State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 06-35

November 16, 2006

Agenda Item No.: 06-10-2

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 2614-253, entitled "Lifecycle Analysis of the Climate Change Reduction Strategies of the California Air Resources Board," has been submitted by the University of California, Davis;

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 2614-253, entitled "Lifecycle Analysis of the Climate Change Reduction Strategies of the California Air Resources Board," submitted by the University of California, Davis, for a total amount not to exceed $199,561.

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 2614-253, entitled "Lifecycle Analysis of the Climate Change Reduction Strategies of the California Air Resources Board," submitted by the University of California, Davis, for a total amount not to exceed $199,561.

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 $199,561.

I hereby certify that the above is a true and correct copy of Resolution 06-35, as adopted by the Air Resources Board.

Lori Andreoni

Lori Andreoni, Clerk of the Board

ATTACHMENT A

"Lifecycle Analysis of the Climate Change Reduction Strategies of the California Air Resources Board"

Background

Lifecycle emissions are calculated based on the entire life of a particular product, from production to disposal. The additional physical and economic processes, such as raw material extraction, electricity generation, and distribution/transportation, can increase the emissions associated with a product significantly beyond those from end use alone. The Climate Action Team has proposed many strategies to reduce greenhouse gases in response to the Governor's Executive Order #S-3-05 (2005). However, the full lifecycle emissions of these strategies have not been analyzed to ensure they will yield a net reduction in greenhouse gases. Additional mitigation strategies in response to the California Global Warming Solutions Act of 2006 (AB 32) will require similar analysis.

Objective

The objective of this project is to enhance the UCD Lifecycle Emissions Model (LEM) in order to produce a state-of-the-art, comprehensive model for evaluating the aggregate lifecycle greenhouse gas emission impacts of climate change mitigation strategies in California.

Methods

The Institute of Transportation Studies at University of California, Davis will enhance their Lifecycle Emissions Model (LEM) to quantify the lifecycle emissions of measures that ARB staff may propose to meet California greenhouse gas reduction targets. The main enhancements to the model include: 1) adding additional data and processes for materials and end-uses that might be subject to mitigation strategies; 2) collecting, analyzing, and inputting California-specific data; 3) developing algorithms to estimate aggregate statewide emissions; 4) improving the model interface to be more user-friendly; and 5) writing documentation for the expanded model.

Expected Results

This contract will produce a user-friendly model that will allow staff to calculate the aggregate lifecycle greenhouse gas and criteria pollutant emissions of climate change mitigation strategies. Complete model documentation as well as in-person tutorials from the investigators will allow ARB staff to use the model to perform full lifecycle analyses on a wide range of strategies. In addition, the contract will produce sample lifecycle analyses of the emissions for the mitigation strategies that have already been proposed by the Climate Action Team.

Significance to the Board

The expanded LEM will enable staff to quantify the lifecycle emissions associated with proposed climate change mitigation strategies and facilitate decision-making as to whether or not they should be implemented.

Contractor:
University of California, Davis

Contract Period:
27 months

Principal Investigator (PI):
Dr. Mark Delucchi

Contract Amount:
$199,561

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:
Dr. Mark Delucchi is a leading expert in lifecycle analysis. His LEM model has been used by a range of stakeholders including automotive companies, non-governmental agencies, and other government entities. Although ARB has not sponsored research with Dr. Delucchi in the past, his vast knowledge of the LEM and other lifecycle analyses will serve ARB well should the results of this model be challenged in the future.

Prior Research Division Funding to UCD:

Year	2005	2004	2003
Funding	$1,429,108	$362,921	$220,896

BUDGET SUMMARY

University of California, Davis

Lifecycle Analysis of the Climate Change Reduction Strategies of the California Air Resources Board

DIRECT COSTS AND BENEFITS				
1.	Labor and Employee Fringe Benefits	$	166,250	
2.	Subcontractors	$	0	
3.	Equipment	$	0	
4.	Travel and Subsistence	$	2,101	
5.	Electronic Data Processing	$	0	
6.	Reproduction/Publication	$	200	
7.	Mail and Phone	$	200	
8.	Supplies	$	200	
9.	Analyses	$	0	
10.	Miscellaneous	$	13,715	
	Total Direct Costs			$182,666
INDIRECT COSTS				
1.	Overhead	$	16,895	
2.	General and Administrative Expenses	$	0	
3.	Other Indirect Costs	$	0	
4.	Fee or Profit	$	0	
	Total Indirect Costs			$16,895
TOTAL PROJECT COSTS				**$199,561**