



## Implementation Report

### Re-Evaluation of Montana's Air Quality Program

<http://www.mdt.mt.gov/research/projects/planning/cmaq.shtml>

#### Introduction and Purpose

This project examined the Montana Department of Transportation's (MDT) current methods for determining projects for the Montana Air and Congestion Initiative (MACI) program. A key objective was to keep the program oriented towards high-value investments for Montana communities. Main project tasks included:

- \* Determine the best use of Congestion Mitigation and Air Quality (CMAQ) funds for each of Montana's transportation-related pollutants
- \* Determine project recommendations that use highest cost to air quality benefit for long-term attainment
- \* Determine possible funding and program policy changes
- \* Identify areas prone to future transportation-related issues

One of the primary products of this research is a set of method descriptions and MS Excel-based tools designed to estimate the air pollution emission reduction benefit and

the cost effectiveness of the new measures and projects that are being implemented in the state.

The recommendations made by the researcher in the final report are listed in this document, along with the actions that will be taken based on these recommendations.

#### Implementation Summary

Tasks performed in this project produced a prioritization of CMAQ measures that might be most worthwhile for Montana areas to consider. Based on this prioritization, a set of emission quantification spreadsheet tools were developed to estimate the emission reductions associated with these various CMAQ projects. An additional spreadsheet tool was developed to estimate the cost effectiveness of these projects based on the emission reductions quantified in the emission tools.

#### Implementation Recommendations

**Recommendation 1:** Concentrate MACI discretionary funding in high-risk areas,

based on Montana Department of Environmental Quality (MTDEQ) requisites.

The normalized community risk values in the final report can be used by MDT to determine which areas of the state are likely to benefit the most by investments which reduce transportation source emissions that contribute to observed air quality concentrations in the state.

**MDT Response:** MACI-discretionary monies will provide funding for the high-risk area investments. The identification of high risk areas are to be based on MTDEQ recommendations from recent ambient air quality monitoring results.

**Recommendation 2:** Continue efficient equipment purchase programs.

Continue to purchase street sweepers and other air quality equipment to replace current equipment in areas where this equipment has been effective in bringing PM<sub>10</sub> concentrations below the National Ambient Air Quality Standard (NAAQS) and in preventing areas considered at 'high risk' for

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PM<sub>10</sub> reaching non-attainment. Program expansion into new areas is not warranted given chemical mass balance (CMB) study findings of sand/salt contributions to PM<sub>2.5</sub> measurements, and street sweeping is not likely to be an effective PM<sub>2.5</sub> emission reduction option.

**MDT Response:** MDT plans to continue to purchase air quality equipment in high risk areas.

**Recommendation 3:** Invest in congestion management options that achieve significant improvements in average speed (> 10 mph).

Traffic flow/intersection channelization improvements will likely achieve the highest emission reductions in Montana. Use of operational strategies provides a toolbox of alternatives that can be implemented to mitigate growing congestion. The benefits of successful operational strategies are multiple – faster, more reliable trips, improved safety, and reduced environmental impacts. Traditional arterial signal systems operate with fixed timings based upon expected volumes during certain portions of the day. Adaptive signal control technologies can adjust to handle varying traffic conditions that may differ from fixed-time operations to improve traffic flow.

**MDT Response:** When transportation project opportunities arise MDT will pursue this option.

**Recommendation 4:** Consider more than just air quality benefits when evaluating CMAQ-eligible projects.

Based on Montana’s nonattainment areas and what this study found

about the culpable sources for nonattainment, on-road vehicle control strategies would be expected to provide limited air quality benefits in Montana areas. The focus of CMAQ funding should be on measures that help maintain attainment status in the areas/ pollutants where transportation sources are most important. While air pollution emission reductions are an important attribute of CMAQ funding decisions for Montana, the lack of any strong transportation influence on existing or expected future Montana nonattainment problems means that MDT will want to also consider variables other than air quality impact when selecting projects for CMAQ funding.

**MDT Response:** MDT typically considers a range of variables in selecting projects and plans to continue this practice.

**Recommendation 5:** Use the provided tools to estimate benefits of CMAQ-eligible projects. The tools (in MS Excel) allow MDT to estimate the emission reductions and cost effectiveness of CMAQ/ MACI measures and projects. These tools use US Environmental Protection Agency’s (EPA) latest guidance (AP-42) and the latest approved emission factor model (MOVES 2010b) to calculate the potential emission reductions from proposed projects. As new MOVES model versions are released by EPA, consider updating emission rates in the tools.

Montana emission rates by vehicle type were generated by running EPA’s MOVES model. These are built into the tools delivered to MDT to estimate benefits of CMAQ-eligible projects. This was done so that users of the tools do not

need to run the MOVES model prior to using them. However, EPA regularly releases updates to the MOVES model. When EPA releases a new version of the model, we recommend that Montana staff review those updates to determine whether emission rates were revised and whether it will be necessary to update the emission factors in the provided tools with revised MOVES emission rates. EPA guidance or documentation about the new version of the model will indicate if emission rates were updated.

**MDT Response:** MDT plans to use this tool and will update when needed.

**Recommendation 6:** Take advantage of opportunities to use CMAQ funds in conjunction with other transportation spending programs.

States may choose to transfer a limited portion of their CMAQ apportionment to some of the other Federal-aid highway programs, such as the Surface Transportation Program, National Highway System, Highway Bridge Program, Interstate Maintenance, Recreational Trails Program, and the Highway Safety Improvement Program. Montana may transfer CMAQ funds up to 50 percent of the amount of the state’s annual apportionment, minus the amount Montana would have received if total CMAQ funding were \$1.35 billion.

**MDT Response:** MDT already does this and will continue.

**Recommendation 7:** Consider providing outreach/training to MDT staff and stakeholders in using the emission reduction and cost effectiveness tools provided

developed by this research project. While the methods descriptions and associated spreadsheets that have been developed for this project are designed to be user friendly, there may be value in providing some training to new users of these materials, along with user support in order to ensure that the tools are being used correctly by staff. It is expected that MDT will use the results of the project evaluations prepared using these tools to provide information about expected emission reductions and project cost effectiveness to the Federal Highway Administration (FHWA) CMAQ database.

**MDT Response:** MDT's Rail, Transit, and Planning Division will be the main users of this tool; however, it can be shared with anyone that expresses an interest in using the tool.

**Recommendation 8:** Review MAP-21 guidance document when it becomes available to determine how FHWA wants to implement the CMAQ program under MAP-21 legislation. MAP-21 calls for a state that has PM<sub>2.5</sub> nonattainment and maintenance areas to use a portion

of its CMAQ funds for projects that reduce PM<sub>2.5</sub> in such areas. Diesel retrofits are highlighted in MAP-21 as eligible to effect such mitigation. Further information about this will be provided in the future. However, diesel retrofits are unlikely to produce much PM<sub>2.5</sub> air quality improvement in Montana's PM<sub>2.5</sub> nonattainment areas – as shown by CMB analyses.

As written, it appears that MAP-21 may force Montana to spend significant amounts of its future CMAQ funds for diesel retrofits in the Libby PM<sub>2.5</sub> nonattainment area. The most recent (2007-2008) CMB modeling that was performed for Libby indicates that diesels contribute about 5 percent of the total wintertime PM<sub>2.5</sub> mass in the nonattainment area. This CMB estimate is consistent with recent emission summaries for the area. Therefore, it is recommended that MDT work with the FHWA to invest as little funding as possible for diesel retrofits in Libby. Another option is to work in cooperation with the MTDEQ to get PM<sub>2.5</sub> concentrations in Libby below the NAAQS and to have this nonattainment area redesignated to attainment.

**MDT Response:** The panel noted that the MAP-21 guidance that has been released by FHWA to date had not provided any information on PM<sub>2.5</sub> nonattainment areas beyond what is in the legislation. When that guidance is released, MDT will revisit this issue.

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