MID-COURSE REVIEW – DRAFT GREENHOUSE GAS INVENTORIES

Assessing Progress Toward Regional 2030 Climate Goals

Maia Davis and Alissa Boggs
Metropolitan Washington Council of Governments (COG)
Department of Environmental Programs
Climate, Energy, and Air Program

Climate, Energy and Environment Policy Committee Meeting
July 23, 2025

Metropolitan Washington
Council of Governments

Midcourse Review Approach

Goal: Assess the status of goals, strategies, measures and actions toward the region's existing plan framework and targets.

CEEPC Meeting	Topic
January 2025	Midcourse Review Approach
March 2025	Renewable Portfolio Standards
May 2025	Local Government Questionnaire
July 2025	2023 Greenhouse Gas (GHG) Inventories
Sept/Nov 2025	Performance Indicators
New Year	Draft Midcourse Review

Metropolitan Washington
Council of Governments

Metropolitan Washington GHG Emission Reduction Goals
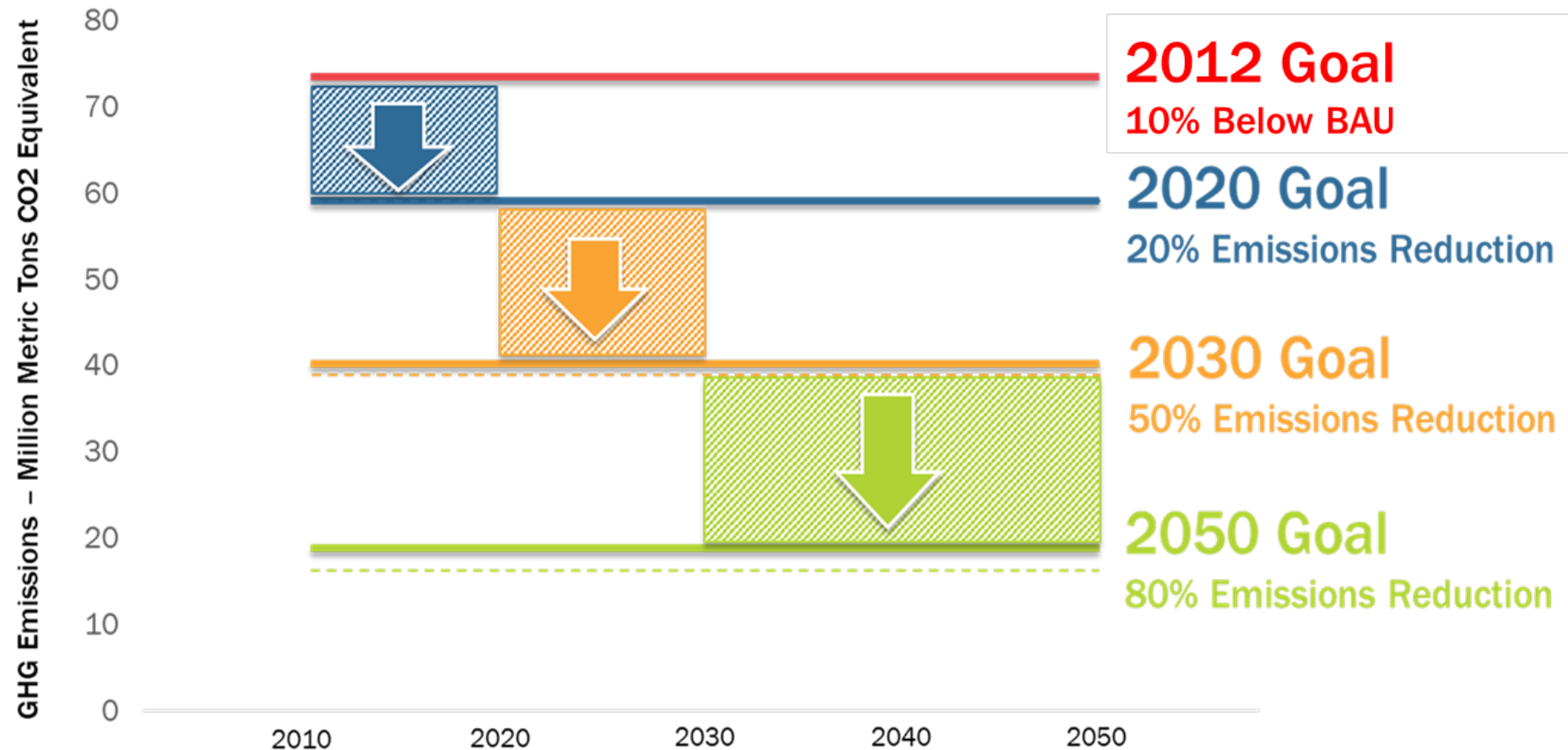
THANK YOU TO ALL CONTRIBUTING TECHNICAL EXPERTS!

- Alissa Boggs, COG DEP
- Tim Masters, COG DEP
- Sunil Kumar, COG DEP
- Mukhtar Ibrahim, COG DEP
- John Snarr, DEP
- Brian LeCouteur, COG DEP
- Mark Moran, COG DTP
- Dusan Vuksan, COG DTP
- Erin Morrow, COG DTP
- Jinchul Park, COG DTP
- Daniel Son, COG DTP
- Tim Canan, COG DTP
- Kenneth Joh, COG DTP
- Zhou Yang, COG DTP
- Greg Goodwin, COG DCPS
- John Kent, COG DCPS
- Debbie Spiliotopoulos, Northern Viginia Regional Commission (NRVC)
- Ronald Gordy, BGE

- David Bloom, BGE
- Shane Mathers, BGE
- Ran Zhang, BGE
- Eric Bateman, Dominion
- Sarah Cosby, Dominion
- Patrick Haworth, Dominion
- Ana Davis, Manassas Electric
- Margaret Schaefer, NOVEC
- Marcus Beal, Pepco
- Julianny Tate, Pepco
- Patrice Haskins, Pepco
- Dorothy Bonds, Pepco
- Renae Graham, Pepco
- Brian Havrilla, Potomac Edison
- Marie Hemminger, Potomac Edison
- Raymond Valdes, Potomac Edison
- Stephanie Fall, Potomac Edison
- Jeff Shaw, SMECO
- Tom Dennison, SMECO
- Stephen Holcomb, Columbia Gas
- Keith Weber, Columbia Gas

- Jerra Michelle Thomas, Columbia Gas
- Melissa Adams, Washington Gas
- Cory Taffera, Washington Gas
- Jessica Rogers, Washington Gas
- Opeoluwa Olawale, Washington Gas
- COG Member Jurisdictions
- Brittany Whited, District Department of Energy and Environment (DOEE)
- Jenn Hatch (DOEE)
- Lindsey Shaw, Montgomery County
- Doug Weisburger, Montgomery County
- Laura Miller, Montgomery County
- Erica Shingara, City of Rockville
- Daryl Braithwaite, City of Takoma Park
- Jenny Willoughby, City of Frederick
- Angie Fyfe, ICLEI

- Eli Yewdall, ICLEI
- Tom Herrod, ICLEI
- Calyn Hart, ICLEI
- Anne Marie Cleary Rauker, ICLEI
- Matthew Katz, ICLEI
- Jadon Basilevac, ICLEI
- Susan Minnemeyer, Chesapeake Conservancy
- Donna Lee, Climate and Land Use Alliance
- Richard Birdsey, Woods Hole Research Center
- Nancy Harris, World Resources Institute (WRI)
- Davis Gibbs, WRI
- Erin Glen, WRI
- Deb Harris, ICF
- Fiona Wissell, ICF
- Emily Carr, ICF
- John Clinger, ICF
- Bella Scornaienchi, ICF

Metropolitan Washington
Council of Governments

Protocol Compliance

- COG GHG Inventories are third party verified compliant with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (USCP)* and the *Global Protocol for Community-Scale Greenhouse Gas Inventories (GPC)*

- *Verified by ICLEI, Carbon Disclosure Project (CDP)*

- *Recognized by Global Covenant of Mayors for Climate and Energy (GCoM) in 2021 and 2023*

Metropolitan Washington Council of Governments is recognized for its action on climate mitigation and adaptation!

The Global Covenant of Mayors for Climate & Energy – the largest global alliance for city climate leadership – awards the 'Compliant' badge for our leading role at the forefront of climate action.

Mitigation

Adaptation

globalcovenantofmayors.org

MITIGATION

Inventory — Target — Plan

ADAPTATION

Assessment Goal — Plan

Methodology Basics

COG develops relevant, robust sets of GHG inventories that provide for completeness, consistency, accuracy, replicability, transparency and quality control.

Emissions Types	COG Inventory?	USCP Required?	GPC Required?
Built Environment	√	√	√
Some Process and Fugitive	√	X	√
Transportation and Mobile	√	√	√
Solid Waste Treatment	√	√	√
Wastewater Treatment	√	√	√
Agriculture	√	X	X
Forests and Trees Outside of Forests	√	X	X

Metropolitan Washington
Council of Governments

Regional GHG Emission Reduction Results

Metropolitan Washington **GROSS** greenhouse gas emissions decreased by **19%** from 2005 - 2023.

Metropolitan Washington **NET** greenhouse gas emissions decreased by **20%** from 2005 - 2023.

Metropolitan Washington
Council of Governments
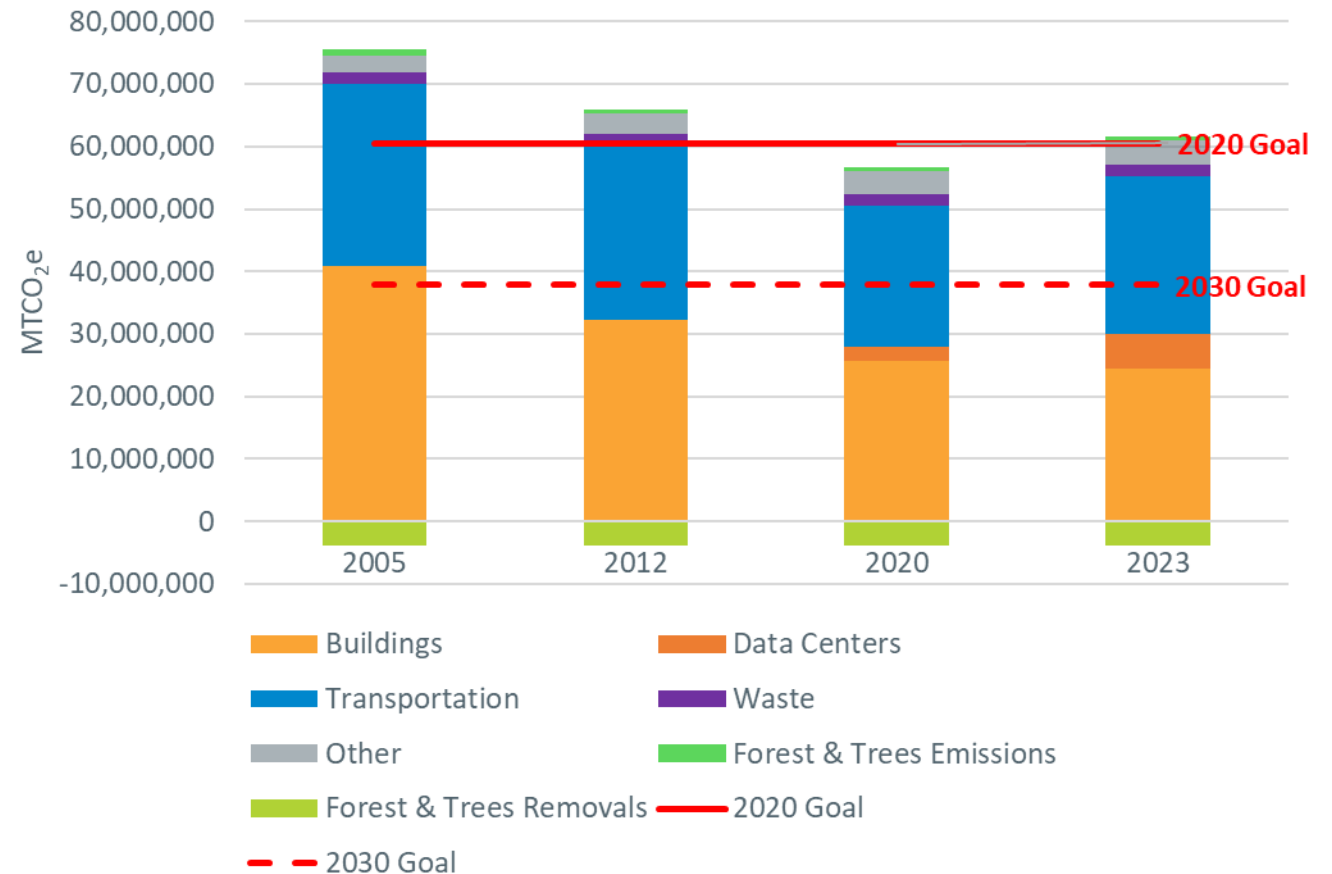
Reduction Equivalencies

The COG Region reduced emissions by >**14 MMTCO$_2$e** between 2005 and 2023. That's equivalent to....

>2.9 Million
Homes Off the Grid in a Year

>232.7 Million
Tree Seedlings Grown for 10 Years

>4.9 Million
Tons of Waste Diverted to Recycling

>3.2 Million
Gas Passenger Cars Off the Road for a Year
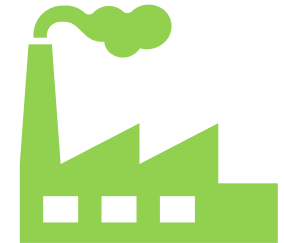
>15.6 Billion
Pounds of Coal Burning Avoided

Metropolitan Washington
Council of Governments

2023 Gross Emissions by Sector

Waste
3%

Other
6%

Forest & Trees Emissions
1%

61.6
MMTCO$_2$e

Transportation
41%

Buildings
49%

Transportation Emissions Breakdown

33% On Road

3% Off Road

4% Passenger Air

<.1% Rail

Buildings Emissions Breakdown

Data Centers
9%

Residential
17%

Commercial
23%

Metropolitan Washington
Council of Governments
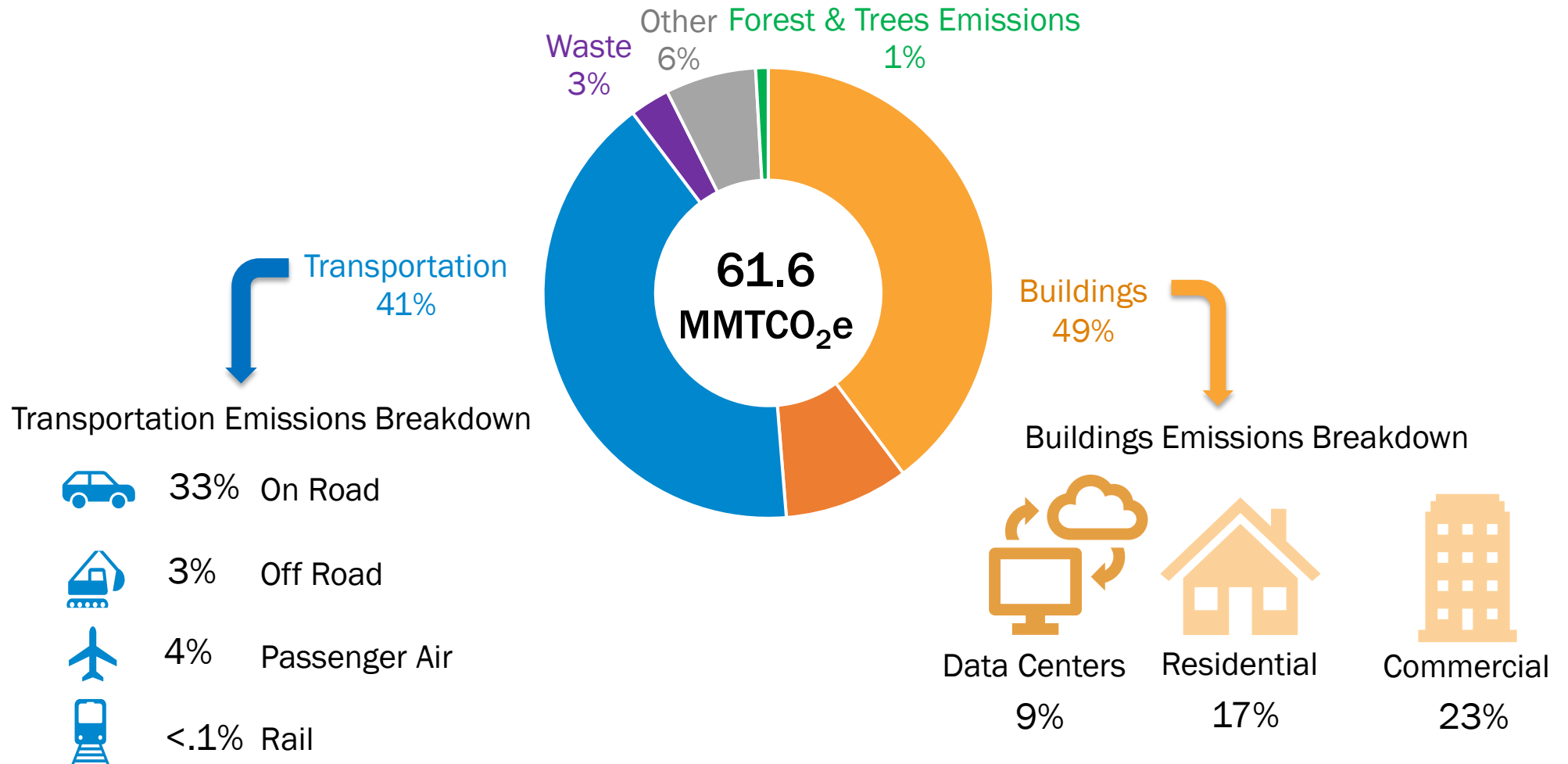
% Change in GHG Emissions, 2005 - 2023

Jurisdiction	% Gross Emissions	% Net Emissions
District of Columbia	-35%	-35%
Charles County	-27%	-39%
Frederick County	-42%	-47%
City of Frederick	-19%	-19%
Montgomery County	-31%	-32%
City of Gaithersburg	-33%	-33%
City of Rockville	-34%	-34%
City of Takoma Park	-31%	-31%
Prince George's County	-27%	-28%
City of Bowie	-30%	-32%
City of College Park	-28%	-28%
City of Greenbelt	-31%	-32%

Jurisdiction	% Gross Emissions	% Net Emissions
City of Hyattsville	-19%	-19%
City of Laurel	-30%	-30%
Town of Bladensburg	-30%	-30%
Northern Virginia	1%	1%
Alexandria	-30%	-30%
Arlington County	-33%	-34%
Fairfax County	-27%	-28%
City of Fairfax	-34%	-35%
City of Falls Church	-18%	-18%
Loudoun County	130%	145%
Prince William County	19%	22%
City of Manassas	-12%	-12%
City of Manassas Park	0%	0%

Metropolitan Washington
Council of Governments

% Change in Gross GHG Emissions, 2005 - 2023
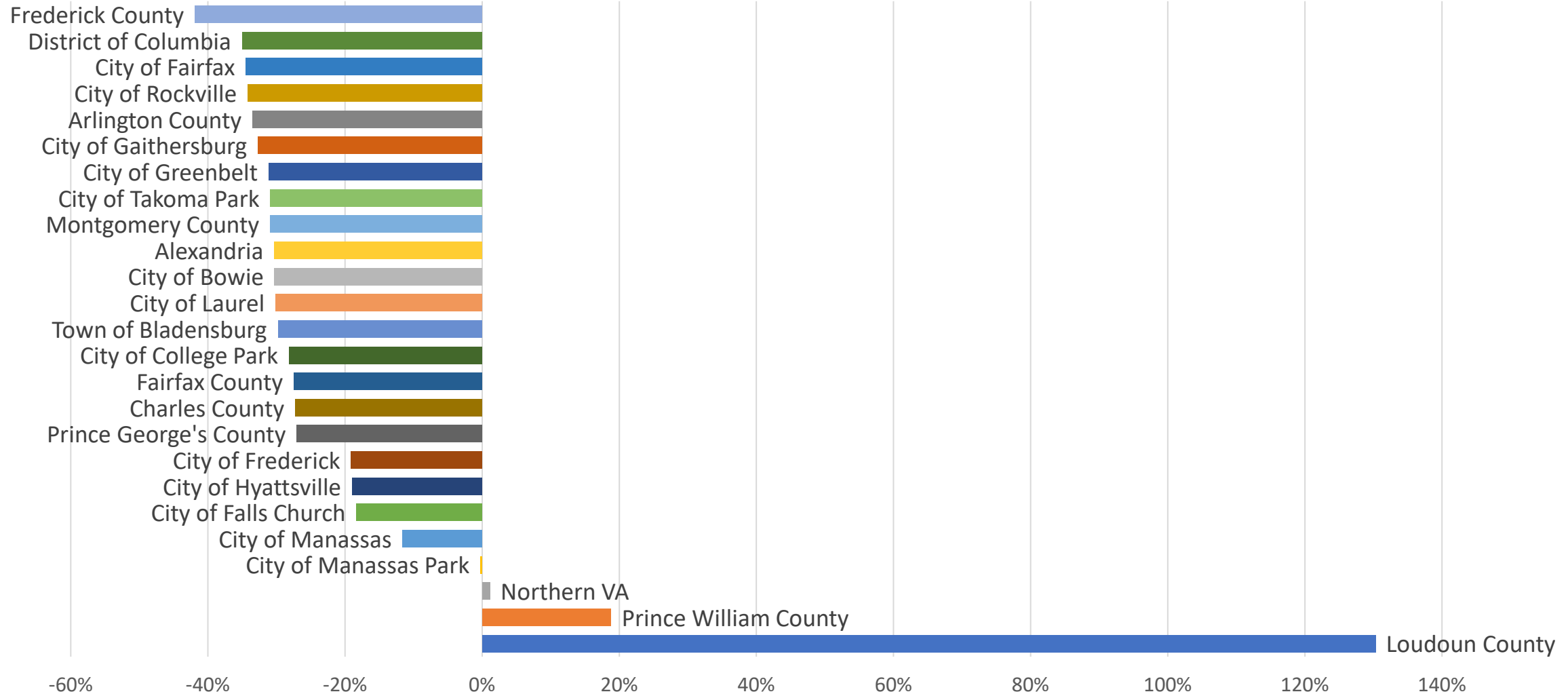
2023 Per Capita Emissions by Jurisdiction

Jurisdiction	MTCO₂e per person
Loudoun County	22.5
City of Manassas	12.3
Frederick County	12.2
City of Frederick	11.8
City of Fairfax	11.2
Prince William County	11.0
District of Columbia	10.72
City of Rockville	10.1
City of College Park	9.5
Fairfax County	9.3
Arlington County	9.3
City of Hyattsville	9.0
City of Bowie	8.9
Montgomery County	8.8
City of Falls Church	8.8
Prince George's County	8.7
City of Laurel	8.7
City of Gaithersburg	8.5
Charles County	8.4
City of Greenbelt	7.8
Town of Bladensburg	7.8
Alexandria	7.4
City of Takoma Park	7.3
City of Manassas Park	6.9

2005 Regional Average
15.6
MTCO$_2$e per person

2023 Regional Average
10.5
MTCO$_2$e per person

Metropolitan Washington
Council of Governments

eGRID GHG Subregion Emission Rates

Year	RFCE – Serving DC/MD			SRVC – Serving VA		
	CO_2 (lbs/MWh)	CH_4 (lb/GWh)	N_2O (lb/GWh)	CO_2 (lbs/MWh)	CH_4 (lb/GWh)	N_2O (lb/GWh)
2005	1,139.1	30.3	18.7	1,134.9	23.8	19.8
2012	858.6	26.4	11.5	932.9	24	14.6
2016	758.2	50	9	805.3	67	11
2018	716.0	61	8	743.3	67	9
2020	652.5	45	6	623.1	50	7
2023	594.7	36	5	590.2	45	6

Metropolitan Washington
Council of Governments

Methodology Updates

- *Global Warming Potential (GWP) Values*
  - ➢ 2005, 2020 (for jurisdictions with data centers), 2023 updated with AR5, less than 0.5% difference to AR4
  - ➢ All years of on-road updated to AR5
- *Built Environment*
  - ➢ Data center electricity estimates for 2020 and 2023
  - ➢ Updated College Park, Prince George's and Charles Counties, and COG region to eliminate double-counting of 2 natural gas plants.
- *Transportation*
  - ➢ All years of on-road updated to MOVES4
  - ➢ 2023 Regional Air Passenger Survey methodology update

- *Waste*
  - ➢ Charles County now has a landfill gas collection system, which reduces GHG emissions
  - ➢ Updated 2020 data available for District of Columbia and Frederick County
  - ➢ Regional Wastewater Flow Forecast Model updated
- *Forestry*
  - ➢ Forests analyzed for 2016-2021
  - ➢ Trees Outside of Forests analyzed for 2013-2018
- *Population*
  - ➢ District of Columbia population updates for 2018-2020 leveraging COG Cooperative Forecast 10.0

Metropolitan Washington
Council of Governments

GHG Inventory Approach for Data Centers

• As part of the Climate Pollution Reduction Grant (CPRG program), we updated the 2020 MSA GHG inventory to break out data center GHG emissions from the broader commercial buildings sector. The methodology was applied to COG's 2020 and 2023 GHG local inventories.

• To inform GHG emissions and projections of data center growth in the region, COG sent out a survey to all localities in the MSA asking for information on planned and permitted data centers, and expectations for growth. In a couple cases, CoStar data was used and verified by localities.

• Data center information was compiled to estimate energy consumption per square foot, total data center electricity consumption, and associated GHG emissions.

• Draft results were presented to relevant localities and stakeholders in spring 2025, and the methodology was further refined.

Metropolitan Washington
Council of Governments

Data Centers – 2023 Results

| Jurisdiction	Data Center Square Footage	Data Center Electricity Consumption		Data Center Emissions	
		MWh	% of Total Electricity	MTCO$_2$e	% of Total Emissions
District of Columbia	546K	142,649	1%	38,633	1%
Frederick County	547K	142,926	5%	38,708	1%
Montgomery County	1.47M	383,967	4%	103,989	1%
Prince George's County	42K	10,974	0.2%	2,972	0.03%
Fairfax County	3.89M	1,016,753	9%	273,523	2%
Loudoun County	31.9M	16,745,143	69%	4,504,718	45%
Prince William County	7.5M	1,959,679	22%	527,186	10%
City of Manassas	250K	65,323	8%	17,573	3%
Northern Virginia	>43M	19,876,897	39%	5,323,000	17%
COG Region	>46M	20.467,412	25%	5,507,302	9%

Metropolitan Washington
Council of Governments

CCAP DRAFT Data Center Measure

- *Action Area 1: IT Equipment Efficiency*
  - ➢ Energy efficient/ENERGY STAR IT equipment, higher utilization levels in IT hardware, educate data center customers (operators, facilities, IT depts) on BMPs for servers/IT equipment

- *Action Area 2: Building-level*
  - ➢ Cooling and air management, onsite efficiency improvements

- *Action Area 3: Onsite Clean Energy*
  - ➢ Encourage onsite solar, clean more efficient back-up power, demand response programs, district energy feasibility studies

- *Action Area 4: Data Tracking and Reporting*
  - ➢ Metering/monitoring systems, BEPS and benchmarking, comprehensive energy assessments, renewables reporting (onsite and PPAs)

- *Action Area 5: Engagement and Advocacy*
  - ➢ Zoning and permitting, legislative advocacy, support data driven decision-making (such as through GHG inventories)

Metropolitan Washington
Council of Governments

GHG Inventories Timeline - Next Steps

Tasks	July 2025	Aug 2025	Sept 2025	Oct 2025	Nov 2025	Dec 2025
Draft Deliverables	▓					
Local Government Technical Review and Comment Period		▓				
CDP Reporting Prep, as Needed		▓				
Final GHG Inventory Edits			▓	▓	▓	
GHG Drivers of Change Analysis			▓	▓	▓	
Fact Sheet Development			▓	▓	▓	
Final Deliverables and Promote						▓

Metropolitan Washington
Council of Governments

GHG Drivers of Change – 2005 - 2020
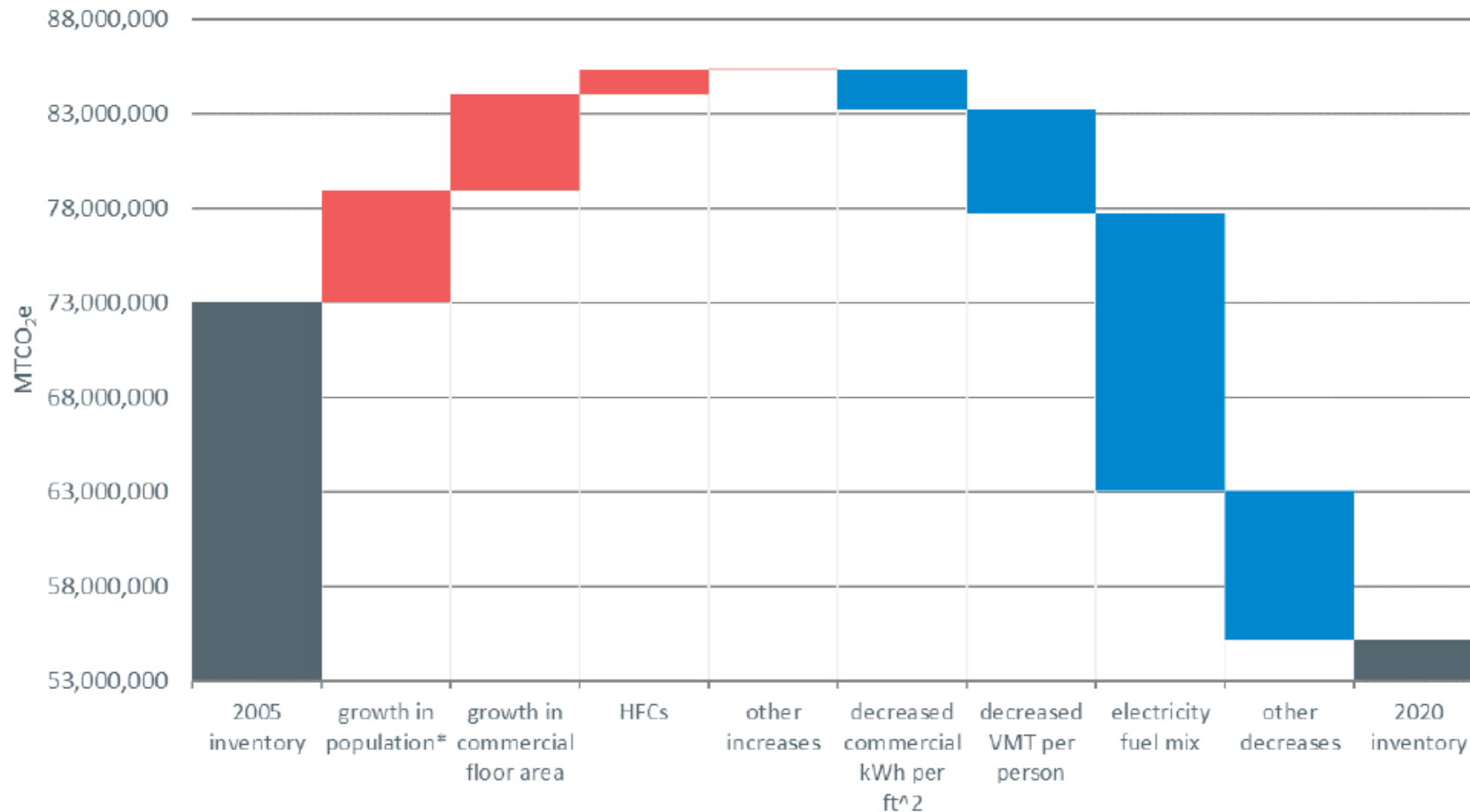
Note: * Includes effects of population on residential energy, VMT, and waste generation.

Maia A. Davis

Senior Environmental Planner

(202) 962-3227

mdavis@mwcog.org

Alissa Boggs

Environmental Planner

(202) 962-3785

aboggs@mwcog.org

mwcog.org

Metropolitan Washington
Council of Governments