

**State of California
AIR RESOURCES BOARD**

Research Screening Committee Meeting

**Cal/EPA Headquarters Building
1001 I Street
Conference Room 510
Sacramento, California 95814
(916) 445-0753**

**September 17, 2004
9:00 a.m.**

ADVANCE AGENDA

Request for Proposals

1. "Ventilation and Indoor Air Quality in New Homes," RFP No. 04-310."

The primary goal of this study is to obtain information on ventilation characteristics and indoor air quality (IAQ) in new single-family detached homes in California through a field study. This information will be useful for improving ventilation and IAQ in new California homes. The objectives of the proposed study are to:

1. Determine how residents use windows, doors, and mechanical ventilation devices, such as exhaust fans and central heating and air-conditioning systems.
2. Measure and characterize indoor air quality (IAQ), ventilation, and the potential sources of indoor pollutants.
3. Determine occupant perceptions of, and satisfaction with, the IAQ in their homes.
4. Examine the relationships among home ventilation characteristics, measured and perceived IAQ, and house and household characteristics.
5. Identify the incentives and barriers that influence people's use of windows, doors, and mechanical ventilation devices for adequate air exchange.
6. Identify the incentives and barriers related to people's purchases and practices that improve IAQ, such as the use of low-emitting building materials and improved air filters.

Interagency Proposals

2. “Climate Change – Characterization of Black Carbon and Organic Carbon Air Pollution Emissions and Evaluation of Measurement Methods,” Desert Research Institute, \$449,997, Proposal No. 2553-244.

The ARB is required under AB 1493 to adopt regulations that reduce greenhouse gas emissions from motor vehicles. However, particulate emissions are also believed to play a significant role in global warming. Highly absorbing aerosols, such as soot, are so highly efficient as light absorbers that they could result in a net warming of the atmosphere. Aside from the direct warming effect of atmospheric aerosols (which may exceed the accumulated impact of non-CO₂ greenhouse gases), they can reduce rainfall by "burning off" cloud cover, causing further climatic effects. For the purposes of climate change emissions inventories, black carbon is defined as the carbon component of particulate matter that absorbs light. However, this specific component of particulate matter is difficult to measure. Most measurements of light-absorbing carbon are not well related, and consensus on interpretation has not yet been reached for the current suite of available measurement techniques. This project will examine the fundamental reasons underlying differences of optical and thermo-optical methods, and will develop reliable emissions factors for use in development of a California emission inventory of climate active carbonaceous particulate matter. This project will result in an improved understanding of the effect of different combustion sources and their particle emissions, in particular black carbon and organic carbon, on air pollution and climate change.

3. “Air Pollution and Environmental Justice (EJ): Integrating Exposure, Demographics, and Land Use into Regulatory Decision-making and Preventive Screening,” University of California, Santa Cruz, \$717,836, Proposal No. 2552-244.

Attempts to deal with issues of “environmental justice” in air-quality regulation have been hampered by difficulties in (1) distinguishing possible effects of neglectful actions from the results of land use decisions and peoples’ choice of neighborhood; (2) characterizing air quality on a neighborhood scale, especially in regards to the combined effects of local sources; and (3) identifying neighborhoods that, for socioeconomic and land-use reasons, may be especially vulnerable to air-quality burdens.

The proposed project would:

- Use existing data and modeling results to create a neighborhood-scale map of the health-related air-quality effects of local emission sources.

Correlate variability in the map with socioeconomic variables, land-use variables, and transportation-system variables. The analysis would apply special statistical techniques to avoid errors due to spatial clustering of variables.

- Use the relationships found in the correlation study to develop a procedure (“screening tool”) for identifying neighborhoods that are particularly vulnerable to harm from new emission sources.
- Apply the screening tool to a hypothetical power-plant siting case.
- Conduct with community participation a micro-scale study of an Oakland neighborhood to locate and describe emission sources and compare the information to the existing emission databases and outputs of the screening tool.

The products of the project will help to detect excesses of air-quality burdens in some neighborhoods, explain the reasons for the excesses, characterize the populations that bear the excesses, provide information on the need to change siting and permitting rules to address total local exposure and sensitive populations, and provide an analytical tool that could be used if new rules were adopted.