

**PROPOSED**

State of California  
AIR RESOURCES BOARD

**RESEARCH PROPOSAL**

Resolution 10-38

November 18, 2010

Agenda Item No.: 10-10-4

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 2703-268, entitled "Characterization of the Atmospheric Chemistry in the Southern San Joaquin Valley," has been submitted by the University of California, Berkeley to augment contract number 08-316;

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

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

Proposal Number 2703-268 entitled "Characterization of the Atmospheric Chemistry in the Southern San Joaquin," submitted by the University of California, Berkeley, for a total amount not to exceed \$45,000.

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 2703-268 entitled "Characterization of the Atmospheric Chemistry in the Southern San Joaquin Valley," submitted by the University of California, Berkeley, for a total amount not to exceed \$45,000.

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 \$45,000.

## ATTACHMENT A

### Characterization of the Atmospheric Chemistry in the Southern San Joaquin Valley (Augmentation to ARB Contract No. 08-316)

#### Background

A budget augmentation is requested to cover unanticipated expenses associated with changing the monitoring location of this project, which served as the super monitoring site in the southern San Joaquin Valley for the CalNex 2010 field study. The original budget assumed that this “supersite” would be at the long-term ARB monitoring site in Arvin. However, shortly before the contract was executed, staff of the Monitoring & Laboratory Division informed the project planners that ARB had lost the lease to the Arvin site when the property owner would not renew the agreement. Consequently, the contractor (UC Berkeley) needed to investigate potential alternate sites and to establish a new monitoring site suitable for serving as the Bakersfield supersite for the CalNex field study, which was set to begin the field measurements phase a few months later in May of 2010. Because it was necessary to find and set-up a totally new monitoring site, this contract incurred significant (~10% of the budget) additional costs associated with ground preparation, installation and distribution of electrical power, etc. To cover these unanticipated logistical expenses, an augmentation of the budget for Contract No. 08-316 is needed.

#### Objective

This requested augmentation of the budget for Contract No. 08-316 will defray the costs that UC Berkeley unexpectedly incurred in establishing a new monitoring site. The requested augmentation will ensure that the objectives and deliverables of the project are fully met. The technical objective of the project remains to collect and analyze the CalNex gas and aerosol measurements and to improve the current understanding of atmospheric chemistry and the performance of models simulating O<sub>3</sub> and PM<sub>2.5</sub> production in the southern San Joaquin Valley.

#### Methods

The principal investigators, their sub-contractors, and other CalNex 2010 participants collected specialized air quality measurements in the San Joaquin Valley to address air quality and climate change issues. The investigators will share results and analyze the data to better characterize the atmospheric chemistry at work in determining ambient air quality in the San Joaquin Valley.

#### Expected Results

This project will improve our understanding of the atmospheric chemistry in the southern San Joaquin Valley and how it controls the formation of secondarily formed pollutants (e.g., O<sub>3</sub> and PM<sub>2.5</sub>).

**Significance to the Board**

The measurements and data analyses from this project and the larger parent CalNex 2010 study will support the development of appropriate and cost-effective control strategies for reducing secondarily formed pollutants like O<sub>3</sub> and PM<sub>2.5</sub> in the San Joaquin Valley and the South Coast Air Basin. The CalNex 2010 study will provide critical data for characterizing the potential impacts of climate change on ambient air quality in California.

**Contractor:**

University of California, Berkeley

**Contract Period:**

36 months

**Principal Investigators (PIs):**

Professors Ronald Cohen and Allen Goldstein

**Original Contract Amount:**

\$1,050,000

**Contract Augmentation:**

\$45,000

**Basis for Indirect Cost Rate:**

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

**Past Experience with these Principal Investigators:**

Professors Cohen and Goldstein are well-respected researchers in the atmospheric measurements and chemistry community. They have worked with other high-level, national research groups (e.g., the National Aeronautics and Space Administration) in the past. At least four staff members of ARB Research Division have worked with these PIs on at least seven projects (e.g., biogenics, organic aerosols, Lake Tahoe Atmospheric Deposition Study, night-time chemistry, satellite measurements) in the past. Staff has been very satisfied with their research.

**Prior Research Division Funding to (UCB):**

Year	2009	2008	2007
Funding	\$1,509,539	\$1,157,110	\$1,420,484

# AUGMENTATION BUDGET SUMMARY

**Contractor:** University of California, Berkeley

Characterization of Atmospheric Chemistry in the Southern San Joaquin Valley

## **DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$	0
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	\$	40,909
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>0</u>
	Total Direct Costs		\$40,909

## **INDIRECT COSTS**

1.	Overhead	\$	4,091
2.	General and Administrative Expenses	\$	0
3.	Other Indirect Costs	\$	0
4.	Fee or Profit	\$	<u>0</u>
	Total Indirect Costs		\$4,091

**TOTAL PROJECT COSTS** \$ 45,000

**PROPOSED**

State of California  
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 10-41

November 18, 2010

Agenda Item No.: 10-10-4

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 2702-268, entitled "Nocturnal Chemistry in the Urban Boundary Layer of Los Angeles," has been submitted by the University of California, Los Angeles to augment contract number 08-318;

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

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

Proposal Number 2702-268 entitled "Nocturnal Chemistry in the Urban Boundary Layer of Los Angeles," submitted by the University of California, Los Angeles for a total amount not to exceed \$120,000.

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 2702-268 entitled "Nocturnal Chemistry in the Urban Boundary Layer of Los Angeles," submitted by the University of California, Los Angeles, for a total amount not to exceed \$120,000.

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 \$120,000.

## ATTACHMENT A

### **“Nocturnal Chemistry in the Urban Boundary Layer of Los Angeles” (Augmentation to ARB Contract No. 08-318)**

#### **Background**

A contract augmentation is requested to cover unanticipated expenses associated with changing the field site of the project, which also served as a supersite for the CalNex 2010 field study, from the originally intended Los Angeles Department of Water and Power (LADWP) building at North Main Street to a site on the campus of the California Institute of Technology.

The original contract was awarded in January 2009 and work commenced immediately on planning and organizing other groups as part of CalNex 2010. In January of 2010, however, the LADWP decided to install solar panels at the North Main street building during the time planned for field work in CalNex 2010. Caltech offered assistance with a site large enough for the entire field experiment, which involved over 30 research groups with 30 gas-phase and 30 aerosol instruments. Because of this change in location, however, the project incurred additional costs associated with installation of power and rental of trailers and towers, and with the need for a more sensitive detector component for the increased light path of the Principal Investigators Differential Optical Absorption Spectroscopy (DOAS) instrument. To cover these logistical expenses, the original contract was amended to shift funds out of salary to appropriate categories. The final deliverables were correspondingly affected: the planned analysis of data can not be carried out with current funding (the PI and graduate student researcher provided in-kind labor to run the instruments and collect data during the field campaign). The requested augmentation would restore the original funding for salary.

#### **Objectives**

The augmentation will allow the PI to carry out the originally planned analyses of the nocturnal chemistry in the South Coast Air Basin based on observations made during the CalNex field experiment. These studies along with the vertical concentration profiles provided by this project will help ARB both validate and improve the chemistry in urban airshed models.

#### **Methods**

This and another project (Contract No. 08-318 - Nocturnal Chemistry in an Urban Area; Contract No. 08-319 - Characterization of Aerosols and SOA Formation, respectively) were confirmed early in 2009 by the Research Screening Committee with the intent to act as the nucleus of a supersite in the South Coast Air Basin for the CalNex 2010 field study – a joint collaboration between the National Oceanic and Atmospheric Administration and ARB to address inter-related issues at the nexus between climate change and air quality in California. The primary tasks for this project, being conducted by UCLA's Professor Jochen Stutz, are to organize and help set up the field site, conduct DOAS measurements of important nocturnal trace gases (vertical profiles of O<sub>3</sub>,

NO<sub>2</sub>, NO<sub>3</sub>, HONO, HCHO, glyoxal, and SO<sub>2</sub>), and interpret the comprehensive data set using UCLA's one-dimensional chemical transport model.

**Expected Results**

The expected results from this work are a greatly improved understanding of nocturnal chemistry and meteorology and of its impact on daytime ozone and particle formation in urban atmospheres.

**Significance to the Board**

With vertical species profiles and calculations from UCLA's one-dimensional-chemistry and transport model, the PI will assess the impact of nocturnal processes on daytime air quality in Los Angeles. As a follow-on, both the measurements and analyses/interpretations will allow the ARB to validate urban airshed models of the South Coast Air Basin with a focus on the, thus far poorly studied, nocturnal behavior of these models. This information will ultimately lead to more accurate air quality models for polluted urban areas, which are needed in the development of future mitigation strategies to meet air quality standards.

**Contractor:**

University of California, Los Angeles

**Contract Period:**

12 months

**Principal Investigator (PI):**

Jochen Stutz

**Original Contract Amount:**

\$289,090

**Contract Augmentation:**

\$120,000

**Basis for Indirect Cost Rate:**

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

**Past Experience with this Principal Investigator:**

Professor Jochen Stutz has recently completed outstanding work for ARB project, Contract# 05-307, "Impact of Reactive Halogens on the Air Quality in California Coastal Areas." For this project, Professor Stutz carried out field site setup, ambient measurements, data analysis and final report writing on budget and within the originally planned time frame. Staff has great confidence that Professor Stutz's proposed study will be successful and yield new and important information about nocturnal chemistry in urban areas.

**Prior Research Division Funding to (UCLA):**

Year	2009	2008	2007
Funding	\$506,565	\$386,076	\$616,171

## AUGMENTED BUDGET SUMMARY

Contractor: University of California, Los Angeles

Nocturnal Chemistry in the Urban Boundary Layer of Los Angeles

### **DIRECT COSTS AND BENEFITS**

11.	Labor and Employee Fringe Benefits	\$ 108,507
12.	Subcontractors	\$ 0
13.	Equipment	\$ 0
14.	Travel and Subsistence	\$ 0
15.	Electronic Data Processing	\$ 0
16.	Reproduction/Publication	\$ 584
17.	Mail and Phone	\$ 0
18.	Supplies	\$ 0
19.	Analyses	\$ 0
20.	Miscellaneous	<u>\$ 0</u>
	Total Direct Costs	\$ 109,091

### **INDIRECT COSTS**

5.	Overhead	\$ 10,909
6.	General and Administrative Expenses	\$ 0
7.	Other Indirect Costs	\$ 0
8.	Fee or Profit	<u>\$ 0</u>
	Total Indirect Costs	<u>\$ 10,909</u>

### **TOTAL PROJECT COSTS**

**\$ 120,000**