

State of California
AIR RESOURCES BOARD

**Identifying and Characterizing Air Pollution Sources
Along the US-Mexico Border**

RESEARCH PROPOSAL

Resolution 16-19

October 20, 2016

Agenda Item No.: 16-9-1

WHEREAS, the Air Resources Board (ARB or 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 2803-285, titled, "Improving the CalEnviroScreen score at the US-Mexico border" has been submitted by San Diego State University for a total amount not to exceed \$150,000;

WHEREAS, the Research Division staff has reviewed Proposal Number 2803-285 and finds that in accordance with Health and Safety Code section 39701, the results of this study will be beneficial to ARB by allowing a more accurate assessment and ranking of environmental justice communities by CalEnviroScreen in California; and

WHEREAS, in accordance with Health and Safety Code section 39705, the Research Screening Committee has reviewed and recommends funding the Research Proposal.

NOW, THEREFORE BE IT RESOLVED, that ARB, pursuant to the authority granted by Health and Safety Code section 39700 through 39705, hereby accepts the recommendations of the Research Screening Committee and staff and approves the Research Proposal.

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 Proposal as further described in Attachment A, in an amount not to exceed \$150,000.

I hereby certify that the above is a true and correct copy of Resolution 16-16 as adopted by the Air Resources Board.

Janice Harlan, Clerk of the Board

Resolution 16-19

October 20, 2016

Identification of Attachments to Board Resolution 16-19

Attachment A: “Improving the CalEnviroScreen Score at the U.S.-Mexico Border”
Summary, Budget Summary, and Subcontractors Budget Summary

ATTACHMENT A

“Improving the CalEnviroScreen Score at the U.S.-Mexico Border”

Background

CalEnviroScreen and the Environmental Justice Screening Method are screening tools that score California census tracts based on measurements of pollution burden and population vulnerability. Their purpose is to identify areas of the state that have the highest pollution burden with populations that are most vulnerable to pollution exposure, so that resources can be directed toward reducing these impacts. Communities near the U.S.-Mexico border often have a high percentage of vulnerable people, including children, and are often majority low income and Latino. These communities may receive a pollutant burden from sources on both the U.S. side and the Mexico side of the border, some of which are not incorporated in the screening tools. In particular, communities near the border in both Imperial and San Diego counties face pollution burdens from sources in Baja California. Some changes have been made to the CalEnviroScreen methodology to incorporate some impacts from Mexico, such as traffic counts on the Mexican side near the border and estimates of diesel emissions from the commercial truck crossings. However, significant gaps remain, including locations of sources and amounts of air toxics emitted and accurate mobile source data.

Objective

The objective of this proposal is to characterize the locations of air pollution emitters on the Mexican side of the California-Baja California border that have the potential to affect California border communities. This data will be provided in a format that can be used to augment the information on environmental exposures from California-based metrics used in environmental justice screening models (CalEnviroScreen and Environmental Justice Screening Method). In addition, the investigators will develop a process for identifying and characterizing emissions sources in the California/Baja California border area of Mexico that can be expanded to provide greater accuracy and completeness in future work to characterize emissions from this area.

Methods

The project will create a database of air pollution sources in Mexico near the US-Mexico border. The investigators will gather existing data on sources near the border in Baja California; verify their locations; develop a process for incorporating and evaluating data to make it as comparable to current screening methods as possible; and to convert data to a useable geocoded form for input into CalEnviroScreen and the Environmental Justice Screening Method (EJSM). The investigators will perform modeling to assist in prioritizing the major emission sources and for guiding the decision of the radius of influence to the border communities in California.

Expected Results

The results of this project will be the location of air pollution emitters and concentrations on the Mexican side of the California-Baja California border that have the potential to affect California border communities. This data will be provided in a format that can be

used to augment the information on environmental exposures from California-based metrics used in CalEnviroScreen and EJSM.

Significance to the Board

The results of this study will be beneficial to ARB by allowing a more accurate assessment and ranking of environmental justice communities in California. It will also build on our partnerships in the U.S.-Mexico border region and train students on both sides of the border in air quality and environmental justice issues.

Contractor:

San Diego State University

Contract Period:

24 Months

Principal Investigator (PI):

Penelope JE Quintana, Ph.D.

Contract Amount:

\$150,000

Basis for Indirect Cost Rate:

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

Past Experience with this Principal Investigator:

The investigators are a binational team with expertise in the multifaceted aspects of this project. They have a long history of collaborative research and environmental justice activities at the United States (U.S.)-Mexico border. Team members include Penelope Quintana and Zohir Chowdhury from San Diego State University (SDSU) Graduate School of Public Health, who have been measuring air pollution at the U.S.-Mexico border in the community of San Ysidro, California, and are currently participating in the Office of Environmental Health Hazard Assessment (OEHHA)-funded project to deploy community air sensing in the border community of San Ysidro, California to input values to CalEnviroScreen; the SDSU Department of Geography experts Atsushi Nara, Trent Biggs and Fernando De Salas, who provide vital mapping, GIS, and modeling expertise; Luisa Molina, Miguel Zavala and Victor Almanza of the Molina Center for Strategic Studies in Energy and the Environment, who are experts in measuring and modeling air pollution in Mexico, and who led the CAL-MEX 2010 air pollution campaign in Tijuana, Baja California; Margarito Quintero Nuñez, Universidad Autónoma de Baja California (UABC), Campus Mexicali, who is the head of the air quality laboratory and a long time binational collaborator on border environmental issues, and who has published many monographs on environmental quality in the border region; Emmanuel Castillo Quiñones, UABC, Campus Tijuana, who has overseen student collection of air pollution data in Tijuana in past studies, and participated in Cal-Mex 2010; Lynn Russell of Scripps Institute of Oceanography, an expert on regional atmospheric aerosols; and consultants James Sadd, Occidental College, Manuel Pastor, University of Southern California and Rachel Morello-Frosch University of California at Berkeley, who developed the first and then expanded versions of the EJSM screening tool and who

have a deep understanding of data needs and gaps in relation to utility for the EJSM and CalEnviroScreen models.

Prior Research Division Funding to San Diego State University:

Year	2015	2014	2013
Funding	\$0	\$0	\$0

BUDGET SUMMARY

Contractor: San Diego State University

"Improving the CalEnviroScreen Score at the US-Mexico Border"

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	94,330
2.	Subcontractors	\$	36,500
3.	Equipment	\$	0
4.	Travel and Subsistence	\$	6,300
5.	Electronic Data Processing	\$	0
6.	Reproduction/Publication	\$	0
7.	Mail and Phone	\$	0
8.	Supplies	\$	279
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>0</u>
	Total Direct Costs	\$	137,409

INDIRECT COSTS

1.	Overhead	\$	12,591
2.	General and Administrative Expenses	\$	0
3.	Other Indirect Costs	\$	0
4.	Fee or Profit	\$	<u>0</u>
	Total Indirect Costs	\$	<u>12,591</u>

TOTAL PROJECT COSTS**\$ 150,000**

SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: The Molina Center for Energy and the Environment

Description of subcontractor's responsibility: The Molina Center for Energy and the Environment is an independent and non-profit organization established in 2005 to bring together international experts in science and engineering, economics, social and political sciences to engage in collaborative research related to energy and environment. The primary role of the Molina Center in this project will be to model the major air pollution sources in Mexico.

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	35,862
2.	Subcontractors	\$	0
3.	Equipment	\$	0
4.	Travel and Subsistence	\$	0
5.	Electronic Data Processing	\$	0
6.	Reproduction/Publication	\$	0
7.	Mail and Phone	\$	0
8.	Supplies	\$	638
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>0</u>
Total Direct Costs		\$	36,500

INDIRECT COSTS

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

TOTAL PROJECT COSTS

\$ 36,500