

State of California  
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 04-31

October 29, 2004

Agenda Item No.: 04-9-9

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a research proposal, number 2552-244, entitled "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making", has been submitted by the University of California, Santa Cruz ;

WHEREAS, the staff of the Air Resources Board has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

Proposal Number 2552-244 entitled "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making" submitted by the University of California, Santa Cruz, for a total amount not to exceed \$692,980.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

Proposal Number 2552-244 entitled "Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making" submitted by the University of California, Santa Cruz, for a total amount not to exceed \$692,980.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein, and as described in Attachment A, in an amount not to exceed \$692,980.

I hereby certify that the above is a true and correct copy of Resolution 04-31, as adopted by the Air Resources Board.

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Lori Andreoni, Clerk of the Board

## ATTACHMENT A

### **“Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making”**

#### **Background**

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.

#### **Objectives**

1. To conduct statewide and regional analytical studies that examine socioeconomic and other key correlates of risk due to air pollution in California;
2. To develop measures of cumulative air pollution impact and socioeconomic vulnerability at the neighborhood level; to integrate those measures into a screening tool that can be used to guide regulatory decision-making, enforcement activities, and community outreach;
3. To validate analytical results by conducting a neighborhood-level validation study to identify and locate emissions sources that may not be systematically incorporated in ARB inventories and estimates of community-level pollution burdens;
4. To demonstrate the utility of the screening tool to decision-makers.

#### **Methods**

The investigators would create maps (“riskscapes”) of cancer risks and non-cancer risks on the census-tract basis in certain areas of the BAAQMD, Central Valley, and SoCAB. They would then examine for statistical correlations of those risks with socioeconomic, traffic, and land-use data.

The statistical analyses would include procedures to reduce the potential effects of spatial auto-correlation (geographic clustering) within the independent variables. This phenomenon tends to falsely inflate the apparent significance of statistical effects.

The investigators would overlay the riskscapes with demographic and socioeconomic variables as the basis for a map of “air pollution vulnerability.” Once relative weights for the overlain variables have been determined, there would be constructed a map of a vulnerability index that could identify neighborhoods that are particularly sensitive to new emission sources.

The investigators would apply the indexing tool just described to a hypothetical power plant siting proposal. Various levels of spatial resolution (size of population cell) would be explored to discern the dependence of the outcome on spatial resolution.

The investigators would train and supervise local workers who would canvas a Bay Area neighborhood for the locations of emissions sources on a fine scale and record qualitative data that relate to air quality (such as odor complaints and suspect activities).

The investigators would peer-review ARB staff's analysis of the benefits to environmental-justice communities of existing programs to improve air quality in air basins.

### **Expected Results**

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 permitting rules were adopted.

### **Significance to the Board**

The results of the project may enable the ARB make consider specific programmatic changes and guidance to Districts according to its Environmental Justice Policies and Actions (Policies).

**Contractor:** University of California, Santa Cruz

**Contract Period:** 36 months

**Principal Investigator (PI):** Manuel Pastor, Ph. D.

**Contract Amount:** \$692,980

**Cofunding:** This project is under consideration by the California Energy Commission.

### **Basis for Indirect Cost Rate:**

The State and the UC system have agreed to a ten percent indirect cost rate.

### **Past Experience with this Principal Investigator:**

The ARB has not contracted with Professor Pastor. However, he and his colleagues in the proposed project are well recognized and well published in statistical analysis applied to issues of environmental justice. Dr. Pastor recently completed "Environmental Justice: Opportunity Assessment and Analysis", for the California Integrated Waste Management Board. It was on time and under budget and they were pleased with his work.

**Prior Research Division Funding to UCSC:**

Year	2003	2002	2001
Funding	\$0	\$0	\$0

# BUDGET SUMMARY

University of California, Santa Cruz

Air Pollution and Environmental Justice: Integrating Indicators of Cumulative Impact and Socioeconomic Vulnerability into Regulatory Decision-making

## **DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$436,310
2.	Subcontractors	\$ 86,893
3.	Equipment	\$ 18,000
4.	Travel and Subsistence	\$ 40,835
5.	Electronic Data Processing	\$ 15,600
6.	Reproduction/Publication	\$ 6,600
7.	Mail and Phone	\$ 2,450
8.	Supplies	\$ 1,900
9.	Analyses	\$ 0
10.	Miscellaneous	<u>\$ 29,522</u>

Total Direct Costs \$638,110

## **INDIRECT COSTS**

1.	Overhead	\$ 54,870
2.	General and Administrative Expenses	\$ 0
3.	Other Indirect Costs	\$ 0
4.	Fee or Profit	<u>\$ 0</u>

Total Indirect Costs \$ 54,870

**TOTAL PROJECT COSTS** **\$692,980**

## Attachment 1

# SUBCONTRACTORS' BUDGET SUMMARY

### Subcontractor: Communities for a Better Environment

Staff from the Oakland office of Communities for a Better Environment will be trained in techniques of field data collection using this system and in a plan for collection of pertinent community information.

CBE staff will then enlist, train, and provide ongoing support to community members who will actually collect the data. Working in a geographically systematic manner, these community members will cover the entire microscale study area to map three types of observations: (a) location and attribute information on small emissions sources, many of which are not recorded in existing inventories; (b) verification of locational accuracy of emissions sources recorded in regulatory data, in particular verifying that the database location reflects the actual location of the emissions; (c) air quality information that is pertinent to community understanding and perception of local air quality problems, such as odor complaints, direct observations of problematic operations, etc. Working with the PIs and consultant, Carlos Porras, CBE staff will regularly download, compile and maintain the completed field data sets, organize meetings for community members to view, discuss and error-check the data via ArcView GIS on a computer at CBE offices, and regularly upload the compiled data to project PIs for analysis, as well as to local organizations such as InfoOakland to provide general public access to the information.

#### *Subcontractor to CBE - Carlos Porras*

Carlos Porras will consult on community organizing tools throughout the project. Porras will consult through Communities for a Better Environment, and in concert with the CTJC research team, to create a list of environmental justice groups in Northern California, conduct outreach to insure interest, and conduct community meetings to introduce the project and seek continued guidance and participation from community members on how to maximize the utility of this project to their concerns.

Porras will also consult on the micro-scale validation study utilizing community participation in data collection to evaluate the value of information not included in existing emissions databases to analytical evaluations of patterns disproportionate exposure, to engage community participation in studying the environmental justice implications of air quality issues, and to capture community information in a form useful to the research team's analysis and community education.

**DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$ 37,850	
2.	Subcontractors	\$ 29,500	
3.	Equipment	\$ 0	
4.	Travel and Subsistence	\$ 7,584	
5.	Electronic Data Processing	\$ 0	
6.	Reproduction/Publication	\$ 650	
7.	Mail and Phone	\$ 809	
8.	Supplies	\$ 100	
9.	Analyses	\$ 0	
10.	Miscellaneous	<u>\$ 2,500</u>	
	Total Direct Costs		\$ 78,993

**INDIRECT COSTS**

1.	Overhead	\$ 7,899	
2.	General and Administrative Expenses	\$ 0	
3.	Other Indirect Costs	\$ 0	
4.	Fee or Profit	<u>\$ 0</u>	
	Total Indirect Costs		<u>\$ 7,899</u>

**TOTAL PROJECT COSTS** \$ 86,893