CMAQ Emissions Calculator Toolkit, Cost-Effectiveness Table and Annual Reporting Update

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Federal Highway Administration

Presentation Content

- CMAQ Emissions Calculator Toolkit
- Emissions Calculator Toolkit Training
- CMAQ Cost-effectiveness Table Update
- CMAQ Annual Reporting

Quick CMAQ Program Overview

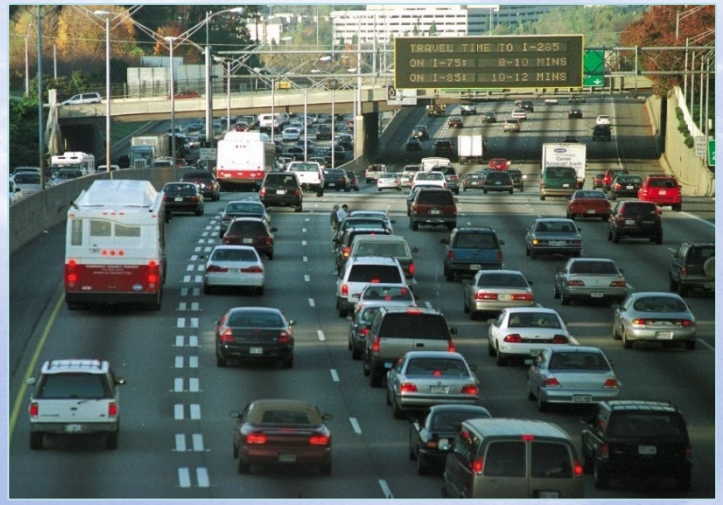
CMAQ Overview

The CMAQ program was established in 1991 to help fund transportation projects or programs that contribute to the attainment or maintenance of the National Ambient Air Quality Standards

CMAQ Goals

Supports U.S. DOT Goals:

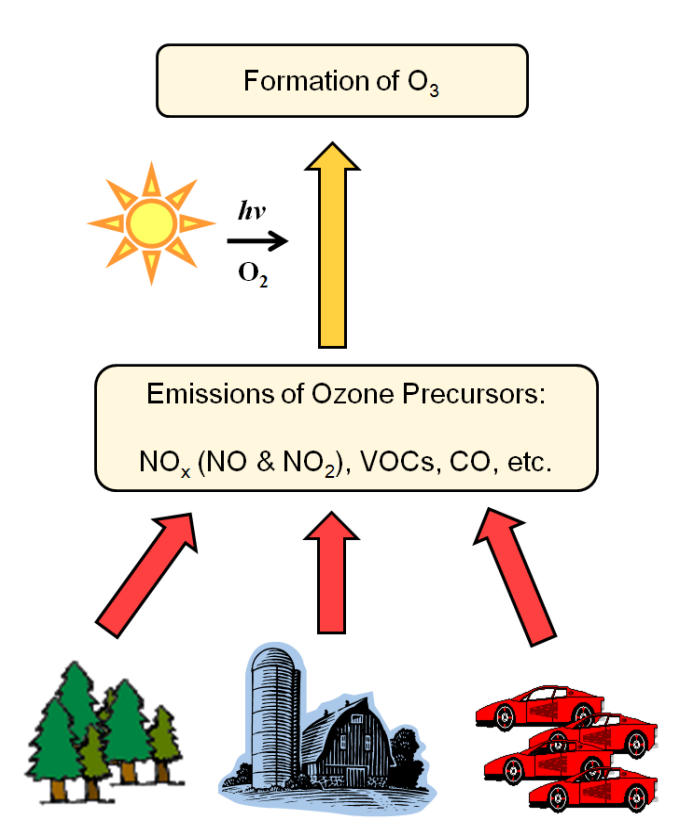
1. Improve air quality
2. Reduce congestion



Source: CMAQ Office

CMAQ & National Ambient Air Quality Standards (NAAQS)

- NAAQS criteria pollutants targeted by CMAQ:
  - Ozone (O_3)
  - Carbon Monoxide (CO)
  - Particulate Matter (PM)
- Applicable pollutants and precursors:
  - CO
  - NO_x
  - VOC
  - PM_{10}
  - $PM_{2.5}$



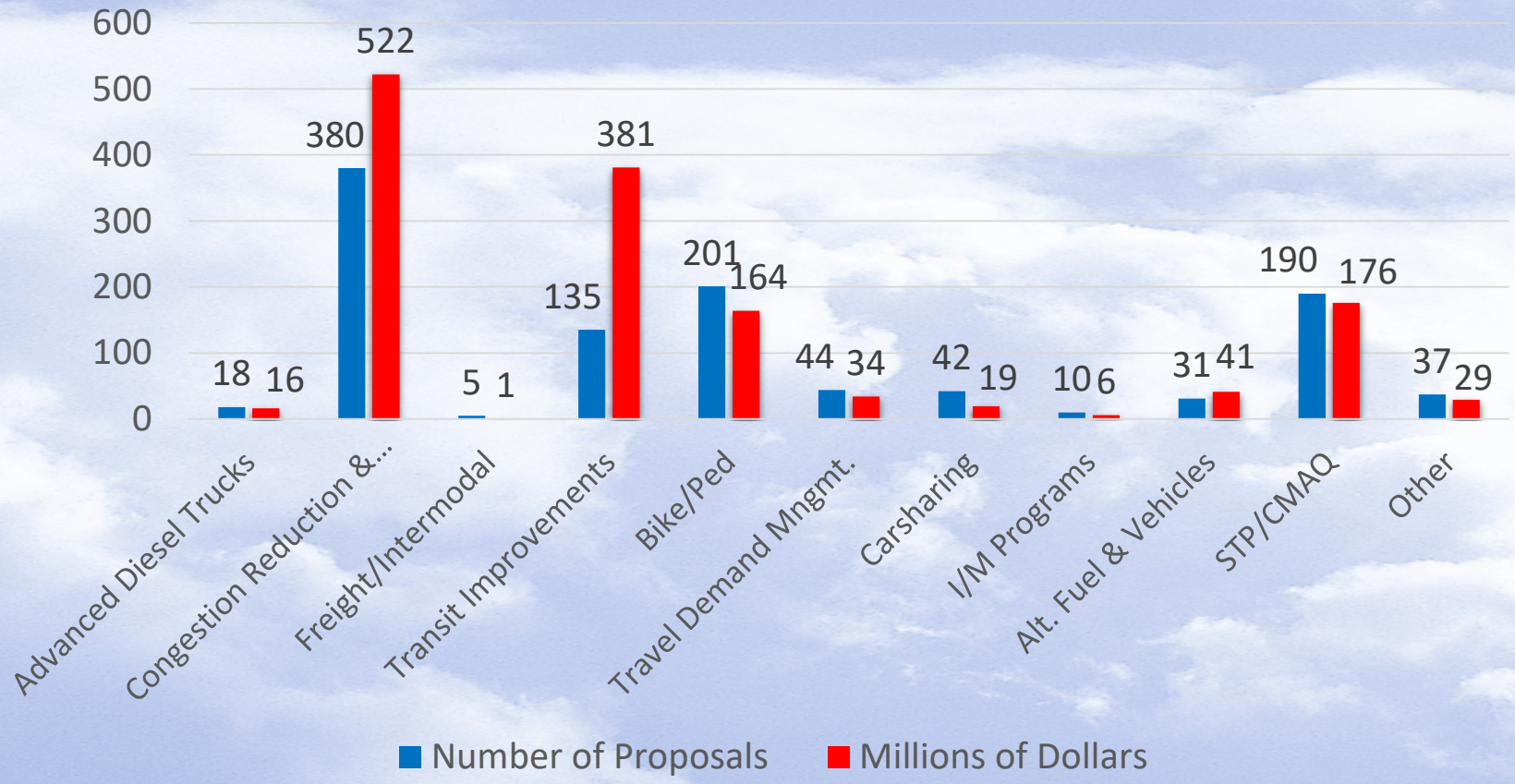
Quantitative Benefit Assessment

Should be:

- Included in project proposals and annual reports
- Included for all pollutants (and applicable precursors) for which area is nonattainment or maintenance
- Listed in consistent units (kg/day) across projects
- Inclusive of all emission sources involved in the project
- Derived from MOVES, EMFAC, AP-42 or other acceptable methods

CMAQ Emissions Calculator Toolkit

CMAQ Project Funding Categories FY 2018



Purpose of CMAQ Emissions Calculator

- Provide analysis methodologies for the most frequently encountered CMAQ projects
- Provide a common set of methodologies using consistent assumptions and readily available data sources
- Provide a helpful means of meeting CMAQ annual reporting, project eligibility and performance measure data requirements

Purpose of CMAQ Emissions Calculator

- Response to requests from project sponsors with limited technical and analytical capabilities to estimate emissions benefits
- Serve as a resource only; users are not required to replace effective methodologies already in practice
- Estimates from the Toolkit are not intended to meet requirements for State Implementation Plans or Transportation Conformity

CMAQ Program Activities requiring Quantitative Emissions Estimates

- CMAQ Transportation Performance Management target setting and biennial performance reports
- Annual Project Reports submitted through the CMAQ Project Tracking System
- CMAQ project eligibility determination and project selection process.

Emissions Calculator Tools Available Now

Modules	CMAQ Tools
Congestion Reduction and Traffic Flow Improvements	• Intersection Improvements • Traffic Signal Synchronization • Roundabouts
Advanced Diesel Truck / Engine Technologies	• On-Road Diesel Retrofit • Diesel Vehicle/Engine Replacement • On-Road Activity Calculator
Alternative Fuels and Vehicles	• Vehicle Replacement • Fueling Facilities (Restricted and Unrestricted Access)
Carpooling and Vanpooling	• Carpooling • Vanpooling
Transit Bus Retrofit and Replacement	• Transit Bus Replacement (Diesel, CNG, Alt Fuel) • Transit Bus Diesel Engine Retrofit

Emissions Calculator Tools Available Now

Modules	CMAQ Tools
Transit Bus and Fleet Expansion	• New Bus Service • System or Service Expansion
Diesel Idle Reduction	• Auxiliary Power Units • Direct-Fired Heaters • Truck Stop Electrification
Bicycle and Pedestrian Improvements	• New Bicycle Lanes/Trails • New Sidewalks/Paved Shoulders

Emissions Calculator Tools and Updates On the Way

Modules	CMAQ Tools
Managed Lanes	• New Managed Lane Facilities • Managed Lane Conversions
Dust Mitigation	• Paved Roads • Unpaved Roads • Unpaved to Paved Roads

- Non-road tools under development: Locomotive / Marine Diesel Engine Technologies and Construction Equipment / Cargo Handling
- Updating early modules to extend analysis years to 2030.

Documentation and Support

Each calculator Module has two guides:

- The primary tool user guide
- MOVES documentation user guide

Open version of tool available on request allows input of local traffic data and emission factors.

Toolkit Website Address

https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/

Emissions Calculator Summary

- Easy to use
- Excel-based
- Readily available inputs
- Consistent methods
- Comprehensive documentation and user support
- Customizable with local data

Emissions Calculator Toolkit Training

Emissions Calculator Toolkit Training

- Developed in response to stakeholder request
- Jointly developed and administered by FHWA HQ CMAQ Program and Resource Center staff.
- Six one hour recorded webinars delivered monthly with opportunity for Q & A and posted on the FHWA / AQ website
- Tentatively schedule to run from September 2019 through March 2020

Upcoming CMAQ Calculator Webinars

Series of webinars (5 total) that break down the calculators in more detail, tentatively planned for:

Modules	Month
• CMAQ Emissions Calculator Toolkit Overview	September
• Congestion Reduction & Traffic Flow Improvements • Managed Lanes	October
• Carpooling & Vanpooling • Bicycle & Pedestrian Improvements	November
• Transit Bus Service & Fleet Expansion • Transit Bus Retrofits & Replacements	January
• Advanced Diesel Truck/Engine Technologies • Diesel Idle Reduction Technologies	February
• Alternative Fuels and Vehicles • Dust Mitigation	March

Cost – Effectiveness Table Update

General Requirements for the Cost Effectiveness Tables as Prescribed under MAP-21

23 USC 149(i):

IN GENERAL - The Secretary in consultation with the Administrator of the Environmental Protection Agency shall evaluate projects on a periodic basis and develop a table or other similar medium that illustrates cost effectiveness of a range of project types for funding under this section as to how the projects mitigate congestion and improve air quality.

USE OF TABLE - States and metropolitan planning organizations shall consider the information in the table when selecting projects or developing performance plans under subsection (l)

FHWA Objectives

- Provide representative cost-effectiveness (C-E) estimates to guide project selection and funding request processes at the State and local level

- Promoting ownership of a role in achieving high environmental impact returns on project funds

Changes in Approach and Analysis

- Projects selected directly from CMAQ Public Access System
- Project analytical scenarios developed from CMAQ Public Access System and Emissions Calculator Toolkit
- MOVES emission factors recalculated with version 2014 b
- Tabular display of projects are grouped in terms of strong, weak and mixed median cost-effectiveness

Steps to Completion

- Complete final document and posting on FHWA / AQ web page
- Internal FHWA and external stakeholder webinar, recorded and posted to FHWA / AQ web page
- Issue guidelines for use of the Cost-Effectiveness in the project selection process.

Cost-Effectiveness Table Website

https://www.fhwa.dot.gov/environment/air_quality/cmaq/reference/cost_effectiveness_tables/

CMAQ Annual Reporting

Authorization

- 23 U.S.C., Section 149:

  In general. - Using appropriate assessments of projects funded under the congestion mitigation and air quality program and results from other research, the Secretary shall maintain and disseminate a cumulative database describing the impacts of the projects, including specific information about each project, such as the project name, location, sponsor, cost, and, to the extent already measured by the project sponsor, cost-effectiveness, based on reductions in congestion and emissions.

Project Reporting Requirements

- All State DOTs and the District of Columbia submit annual CMAQ reports
  - Projects funded the previous federal fiscal year
  - Funds obligated or de-obligated for each project
  - Quantitative emissions analysis whenever possible

Sequence of the Annual Reporting Process

- State DOTs and MPOs enter project data into the CMAQ Project Tracking System and approve. Project Data forwarded to Divisions.
- HQ notification to Divisions Administrators that Division level approval of State DOT and MPO approved data is due by **March 1st**
- HQ receives 51 Division level approved Annual Reports and begins the final approval process which must be completed by **July 1st** to comply with Transportation Performance Measure requirements.

Critical Project Information for Approvals

- Check that 'Project Reporting Category' accurately represents project type.
- Description of the project should be as detailed as possible so it may be recognized in later project searches.
- Make sure CMAQ Capital, CMAQ Operating and Non-CMAQ funding is accurately represented.
- Check that funding ratio does not exceed 80/20 unless 100% or sliding scale is appropriate.

Critical Project Information for Approvals

- Make sure that either Quantitative or Qualitative Emissions Benefit information has been entered unless a deobligation.
- If Qualitative Emissions Benefit is chosen, evaluate justification for why quantitative reporting was not possible.
- Deficiencies in any of the preceding information categories is justification for returning projects for correction.

Thank You

Questions?

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