CPRG Tools and Technical Assistance – Co-Pollutant Benefits Analysis

This webpage provides a list of tools and resources that support Climate Reduction Pollution Grants (CPRG) Planning Grantees meet the Co-Pollutant Benefits Analysis requirements for the Priority Climate Action Plan (PCAP) and Comprehensive Climate Action Plan (CCAP). These requirements are laid out in the Program Guidance for States, Municipalities, and Air Pollution Control Agencies and Federally Recognized Tribes, Tribal Consortia, and U.S. Territories. EPA publishes and maintains a variety of resources that grantees may leverage to meet these requirements, including Co-Pollutant Data and Co-Pollutant Analysis Tools. These resources are further described below.

A benefits analysis should assess benefits of greenhouse gas (GHG) reduction measures across the full geographic scope of each plan. It should include both base year estimates of co-pollutants (including criteria pollutants/ precursors and air toxics) and anticipated co-pollutant emission reductions as plan measures are implemented and GHG reduction goals are met. This analysis is required for the CCAP for states and municipalities and for the PCAP for Tribes and territories. Please refer to the technical reference document below for more information about specific expectations regarding this requirement. Grant recipients are further encouraged (but not required) to include in their PCAP and CCAP a broader assessment of benefits associated with their GHG reduction measures, including but not limited to, improved public health outcomes, economic benefits, increased climate resilience, or other environmental benefits.

Note: EPA does not require the usage of a specific dataset, tool, or baseline year for this analysis.

Where to get started?

The Benefits Analysis element under the CPRG Program includes estimating co-pollutant emission reductions as plan measures are implemented and GHG reduction goals are met. Planning grant recipients are therefore expected to develop mechanisms to estimate the impacts of measures included in their climate action plans.

The Technical Reference Document for Benefits Analyses: Co-Pollutant Impacts (pdf) document provides applicants with additional guidance on how to meet the Benefits Analyses requirements. EPA hosts several data sources and tools that may be suitable for this type of assessment, including the National Emissions Inventory (NEI). Additional information and guidance pertaining to possible approaches for co-

pollutant impact analysis that may be of interest to applicants can be found in the remainder of this document.

- The Co-Pollutant Inventory and Future Projections Benefits Analysis webinar provides additional guidance for users.

Co-Pollutant Data

Grantees are required to perform a "co-pollutant impacts analysis" that serves as the "benefits analysis" deliverable requirement. The datasets below can be used in compiling co-pollutant inventories.

- EPA's National Emissions Inventory (NEI) is a county, facility, and process-level emissions inventory of Criteria Air Pollutants (CAPs) and Hazardous Air Pollutants (HAPs). In addition to including CAPs and HAPs, the NEI also maintains GHG emissions data at the county and facility-level for many sources, including mobile and large stationary sources. Mobile source emissions, both on- and off-highway, are generated using EPA's MOVES model and other methods for locomotives, commercial marine vessels, and aircraft. These mobile source inventories are informed by local data that are provided by state, local, and Tribal agencies and developed by EPA. Large stationary source, facility-level GHG emissions come from the U.S. EPA's Greenhouse Gas Reporting Program or direct state, locality, or tribal GHG submissions to the NEI. EPA notes that the NEI estimates emissions for entities that do not submit their own inventories and can provide these inventories to state, local, and tribal governments. The latest data can be used to help meet the PCAP/CCAP requirement(s).
    - *Note: the bottom-up approach applied in the NEI differs from the approach and methods used in the national GHG inventory and the related state level estimates in the Inventory of U.S. GHG Emissions and Sinks by State.*

Co-Pollutant Analysis Tools

The tools described below can be used to develop comprehensive co-pollutant inventories and anticipated co-pollutant emission reductions as plan measures are implemented as required by the CCAP.

- EPA's MOtor Vehicle Emission Simulator (MOVES) is an emission modeling system that can be used to estimate emissions for mobile sources at the national, county, and project level for GHGs, criteria air pollutants, and air toxics. MOVES can also estimate energy consumption. MOVES estimates emissions from on-road mobile sources (i.e., on-road vehicles such as cars, trucks, and buses) and from most nonroad emissions sources as well (with the exceptions of locomotives, marine vessels, and aircraft). MOVES can be used for inventory estimations by state, local, and tribal governments. As MOVES can model through the year 2060, it is useful for transportation sector emission projections for future years.
    - EPA's MOVES website provides guidance on mobile source emissions modeling:
        - Quantifying GHGs is covered in the MOVES Greenhouse Gas Guidance: Using MOVES for Estimating State and Local Inventories of Onroad and Nonroad Greenhouse Gas Emissions and Energy Consumption.

        - Quantifying co-pollutants (criteria pollutants/precursors and air toxics) is covered in the MOVES Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity.
    - EPA's MOVES Training website provides additional training resources.
- EPA's AVoided Emissions and geneRation Tool (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. AVERT may be a useful tool for compiling the benefits analysis in the PCAP or CCAP. AVERT results can be easily exported and imported into the Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA), further described below.
    - This webinar page includes a recording and slides that outline the new features of the latest version of AVERT.
- The 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. State and local governments can use COBRA to design or select program options that maximize benefits, narrow a list of policy options to those that should be evaluated using more sophisticated air quality models, and more.
    - The EPA COBRA User Manual helps users navigate the Tool, provides a quick-start tutorial, and describes options for data, scenarios, and results.
    - EPA offers a short video that introduces COBRA and shows how it can be used to estimate the health impacts of changes in air pollution emissions. Note that because COBRA provides a screening-level estimate of the health impacts of changes in air pollution emissions, it may not be appropriate for certain analyses, such as federal air quality rulemaking.
    - COBRA Quickstart Tutorial provides an overview of COBRA and summarizes its six key analytical steps by illustrating two case studies, a Renewable Portfolio Standard and a Wind Energy Program.
- The Environmental Benefits Mapping and Analysis Program – Community Edition (BenMAP – CE) is an open-source computer program that calculates the number and economic value of air pollution-related deaths and illnesses. The software incorporates a database that includes many of the concentration-response relationships, population files, and health and economic data needed to quantify these impacts.
    - EPA provides several BenMAP-CE self-paced training materials, available in English for all regions and Spanish and French for a subset of regions.
- The Emissions & Generation Resource Integrated Database (eGRID) is a comprehensive source of data from EPA's Clean Air Power Sector Programs on the environmental characteristics of almost all electric power generated in the United States. The data includes emissions, emission rates, generation, heat input, resource mix, and many other attributes and can be used for GHG inventories, carbon footprints, emission inventories and standards, avoided emission estimates and more. This tool may help grantees document emissions associated with the electric power sector.

- This technical guide provides a description of eGRID2021, including the methodology for developing the Excel spreadsheets for each level of aggregation and the grid gross loss calculation.
- The Download Data page allows users to view summary-level eGRID data by region or download all data in spreadsheet form by historical year of interest.

- The Community Multiscale Air Quality Modeling System (CMAQ) is an active open-source development project of the U.S. EPA that consists of a suite of programs for conducting air quality model simulations. CMAQ combines current knowledge in atmospheric science and air quality modeling, multi-processor computing techniques, and an open-source framework to deliver fast, technically sound estimates of ozone, particulates, toxics and acid deposition. This tool may help grantees document projected changes in hazardous air pollutant emissions associated with specific GHG reduction measures.
  - EPA's CMAQ Resources/Utilities webpage offers resources and links to help new users get started with the CMAQ system as well as information for more experienced users who are ready to run CMAQ or analyze CMAQ output.

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