Section ES EXECUTIVE SUMMARY

The emissions inventory is the foundation upon which the Air Resources Board regulatory strategy rests. Prior to the consideration of any new vehicle standard or in use emissions control program, an inventory assessment is made of that source's contribution to the overall inventory, and what properties and process lead to excess emissions. The inventory is used as one gauge by which progress toward attainment is measured, and by which each estimate of the cost effectiveness of control measures is assessed.

Over the years, the increasing stringency of emissions standards was met with technological solutions of greater complexity. In response, the emissions estimation models have grown in size and complexity. What hasn't changed, however, is the reliance on the accuracy of the inventory in making those decisions which ultimately effect all of California and in some instances, the entire nation. Given how critical an accurate inventory is to the regulatory process, staff was charged to review and incorporate the latest emissions modeling information available, and to undertake research and test projects where this information was found to be lacking.

Methodologies that had previously been reviewed and approved were re-evaluated and in many instances, revised or eliminated. In this revision of the model, staff performed hundreds of analyses, some proving to have a large impact on the inventory, some having very little impact. Some analyses lead to a decrease in estimated emissions, many lead to increases. No goal or emissions "target" was established except to produce as functional, flexible and accurate an emissions calculation tool possible.

The staff of the Air Resources Board is seeking Board approval of the inventory of pollutants from on-road mobile sources as calculated by the latest version of inventory estimation model, EMFAC2000. EMFAC2000 estimates the total emissions for the entire state, subtotals for each of the seventeen air basins, thirteen districts and fifty-eight counties. The model produces emission rates and inventories of exhaust and evaporative hydrocarbons, carbon monoxide, oxides of nitrogen and particulate matter associated with exhaust, tire-wear and brake-wear. Hydrocarbon emissions estimates are produced for total hydrocarbon, total organic gases, and reactive organic gases. Particulate matter estimates are made for total suspended particulate, particulate ten microns in diameter or less, and particulate 2.5 microns in diameter or less. The model also estimates emissions of oxides of sulfur, lead, and carbon dioxide. The carbon dioxide inventory is used to estimate fuel consumption. Although the estimation of toxic air contaminants is currently performed outside of EMFAC2000, efforts are underway to include this capability in the next version of the model.

In addition to current year inventories, the model is capable of estimating back-cast and forecasted inventories for calendar years 1980 to 2040. Temperature and humidity profiles are used to produce month specific, annual average and episodic inventories. Staff is also seeking approval of these ancillary products of the estimation model.

Section 1.0 BACKGROUND

The on-road motor vehicle emission inventory can be summarized as the product of an emission rate (e.g., grams/mile) and an associated vehicle activity (e.g., miles/day). Emission rate data are collected on individual vehicles in a laboratory setting. These tests are performed primarily by the ARB and U.S. EPA[1]. Activity data are available from many sources, including the DMV, CALTRANS, and MPOs.

For planning purposes, it is necessary to predict emission rates, activity, and inventories for the future this necessitates the development of mathematical models. These models can then be used to develop emission inventories for conditions, places, and times that cannot be measured directly.

A list of the various acronyms used in this report is included in the Appendix.