State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 12-47

December 6, 2012

Agenda Item No.: 12-9-4

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 2754-275, entitled "Identifying Urban Designs and Traffic Management Strategies that Reduce Air Pollution Exposure," has been submitted by the University of California, Los Angeles;

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

> Proposal Number 2754-275 entitled "Identifying Urban Designs and Traffic Management Strategies that Reduce Air Pollution Exposure," submitted by the University of California, Los Angeles, for a total amount not to exceed $388,001.

WHEREAS, the Research Division staff has reviewed Proposal Number 2754-275 and finds that in accordance with Health and Safety Code section 39701, as ARB implements Senate Bill (SB) 375, the agency needs to understand the air pollution implications of different transportation planning options and ways in which risks could be minimized. Transportation policies that encourage greater residential density around transit corridors may lead to the unintended effect of greater pedestrian exposure to roadway air pollutants. While California has made tremendous progress in reducing vehicular emissions, evidence of the risks of near-roadway pollutant exposure is growing, highlighting the need to ensure that implementation of SB 375 is consistent with ARB's criteria and toxic pollution exposure reduction policy goals. This proposal not only considers potential impacts of SB 375 implementation options on near-road exposure but also plans to develop tools to disseminate the results in an easy to understand manner. Research Division staff recommends this proposal for approval; and

WHEREAS, the Air Resources Board will fund this proposal for a total amount $388,001; and the University of California Transportation Center will co-fund this proposal for $130,598.

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

recommendations of the Research Screening Committee and Research Division staff and approves the following:

> Proposal Number 2754-275 entitled "Identifying Urban Designs and Traffic Management Strategies that Reduce Air Pollution Exposure," submitted by the University of California, Los Angeles, for a total amount not to exceed $388,001.

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 $388,001.

I hereby certify that the above is a true and correct copy of Resolution 12-47, as adopted by the Air Resources Board.

Tracy Jensen

Tracy Jensen, Clerk of the Board

ATTACHMENT A

"Identifying Urban Designs and Traffic Management Strategies that Reduce Air Pollution Exposure"

Background

A large number of studies have used epidemiology to assess the association between exposure to pollution from vehicle fleets and a wide range of adverse health outcomes. Vehicle emissions are rapidly diluted away from roadways; however, existing networks of air quality monitors cannot fully characterize pollutant concentrations near roadways. Several recent studies have shown that because many pollutants are so highly elevated around roadways, compared to areas at even moderate distances from roadways, a large fraction of an individual's exposure to many pollutants can be attributed to relatively short time periods spent on and near roadways.

Objective

The objectives of this proposal are three-fold: to characterize how spatial distribution of air pollutants in transit stop environments varies with local emission sources and the built environment; to develop a general model that can predict the dispersion of air pollutants in different transit environments; and to evaluate how this model can be used as a decision-support tool for planners and policy makers.

Methods

The focus of the proposed study are features of transit stop environments that may play a major role in determining pedestrian air pollution exposure and could also be modified through local planning and transportation decisions. These meta-features include: 1) traffic volume, composition, and traffic calming strategies; 2) building heights around the arterial; 3) building set-backs from the arterial. ARB's mobile platform will be used to obtain a spatially rich multi-point and multi-pollutant data set to assess quantitatively the opportunity for exposure reductions associated with adjustments to traffic control strategies. Using these and other data, an analytical model will be developed that simulates the impacts of a much broader set of transit environment configurations and meteorological conditions. The model will be based partly on the Operational Street Pollution Model (OSPM), a model widely used in Europe to characterize air pollution dispersion in street canyons.

Expected Results

The result of analysis of real-time data and modeling results will be a set of tools and guidelines that transportation and urban planning decision makers can use to guide everyday decisions that impact the air pollution exposure of pedestrians in transit oriented developments.

Significance to the Board

As ARB implements Senate Bill (SB) 375, the agency needs to understand the air pollution implications of different transportation planning options and ways in which risks could be minimized. Transportation policies that encourage greater residential density

around transit corridors may lead to the unintended effect of greater pedestrian exposure to roadway air pollutants. While California has made tremendous progress in reducing vehicular emissions, evidence of the risks of near-roadway pollutant exposure is growing, highlighting the need to ensure that implementation of SB 375 is consistent with ARB's criteria and toxic pollution exposure reduction policy goals. This proposal not only considers potential impacts of SB 375 implementation options on near-road exposure but also plans to develop tools to disseminate the results in an easy to understand manner.

Contractor:
University of California, Los Angeles

Contract Period:
36 months

Principal Investigator (PI):
Suzanne E. Paulson, Ph.D.

Contract Amount:
$388,001

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:
Professor Suzanne Paulson has more than a decade of research experience in atmospheric science and has recently published a manuscript on characterizing meteorological conditions in the South Coast using CART (classification and regression tree) analysis. Several other manuscripts related to this project are in progress. She has also lead previous ARB-funded studies with success.

Prior Research Division Funding to the University of California, Los Angeles:

Year	2012	2011	2010
Funding	$ 400,000	$ 630,264	$ 290,000

BUDGET SUMMARY

Contractor: University of California, Los Angeles

"Identifying Urban Designs and Traffic Management Strategies that Reduce Air Pollution Exposure"

DIRECT COSTS AND BENEFITS			
1.	Labor and Employee Fringe Benefits	$ 201,097	
2.	Subcontractors	$ 127,460	
3.	Equipment	$ 16,000	
4.	Travel and Subsistence	$ 5,275	
5.	Electronic Data Processing	$ 0	
6.	Reproduction/Publication	$ 245	
7.	Mail and Phone	$ 245	
8.	Supplies	$ 3,390	
9.	Analyses	$ 0	
10.	Miscellaneous	$ 12,058	
	Total Direct Costs		$ 365,770
INDIRECT COSTS			
1.	Overhead	$ 22,231	
2.	General and Administrative Expenses	$ 0	
3.	Other Indirect Costs	$ 0	
4.	Fee or Profit	$ 0	
	Total Indirect Costs		$ 22,231
TOTAL PROJECT COSTS			**$ 388,001**

ATTACHMENT B

SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: University of California, Riverside

Description of subcontractor's responsibility: UCR will formulate, evaluate, and apply a dispersion model to predict the effects of building morphology in transit oriented developments (TODs) on pollutant concentrations at scales of meters from urban sources.

DIRECT COSTS AND BENEFITS			
1.	Labor and Employee Fringe Benefits	$ 119,829	
2.	Subcontractors	$ 0	
3.	Equipment	$ 0	
4.	Travel and Subsistence	$ 680	
5.	Electronic Data Processing	$ 0	
6.	Reproduction/Publication	$ 190	
7.	Mail and Phone	$ 0	
8.	Supplies	$ 0	
9.	Analyses	$ 0	
10.	Miscellaneous	$ 0	
	Total Direct Costs		$ 120,699
INDIRECT COSTS			
1.	Overhead	$ 6,761	
2.	General and Administrative Expenses	$ 0	
3.	Other Indirect Costs	$ 0	
4.	Fee or Profit	$ 0	
	Total Indirect Costs		$ 6,761
TOTAL PROJECT COSTS			**$ 127,460**