EPA CLIMATE POLLUTION REDUCTION GRANT PROGRAM

Comprehensive Climate Action Plan: Draft Results

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Air and Climate Public Advisory Committee (ACPAC)
September 15, 2025

Climate, Energy, and Environment Policy Committee
September 24, 2025

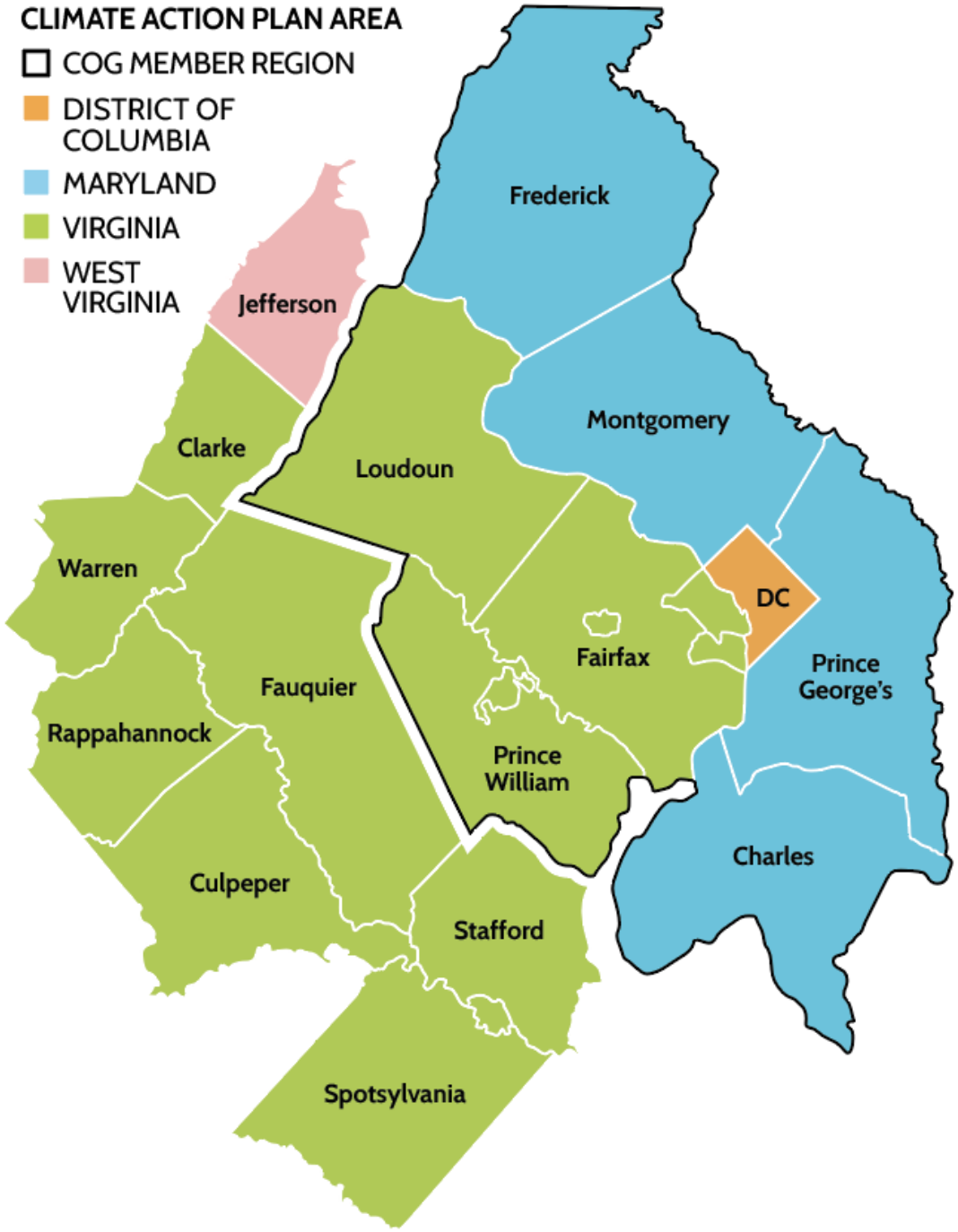
Metropolitan Washington
Council of Governments

Agenda

1. Carbon Pollution Reduction Grants Program (CPRG) Program Background
2. Greenhouse Gas (GHG) Inventory and Business as Usual (BAU) Projections
3. CCAP Measures List and Emission Reduction Potential
4. Workforce Assessment

CPRG Overview

- The Climate Pollution Reduction Grants (CPRG) program provided a grant to the DC MSA to develop and implement plans for reducing economy-wide greenhouse gas emissions and other harmful air pollution.
- Multiple rounds of planning:
  - Priority Climate Action Plan (PCAP) – due March 1, 2024
  - Comprehensive Climate Action Plan (CCAP) – due December 1, 2025
- COG, via DC's allocation, is managing $1 million for MSA climate planning, which includes communities from VA and WV.



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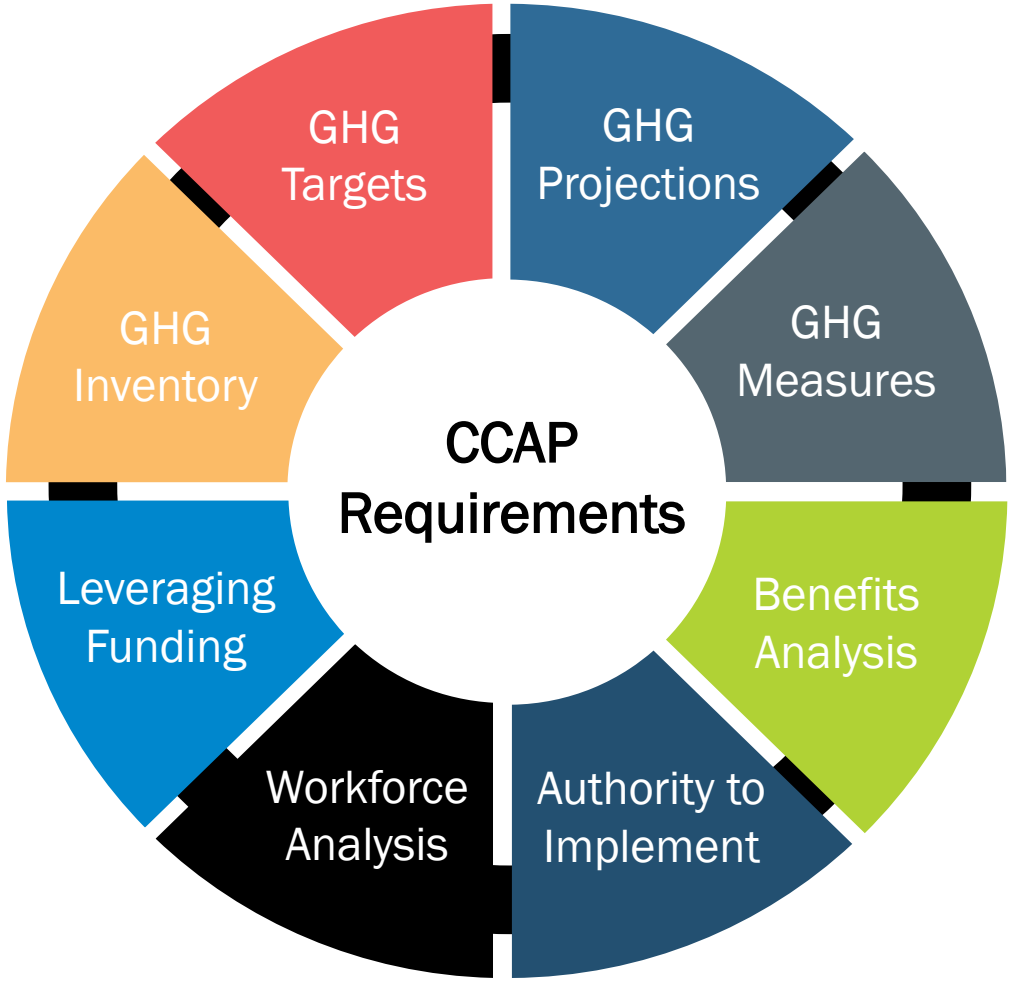
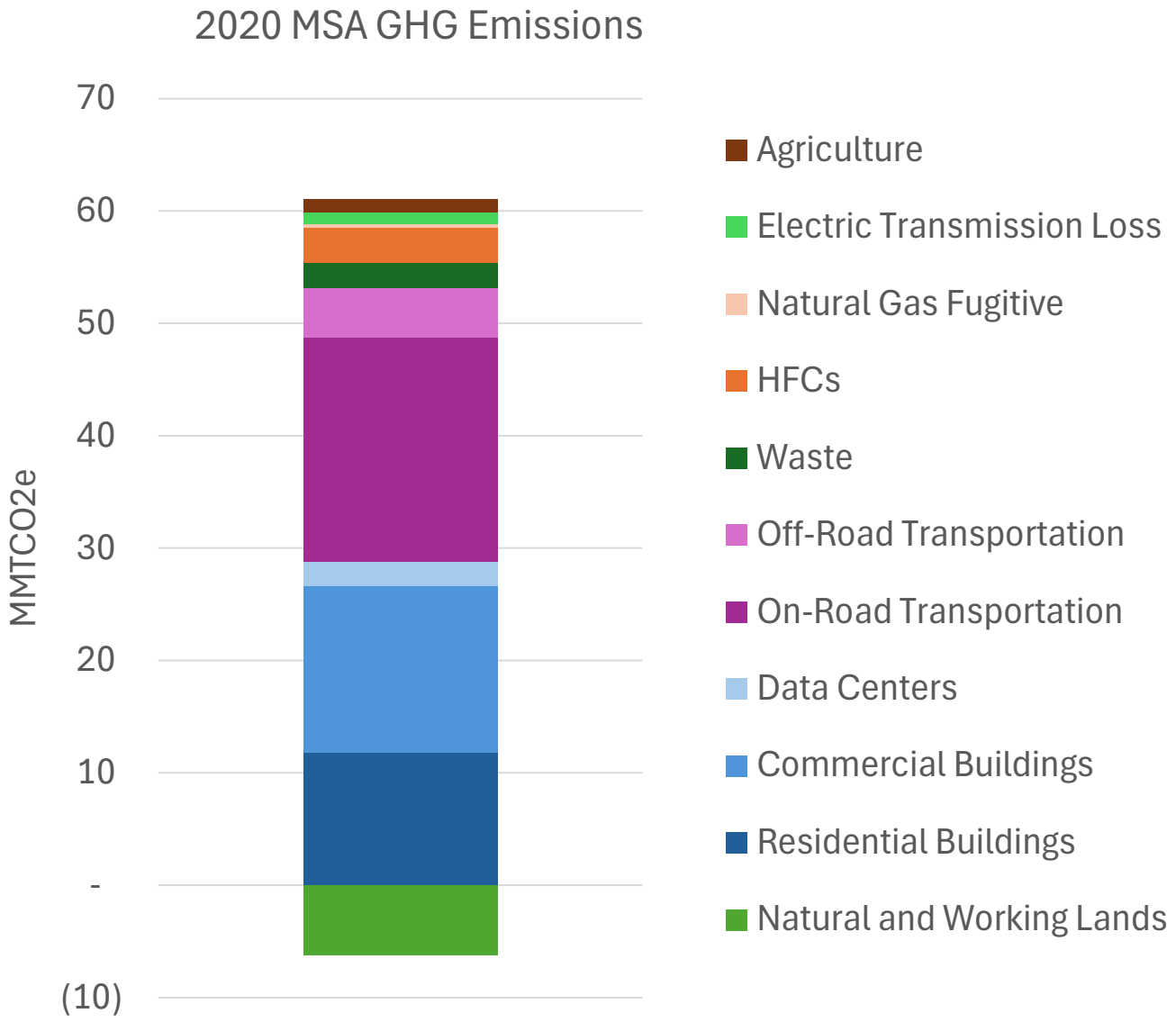
CPRG CCAP Requirements

- GHG mitigation measures and modeling potential GHG reductions across all sectors
  - Transportation
  - Buildings
  - Electric Power
  - Waste
  - Agriculture
  - Natural and Working Lands
- "What would it take" to reach net-zero GHG emissions by 2050?

  → Measures list: aggressive but feasible mitigation strategies to put the region on a pathway to net zero emissions
- Benefits Analysis: co-pollutants assessment
- Workforce Assessment

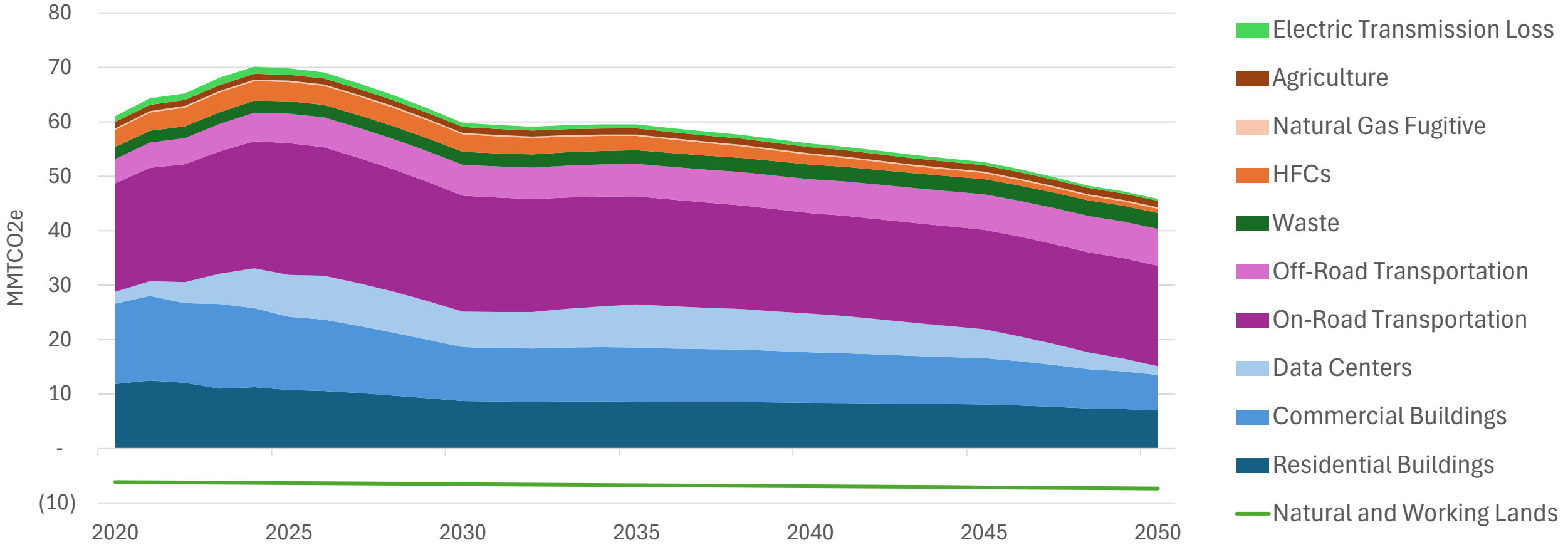


2020 GHG Emissions Inventory for the MSA



Subsector	MMTCO2e	% of Gross Total
On-Road	20	33%
Commercial	15	24%
Residential	12	19%
Off-Road	4	7%
HFCs	3	5%
Waste	2	4%
Data Centers	2	4%
Other	3	4%
Natural and Working Lands	-6	NA

Business-As-Usual GHG Emissions for the MSA



CCAP Measures List: Key GHG mitigation strategies to put the region on a path to net zero emissions

Buildings and Clean Energy

- Accelerate the deployment of energy efficiency solutions and decarbonization of residential, institutional, municipal, and commercial buildings
- Accelerate the deployment of clean and renewable energy
- Study, plan for, and deploy district energy and microgrid opportunities
- Clean and efficient data centers (*new measure for CCAP*)

Transportation

- Provide and promote new and expanded opportunities to reduce VMT through public transportation, non-motorized travel, micromobility, shared travel options, and development
- Accelerate the deployment of low-emission transportation, fuels, and vehicles
- Accelerate the deployment of off-road/non-road electric equipment

Waste

- Reduce GHG emissions from waste and wastewater treatment

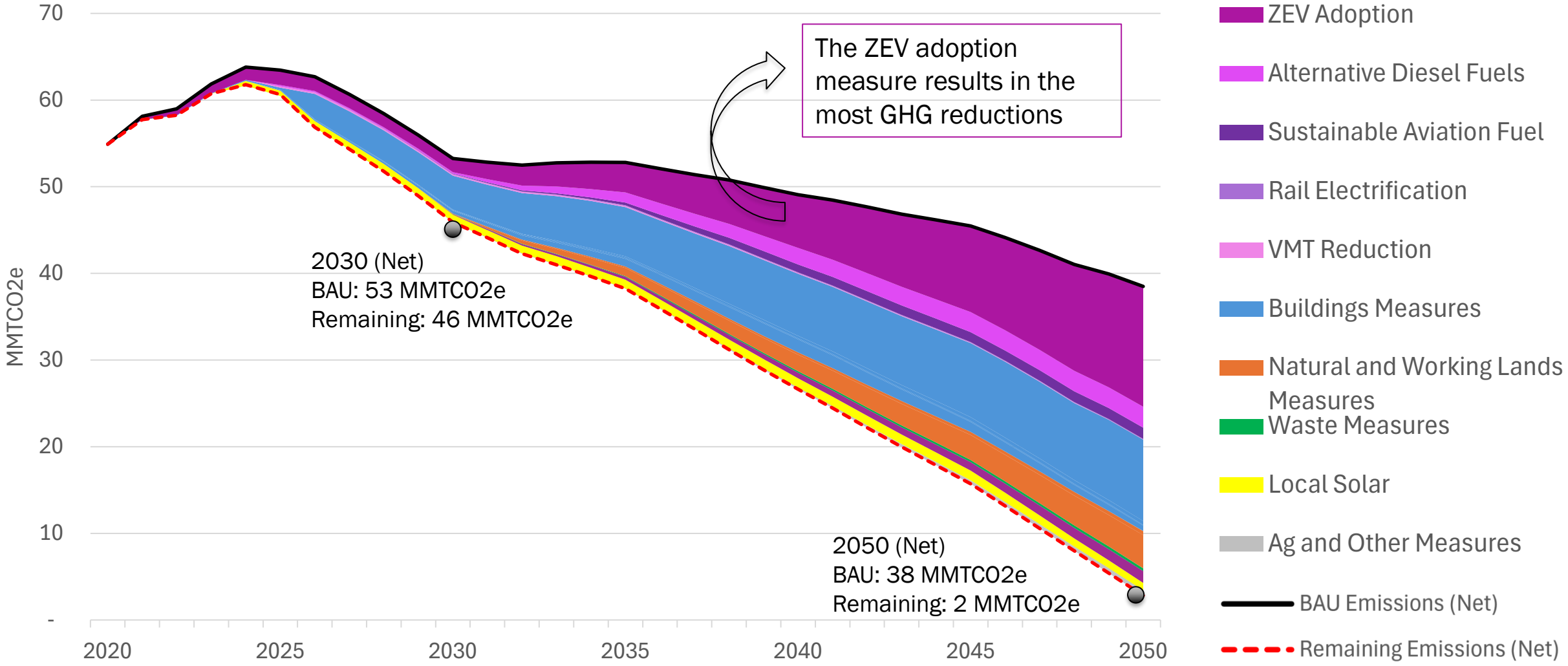
Land Use

- Accelerate the expansion of the regional tree canopy and reduce tree canopy loss

Engagement

- Conduct education and public outreach to support measure implementation (*new measure for CCAP*)

Draft Economy-Wide GHG Reduction Results



Built Environment Assumption Drivers

Measure	Assumption	Driver
Energy Efficiency and Electrification (Existing Buildings)	Residential heat pump adoption: • MD: 95% of new installations by 2045 • DC: 90% of new installations by 2045 • VA: 85% of new installations by 2050	• MD and DC net-zero targets and VCEA • High prevalence of electric resistance space heating and central AC in existing building stock • Relatively low electricity prices and high natural gas prices
	Large commercial buildings in MD and DC adopt energy-efficient technologies (e.g., efficient HVAC, building controls, lighting, envelope upgrades) at an accelerated pace.	MD & DC Building Energy Performance Standards (BEPS)
Energy Efficiency and Electrification (New Buildings)	Full electrification of new buildings begins in: • 2027 – DC residential & commercial • 2035 – MD and VA residential • 2040 – MD and VA commercial	• Clean Energy DC Building Code Amendment Act of 2022 • Passive House standards • MD and DC net-zero targets • MD proposed CHS/ZEHES standards

Transportation Assumption Drivers

Measure	Assumption	Driver
LDV ZEV Adoption	100% BEV sales by 2040	Demonstrates a potential for ZEV adoption rates, based on ACCII sales targets, which had been adopted by several states, including MD and DC.
MHDV ZEV Adoption	100% BEV (short-haul) or FCEV (long-haul) by 2050	DC, MD, and VA have all signed the medium- and heavy-duty vehicle memorandum of understanding; hydrogen more viable for long-haul transport.
Bus ZEV Adoption	100% electric sales	Local trends; more municipal authority over transit buses.
Alternative Diesel Fuels	10% biodiesel and 90% renewable diesel by 2050 for on-road; 100% renewable diesel by 2050 for off-road	Renewable diesel is a drop-in fuel, thus easier to swap in than renewable diesel; however, biodiesel vehicles already exist in the area and biodiesel blends could become more available.
VMT Reduction	1.8% reduction by 2030, 3% reduction by 2050 from BAU levels	Priority GHG Reduction strategies adopted by the TPB in June 2022.
Penn Line Electrification	100% electrification of the Penn Line by 2035	Existing plans to electrify Penn Line by 2035.
Sustainable Aviation Fuel (SAF)	$2.00/gallon SAF tax credit to reach 98% SAF by 2050	Reduces the price premium for SAF enough to increase profitability such that 98% of the jet fuel supply converts to SAF by 2050

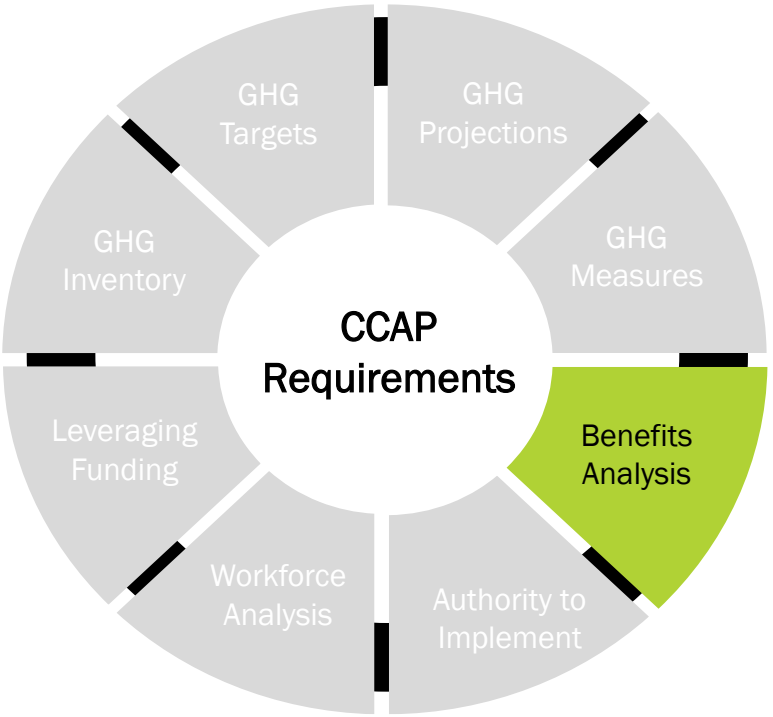
Other Sector Assumption Drivers

Measure	Assumption	Driver
Tree Canopy	Increase average urban tree canopy to 50% by 2050 across the MSA	MWCOG's regional urban tree canopy cover goal (locality-specific goals are incorporated as applicable)
Improved Land Management	Turn over 50% of all wetlands and forested lands into an improved land management class to protect and restore forests and wetlands	Illustrative target based on the Half-Earth Project
Waste	80% of currently landfilled recyclable and compostable waste is diverted by 2050	Aligned with a “Zero Waste” strategy target
Local Solar	250,000 rooftops have solar in the MWCOG region by 2030; achieve 20% of technical potential for rooftop solar across the MSA by 2050	MWCOG rooftop solar goal, NREL’s Electrification Futures Study Adoption Feasibility Assumptions

Co-Pollutant Benefit Analysis

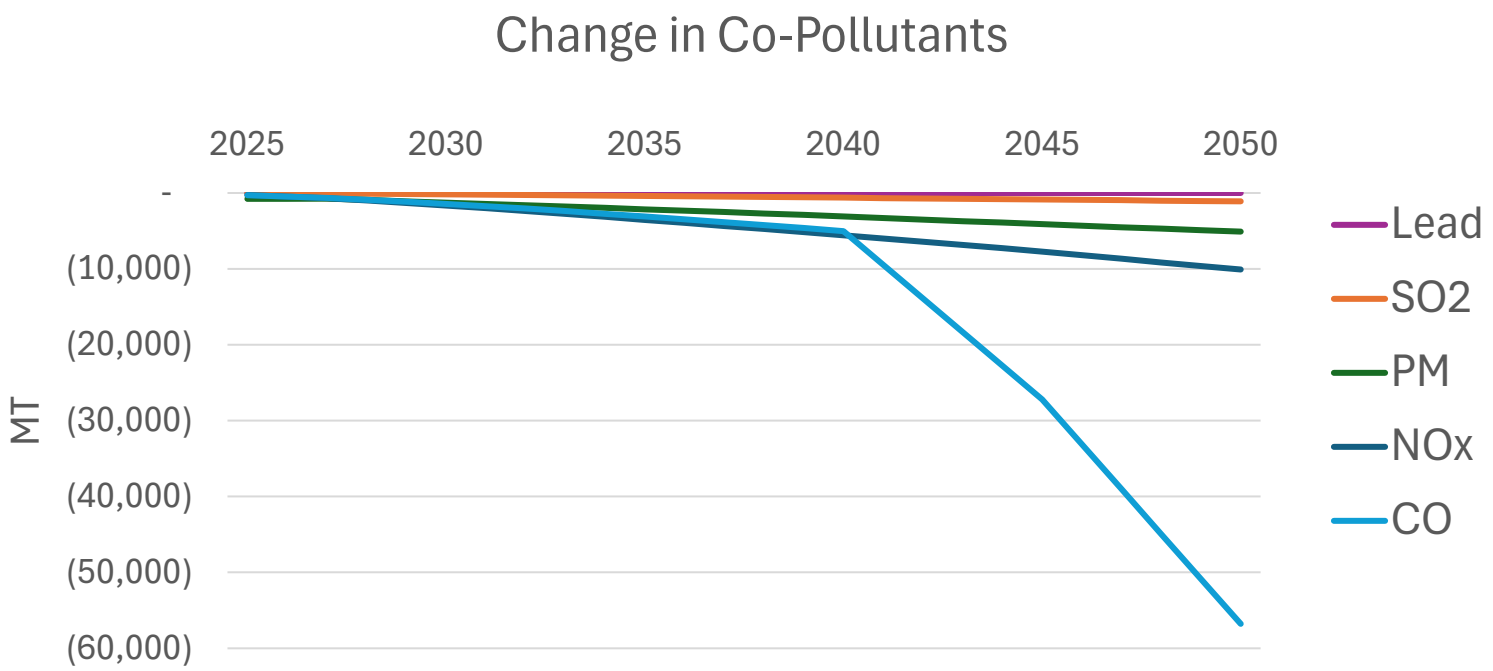
As required by the CPRG program guidance, the CCAP must include:

1. **Base year inventory** for criteria air pollutants (CAPs) and hazardous air pollutants (HAPs) emissions by county
2. **BAU projections** of co-pollutant emissions (based on EPA's NEI data)
3. **Co-pollutant reduction estimates** for the suite of measures



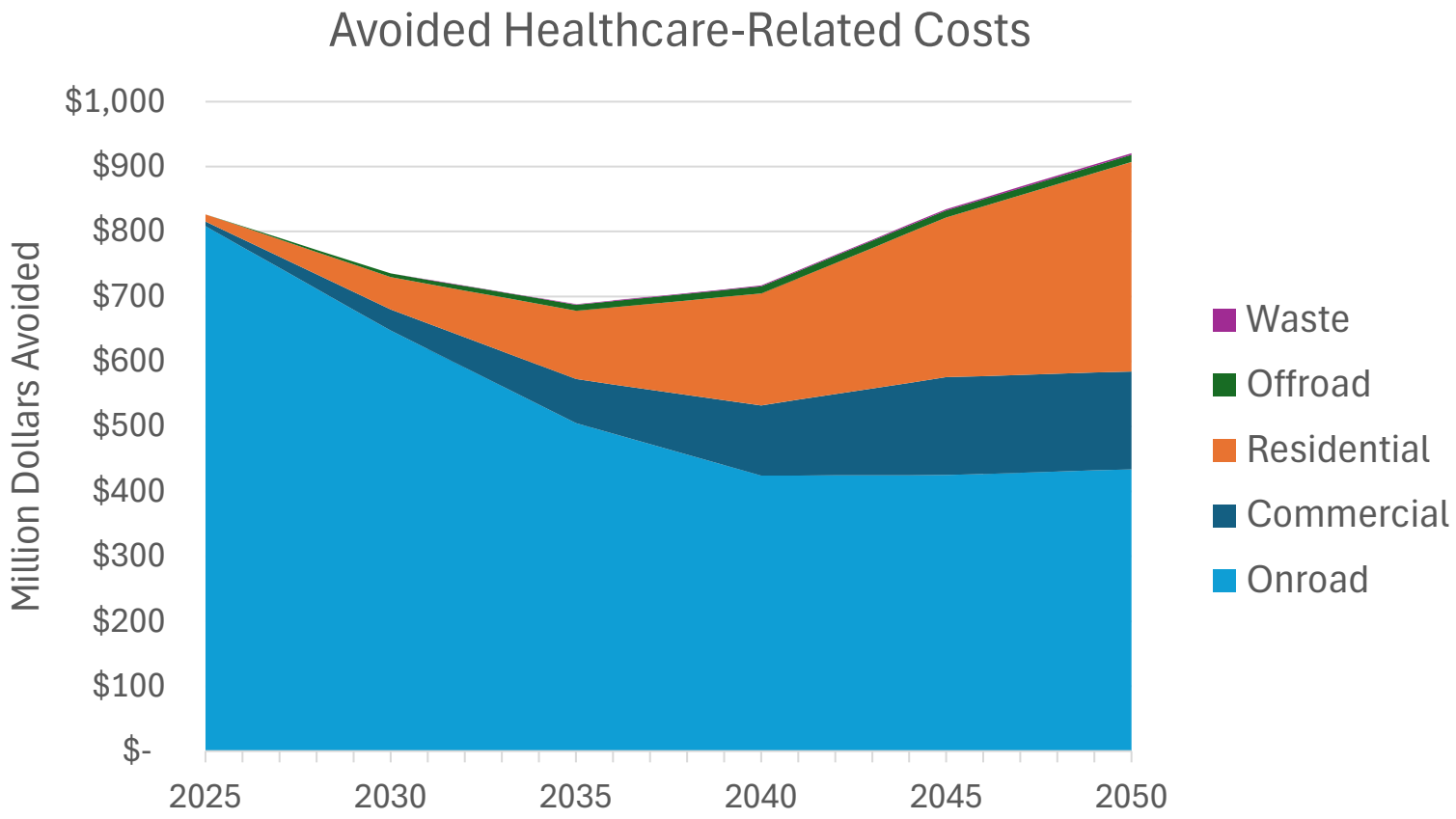
Co-pollutants covered include CAPs and HAPs: CO, SO_2, NO_x, VOCs, $PM_{2.5}$, PM_{10}, and NH3

Draft Economy-Wide Co-Pollutant Results



Pollutant	Cumulative Reduction (MT)
NOx	120,000
SO2	13,000
PM	70,000
CO	350,000
Lead	1

Draft Economy-Wide Health Impact Results



Category	Reduction in Incidents (2025-2050)
Cardiovascular Conditions	450
Hospital Visits	1,900
Missed School/Work or Restricted Activity	940,000
Mortality (Low)	690
Mortality (High)	1,300
Respiratory Conditions	740,000

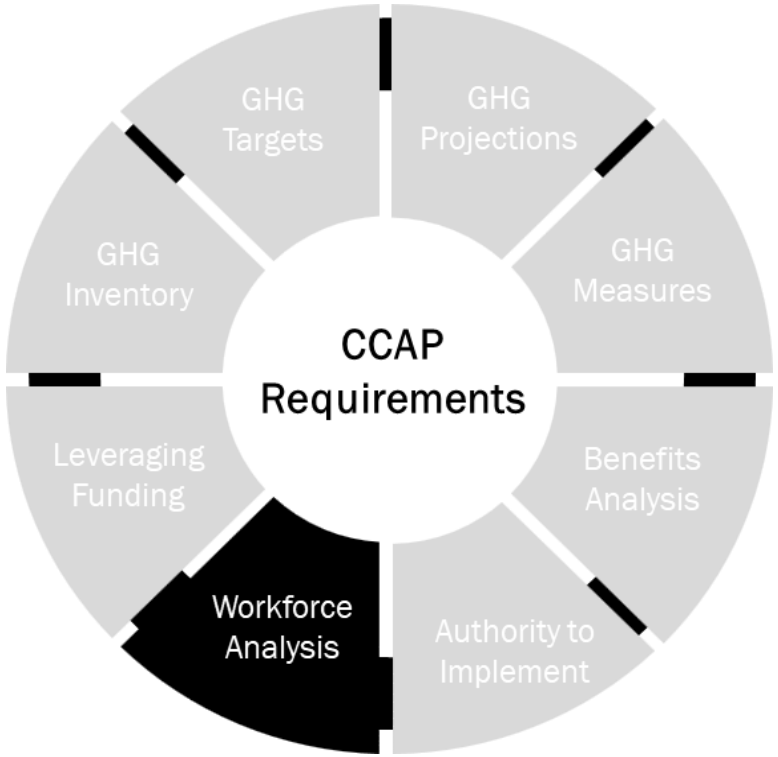
CPRG Workforce Analysis

- As required by the CPRG program guidance, the CCAP must include:

  1. Conduct an analysis of anticipated **workforce shortages** that could prevent them from achieving the goals described in the CCAP

  2. Requirement to identify **potential solutions and partners** at the state, regional, and/or local level that are equipped to help address those challenges

- The gap analysis focused on the following occupations in transportation: civil engineers, urban & regional planners, electricians, motor vehicle installers/repairers, locomotive engineers, subway operators, and bus drivers.



Occupations with Largest Workforce Shortages in 2025

SOC	Occupation	Relevant Sector	Projected Employment	*Projected Supply*	*Projected Demand Subtotals*		*Projected Shortage*	
				Hires	Growth (New Jobs)	Projected Separations	Workforce Shortage	Shortage as a Percent of Total Employment
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	Waste	26,892	24,645	284	24,923	-563	2.1%
47-2061	Construction Laborers	Buildings and Clean Energy	25,202	15,065	136	15,160	-231	0.9%
47-2152	Plumbers, Pipefitters, and Steamfitters	Buildings and Clean Energy	9,275	3,985	23	4,073	-110	1.2%
47-2031	Carpenters	Buildings and Clean Energy	15,981	6,867	(17)	6,967	-82	0.5%
47-1011	First-Line Supervisors of Construction Trades	Buildings and Clean Energy	17,150	6,229	33	6,230	-34	0.2%
47-3012	Helpers--Carpenters	Buildings and Clean Energy	651	1,387	(4)	1,423	-31	4.8%
47-2181	Roofers	Buildings and Clean Energy	2,673	1,404	(4)	1,430	-23	0.9%
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	Buildings and Clean Energy	1,152	1,867	1	1,886	-19	1.7%
53-7051	Industrial Truck and Tractor Operators	Waste	4,765	3,133	77	3,074	-19	0.4%
53-4031	Railroad Conductors and Yardmasters	Transportation	787	337	9	338	-10	1.3%

Occupations with Largest Workforce Surplus in 2025

Occupation	Relevant Sector	Projected Employment	*Projected Supply*	*Projected Demand Subtotals*		*Projected Surplus*	
			Hires	Growth (New Jobs)	Separations	Workforce Surplus	Surplus as a Percent of Total Employment
Heavy and Tractor-Trailer Truck Drivers	Waste	23,176	15,024	329	14,492	204	0.9%
Civil Engineers	Buildings and Clean Energy, Transportation	8,986	3,040	35	2,801	204	2.3%
Compliance Officers	Buildings and Clean Energy	13,599	3,864	66	3,608	190	1.4%
Engineers, All Other	Buildings and Clean Energy	9,431	2,580	17	2,414	148	1.6%
Electricians	Buildings and Clean Energy, Transportation	17,552	7,682	201	7,393	88	0.5%
Landscaping and Groundskeeping Workers	Land Use	21,147	12,900	173	12,642	85	0.4%
Refuse and Recyclable Material Collectors	Waste	2,624	2,194	47	2,066	81	3.1%
Helpers--Electricians	Buildings and Clean Energy, Transportation	1,851	3,218	4	3,138	77	4.1%

Workforce Gap Analysis Takeaways

1. No major gaps at the occupation level (supply is within 1-2% of demand for most occupations)

2. There is sufficient training capacity in the region related to building trades (HVAC & heat pumps) and electricians, but there are potential shortages related to EV maintenance and energy auditors.

3. Comprehensive solutions are needed beyond training to ensure equitable access to training and worker retention (e.g., through internship programs, alternative career pathways, competitive pay, etc.)

Example Input from Montgomery County on Discussion Question #3

- The County is leveraging partnerships with Montgomery College, Associated Building Contractors, and the Transit Workforce Center, to train employees in emerging transportation-related technologies such as **Battery-Electric Buses, hydrogen fueling, and EV charging**.
- County apprenticeship programs equip aspiring **mechanics**, **electricians**, and **plumbers** with core skills as well as expertise in cutting-edge technologies like hydrogen production, **microgrids**, geothermal **HVAC**, and advanced **building control systems**.
- By implementing a structured registered apprenticeship approach, the County can ensure that quality candidates receive quality instruction that will remain relevant to the County's routine needs and environmental goals long into the future.
- With apprenticeship programs demonstrating a **92% boost in retention rates**, this strategic investment in workforce development enables the County to build and retain a skilled workforce, driving progress toward a cleaner, greener future.

Next Steps

Schedule	Action Item
September 2025	Committee and stakeholder engagement Internal draft and review of CCAP
October 2025	CCAP public comment period
November 2025	CCAP revisions based on comments received
December 2025	Publish final CCAP and submit to U.S. EPA

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