energy, sustainable infrastructure, transportation, waste management, and carbon sequestration. The following insights offer valuable perspectives on the types of initiatives respondents believe should be prioritized to address the multifaceted challenges posed by climate change within the COG region.

The community responses reflected several key themes that resonated across the spectrum of climate action strategies within the COG's identified areas.

- **Equity and Inclusive Clean Energy Transition:** A recurring priority was the promotion of equitable clean energy transitions, particularly in LIDACs. The responses advocated for green job opportunities, diverse representation, and inclusive decision-making processes to ensure the benefits of clean energy initiatives reached everyone.
- **Renewable Energy and Sustainable Transportation:** Another prevalent theme was the commitment to advancing renewable energy and sustainable transportation. This involved a push for increased use of renewable energy sources, such as solar, alongside a focus on zero-emission vehicle (ZEVs), robust charging infrastructure, and enhanced public transit options.
- **Waste Reduction and Recycling Initiatives:** Respondents expressed a collective commitment to a circular economy, emphasizing waste reduction, recycling initiatives, and legislative support for reuse infrastructure. Additionally, there was a shared focus on climate resilience through community planning, increased green spaces, and stormwater management solutions.

These common themes underscored the community's strong emphasis on inclusivity, environmental sustainability, and climate resilience in shaping climate action strategies.

CONCLUSION

COG values community input and will continue to engage with the public more broadly within the MSA on the development of the CCAP, with a focus on addressing environmental justice concerns and supporting historically underrepresented and overburdened communities. COG will use the responses of this survey to inform the CCAP and its wider Community Engagement Plan for the CCAP and continue to seek engagement from a wider, more diverse audience within its climate mitigation planning processes.

Thank you to all community members who participated in shaping the climate priorities for the metropolitan Washington region.