

EPA CPRG BENEFIT ANALYSIS: APPROACH OVERVIEW

Metropolitan Washington Air Quality Committee (MWAQC)
Technical Advisory Committee (TAC)

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Metropolitan Washington
Council of Governments

CCAP Benefit Analysis Requirements

As required by the U.S. Environmental Protection Agency (EPA) Climate Pollution Reduction Grants (CPRG) program, the Comprehensive Climate Action Plan (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
3. Estimate of **co-pollutant reductions** for the suite of measures included

Co-pollutants covered include **CAPs and HAPs**: CO, SO₂, NO_x, VOCs, PM_{2.5}, PM₁₀, and NH₃

Co-pollutant Inventory and BAU Data Sources

Data Sources:

- EPA's [National Emissions Inventory \(NEI\)](#): historical data for criteria and hazardous air pollutants emissions by county and source. Data is available for 2020.
- EPA's [2022 Emissions Modeling Platform](#): based on the 2020 NEI with updates to better represent 2022.
 - Includes projected years for co-pollutant emissions: 2026, 2032, and 2038
 - To project to 2050, we will use a combination of:
 - Historical trends (2022-2038)
 - Alignment with EIA's Annual Energy Outlook, which is the data source behind some energy sector emissions trends in the GHG BAU (e.g., buildings)
 - Will confirm VOC and NOx alignment with Department of Transportation Planning data

CCAP Benefit Analysis Tools for Measure Quantification

Multiple tools and approaches will be used to estimate the impact of the CCAP measures on co-pollutants, including:

- EPA's Avoided Emissions and generation Tool ([AVERT](#))
- Where an existing tool does not capture the impacts from a particular measure, we will estimate co-pollutant changes by proportionally applying changes in GHG emissions to co-pollutant emissions from the base year inventory.

The Benefit Analysis will be conducted after the GHG reductions are quantified for each measure.

EPA's AVERT Tool

Description: EPA's AVERT is a web or Excel-based tool used to evaluate how energy policies and programs such as energy efficiency, renewable energy, and electric vehicle deployment lead to changes in emissions of fine particulate matter, nitrogen oxides, sulfur dioxide, carbon dioxide, volatile organic compounds, and ammonia from electric power plants and avoided internal combustion engine vehicles. It operates at the regional electricity grid level and reports results down to the county level.

Inputs: energy efficiency (reductions/yr), solar capacity added, number of EVs added, solar+storage capacity added

Outputs: annual hourly electric power load profile, change in GHG emissions, SO₂, NO_x, PM_{2.5} VOCs and NH₃

AVERT results can be easily exported and imported into the Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA).

EPA's COBRA Tool

Description: EPA's Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA) is a screening tool that provides preliminary estimates of the impact of air pollution emission changes on ambient particulate matter (PM) air pollution concentrations, translates this into health effect impacts, and then monetizes these impacts at the county level.

Inputs from AVERT or other CCAP measure co-pollutant quantifications: county-level change in PM_{2.5}, SO₂, NO_x, VOC, and NH₃ by sector (e.g., buildings sector gas combustion; gasoline highway vehicles, etc.)

Outputs: Multiple health indicators, including mortality, hospital admits, ER visits, asthma, lung cancer, school and work loss days, etc. (change in incident and monetary value impacts)

CCAP Benefit Analysis Outcomes

- Co-pollutant emissions inventory and BAU
- Changes in co-pollutants from CCAP measure implementation, by county, and associated health impacts due to changes in air pollution
- Share of impacts to LIDACs (*methodology under development for non-point source emissions and pending updated EPA guidance*)
- Qualitative discussion on co-benefits or disbenefits that may result from measure implementation (e.g., resiliency, energy bill impacts, health, quality of life/place, jobs, etc.), particularly in LIDACs