Metropolitan Washington Council of Governments

Frederick County Climate Emergency Mobilization Workgroup

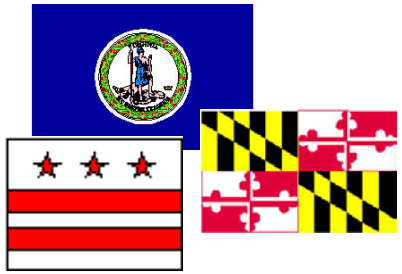
Jeff King, Chief, Energy and Climate

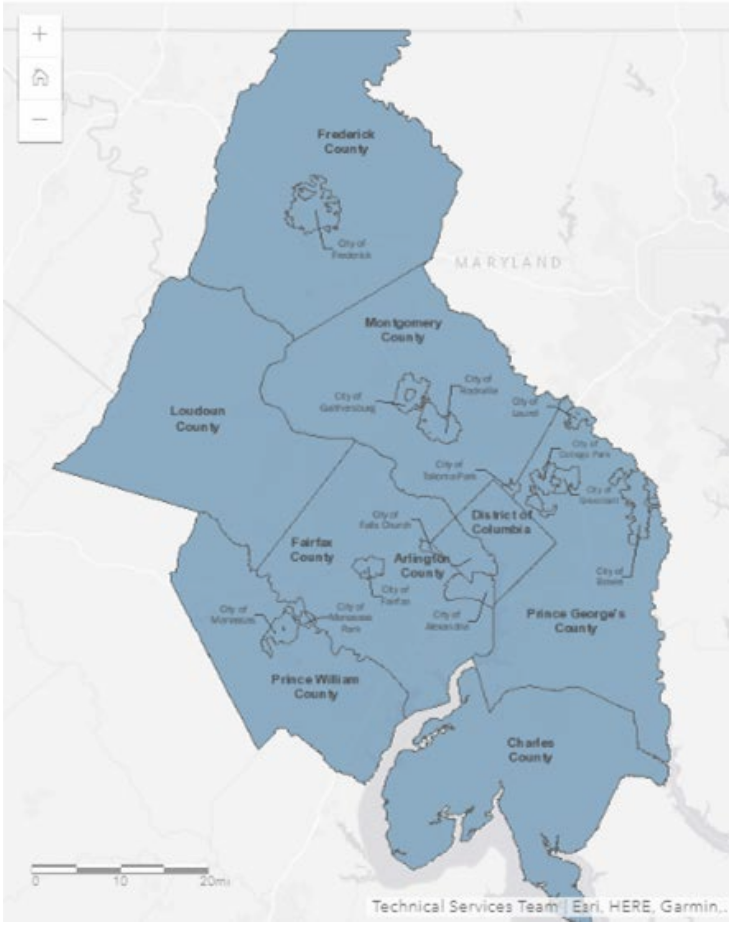
October 22, 2020

Metropolitan Washington
Council of Governments

COG & Our Region

- COG Members: 24 local governments, states of Maryland and Virginia, U.S. Congress
- Region Forward - common vision for a more prosperous, accessible, livable and sustainable region



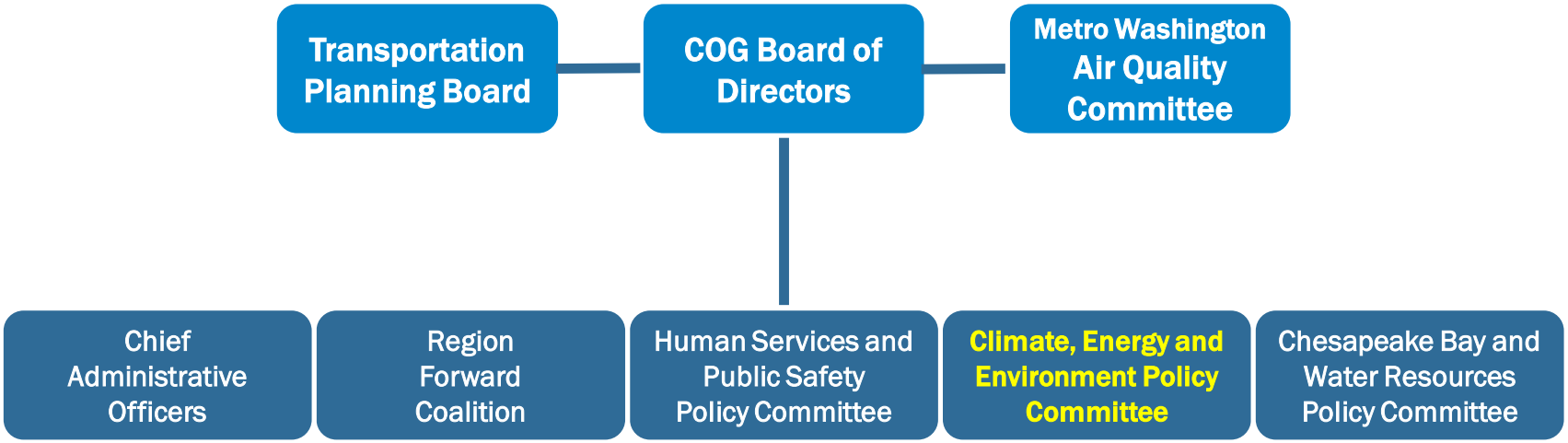


Community Profile

	2020	2030
Population	5.69 million (6.13 million MSA)	6.25 million
Households	2.14 million	2.37 million
Jobs	3.36 million	3.77 million
Washington GDP (MSA)	540.68 billion (2018)	5th highest of US metro areas
Land Area (MSA)	5,564.6 sq mi	

Demographics (2016 American Community Survey)				
Non-Hispanic White	Black	Hispanic or Latino	Asian	Other
45.8 %	24.9 %	15.5 %	10.0 %	3.8 %

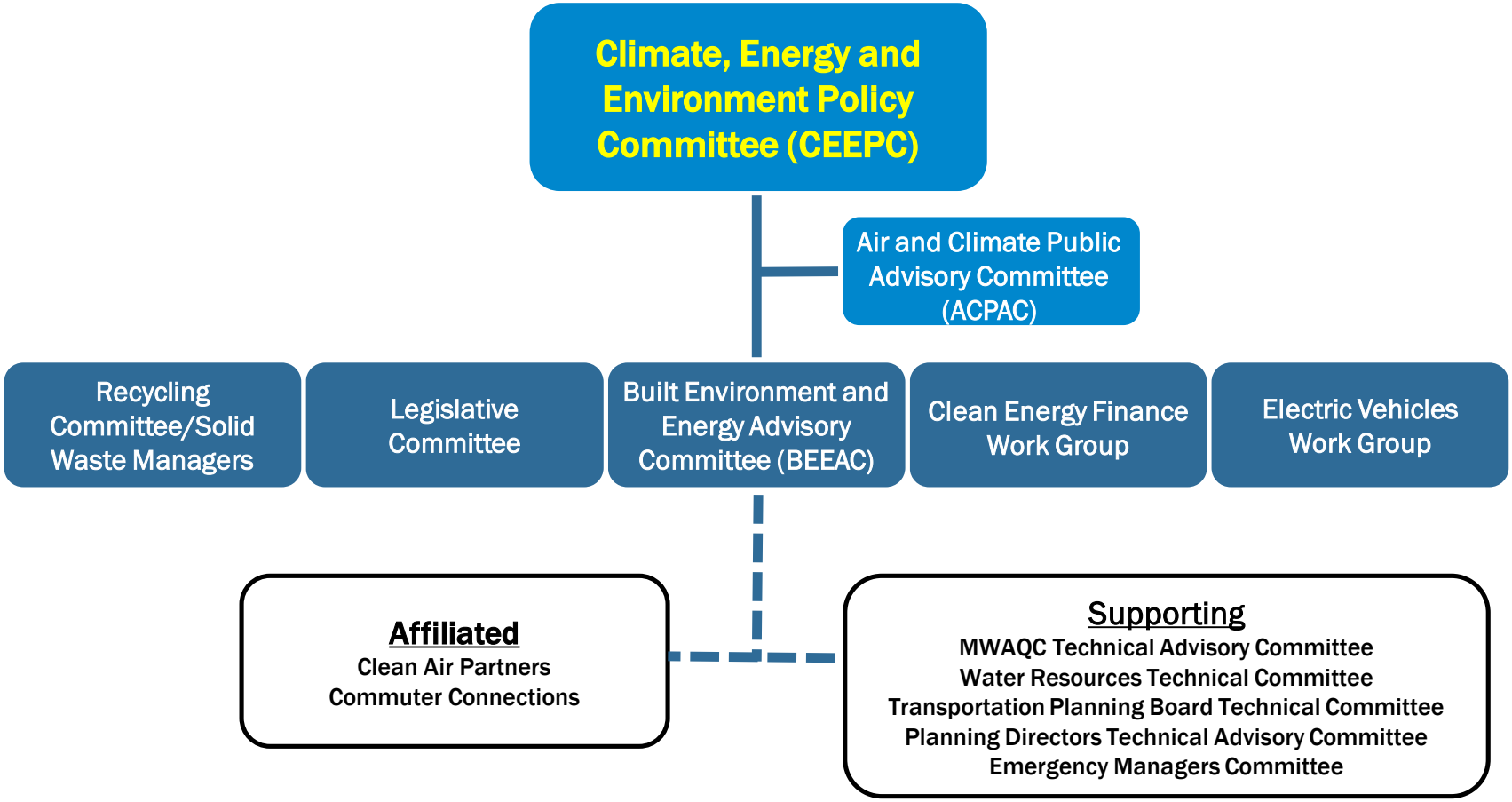
COG Committee Structure



- CEEPC was established in 2009 to provide leadership on climate change, energy, green building, alternative fuels, solid waste and recycling issues and meet the goals in the 2008 *National Capital Region Climate Change Report*.

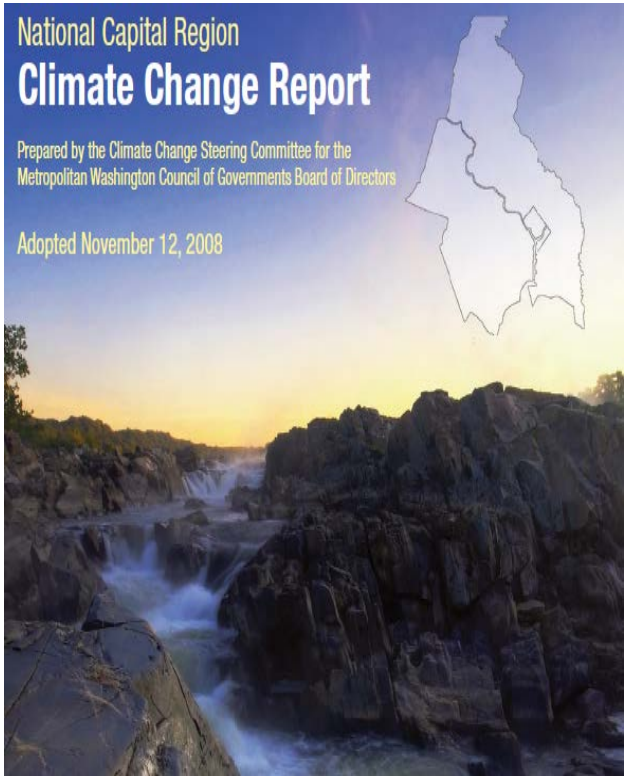
CEEPC Structure & Linkages

Advisory, technical and supporting committees



COG's Greenhouse Gas Emission Reduction Targets

- 2008 National Capital Region Climate Change Report GHG emission reduction targets
  - By 2012, reduce Business As Usual emissions by 10% - roughly equivalent to 2005 baseline
  - By 2020, reduce greenhouse gas emissions by 20% below 2005 baseline
  - By 2050, reduce greenhouse gas emissions by 80% below 2005 baseline



COG's Climate Action History

- **2007**: R31-07 created the COG Climate Change Initiative
- **2008**: Resolution R60-08 adopted the National Capital Region Climate Change Report
- **2009**: Resolution 18-09 established the Climate, Energy and Environment Policy Committee
- **2010**: Greenhouse gas emission reduction targets incorporated into Region Forward
- **2010**: CEEPC adopted the first regional Climate and Energy Action Plan for 2010-2012.
- **2013-2016 and 2017-2020**: Updated Action Plans adopted
- **2020-2030**: Action Plan under development

COG Board Action

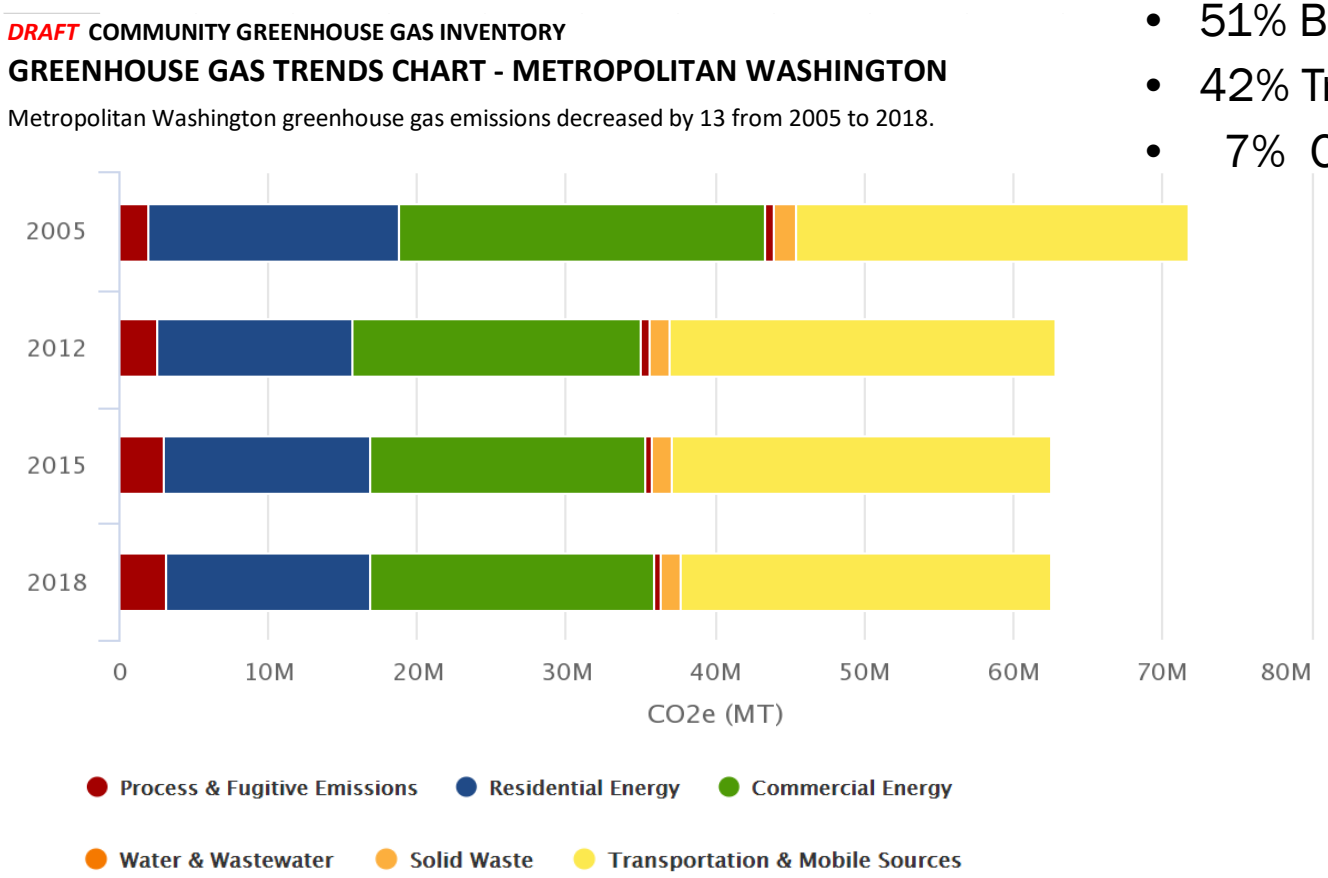
- October 14 COB Board briefing
  - U.S. and international regional climate goals and plans
  - Metropolitan Washington 2030 Climate and Energy Action Plan development
  - Recommendation from CEEPC to adopt the proposed 2030 Plan goals
  - COG Board adopted goals of:
    - 50% by 2030 below 2005 levels
    - Becoming a Climate Ready Region and making significant progress to be a Climate Resilient Region by 2030

GHG Emissions Inventory

- WRI ⇨ ICLEI ⇨ ICLEI ClearPath (GCoM compliant)
- 2005, 2012, 2015, 2018
  - Utility & other data; back cast to previous inventories
  - Significant drop through 2012; leveling out since
- COVID-19 analysis
  - 16% real time; 4% annual GHG emissions drop
  - Drop in electricity use; vehicle miles; air travel
  - No natural gas, waste, water, HFC, other changes
  - Structural economic changes (telework, economic activity
- Illustrates the difficult road ahead

Regional Greenhouse Gas Emission Inventory

- 51% Built Environment
- 42% Transportation
- 7% Other



Source: ClearPath output

Note: ClearPath is an online greenhouse gas inventory tool. ClearPath is a product of ICLEI - Local Governments for Sustainability.

Climate Planning Guiding Principles

- Collective action
- Effective partnerships
- Lead by example
- Integration
- Flexibility
- Transparency
- Innovation
- Community leadership
- Inclusive engagement
- Advocacy

2020 Objectives and Outcomes

CEEPC's Regional Climate and Energy Action Plan

Objectives	2020 Outcomes
Reduce Greenhouse Gas Emissions	↓ 20% (below 2005 levels)
Reduce Energy Consumption	↓ Energy consumption by 5% (below 2015 levels) ↑ 5,000 high performance buildings
Increase Share of Renewables	Meet 20% of electricity consumption with power from renewables ↑ 30K grid connected renewables
Advance Sustainable Regional Mobility	↓ Transportation GHG emissions to 20.6 MMTCO$_2$e ↑ 10,000 EV owners ↑ 1,000 EV charging stations ↓ VMT and VMT per capita
Increase Sustainable Urban Development	↑ Rate of growth in activity centers (73% jobs, 59% housing, 53% population) ↓ Loss of resource lands, canopy and vegetation from development

2020 Objectives and Outcomes

(Continued from previous slide)

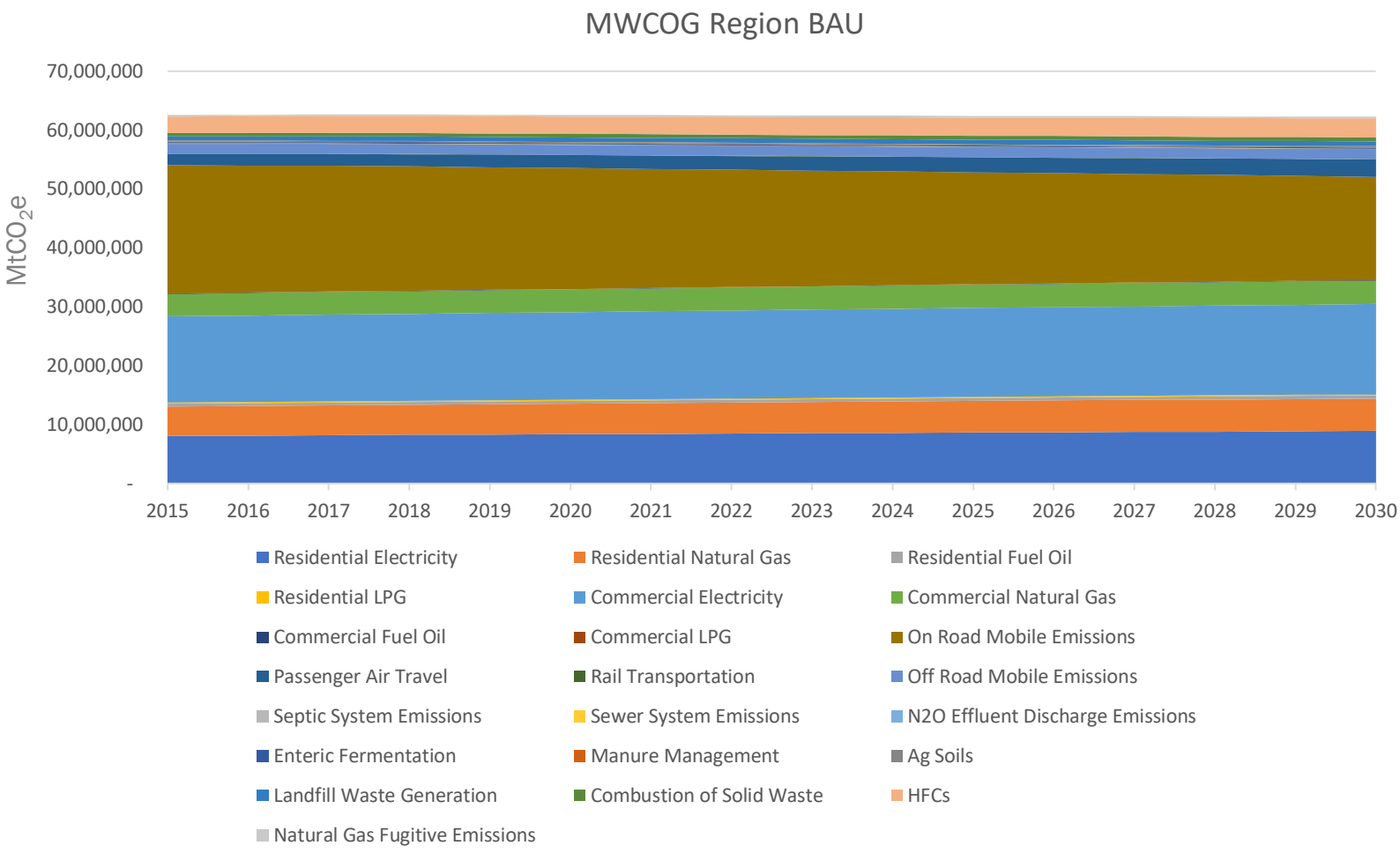
Objectives	2020 Outcomes
Move Toward Zero Waste	↑ 50% recycling rate ↑ Sustainable consumption activities in local govt decision-making
Build Regional Resilience	↑ Resiliency of the region's infrastructure, economy, and environment.
Protect Equity and Health	Social equity, cultural sensitivity, and community health considerations are incorporated into all local climate change and energy planning, program, and policy decisions.
Grow the Regional Clean Economy	↑ Regional GDP 2% annually while meeting 2020 GHG emission reduction goal

Reporting Outcomes on Climate & Energy Dashboard
https://www.mwcog.org/environment/data-and-tools/climate-and-energy-progress-dashboard/

Updated Business As Usual

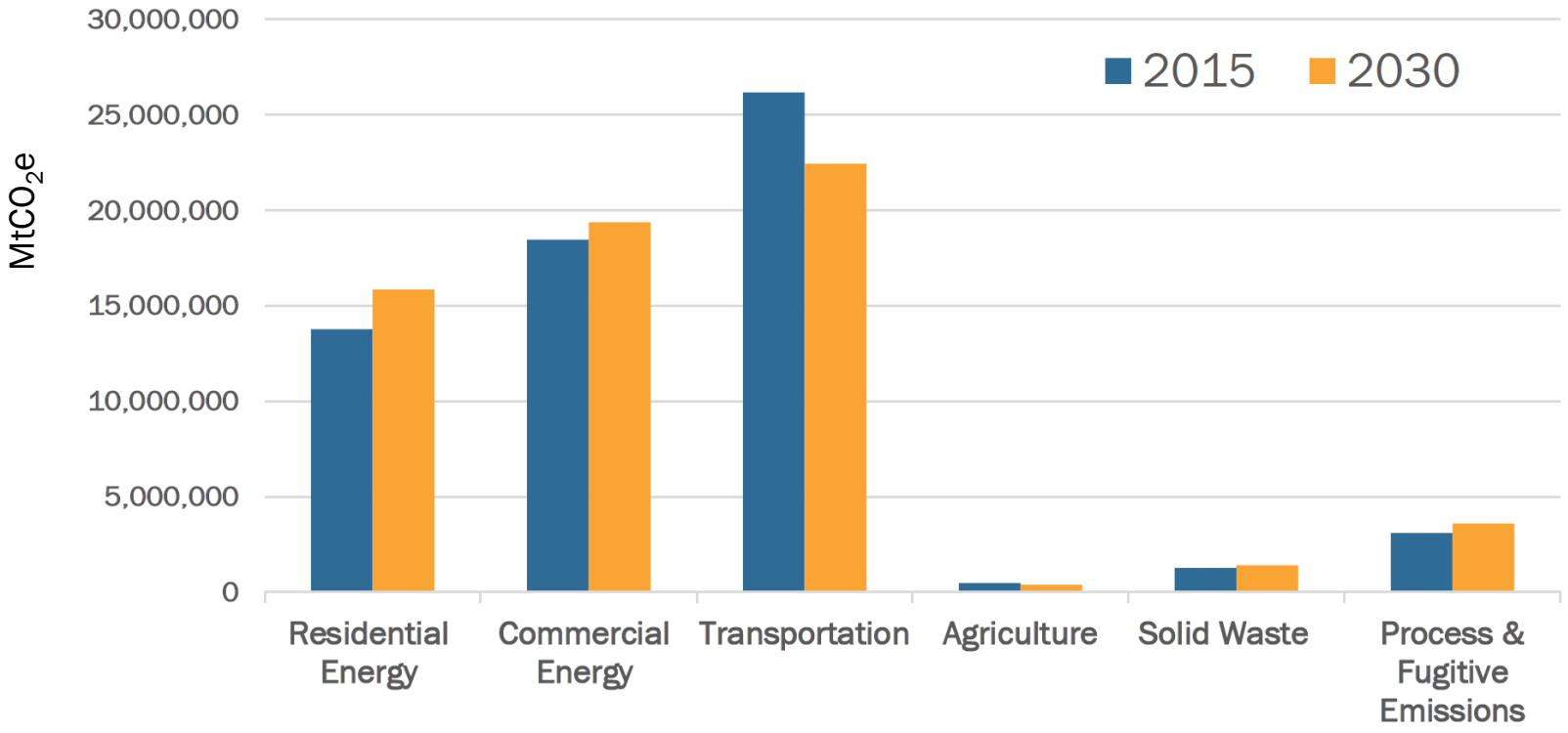
- Spreadsheet Tool
  - Calculates for localities; sums to the region
- Regional and jurisdictional data (where available)
  - Greenhouse Gas Emissions Inventory
  - COG locally vetted demographic & economic data, and transportation modeling (COG Cooperative Forecast 9.1)
  - Complemented with limited data from the Census Bureau, EIA, EPA, other

Updated Business As Usual



Looking Forward – Business as Usual

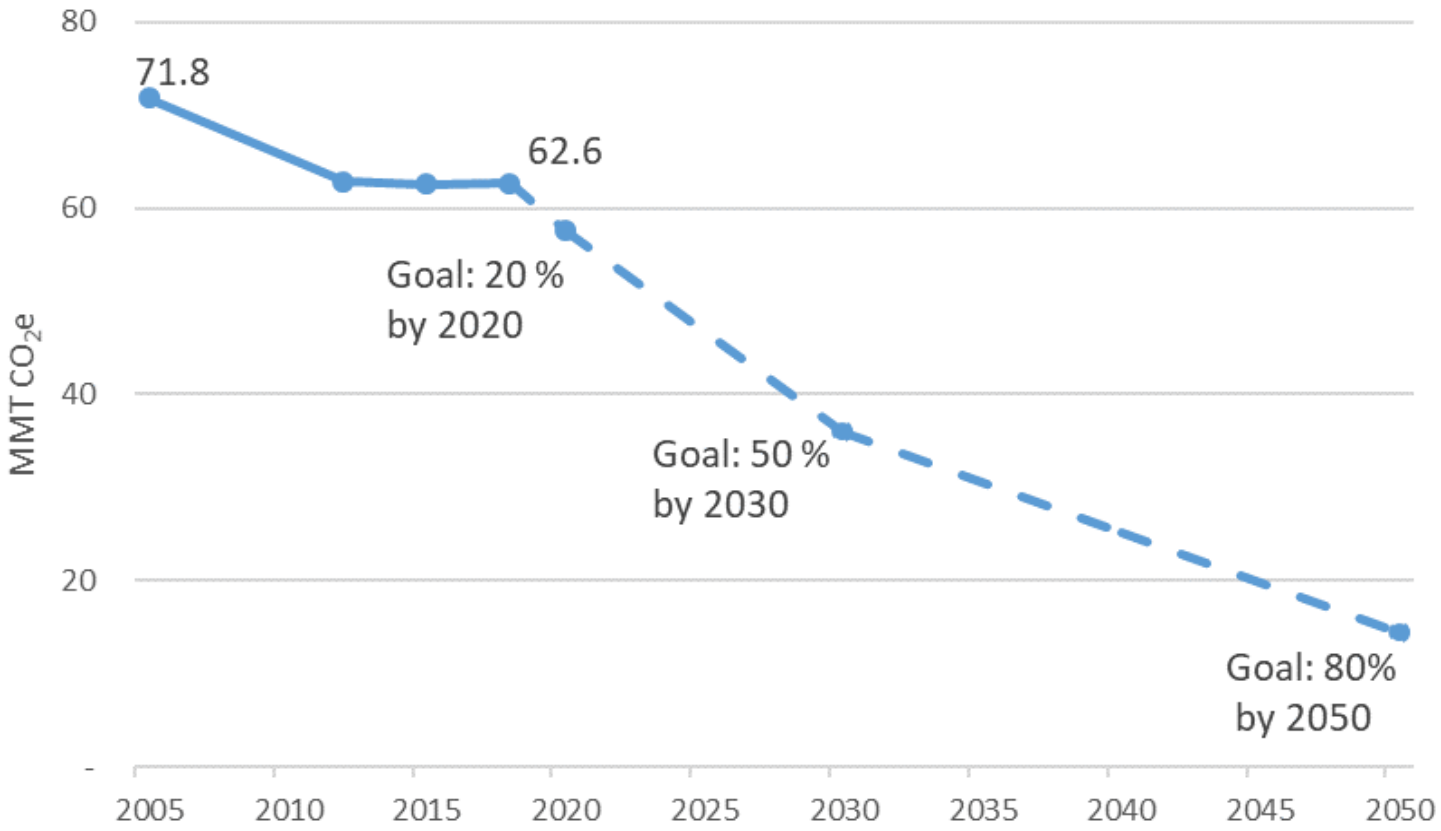
- Total GHG emissions would start to increase again
- Reflects growth in population, employment, transportation
- Accounts for "on-the-books" actions as of 2015



2030 Regional Plan Elements

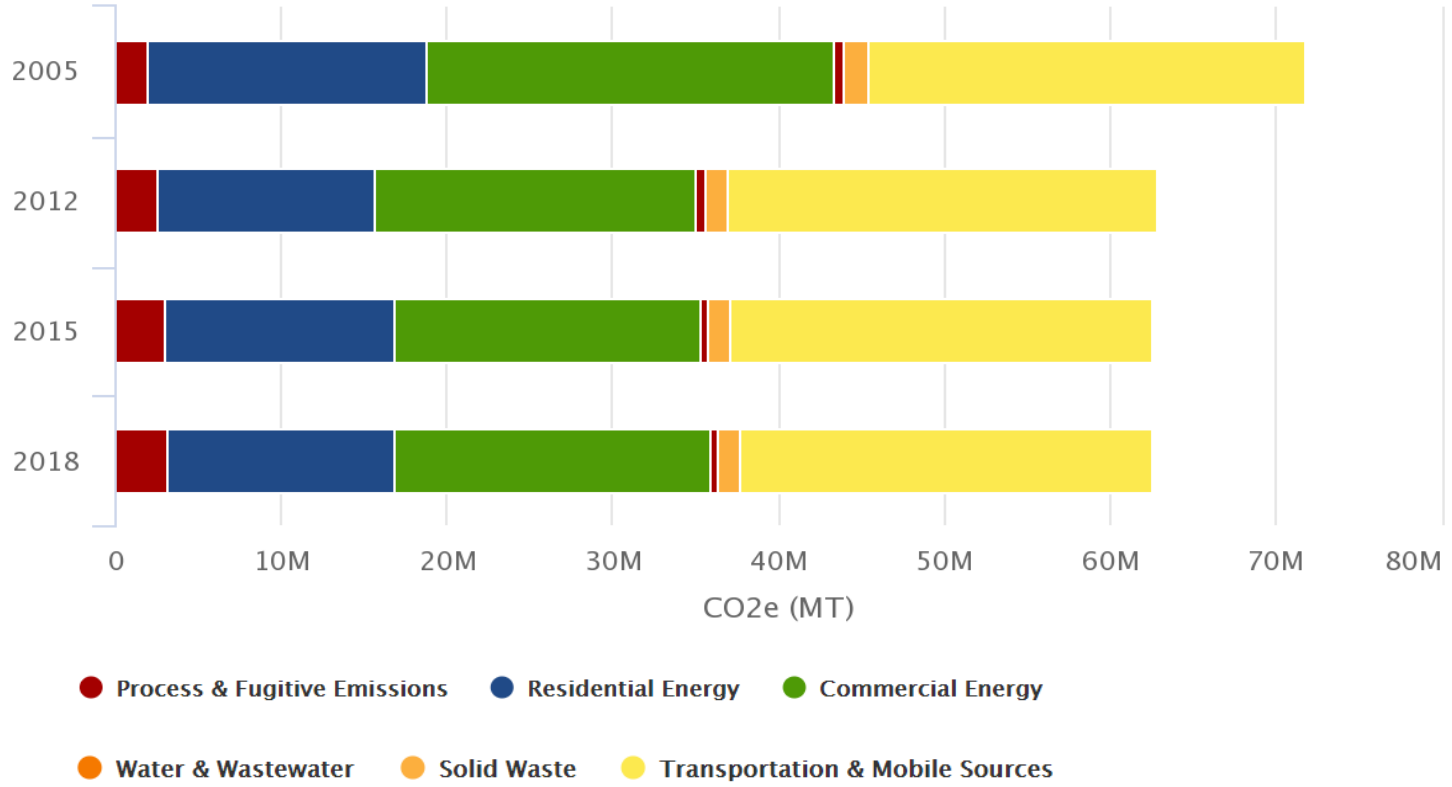
Element	Description
1. Greenhouse Gases	Summary of regional GHG inventory trends from 2005 – 2018, business-as-usual (BAU) GHG emission projections through 2030, and technical scenario showing what it will take for the region to reach GHG reductions of 50% below 2005 levels by 2030.
2. Climate Mitigation Strategy	CEEPC's priority collaborative mitigation actions to move the region toward achieving the GHG emission reduction goal of 50% by 2030, below 2005 levels. Climate action areas include Planning, Equity, Clean Electricity, Zero Energy Buildings, Zero Emission Vehicles, Zero Waste, and Sequestration.
3. Climate Risks and Vulnerabilities	Summary of the Regional Climate, Risk and Vulnerability Assessment (CRVA). Evaluates climate hazards: extreme heat, drought, lightning and thunderstorms, flash and riverine flooding, coastal flooding and extreme winter conditions.
4. Climate Resilience Strategy	CEEPC's priority collaborative climate resilience actions to move the region toward achieving the goal of becoming a Climate-Ready Region 2030. The action areas include Planning, Equity, and Resilient Infrastructure.

Updated Regional GHG Mitigation Goals



Regional GHG Mitigation Goals

- 13% Reduction in GHGs across region, 2005 - 2018



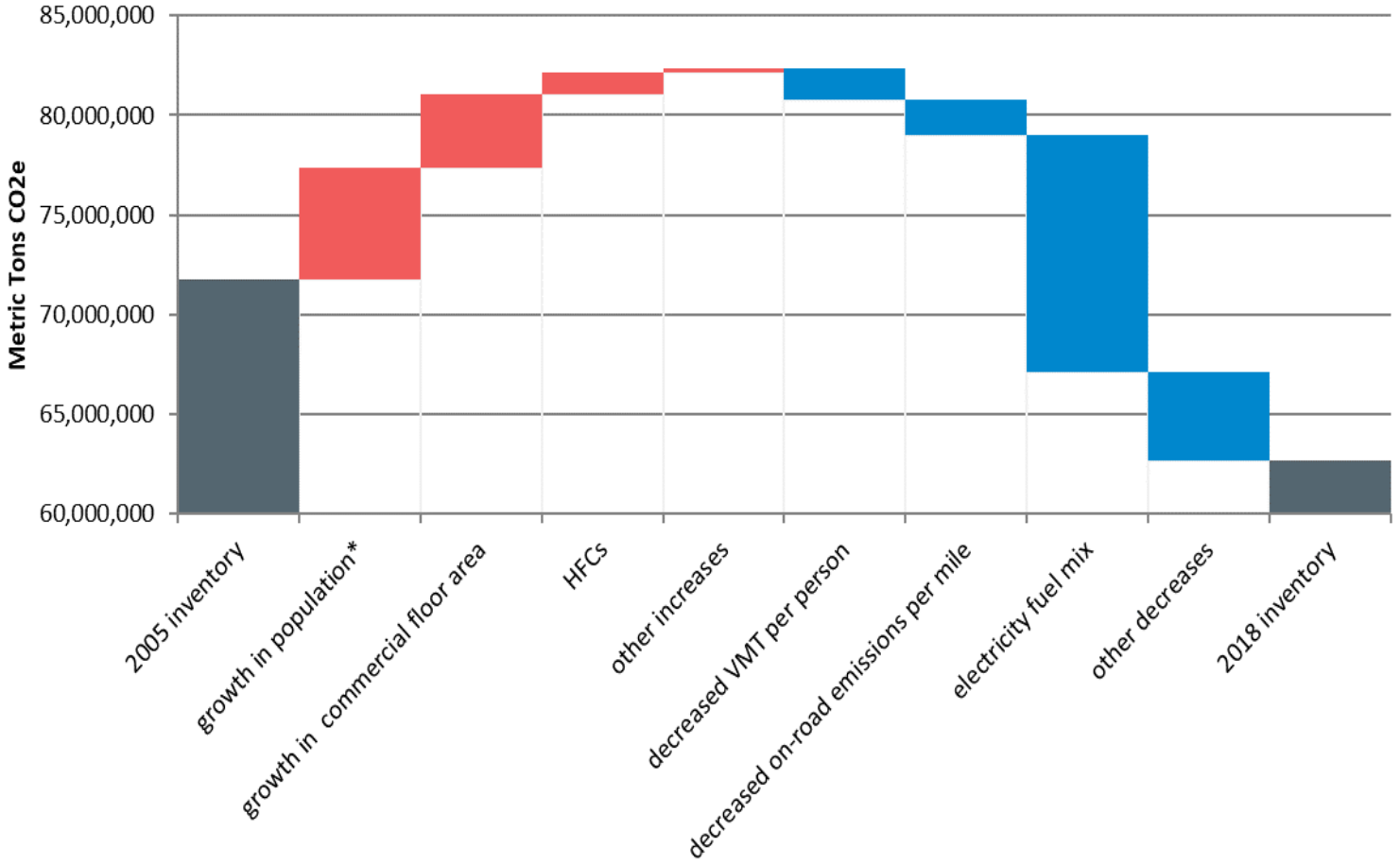
Source: ClearPath output

Note: ClearPath is an online greenhouse gas inventory tool. ClearPath is a product of ICLEI - Local Governments for Sustainability.

ICLEI Contribution Analysis Tool

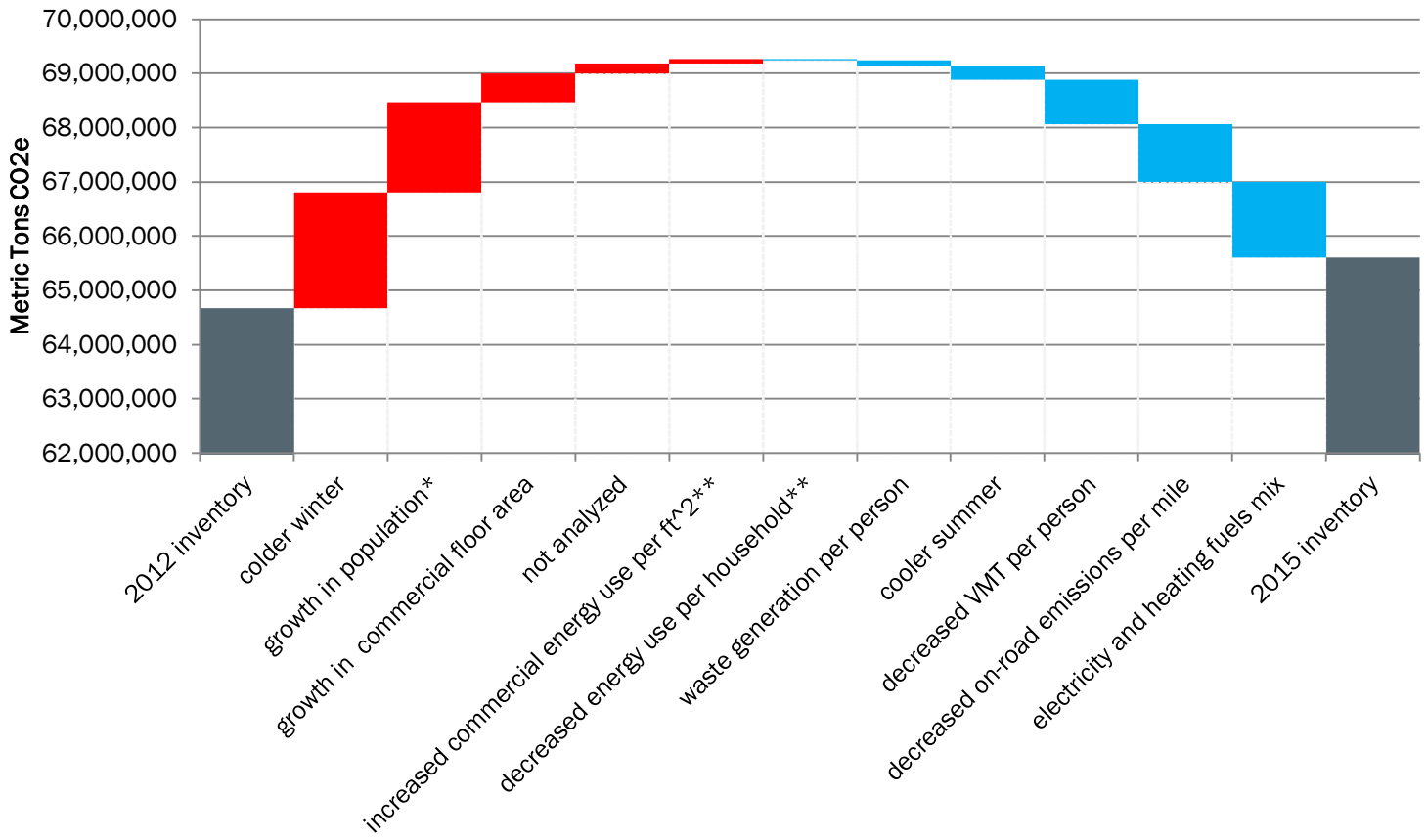
- Shows factors resulting in decreases and increases
  - Differed significantly by locality
  - Cleaner grid (Improvements in electric generation emission factor)
  - Cleaner cars, Increased VMT, decreased VMT per capita
  - Changes in weather
  - Growth in population, jobs
  - Data centers

Regional Drivers of GHG Change

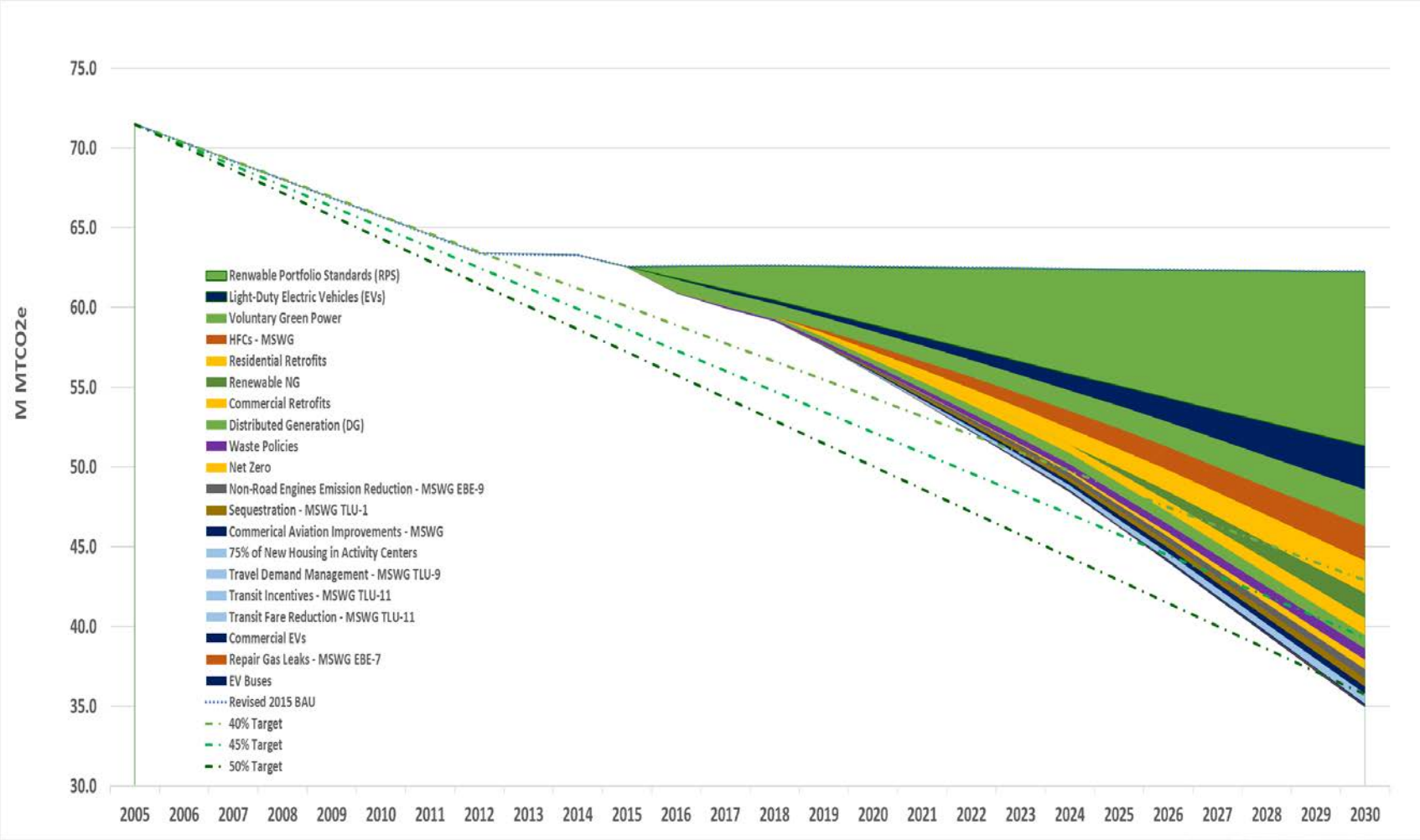


ICLEI Contribution Analysis Tool

- 2012 to 2015 Metropolitan Washington



Looking Forward: Technical Potential



Efficiency & Conservation

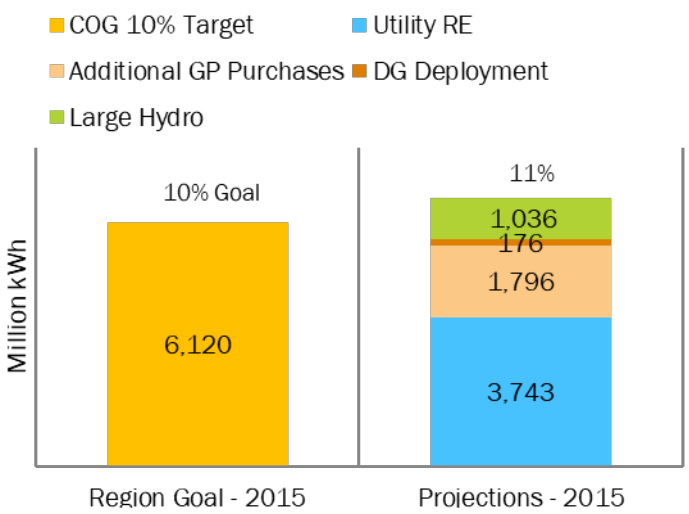
- Building Benchmarking & mandated improvements
- Financing
  - PACE
  - Green banks (Montgomery County, MD; DC)
- High Performance Buildings
- Net Zero Buildings
- Building electrification
  - Dependent on grid emissions factors
  - Consider natural gas fugitive emissions

American Geophysical Union

EPA Potomac Yard One & Two

Renewables

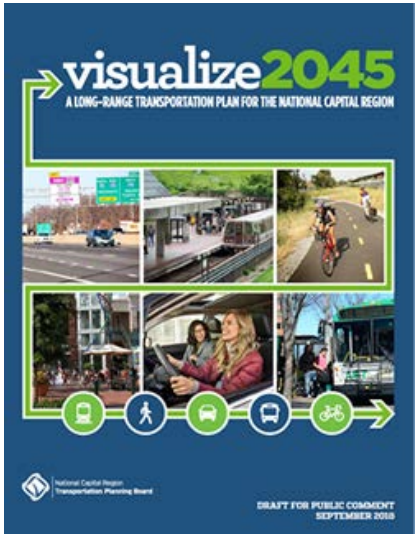
- Electricity from renewables - 2015
  - Utility solar and wind
  - Roof-top/distributed solar
  - Company purchases (EPA Green Power Partners; data centers)
  - Hydro (small and large)



- Solar potential mapping
- Solarize/SUN Cooperatives/Community Solar
- Role of vertically integrated vs disintegrated utilities
- Renewable Portfolio Standards/State goals
- Community Choice Aggregation
- Renewable/Low Carbon Natural Gas

Sustainable Transportation

- Light-duty electric vehicles & infrastructure
- Electric Buses
  - Frederick
  - DC Circulator
  - Growing adoption – starting small; various vendors
  - School buses – Dominion Energy
- Visualize 2045 – Long-Range Transportation Plan
- Transportation & Climate Initiative



TRANSPORTATION & CLIMATE INITIATIVE
Of the Northeast and Mid-Atlantic States

Tree Canopy

- Tree Canopy Management Strategy
- Tree Canopy Subcommittee
  - Model ordinance cookbook
  - Tree canopy % by major land use type
  - Urban, suburban, exurban tree canopy
  - Difficulty in finding land for expanding canopy
- Tree canopy sequestration
  - ICLEI-WRI-Woods Hole Research Center
    - Montgomery County, MD
    - Prince Georges County, MD
    - Alexandria, VA
    - Takoma Park, MD
    - Bowie, MD

Communications

- One Message – Many Voices
- Climate and Energy Leadership Awards
  - Categories
    - General Purpose Government
    - NGO
    - Educational Institution
    - Private Sector
  - Criteria
    - Engagement
    - Results
    - Creativity
    - Replicability

Prince George's County Food Composting Program

Resiliency/Adaptation

- Climate Projections
- Flooding - Coastal, riverine, overland
  - CORPS study (NACCS)
  - Sea level rise; IDF curve updates
- Heat island; mapping, cooling centers
- Hazard mitigation management
- Cascading impacts
  - Water/Sewer
  - Food systems
  - Transportation infrastructure

Looking Forward: Climate Risk and Vulnerability Assessment

- Metropolitan Washington

Climate Hazards

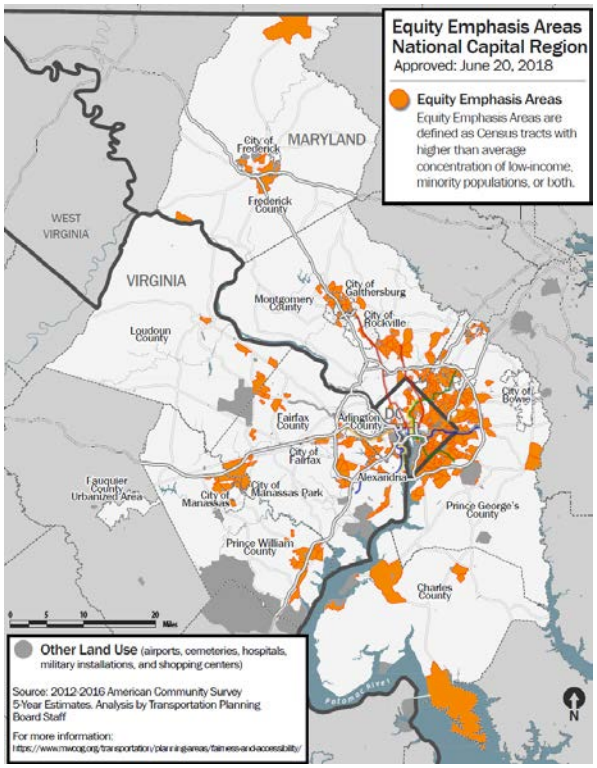
Hazard	Probability	Consequence	Risk
Extreme Heat Days	3	3	**9**
Drought	2	3	**6**
Flooding (Flash and Riverine)	3	3	**9**
Lightning/Thunderstorm	3	2	**6**
Extreme Winter Conditions	2	3	**6**
Coastal Flooding	3	2	**6**

Adaptive Capacity

Factor	Degree of Challenge
Access to Basic Services	Moderate
Access to Healthcare	Moderate
Public Health	Moderate
Housing	Moderate
Poverty	Moderate
Economic Health	Low
Environmental Conditions	Moderate
Infrastructure Conditions / Maintenance	High
Community Engagement	Moderate

Equity

- GCoM Sustainable Energy Access
- Energy poverty
- Community impact
  - Transportation Equity Emphasis Areas
  - Health Equity: How Opportunities for Health are Shaped by Race and Ethnicity
- Racial Equity Cohort with Government Alliance on Race and Equity (GARE)

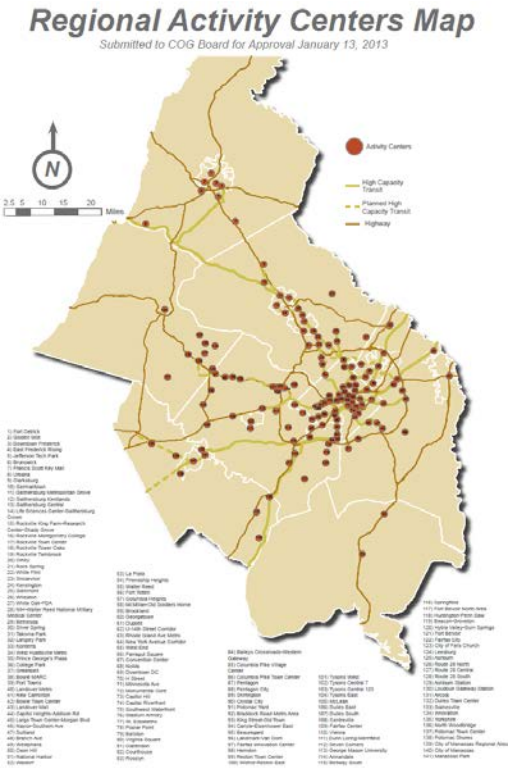


Advocacy

- CEEPC Legislative Committee
  - Legislation review/comment
  - Coordinate local input
- Federal and state regulatory actions
  - Comment letters
  - Joint from COG's Climate-Transportation-Air Quality committees
  - NARC, NASEO, NACAA, NESCAUM, TCI
- Legal challenges
  - State Attorneys General take lead

Co-Benefits

- Activity Centers
  - 10% land area; 75% growth
  - High capacity transit service
  - Higher performance buildings (EUI)
  - Jobs-housing nexus
- Air Quality
  - 2015 Ozone NAAQS SIP/maintenance plan
    - Enforceable standards
    - Voluntary package
- Homeland Security
  - Emergency response & recovery



Planning for the Future

- Connected DMV – Internet of things
- Grid modernization
- Electrification of the energy systems
- Electrification of light/heavy duty vehicles
- Vehicle to Grid
- Net-zero Buildings
- Autonomous vehicles
- Forward looking planning for climate change
- Structural changes from the coronavirus pandemic
- Other

50% Reduction – Technical Potential

GHG Emission Reduction Activity	Scenario Assumptions
Renewable Portfolio Standards	Current standards (DC 87%, MD 50%, Northern VA 38% by 2030)
Other Renewables	> 200,000 additional solar systems, equivalent to 24% of single-family homes
	Continued 10% annual growth of green power purchases
	>16% of gas supply from renewable natural gas
Building Policies and Programs	All new construction net zero energy by 2030
	2% of residential and commercial existing buildings get deep retrofits annually
Zero Emission Vehicle Deployment	EV adoption rates of >20% light duty cars, >9% light duty trucks, >4% medium/heavy duty trucks, and >30% transit buses.
Transportation Policies and Programs	75% new housing in Activity Centers with high capacity transit.
	Continued transit improvements and transportation demand management to reduce VMT
Zero Waste Policies and Programs	80% diversion by 2030

Mitigation Actions

Climate Action Area	Action ID	Priority Collaborative Action
Planning	PL - 1	Advance Climate Planning and Track Progress
Equity	EQ - 1	Enable Equitable Planning Practices
	EQ - 2	Prioritize Sustainable Energy Access for All
Clean Electricity	CE - 1	Advocate for Aggressive Renewable Portfolio Standards
	CE - 2	Accelerate Development of On-Site Renewables
	CE - 3	Accelerate Deployment of Battery Storage
	CE - 4	Accelerate Development of Microgrids for Critical Infrastructure
	CE - 5	Accelerate Development of Large-Scale Off-Site Renewables
	CE - 6	Advocate for and Implement Community Choice Aggregation
Zero Energy Buildings	ZEB - 1	Expand Building Benchmarking Requirements
	ZEB - 2	Accelerate Deep Building Retrofits
	ZEB - 3	Enhance Green Building Codes and Policies to Facilitate Net Zero Energy Building Development
	ZEB - 4	Expand Proper Disposal and Leak Detection of Refrigerants

Mitigation Actions (continued)

Climate Action Area	Action ID	Priority Collaborative Action
Zero Emission Vehicles	ZEV - 1	Expand Light-Duty Electric Vehicle Deployment
	ZEV - 2	Accelerate Electrification of Medium- and Heavy-Duty Vehicles
	ZEV - 3	Build Out Regional Electric Vehicle Charging Network
Zero Waste	ZW - 1	Implement Curbside Organics Recycling Programs
	ZW - 2	Reduce Solid Waste Generation
	ZW - 3	Build Markets for Circularity
Sequestration	SQ - 1	Strategically Plant New Trees on Publicly Owned Land
	SQ - 2	Enhance Regulatory Capacity to Manage Tree Canopy and Forest Protection
	SQ - 3	Enhance Tree Planting and Preservation on Privately Owned Lands

Preliminary Assessment of Comments

Summary of Comment(s)	Response
INTRODUCTION SECTION	
While VA has adopted the 2015 IECC, amendments we made that push the residential construction energy components back to levels equivalent to the levels of the 2009 IECC.	Indicate this change in the table or footnote.
Comments referencing regional transportation efforts are not mentioned in this plan.	Add descriptive language on current initiatives and progress, including Visualize 2045 and Metro.
GHG EMISSIONS SECTION	
Stakeholders had questions around how closely the scenario aligns with mitigation strategy and whether actions add up to the 50% reduction by 2030.	Revise wedge to align with mitigation climate action areas. Add more descriptive language in text.

Preliminary Assessment of Comments

Summary of Comment(s)	Response
MITIGATION STRATEGY	
How do the strategy actions increase the number of green jobs and support the local green economy?	Look into adding Economy co-benefits.
ZEV-1 (light-duty vehicles): Add or revise: - Advocate for state and national ZEV mandates aligned with the California ZEV Mandate of ZEVs for 100% of new sales by 2035.	To be developed
ZEV – 2 (medium & heavy duty vehicles): Add: - Advocate for a national medium-duty and heavy-duty ZEV Mandate. - Enact diesel bans in member jurisdictions.	To be developed
The plan needs to incorporate transportation-land use, including: - Housing-Jobs growth in high capacity transit areas - Affordable housing in TODs - VMT reduction strategies - Congestion pricing for roads and parking	Add two umbrella strategies: - Reduce single-occupancy vehicle trips - Reduce per capita VMT Address in affordable energy access and co-benefits

Preliminary Assessment of Comments

Summary of Comment(s)	Response
RESILIENCE STRATEGY	
Include an action encouraging state/local government and financial institutions to create climate resilience incentives including loans, grants, rebates, tax credits.	Reflect in discussion of financing resiliency, such as has been done with expanding PACE financing to flood control
Include the development of a climate resiliency tool kit for local governments.	Add to PL-3: Develop an integrated approach to climate resilience planning
Public transit is critical infrastructure that enables mobility and livability across the region. More intensive development on and near Metro-owned properties, Metro reduces sprawl and traffic congestion and preserves open space and watershed protection.	Review action co-benefits for transportation additions.
Projects are currently being designed and implemented to harden Metro's critical infrastructure to protect them from the adverse effects of climate change.	Include Metro's system-wide flood resiliency infrastructure upgrade assessment as an example in action RI-5

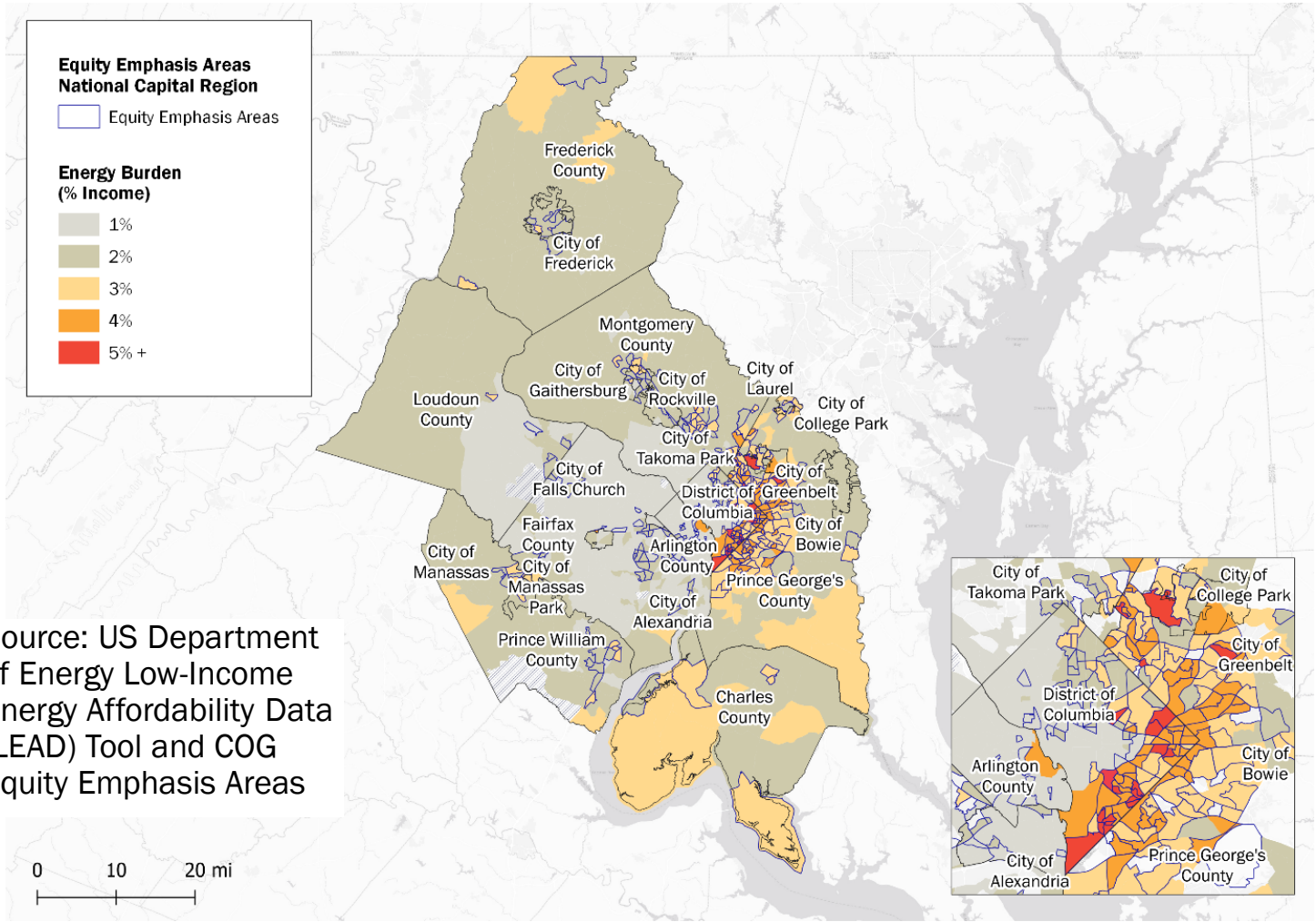
Preliminary Assessment of Comments

Summary of Comment(s)	Response
OTHER	
Several questions on how to find key information in the plan.	Develop an Executive Summary
Plan should address education.	Education and capacity building woven throughout actions. Adding additional education co-benefits.
Can maps zoom in on areas with a concentration of Equity Emphasis Areas?	Will add this feature to the maps.
Recognize stormwater co-benefits of mitigation and resiliency actions.	Review and add to action co-benefits, where appropriate.
Recognition and Acknowledgements	Recognize GCoM and consultant support on back cover. Add an 'In Memorandum' page at the end of the plan.

Additional Transportation Strategies

1. Reduce single-occupant vehicle (SOV) trips
   - Expand telework options
   - Move more people on high capacity transit
   - Develop rapid bus systems throughout the region
   - Construct network of express lanes with express bus services
   - Provide transit benefits to employees
   - Implement roadway pricing
   - Implement context-sensitive pricing for parking
2. Reduce per capita vehicle miles traveled (VMT)
   - Bring jobs and housing closer together
   - Improve non-motorized connectivity in Activity Centers
   - Improve and expand pedestrian and bicycle infrastructure
   - Improve walk and bicycle access to transit
   - Ensure equitable and affordable transit fares

Equity Emphasis Areas and Energy Burden



Source: US Department of Energy Low-Income Energy Affordability Data (LEAD) Tool and COG Equity Emphasis Areas

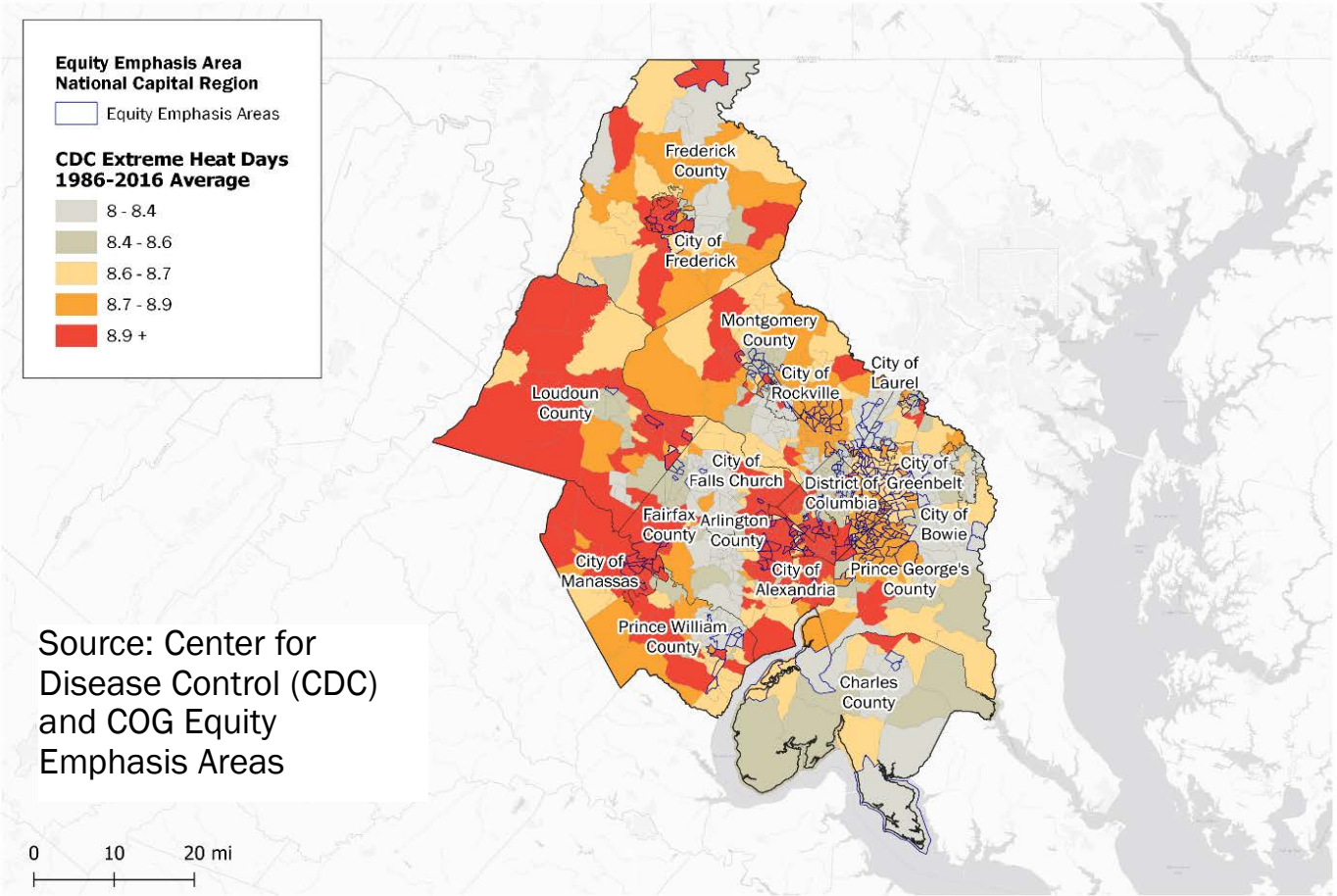
Risk Levels and Adaptive Capacity Degree of Challenge

Hazard	Probability	Consequence	Risk
Extreme Heat	3	3	9
Drought	2	3	6
Flooding (Flash and Riverine)	3	3	9
Coastal Flooding	3	2	6
Lightning/Thunderstorm	3	2	6
Extreme Winter Conditions	2	3	6

Factor	Degree of Challenge
Infrastructure Conditions/Maintenance	High
Access to Basic Services	Moderate
Access to Healthcare	Moderate
Public Health	Moderate
Housing	Moderate
Poverty	Moderate
Community Engagement	Moderate
Environmental Conditions	Moderate
Economic Health	Low

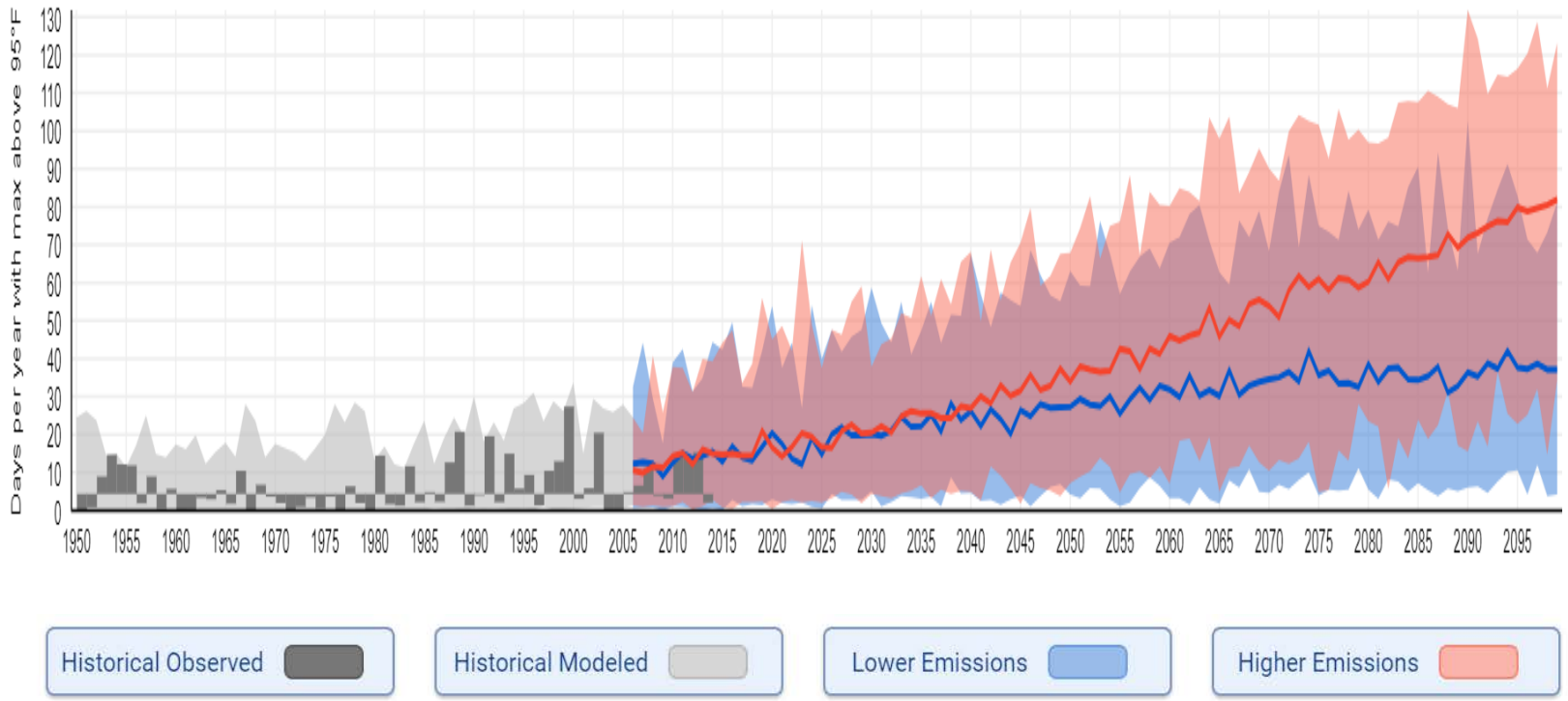
Equity Emphasis Areas and Extreme Heat

Falls Church = 9.26 average annual number of extreme heat days from 1986 to 2016.



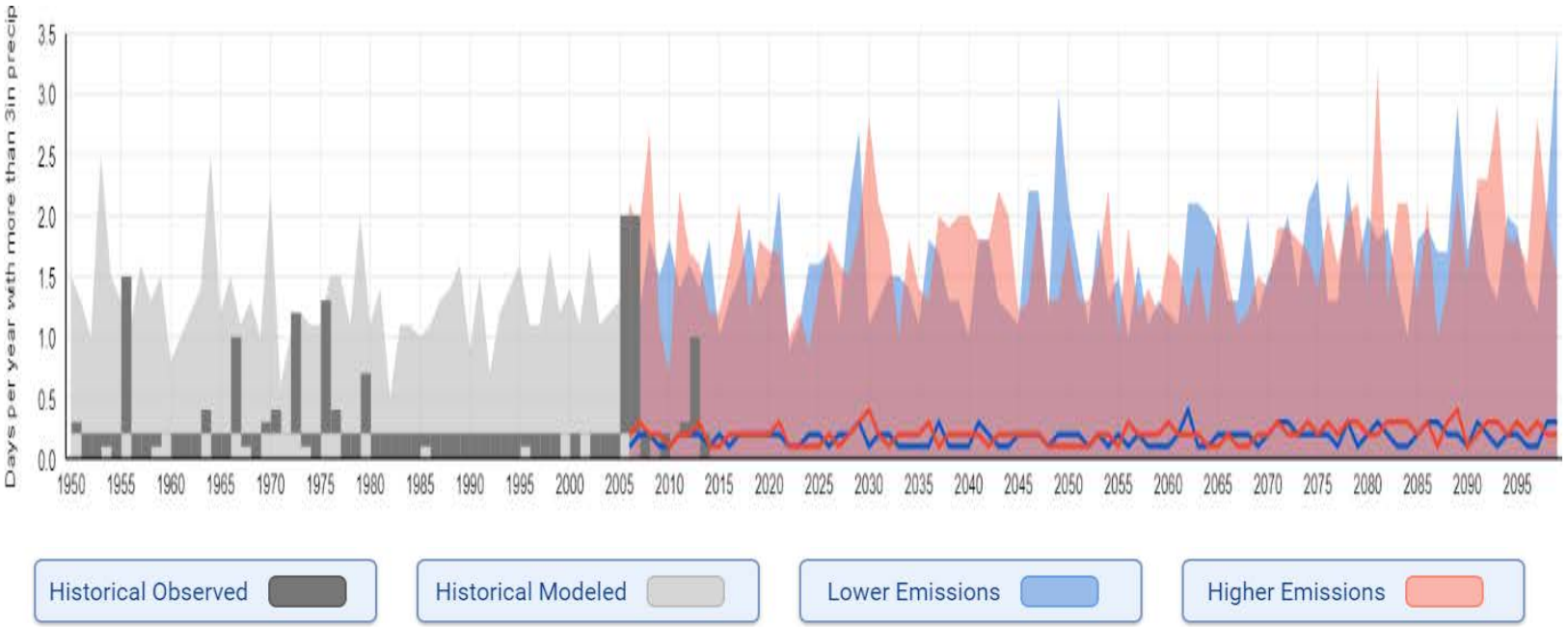
Source: Center for Disease Control (CDC) and COG Equity Emphasis Areas

Days Over 95°F from 1950 until 2095



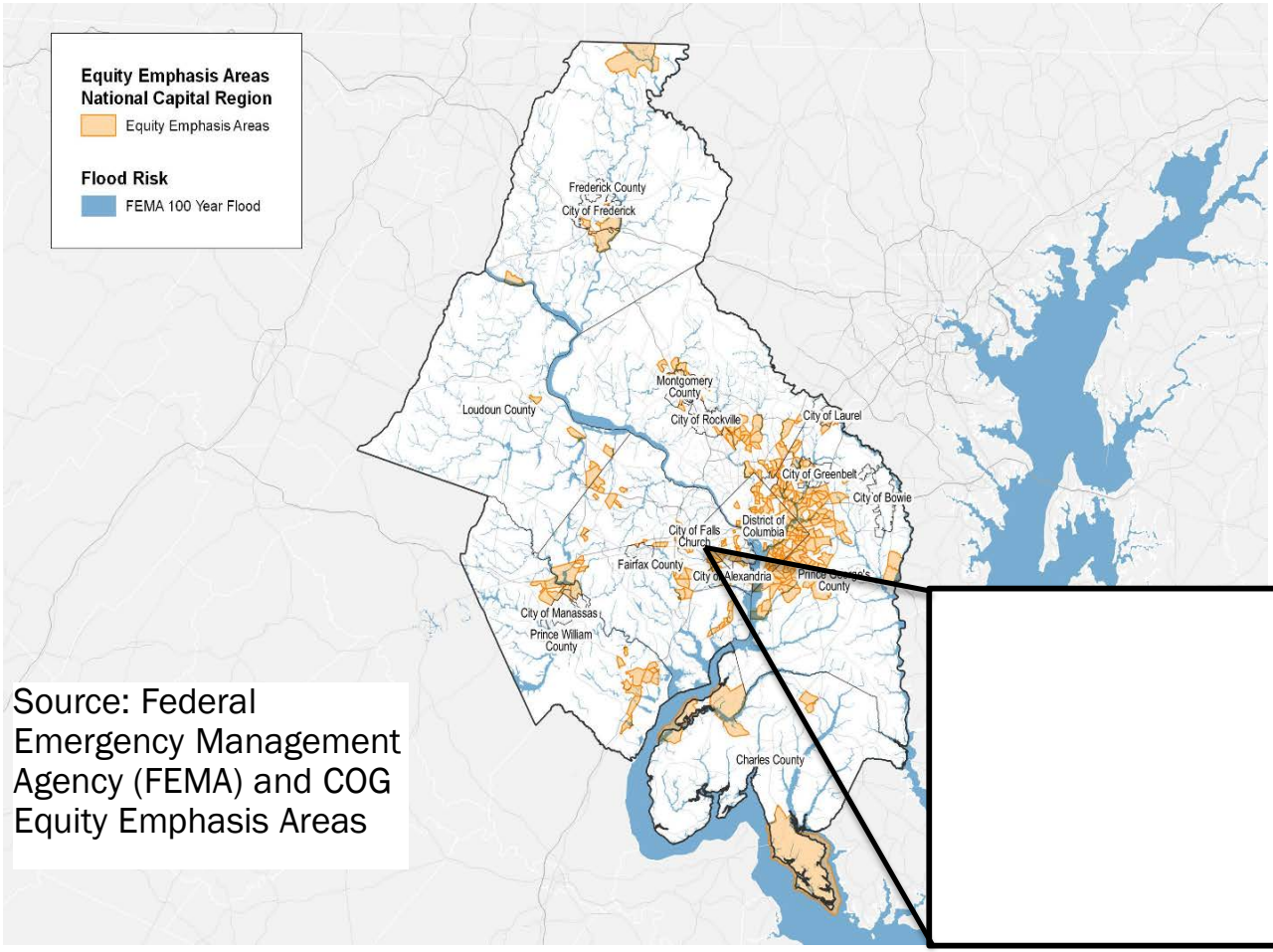
Source: NOAA Climate Explorer

Days Per Year with >3 Inches Precipitation



Source: NOAA Climate Explorer

Equity Emphasis Areas and 100-Year Floodplains



Source: Federal Emergency Management Agency (FEMA) and COG Equity Emphasis Areas

Resilience Actions

Climate Action Area	Action ID	Priority Collaborative Action
Planning	PL - 2	Support Capacity Building for Climate Resilience Planning
	PL - 3	Develop Integrated Approach to Climate Resilience Planning
	PL - 4	Update Local Regional Plans to Address Climate Risks
Equity	EQ - 3	Support Engagement of the Public on Climate Risks, with a Particular Emphasis on Potentially Vulnerable Populations
	EQ - 4	Support Equitable Secure Energy Access
Resilient Infrastructure	RI - 1	Support Establishment of Resilience Hubs
	RI - 2	Improve the Resilience of Critical Infrastructure
	RI - 3	Implement Measures to Equitably Address Urban Heat Island
	RI - 4	Enhance Green Infrastructure Networks
	RI - 5	Implement Measures to Reduce Flood Risk

Local Climate Planning Support

- COG has hired two teams to support local planning efforts (ICF and Cadmus)
- COG MOUs and Contractor Task Order Contract
  - Inventory
  - Mitigation
  - Resilience
  - Sector Planning (e.g., EVs)
- Fairfax, Prince George's City of Frederick, Rockville, Takoma Park, Baltimore County, City of Alexandria
- Various Resources Available – Regional, Local

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