



Project Summary

Conceptual Designs for a New Highway Vehicle Emissions Estimation Methodology

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This report discusses conceptual designs from six contractors for a new highway vehicle emissions estimation methodology and summarizes the contractors' recommendations for improving the emissions and activity factors in the emissions estimation process. The complete reports are included as appendices. EPA asked these contractors to assist in developing ideas for a future improved methodology to estimate highway vehicle emissions. They were selected because of their experience in working with mobile source emissions inventories.

In general, the contractors suggest developing new modules within the emission estimation process to provide users with more detailed information on the causes of vehicle emissions. The essence of these suggestions is the need for more comprehensive integration of data between the transportation planning model and the emission factor model. The reports reinforced comments voiced by other experts for modal data and more responsive transportation models, although they did not identify totally new concepts not already being considered by EPA research programs.

This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the

same title (see Project Report ordering information at back).

Project Overview

In April 1991, six tasks were awarded to look for new concepts that could potentially provide improved emission inventory estimates from highway vehicles in 5-10 years. Contractors were asked to submit their ideas for a new highway vehicle emissions estimation methodology. The request to the contractors was to determine if, because of changes in vehicle technologies, transportation analysis tools, and scientific understandings, adoption of new concepts could provide significant advantages over existing methodologies. This project was a follow-on to the two highway vehicle workshops held in the summer of 1990 to solicit recommendations from emission inventory experts. The contractors (Alliance Technologies Corp., Desert Research Institute, E. H. Pechan & Associates, Inc., Radian Corp., Sierra Research, Inc., and Systems Applications International) were selected because of their experience in using and developing mobile source emission inventories for EPA and California. E. H. Pechan & Associates teamed with COMSIS Corporation to address transport modeling recommendations. Ground rules for the study were that: 1) emission inventory estimates are used by EPA and states in models to determine the effectiveness of various control strategies for achieving air quality standards; 2) the methods now available for



estimating emissions from highway vehicles will not be adequate for the new fuels, technologies, and transportation control methods available in 5 to 10 years; and 3) this project is intended to begin the process of looking for an optimum methodology for estimating emissions and ensuring that the estimates meet future U.S. needs. The results of this effort should help produce better methods for estimating emissions from highway vehicles. The time frame for implementing any new concepts is 5 - 10 years.

This report summarizes the conceptual designs received in 1991 from six contractors. Their complete reports are included as appendices. In general, the contractors' reports suggest developing new

modules within the emission estimation process to provide users with more detailed information on the causes of vehicle comprehensive integration of data between the transportation planning model and the emission factor model. To present the contractors' recommendations clearly and to avoid redundancy, this report combines their concepts and organizes them according to topic, rather than simply summarizing each contractor's conceptual design separately. First, concepts on improving emission factors are considered, followed by recommendations for improving activity factors, and ideas for organizing and coordinating the new emission and transportation models.

As EPA develops its research program to prepare emission inventory models for the future, it is attempting to ensure that no promising new concepts are overlooked. This effort was to solicit ideas from contractors experienced in estimating emissions from highway vehicles. For the most part, the reports did not identify any totally new concepts not already being considered by EPA research programs. Most of the ideas were linked to existing procedures, requiring much costly data collection concerning vehicle emissions and operations on highway networks. The reports reinforced comments voiced by other experts for modal data and more responsive transportation models.

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J. T. Ripberger is a Participant in the Earth Team Soil Conservation Service Volunteer Program assisting the U.S. EPA.

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The complete report, entitled "Conceptual Designs for a New Highway Vehicle Emissions Estimation Methodology," (Order No. PB94-120 128/AS; Cost: \$36.50, subject to change) will be available only from:

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