REGIONAL CLIMATE AND ENERGY ACTION PLAN
2017 - 2020

A Plan of the Climate, Energy and Environment Policy Committee to Promote Voluntary Action and Progress by Metropolitan Washington Local Jurisdictions

October 2016 BEEAC Work Session DRAFT

Metropolitan Washington
Council of Governments

REGIONAL CLIMATE AND ENERGY ACTION PLAN
Prepared by the Climate, Energy and Environment Committee
October 2016 *FIRST DRAFT*

ABOUT COG
The Metropolitan Washington Council of Governments (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 22 local governments, the Maryland and Virginia state legislatures, and U.S. Congress.

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ACCOMMODATIONS
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INTRODUCTION

Region Forward

Metropolitan Washington regional planning is guided by *Region Forward*, the region's comprehensive vision plan. *Region Forward* is based on ambitious goals shared by residents, business and nonprofit leaders, and elected officials across metropolitan Washington. These goals also encourage leaders to think about the regional impact of local decisions. The *Region Forward* goals are as follows:

Land Use

- We seek the enhancement of established neighborhoods of differing densities with compact, walkable infill development, rehabilitation and retention of historic sites and districts, and preservation of open space, farmland and environmental resource land in rural areas.
- We seek transit-oriented and mixed-use communities emerging in Activity Centers that will capture new employment and household growth.

Transportation

- We seek a broad range of public and private transportation choices for our region which maximizes accessibility and affordability to everyone and minimizes reliance upon single occupancy use of the automobile.
- We seek a transportation system that maximizes community connectivity and walkability, and minimizes ecological harm to the region and world beyond.

Climate and Energy

- We seek a significant decrease in greenhouse gas (GHG) emissions, with substantial reductions from the built environment and transportation sector.
- We seek efficient public and private use of energy region-wide, with reliance upon renewable energy and alternative fuels for buildings, vehicles, and public transportation.

Environment

- We seek to maximize protection and enhancement of the region's environmental resources by meeting and exceeding standards for our air, water, and land.
- We seek preservation and enhancement of our region's open space, green space, and wildlife preserves.

Public Safety

- We seek safe communities for residents and visitors.
- We seek partnerships that manage emergencies, protect the public health, safety, welfare, and preserve the lives, property and economic well-being of the region and its residents.

Education

- We seek to provide greater access to the best education at all levels, from pre-kindergarten to graduate school.
- We seek to make our region a pre-eminent knowledge hub, through educational venues, workforce development, and institutional collaboration.

Housing

- We seek a variety of housing types and choices in diverse, vibrant, safe, healthy, and sustainable neighborhoods, affordable to persons at all income levels.
- We seek to make the production, preservation, and distribution of affordable housing a priority throughout the region.

Health and Human Services

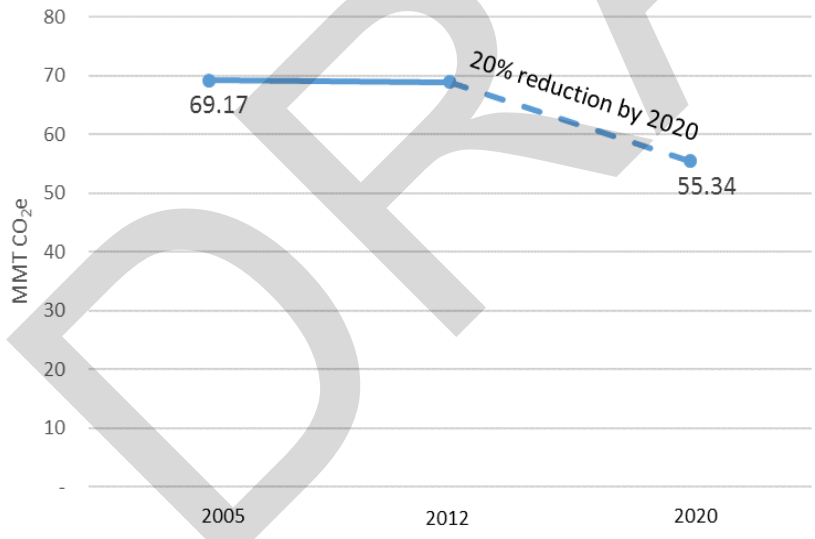
- We seek communities in which every person enjoys health and well-being.

Economy

- We seek a diversified, stable, and competitive economy, with a wide range of employment opportunities and a focus on sustainable economic development.
- We seek to minimize economic disparities and enhance the prosperity of each jurisdiction and the region as a whole through balanced growth and access to high-quality jobs for everyone.
- We seek to fully recognize and enhance the benefits that accrue to the region as the seat of the national government and as a world capital.

Region Forward draws its climate and energy related goals from the 2008 National Capital Region Climate Change Report. The regional GHG emissions reduction goals include 10 percent below business as usual by 2012 (back down to 2005 levels), 20 percent below the 2005 levels by 2020, and 80 percent below 2005 levels by 2050. Figure 1 tracks the regional progress towards meeting these goals.[1] The region met its first 2012 goal but has there is an immense undertaking to meet the 2020 and 2050 goals.

Figure 1: 2020 Outlook for Regional Greenhouse Gas Emissions



Source: Metropolitan Washington Greenhouse Gas Inventory

[1] Metropolitan Washington Council of Governments. (2016). *Greenhouse Gas Emissions Inventory for Metropolitan Washington – 2005-2012*. Washington D.C

Regional Climate and Energy Action Plan

Created in 2009, COG's Climate, Energy and Environment Policy Committee (CEEPC) was created to guide the region to meeting regional GHG emission reduction goals. CEEPC supports the Region *Forward* vision and mission by providing leadership on climate change, energy, green building, alternative fuels, solid waste and recycling issues, and by supporting area governments as they work together to meet regional goals.

CEEPC includes representatives from COG's member governments, state environmental and transportation agencies, state legislatures, the Air and Climate Public Advisory Committee (ACPAC), federal and regional agencies, electric and gas utilities, environmental organizations, business organizations and members of the academic community. Several subcommittees and technical working groups provide essential input and support to CEEPC.

CEEPC develops short-term Regional Climate and Energy Action Plans to help move the region toward achieving the regional GHG emission reduction goals. This document is the 3rd edition of the Action Plan, focusing on implementation and outcomes for 2017-2020. The Action Plan offers a variety of voluntary and flexible options for local jurisdictions to implement, including options on how to reduce emissions from government operations and how local jurisdictions can support community action. This Action Plan builds on and reflects current local action as well as national best practices.

A guiding influence to the development of this Action Plan has been the actions and recommendations from the Multi-Sector Work Group (MSWG) on GHG emission reduction strategies. COG convened this group to conduct an extensive examination of potential implementable GHG reduction strategies in the energy/environment, land use and transportation sectors. The recommended set of strategies from the MSWG were developed to encourage COG members and committees to incorporate the strategies into their local, regional and state programs.

Although the main purpose of the MSWG and this Action Plan is to reduce emissions, the actions identified in this plan naturally supports a variety of other *Region Forward* goals. Table 1 notes each section of the report and what *Region Forward* goals it supports. Throughout this document the *Region Forward* symbols are a reminder of how climate action areas support *Region Forward*.

Table 1: Climate Action Areas that Support Region Forward Goals

Climate Action Areas									
Reduce Energy Consumption			√	√		√	√		√
Increase Renewables			√	√		√	√		√
Advance Sustainable Regional Mobility	√	√	√	√		√		√	√
Increase Sustainable Urban Development	√	√	√	√		√	√	√	√
Move Towards Zero Waste			√	√		√			√
Build Regional Resilience	√	√	√	√	√	√	√	√	√
Grow the Regional Clean Economy	√	√	√	√		√			√
Protect Equity and Health	√	√	√	√	√	√	√	√	√

PRINCIPLES

This Action Plan is guided by overarching principles that are necessary to ensure the feasibility of a coordinated regional approach and leadership needed to equitable meet regional goals.

- **Application at Scale**: Most COG local jurisdiction members have been implementing climate and energy initiatives for five or more years and have been able to fine-tune and expand efforts. COG local jurisdiction members and stakeholders should continue to work together to help build an ecosystem that supports application at scale. Sharing best practices, learning together, and coordinating on implementation serves as a regional support mechanism for transformation.

- **Flexibility**: Metropolitan Washington spans across three "states" - the District of Columbia, Maryland, and Virginia - each with varying authorities and local responsibilities. For instance, under Virginia's Dillion rule local jurisdictions are given limited authority and additional authorities need to be granted by the state.[2] In addition, there are a variety of local jurisdictions across the region that span from urban, suburban, and rural and small, medium, and large-sized communities. These communities face different challenges and abilities to implement climate action.

  Therefore, there needs to be flexibility in how each local jurisdiction works to achieve the regional goals. All local jurisdictions to some extent should be participating in climate planning and policy development, investing in climate action, incentivizing and engaging the community, establishing regulations and requirements (where appropriate), and supporting state, federal, and utility initiatives.

- **Innovation**: Metropolitan Washington local jurisdictions strive to be best in-class leaders for climate and energy action. In 2014, The White House recognized this leadership by designating COG and its members as Climate Action Champions. This brought federal support in evaluating potential clean energy technology deployment opportunities. COG and its members need to continue to support innovations in clean energy and related technology deployment today if the region is going to meet long-term GHG emission reduction goals.

- **Integration**: Climate planning and action cannot occur in a bubble. Meeting GHG emission reduction and climate resiliency goals require integrating climate change impacts and action into all types of local jurisdiction plans and operations. At the same time, climate plans and initiatives need to support broader community goals, such as economy growth and equity in the initial planning.

- **Engagement and Partnerships**: Local jurisdictions need to set an example for the community and do its part to reduce GHG emissions from government operations. However, local government operations typically only account for a small fraction (2 - 6 percent) of total community-wide emissions.[3] In order to meet GHG emission reduction goals, local jurisdictions need to inspire community action. Outreach, education, and partnerships are important ways local can encourage and support community action and innovations.

[2] Fairfax County, Virginia. (2016). Dillion Rule in Virginia. Fairfax, VA. Retrieved from http://www.fairfaxcounty.gov/government/about/dillon-rule.htm.

[3] City of Alexandria. (2011). *Eco-City Alexandria Energy and Climate Change Action Plan*. Alexandria, VA.
City of Bowie, Maryland. (2015). *Climate Action Plan*. Bowie, MD
District Department of Environment. (2012). *Reducing Greenhouse Gases…Growing Our Economy: The 2011 District of Columbia Greenhouse Gas Emissions Inventory*. Washington D.C.
Fairfax County. (2013). *Community Greenhouse Gas Inventory for Fairfax County, Virginia*. Fairfax, VA
Frederick County. (2010). *Frederick County Greenhouse Gas Emissions Inventory Report. Community and Government Operations*. Frederick, MD
Montgomery County Sustainability Working Group. (2009). *Climate Protection Plan*. Rockville, MD
SAIC. (2013). *2012 Community Greenhouse Gas Inventory*. Prepared for Arlington County Department of Environmental Services.

SECTION 1

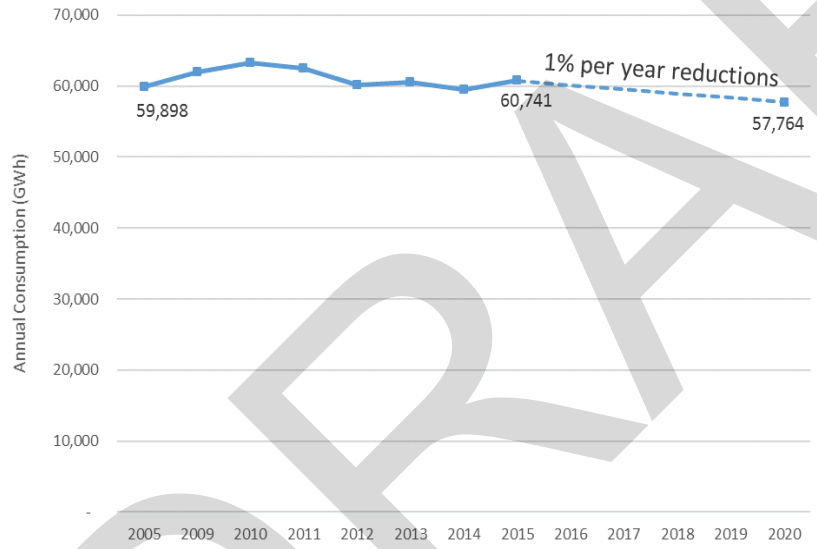
Reduce Energy Consumption

Outcome: Reduce energy consumption 1 percent per year through 2020.

ELECTRICITY CONSUMPTION

In 2012, electricity consumption accounted for 40 percent of total GHG emissions in the region. Commercial use contributed to more than half of regional electricity consumption.[4] Sustaining continued reductions in regional electricity consumption will be a leading factor in the region meeting its GHG emission reduction goals. Figure 2 features the trends in regional electricity consumption. Comparing 2005 and 2015, there is only a 1 percent increase in total consumption, despite a population growth of more than 700,000. Per capita consumption decreased 12 percent between 2005 and 2015.[5]

Figure 2: 2020 Outlook for Regional Electricity Consumption



Source: Metropolitan Washington Annual Utility Data Survey Analysis

LOCAL ACTIONS

COG and its members will continue to support actions to reduce overall energy consumption. Table 2 on the next page includes a variety of voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

[4] Metropolitan Washington Council of Governments. (2016). *Greenhouse Gas Emissions Inventory for Metropolitan Washington – 2005-2012*. Washington D.C.

[5] Metropolitan Washington Annual Utility Data Survey Analysis

Table 2: Local action to reduce energy consumption

REDUCE ENERGY CONSUMPTION		%
	Increase Efficiency of Public Facilities and Operations	
1	Prepare GHG emission inventories and reduction plans for government operations.	100%
2	Regularly track/benchmark and publicly disclose energy performance at all government facilities.	100%
3	Prepare an energy for local government facilities and operations.	100%
4	Perform walk-through energy audits of local government facilities and implement recommendations.	100%
5	Implement employee challenges and education programs on energy and sustainability policies and practices at work and home.	100%
	Facilitate Increased Efficiency in the Community	
6	Adopt a community-wide GHG emission reduction plan (could also be framed as a climate action plan, energy plan, sustainability plan, etc.).	100%
7	Incorporate community energy infrastructure needs, goals, and strategies in master plans, comprehensive plans, and small area plans.	50%
8	Increase level of compliance for existing energy building codes. Support increased efficiency in codes at national, state, or local levels (only feasible where local jurisdiction has authority).	75%
9	Implement mandatory energy benchmarking requirements or promote voluntary benchmarking. Provide training or technical assistance.	50%
10	Offer innovative financing solutions for residential and commercial sectors (i.e. green bank, PACE, loan loss reserves, etc.).	75%
11	Provide local energy efficiency incentives to residents and businesses or promote federal, state, and utility incentives. Target opportunities to underserved communities.	100%
12	Expand low-income housing retrofits for energy and water savings.	50%
13	Deploy energy efficient outdoor lighting requirements or initiatives (for streets, parking lots, parks, or signage).	75%
14	Implement residential and commercial engagement programs (i.e. green business or home challenges, awards, etc.) to encourage energy efficiency.	100%
15	Analyze feasibility of deploying combined heat and power, district energy, and microgrid systems. Reduce barriers to and incentivize community deployment.	25%

SECTION 2

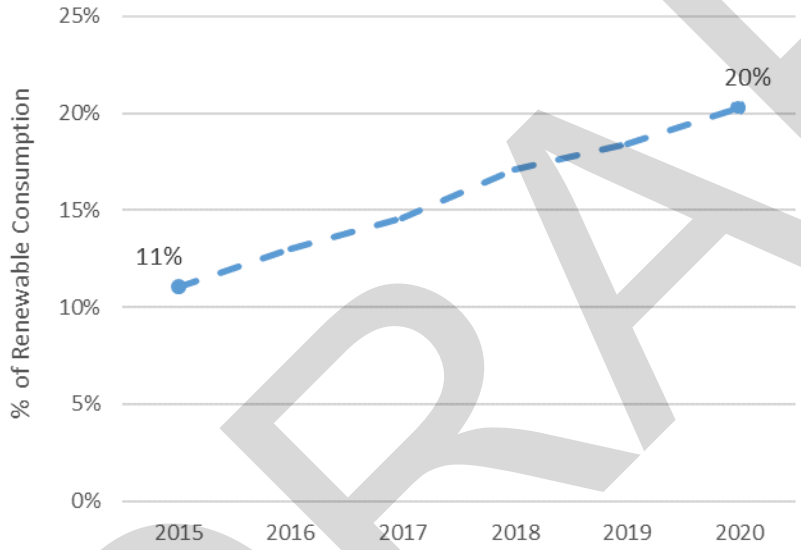
Increase Renewables

Outcome: Meet 20 percent of regional electricity consumption with power from renewable sources by 2020.

RENEWABLE ENERGY CONSUMPTION

Growth in overall regional renewable energy consumption is an important indicator to show progress towards the regional GHG reduction goals. An analysis was conducted as part of the Multi-Sector Work Group project to estimate and project the potential growth of renewable energy consumption for the region. A summary of the results in Figure 3 shows 11 percent of total regional energy consumption is from renewables in 2016, with a potential of reaching 20 percent by 2020.[6]

Figure 3: 2020 Outlook for Renewable Energy Consumption



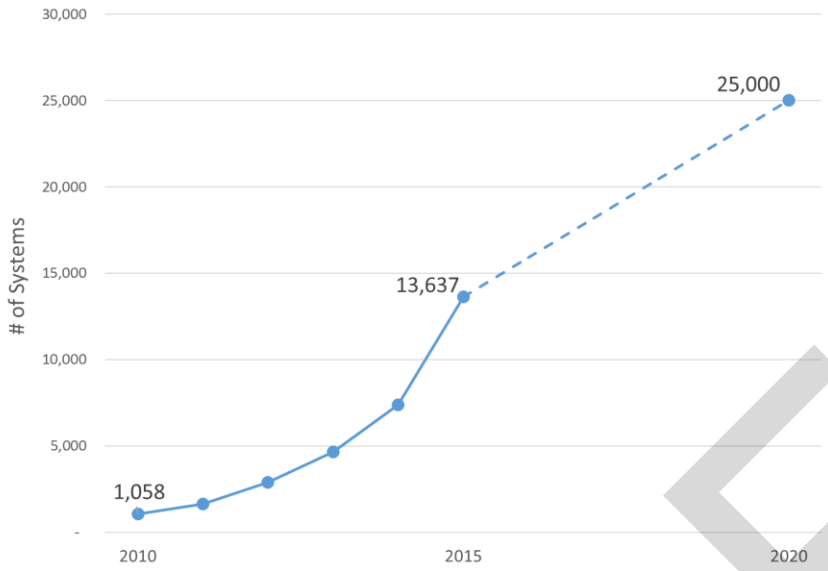
Source: Renewable Energy Supplemental Analysis

GRID CONNECTED RENEWABLES

Installation of grid-connected renewables support growth in overall renewable energy consumption. Figure 4 on the next page shows the number of grid-connected solar and wind systems, according to data provided to COG by the region's electric utilities. As of 2015, region has 13,637 grid-connected solar and wind systems, with a total generating capacity of 132.2 megawatts. Distributed renewable energy deployment has been growing at a tremendous rate. If this rate of growth continues the region could have 25,000 or more grid-connected renewables by 2020.

[6] ICF International. (2016). *Multi-Sector Approach to Reducing Greenhouse Gas Emissions in the Metropolitan Washington Region: Renewable Energy Supplemental Analysis Technical Report*. Prepared for the Metropolitan Washington Council of Governments Washington D.C.

Figure 4: 2020 Outlook for Grid-Connected Renewables



Source: Metropolitan Washington Annual Utility Data Survey Analysis

LOCAL ACTIONS

COG and its members will continue to support actions to increase the share of renewables. Table 3 includes a variety of voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 3: Local action to increase share of renewables

INCREASE RENEWABLES		%
1	Adopt a net zero energy plan, policies, or initiatives.	25%
2	Install renewable energy systems on local government property.	100%
3	Achieve and maintain EPA Green Power Partnership for government operations.	75%
4	Work with the community to achieve and maintain EPA Green Power Community Partnership.	50%
5	Adopt solar access, solar-ready, and similar ordinances to help facilitate local solar deployment.	75%
6	Provide or promote incentives for building-level renewable technologies and energy storage systems. Target opportunities to underserved communities.	100%
7	Facilitate and support establishment of cooperative community renewable systems and cooperative renewable energy purchasing.	75%
8	Increase public education and outreach on renewable technologies.	100%
9	Continue to support strong state-level renewable portfolio standards.	75%
10	Support expanded renewable energy incentives and financing mechanisms at utility, state, and national levels.	75%

SECTION 3

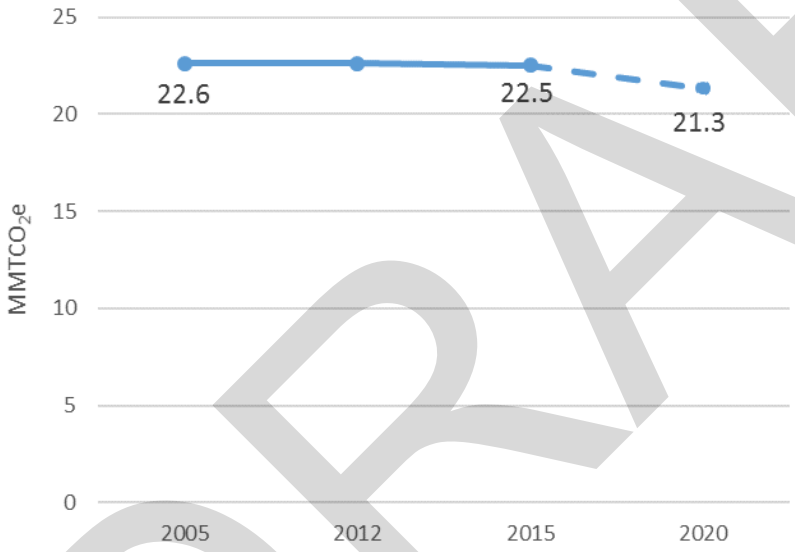
Advance Sustainable Regional Mobility

Outcome: Reduce transportation sector GHG emissions to approximately 21.3 $MMTCO_2e$ by 2020. Increase total electric vehicle ownership to 10,000 and have 1,000 public EV charging stations in the region by 2020.

TRANSPORTATION SECTOR GHG EMISSIONS

In 2012, mobile transportation was the second largest contributor to regional GHG emissions, accounting for 34 percent of total emissions.[7] Figure 5 shows that transportation sector emissions have remained relatively flat; however, per capita emissions decreased 13 percent between 2005 and 2015.Transportation GHG emissions are projected to drop by more than 5 percent by 2020 down to 21.3 MMTCO2e.[8]

Figure 5: 2020 Outlook for Transportation Sector GHG Emissions



Source: Metropolitan Washington Waste and Recycling Trends Analysis

ELECTRIC VEHICLES AND INFRASTRUCTURE

Improving the fuel economy and reducing emissions of vehicles in the region will play an important role in reducing transportation sector GHG emissions. Figure 6 on the next page shows the total growth of ownership of the most efficient vehicles in the region, including hybrid electric vehicles (HEVs), plug-in hybrid electric (PHEVs), and all electric vehicles (EVs). HEVs account for the vast majority of these vehicles and have seen significant growth since 2005. PHEV and EV ownership was first estimated in 2012 at 497 vehicles. In 2014, PHEVs and EVs account for 3,707 vehicles and HEVs account for 96,982, totaling 100,689 vehicles.[9]

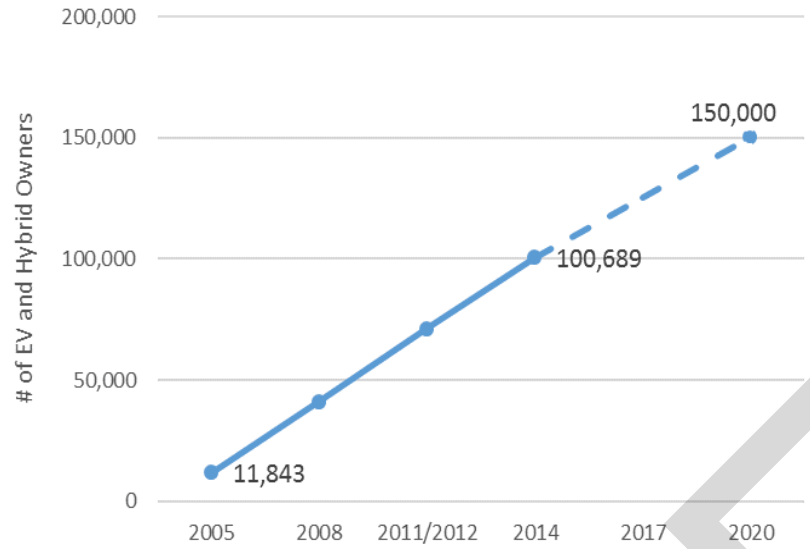
[7] Metropolitan Washington Council of Governments. (2016). *Greenhouse Gas Emissions Inventory for Metropolitan Washington–2005-2012*. Washington D.C.

[8] National Capital Region Transportation Planning Board. (2015). Financially Constrained Long Range Transportation Plan for the National Capital Region – 2015 Amendment. Washington D.C.

[9] Metropolitan Washington Council of Governments. (2012). *Electric Vehicles in Metropolitan Washington: Understanding the Region's Current EV Readiness and Options for Expanding Their Use*. Washington D.C.

Metropolitan Washington Council of Governments. (2005, 2008, 2011, 2014). *Metropolitan Washington Vehicle Registrations Database Analysis*. Washington D.C.

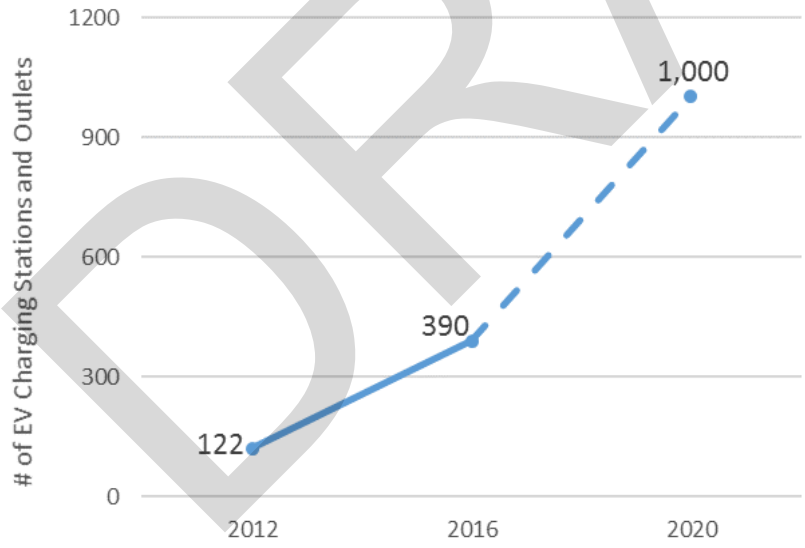
Figure 6: 2020 Outlook for Total Electric (HEV, PHEV, EV) Vehicle Ownership



Source: Metropolitan Washington Vehicle Registration Data Analysis

PHEVs and EVs can be charged through plug-in connections (HEVs cannot). The majority of charging is anticipated to occur at home and the workplace. PHEV and EV owners need to supported with a robust network of workplace and public charging stations. Figure 7 shows that publicly accessible charging stations have more than tripled since 2012 to 390 charging stations with 943 plug-in connections.[10] Triple the number of 2016 would result in more than 1,000 stations by 2020.

Figure 7: 2020 Outlook for Publicly Accessible Electric Vehicle Charging Stations



Source: Metropolitan Washington Electric Vehicle Charging Station Analysis

[10] Metropolitan Washington Council of Governments. (2012). *Electric Vehicles in Metropolitan Washington: Understanding the Region's Current EV Readiness and Options for Expanding Their Use.* Washington D.C.

US Department of Energy. (2016). *Alternative Fuels Data Center Station Locator*. Retrieved from http://www.afdc.energy.gov/locator/stations/results?location=&fuel=ELEC&private=&planned=&owner=all&payment=all&radius=&radius_miles=

Charge Point. (2016). *Station Location Dashboard*. Campbell, CA. Retrieved from https://na.chargepoint.com/charge_point.

PlugShare. (2016). Charging Station Database. Venice, California. Retrieved from http://www.plugshare.com/.

LOCAL ACTIONS

COG and its members will continue to support actions to advance sustainable regional mobility. Table 4 includes a variety of voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 4: Local action to advance sustainable regional mobility

	ADVANCE SUSTAINABLE REGIONAL MOBILITY	%
	Increase Efficiency of Public Sector Fleets	
1	Adopt a green fleet policy or fleet management plan aimed at reducing emissions of GHGs and other pollutants.	100%
2	Add alternative fuel and charging equipment (e.g. natural gas, biofuel, electric, hydrogen) to public fueling facilities. Retrofit garages and refueling facilities, as needed.	75%
3	Offer car sharing and bike sharing programs for employees as an alternative to expanding fleet.	50%
4	Adopt anti-idling policies for public fleets and off-road equipment.	75%
5	Provide staff education and training for efficient use of and maintenance on all vehicle types in the fleet with a particular focus on alternative fuel vehicles.	50%
6	Implement innovative pilot initiatives to advance new technologies (e.g. vehicle-to-grid, solar powered charging stations, etc.).	25%
	Improve Local Fuel Economy	
7	Comprehensive, small area, and development plans guide EV and other AFV infrastructure development.	50%
8	Invest in a system of publically accessible EV charging stations and other AFV fueling stations.	75%
9	Actively promote and enforce community-wide anti-idling regulations (adopted locally or by state).	75%
10	Require new buildings to install EV charging stations or require them to be EV-Ready.	25%
11	Require space for bicycle and car sharing in development plans.	25%
12	Provide or promote incentives for electric vehicles and charging stations.	50%
13	Provide outreach and education on the benefits and availability of EVs.	25%
14	Support state and national incentives for low-emitting, efficient vehicles, infrastructure, and technology.	75%
	Mobility Management	
15	Adopt a bicycle and pedestrian plan.	100%
16	Achieve a Bike Friendly or Walk Friendly Community Designation.	25%
17	Expand park and ride facilities to meet anticipated increase in rideshare and transit demand.	50%
18	Implement transit enhancements to increase capacity and improve services (e.g. enhanced commuter bus service, real-time bus schedule information, bus rapid transit, etc.). Place emphasis on increasing accessibility and expanded transit options to underserved communities.	50%

19	Enhance system operational performance of roadways (e.g. signal retiming, intersection efficiency improvements, etc.).	50%
20	Adopt a complete streets policy.	75%
21	Offer a commute options program for government employees (telework, flex-time, alternative work schedule, car pool, van pool, guaranteed ride home, bike/pedestrian, or financial incentive).	100%
22	Provide or promote travel demand management programs (e.g. Commuter Connections) to encourage citizens to take alternative commute options and to help employers offer alternative commute options to their employees.	100%
23	Implement transit fare reductions to targeted audiences.	50%

SECTION 4

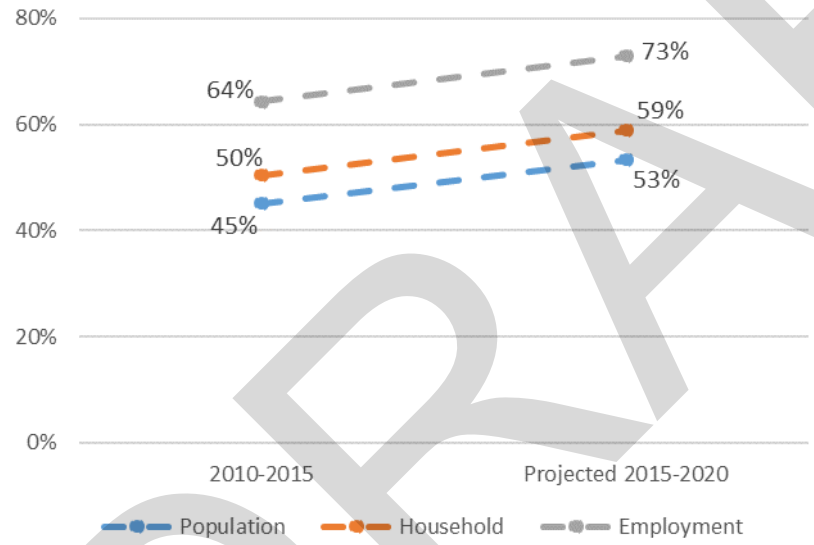
Increase Sustainable Urban Development

Outcomes: Increase population, household, and employment growth rates in Activity Centers to 53 percent, 50 percent, and 73 percent, respectively. Increase number of high performance buildings in the region to 5,000.

SUSTAINABLE DEVELOPMENT PATTERNS

Development patterns have significant impact on GHG emissions. Compact development in walkable, mixed use communities, and preservation of greenspace can mitigate GHG emissions.[11] Activity Centers are the region's priority growth areas and include existing urban centers, suburban town centers, traditional towns, and transit hubs.[12] Figure 8 shows the 2020 outlook for population, household, and job growth within Activity Centers[13].

Figure 8: 2020 Outlook for Growth Rates in Activity Centers



Source: DRAFT COG Cooperative Forecasts 9.0

HIGH PERFORMANCE BUILDINGS

In addition to creating sustainable development patterns, buildings themselves need to have higher levels of environmental performance to meet regional GHG emission reduction goals as well as the broader goals of Region Forward. The Metropolitan Washington High Performance Buildings Database includes projects that are certified by LEED, ENERGY STAR, EarthCraft, or Passive House certification. Figure 9 shows on the next page the total number of buildings at 3,553 as of June 2016.[14]

[11] US Environmental Protection Agency. (2016). Smart Growth and Climate Change. Retrieved from https://www.epa.gov/smartgrowth/smart-growth-and-climate-change.

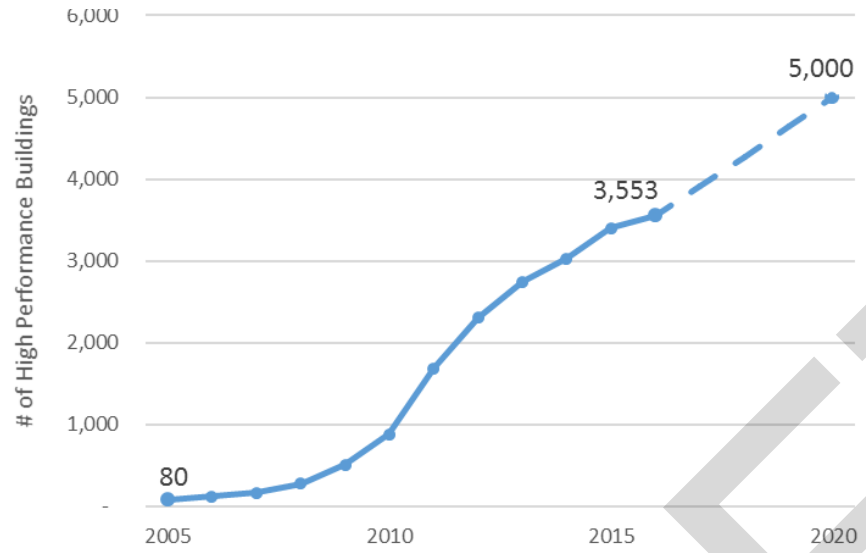
[12] Metropolitan Washington Council of Governments. (2016). *Land Use and Activity Centers*. Retrieved from https://www.mwcog.org/community/planning-areas/land-use-and-activity-centers/

[13] Metropolitan Washington Council of Governments. (2016). *DRAFT COG Cooperative Forecasts 9.0*. Washington D.C.

[14] U.S. Green Building Council. (2016). *LEED Projects Directory*. Washington D.C. Retrieved from http://www.usgbc.org/projects.

US EPA. (2016). *ENERGY STAR Certified Buildings and Plants Database*. https://www.energystar.gov/index.cfm?fuseaction=labeled_buildings.locator

Figure 9: 2020 Outlook for High Performance Buildings



Source: Metropolitan Washington High Performance Building Database

LOCAL ACTIONS

COG and its members will continue to support actions to increase growth rates in Activity Centers; increase the number of high performance buildings; and reduce loss of resources lands, tree canopy, and vegetation from development. Table 5 includes a variety of voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 5: Local action to increase level of sustainable urban development

INCREASE SUSTAINABLE URBAN DEVELOPMENT		%
	Facilitate Sustainable Development Patterns	
1	Update comprehensive and small area land use plans, zoning, and urban design guidelines to allow for greater concentration of growth in activity centers.	100%
2	Develop neighborhood stabilization strategies to preserve neighborhood identify in underserved communities.	50%
3	Implement pedestrian, bicycle, and transit improvements to accommodate growth around rail stations and other activity centers. Place emphasis on increasing connectivity in underserved communities.	75%
4	Incentivize development in activity centers that are walkable, higher density, mixed use, mixed income, and transit-oriented. Identify, promote, and incentivize the redevelopment or innovative uses of vacant, underutilized, or brownfield sites.	50%

Viridiant. (2016). *EarthCraft Certified Projects Database for Metropolitan Washington*. Richmond, Virginia

Passive House Institute US. (2016). *Certified Projects Database*. Chicago, Illinois. Retrieved from http://www.phius.org/phius-certification-for-buildings-and-products/certified-projects-database

	Increase Number of High Performance Buildings	
5	Incorporate high performance building goals and strategies in master plans, comprehensive land use plans, and small area plans.	50%
6	Implement an affordable housing green rehabilitation program.	50%
7	Enhance green building policies to require higher level of green construction standards (e.g. LEED Gold instead of LEED Silver).	50%
8	Offer incentives for commercial and residential buildings certified by a high efficiency building/green rating system (LEED, ENERGY STAR, Passive House, EarthCraft, Living Building Challenge, Net Zero, Well Standard, etc.).	50%
9	Provide education and training on new and advanced green construction standards (Living Building, Net Zero, WELL Standard, etc.).	50%
	Reduce Loss of Resource Lands, Canopy, and Vegetation from Development	
10	Implement plan(s) to preserve and enhance ecologically valuable green spaces (such as forests, wetlands, stream buffers) in urban, suburban and rural areas (e.g. green infrastructure plan, natural resource management plan, or green space plan).	100%
11	Increase access to greenspaces for underserved communities.	50%
12	Adopt a tree canopy/forest cover goal.	100%
13	Obtain and maintain Tree City USA designation. Designation requirements include having a tree board or department, tree care ordinance, an Arbor Day observance or proclamation, and a $2 per capita budget for public tree plantings and care.	100%
14	Promote planting, care of trees, and engage the community on tree planting.	100%
15	Adopt green streets plan, policies, or initiatives.	50%
12	Expand urban heat island mitigation programs.	100%
13	Require green infrastructure and tree canopy for new development and retrofits as part of the development review process. Expand the responsibility of developers to plant or maintain trees over an extended period of time.	50%
14	Provide or promote green infrastructure incentives (i.e. private property tree plantings, green roofs, paved surface reduction, etc.).	50%
15	Install green roof(s) on government property.	75%
16	Utilize zoning, development and permitting regulations, and other tools to support local food production, processing, and distribution in urban, suburban, and rural communities (i.e. farmers' markets, community gardens, on-farm processing, agri-tourism, etc.).	50%
18	Provide support or incentives for urban agriculture (e.g. edible landscaping, school and community gardens, urban farming).	75%

SECTION 5

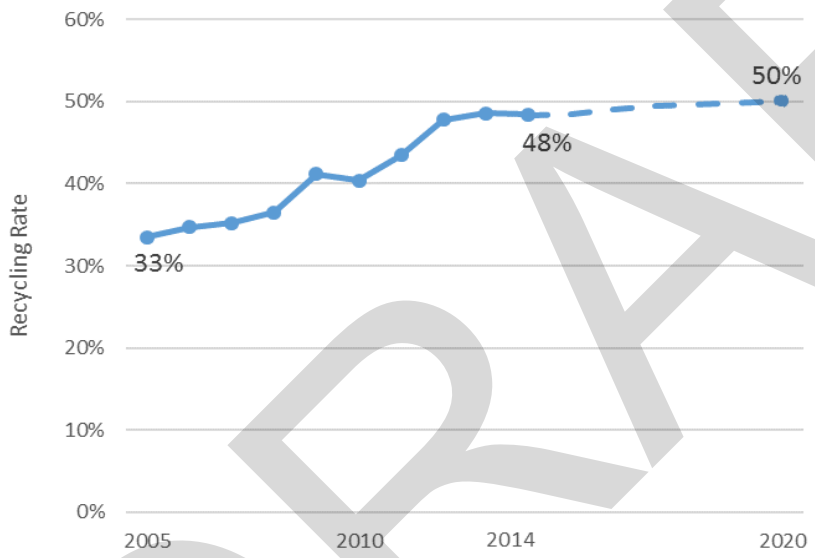
Move Towards Zero Waste

Outcome: Increase regional recycling rate to 50 percent by 2020.

RECYCLING RATE

Zero waste is the aspirational, long-term goal of eliminating the disposal of solid waste. Implementing strategies of this nature reduces emissions, saves energy, and extends landfill capacity.[15] The recycling rate is an indicator to help track regional progress towards zero waste. Several forward-thinking entities are undertaking ambitious zero waste goals. Figure 10 shows the regional recycling rate has increased from 33 percent in 2005 to approximately 48 percent in 2014.[16]

Figure 10: 2020 Outlook for Regional Recycling Rate



Source: Metropolitan Washington Waste and Recycling Trends Analysis

[15] Maryland Department of Environment. (2014). Zero Waste Maryland: Maryland's Plan to Reduce, Reuse and Recycle Nearly All Waste Generated in Maryland by 2040. Baltimore, Maryland

[16] Northern Virginia Regional Commission. (2008, 2009, 2012, 2014, 2016). *Public Solid Waste Services in the Metropolitan Washington Region.* Prepared for the Northern Virginia Waste Management Board Fairfax, Virginia

Maryland Department of Environment. (2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015). Maryland Solid Waste Management and Diversion Reports. Prepared for the State of Maryland, Maryland General Assembly, and Senate and House Environmental Committees Baltimore, Maryland

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LOCAL ACTIONS

COG and its members will continue to support actions to reduce waste and increase recycling. Table 6 includes a variety of voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 6: Local action to move towards zero waste

MOVE TOWARD ZERO WASTE		%
1	Adopt a zero waste plan, policies, or initiatives.	25%
2	Develop framework for organics collections at residential and commercial sites, including food composting and recovery initiatives.	100%
3	Implement solutions for disposal of household hazardous waste and pharmaceuticals.	100%
4	Expand diversion solutions in public spaces (such as installing solar compactors for landfill waste and recycling, and displaying signage with proper waste disposal techniques).	100%
5	Determine needed upgrades of Material Recovery Facilities (MRF) and collection systems to optimize operating efficiency.	25%
6	Adopt and enforce recycling requirements for businesses.	100%
7	Adopt a construction and demolition recycling policy.	100%
8	Provide incentives for residential on-site composting.	75%
9	Expand education and outreach initiatives to encourage sustainable consumption, increased recycling, and composting.	100%
10	Support siting of renewables at landfills.	50%

SECTION 6

Build Regional Resilience

Outcome: Increase the resiliency of the region's infrastructure, economy, and environment.

Taking practical, common sense steps to address climate change impacts today is in the best interest of future generations. In metropolitan Washington, average annual temperature and sea level in the Potomac River have been and will continue to rise but most people are more likely to notice the increase in extreme events such as severe storms and heat waves. Changes in the number of hot and cold days may affect energy usage patterns, infrastructure, health, and habitats.[17]

LOCAL ACTIONS

COG and its members will continue to support actions to build regional resilience. Throughout this plan there are actions that support community resilience. Table 7 includes a variety of additional voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 7: Local action to build regional resilience

BUILD REGIONAL RESILIENCE		%
1	Assess community vulnerability (social, environmental, economic) to climate impacts.	50%
2	Assess vulnerability of critical infrastructure for transportation, communication, energy utility, water and wastewater utility systems assets.	25%
3	Adopt climate adaptation/resiliency plan, policies or initiatives.	50%
4	Update plans (comprehensive, small area, hazard mitigation, emergency response and recovery, public health, etc.) to address climate impacts and preparedness.	25%
5	Incorporate climate resilience strategies into capital improvement plans and projects.	25%
6	Update zoning, building codes, ordinances, and the development review process to ensure new development is more resilient to local climate impacts.	25%
7	Implement local government energy assurance planning initiatives.	50%
8	Design new public buildings to be more resilient to climate impacts and to continue operations during extended power outages.	25%
9	Implement energy, flood, and heat protection measures at vulnerable critical facilities and infrastructure sites.	50%
10	Revise infrastructure design standards to be more resilient to heat, flooding, and other climate impacts.	25%
11	Direct assistance (technical and financial) and innovative solutions to vulnerable and underserved communities.	25%
12	Implement public education campaign on preparedness for citizens, commercial property owners, and small businesses.	50%
13	Restore and manage natural ecosystem functions to increase capacity to adapt to a changing climate.	25%

[17] National Aeronautics and Space Administration. (2012). *Adapting to a Changing Climate: Federal Agencies in the Washington D.C. Area*. Washington D.C.

SECTION 7

Grow the Regional Clean Economy

Outcome: Boost growth of the clean economy.

According to Brookings Institution's Metropolitan Policy Program, there were 70,828 clean jobs in the Washington Metropolitan Area in 2010, representing 2.3 percent of all jobs in the region. At the time, the region had the fourth largest clean economy in the nation. Brookings incorporated a diverse array of environmentally-oriented industry segments, such as conservation, public mass transit, solar photovoltaic, smart grid, and battery technology.[18]

Grow of the regional clean energy economy is highly dependent on private-sector leadership; however, local jurisdictions also have the ability scale up the market. Investing public dollars on clean products, services, and technologies supports local demand. Strong local policies can reduce market uncertainties and providing finance solutions and incentives can spur private investment.[19]

LOCAL ACTIONS

COG and its members will continue to support actions to grow the regional clean economy. Throughout this plan there are actions that support public investment, financing, and incentives. Table 8 includes a variety of additional voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 8: Local action to grow the regional clean economy

GROW THE REGIONAL CLEAN ECONOMY		%
1	Adopt environmentally preferable purchasing policies that facilitates government procurement of goods and services that reduce impact on human health and environment.	100%
2	Increase government spend on environmentally-friendly products or services.	100%
3	Encourage government vendors and businesses in the community to minimize the carbon intensity of their supply chain.	25%
4	Commit to divest in fossil fuels over the long-term.	25%
5	Update economic development workforce plans/strategies to incorporate strategies to support emerging green or clean tech industries.	25%
6	Develop a cleantech branding and marketing strategy.	25%
7	Provide shared space and develop incentives for green/clean tech businesses to locate within the jurisdiction.	25%
8	Expand opportunities for minority and women owned businesses to participate in green and clean economy initiatives.	25%
9	Support innovative technology deployment to address current community challenges and needs.	25%
10	Support state and federal incentive programs for green and clean tech activities.	25%

[18] Brookings Institution Metropolitan Policy Program. (2011). *Sizing the Clean Economy: The Clean Economy in the Washington, DC-VA-MD-WV Metropolitan Area Fact Sheet*. Washington D.C.

[19] Brookings Institution Metropolitan Policy Program. (2011). *Sizing the Clean Economy: A National and Regional Green Jobs Assessment.* Washington D.C.

SECTION 8

Protect Equity and Health

Outcome: Social equity, cultural sensitivity, and community health considerations are incorporated into all local climate change and energy planning, program and policy decisions.

Climate change will impact people and communities differently, of particular concern are vulnerable and underserved communities. Vulnerable communities are more susceptible and have less ability to respond to or recover from climate impacts, especially extreme weather events. Underserved communities include low income, minority, and limited English proficiency populations. As these communities face greater risk, their consideration and inclusion in climate and energy planning can help ensure equitable distribution of benefits.[20]

LOCAL ACTIONS

COG and its members will continue to support actions to protect equity and health. Throughout this plan there are actions that support equity and public health protection. Table 9 includes a variety of additional voluntary action options and flexible implementation levels. The percent column refers to the level of implementation anticipated by COG member local jurisdictions by 2020.

Table 9: Local action to protect equity and health

	PROTECT EQUITY AND HEALTH	%
1	Identify the community's priorities for equitable environmental improvements. Provide data and resources to support decision-making of priorities.	25%
2	Conduct cumulative environmental and health impact assessments in underserved communities.	25%
3	Integrate equity and health considerations and strategies into all local government policies, plans, and programs. Identify impacts of policies and programs to underserved populations and communities and how to maximize positive impacts and minimize negative impacts.	25%
4	Develop a healthy food access or food security plan.	25%
5	Adopt a precautionary principle as the underlying policy standard when it comes to reducing environmental hazards and risks.	25%
6	Direct environmental incentives towards vulnerable and underserved populations.	25%
7	Provide training to local government staff on successful public engagement techniques, equity and diversity.	25%
8	Support community environmental monitoring programs to increase community participation in gathering and accessing community data (e.g. Citizen Science).	25%
9	Provide meaningful engagement forums and community leadership development opportunities to enhance citizen's knowledge on the local environmental planning process, how to influence environmental decision-making, and how to access data, technical assistance, and resources.	50%

[20] US Environmental Protection Agency. (2016). Climate Impacts on Society. Retrieved from https://www.epa.gov/climate-impacts/climate-impacts-society

Cite the draft EJ Toolkit?