Office of NATURAL ENVIRONMENT

http://www.fhwa.dot.gov/environment/

U.S. Department of Transportation
Federal Highway Administration
Office of Planning, Environment and Realty

The Federal Highway Administration's (FHWA) Office of Planning, Environment, and Realty offers opportunities under the Moving Ahead for Progress in the 21st Century (MAP-21) legislation to improve transportation decision making and promote efficiency while protecting communities and the environment. The Office supports and conducts research under MAP-21 that:

Informs Decisions

- Reduces Environmental Impacts
- Improves Quality of Life
- Streamlines Project Delivery
- Integrates Planning

The following document highlights specific research activities in the Office of Natural Environment. For more information, please visit http://www.fhwa.dot.gov/hep/map-21_research/.

OFFICE OF NATURAL ENVIRONMENT

FHWA's Office of Natural Environment develops and implements programs and activities to minimize the adverse impact of transportation on the natural environment.

Research Focus

The Office identifies and carries out a comprehensive research program to address natural environmental issues related to transportation. These issues include air quality conformity and associated programs, highway noise, sustainability, and climate change.

Under MAP-21, the Office's research efforts are focused on the Congestion Mitigation and Air Quality Improvement (CMAQ) program. Specific activities include:

- Updating existing analytical tools to incorporate new emissions estimating procedures
- Developing CMAQ Cost Effectiveness Tables
- Conducting a CMAQ Assessment Study.
- Re-developing the CMAQ project database.

For more information, please contact Connie Hill Galloway, 804-775-3378 or connie.hill@dot.gov .

FEATURED RESEARCH ACTIVITIES

MOVES2010 Regional and Project Level Sensitivity Analyses

These research studies analyze the sensitivity of various input parameters on emission rates using the U.S. Environmental Protection Agency's MOVES2010 model at both the regional and the project level. Pollutants evaluated in the two studies are carbon monoxide (CO), Oxides of Nitrogen (NOX), Particulate Matter of less than 2.5 micrometers (PM2.5), and Volatile Organic Compounds (VOCs). Results are presented using the predicted emission rates (grams/mile) for running exhaust, starts, and evaporative emissions across multiple MOVES source types. The following input parameters were varied in these analyses:

- Temperature
- Humidity
- Ramp fraction
- Age distribution
- Analysis year
- Average speed distribution

The results of the two analyses show how the running exhaust, start, and evaporative emissions rates are affected by the variation of analyzed input parameters and the magnitude of the changes. **Staff Contact:** Mark Glaze, 202-366-4053 or Mark.Glaze@dot.gov.

Improving Noise Regulation Implementation

This recently completed research study aims to improve the implementation of the FHWA noise regulation found in 23 CFR 772. Three subject areas were the focus of the study: land use evaluation methodologies, analysis of noise barrier acceptance criteria, and opportunities for streamlining the noise study process. Pending availability of funding, additional research may be initiated on findings that were identified as a higher priority. A technical work group comprised of state DOTs and FHWA will oversee the effort. **Staff Contact:** Mark Ferroni, 202-366-3233 or Mark.Ferroni@dot.gov.

Gulf Coast Phase 2

This study produced a comprehensive assessment of projected climate impacts on the Mobile, Alabama transportation network. The study addressed the key challenges in conducting vulnerability assessments by developing advanced methods and tools that can support planning and engineering processes for agencies around the nation. These include:

- Developing climate projections to use for assessing future transportation vulnerability. The study developed tools and techniques to quickly obtain relevant climate projections and to consider their uncertainty in developing adaptation strategies.
- Screening and assessing vulnerability of a large number of key assets. The study developed a series of methods and tools to systematically and efficiently screen transportation assets for climate vulnerability.
- Applying engineering principles to develop adaptation options for a vulnerable transportation asset. The study narrows the gap between climate science and engineering practice by providing detailed examples of how climate information may be incorporated into the traditional engineering design process.

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Climate Change Resilience Pilots

FHWA partnered with 19 State DOTs and MPOs to pilot approaches to conduct climate change and extreme weather vulnerability assessments of transportation infrastructure and to analyze options for adapting and improving resiliency. The pilots will be complete by February 2015. Final reports for each project will be posted to FHWA's website, and results will be incorporated into an updated version of FHWA's Climate Change and Extreme Weather Vulnerability Assessment Framework. **Staff Contact:** Becky Lupes, 202-366-7808 or Rebecca.Lupes@dot.gov.