SPR PROJECT DESCRIPTION

PROJECT NUMBER:
00466

PROJECT TITLE:
Improved Data Collection and Evaluation for MOBILE 6-Based Conformity Analysis of Transportation Projects

PRINCIPAL INVESTIGATOR:
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PROJECT OBJECTIVE:
The objective of this project is to improve vehicle emissions estimates by using local, rather than default, vehicle fleet composition data.

PROJECT ABSTRACT:
Alabama currently has five counties in non-attainment of the eight-hour ozone standard. In these counties, vehicular emissions must be inventoried, and new roadway projects may not significantly increase these inventories. The MOBILE model is used to estimate emission factors (grams/mile) for compounds that contribute to ozone formation. The MOBILE model provides national default information by dividing the fleet into emission classes, but the default classification is not representative of the vehicle fleet in Alabama. EPA Region IV and the FHWA Southern Regional Resource Center have strongly encouraged ALDOT and ADEM to acquire local data that accurately reflects Alabama vehicle emissions.

Acquiring local and site-specific fleet composition data is not straightforward. Institutional barriers and financial constraints complicate the process, and the most convenient data item (vehicle registration data) does not necessarily reflect the vehicle mix operating on any one street. Observation of vehicles on the road is the most accurate way to get classifications. This type of data is already gathered by ALDOT as part of the HPMS system. However, the MOBILE model uses a different classification scheme than ALDOT uses (EPA classifies by fuel type and weight, while FHWA/ALDOT classifies by vehicle length and number of axles).

A tool is needed to convert the FHWA classifications to MOBILE 6 classifications. This would allow use of actual on-road data to accurately classify vehicles; therefore more accurate emissions inventories may be generated. With such data, comparisons of emissions can be made between emission estimates from national and site-specific fleet composition data.

PROJECT TASK DESCRIPTIONS:
1) Assess current conversion techniques and literature for data to support new techniques
2) Develop a table of conversion factors (FHWA to MOBILE 6)
3) Develop a software tool to convert FWHA counts to MOBILE 5b and MOBILE 6 counts
4) Identify a group of ADEM ALDOT stakeholders as project advisors
5) Modify software to account for stakeholder needs
6) Test software with Alabama data, and a large set of data (from Alabama or elsewhere if a comprehensive set of Alabama data is not available).
7) Evaluate the tool by performing a number of inventory analyses
8) Conduct technology transfer (if desired by ALDOT)

MILESTONES AND DATES:
Startup: December 4, 2000
Start tasks 1-3: January 5, 2001
Start task 4: Feb 1, 2001
Start task 5: May 1, 2001
Start task 6: July 1, 2001
Start task 7: August 1, 2001
Start task 8: (if needed) – October 1, 2001
Conclude project: December 1, 2001

TOTAL BUDGET:
One-year project: ALDOT (SPR funds) $50,395; total budget: $101,488.

STUDENT INVOLVEMENT:
Two graduate students will work on the project. An undergraduate may be used to rewrite the final program into several different languages to facilitate use.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
UTCA project 00108, Air Quality Aspects of Traffic Management, looked at transportation impacts on air quality, and was the predecessor to this project. As EPA releases MOBILE 6, many evaluations of the model will be performed throughout the country.

TECHNOLOGY TRANSFER ACTIVITIES:
The project itself is technology transfer as the goal is to develop a software tool for the use of ALDOT.

POTENTIAL BENEFITS OF THE PROJECT:
Reduce time, manpower, and costs, of developing emission inventories by using an existing data gathering effort to provide more accurate local fleet composition data.

TRB KEYWORDS:
Air pollution, emissions, conformity, MOBILE 6, MOBILE 5b.