

State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 05-69

December 8, 2005

Agenda Item No.: 05-12-2

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 2599-250, entitled "Economic Value of Reducing Cardiovascular Disease Morbidity Associated with Air Pollution", has been submitted by San Diego State University Research Foundation;

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 2599-250 entitled "Economic Value of Reducing Cardiovascular Disease Morbidity Associated with Air Pollution", submitted by San Diego State University Research Foundation, for a total amount not to exceed \$349,632.

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 2599-250 entitled "Economic Value of Reducing Cardiovascular Disease Morbidity Associated with Air Pollution", submitted by San Diego State University Research Foundation, for a total amount not to exceed \$349,632.

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 \$349,632.

I hereby certify that the above is a true
and correct copy of Resolution 05-69, as
adopted by the Air Resources Board.

Lori Andreoni, Clerk of the Board

ATTACHMENT A

“Economic Value of Reducing Cardiovascular Disease Morbidity Associated with Air Pollution”

Background

Biological and epidemiological research continues to uncover new associations between airborne pollutants and human health. Recent health effects studies indicate that pollution exposure is a risk factor for developing cardiovascular disease, not just for aggravating existing disease. This is an extremely serious health risk and one that will be important to include in benefits assessment for pollution control.

Previous health benefits analyses have estimated COI (cost of illness) values for cardiovascular hospitalizations and heart attacks, based on medical costs and work loss during the episode. However, these episodes represent only a small component of an entire lifetime profile of cardiovascular disease. The economic significance, in terms of the monetary value of the total effect on the well-being of the affected individuals, of reducing the chances that cardiovascular disease will develop is probably significantly understated by the monetary estimates currently used in health benefits analysis.

Objective

The objective of this study is to estimate the economic value of reducing new cases of cardiovascular disease using willingness to pay (WTP) estimation methods. Viscusi et al. (1991) developed a valuation instrument for chronic bronchitis, and a variation on this approach was implemented by Krupnick and Cropper (1992). The proposed study will use this approach as a starting point, adapting it to cardiovascular disease and updating the instrument to reflect current approaches used in the non-market valuation literature.

Methods

WTP is estimated using a survey method. The contractor will design a survey instrument to collect data on WTP values to reduce a respondent's risk of developing cardiovascular disease. The target population will be adults who do not currently have cardiovascular disease because this is the population that benefits from reduced pollution exposures that result in lowered risks of developing cardiovascular disease.

The survey instrument will include a description of the lifetime profile for cardiovascular disease. The most cost-effective way to implement this survey will be through an established web-based survey panel. This will allow efficient identification of a survey sample and delivery of the instrument via computer. It also permits customization of the instrument to the survey respondent and flexibility to program various versions of the instrument.

Expected Results

The results of this study will include estimates of both the direct medical cost (COI) for an individual lifetime of cardiovascular disease morbidity and individual WTP to reduce the risk of a lifetime of cardiovascular disease morbidity. WTP for an individual reflects how much of other goods and services the individual is willing to give up to obtain a

reduction or prevent an increase in adverse health effects. This yields a dollar measure of the change in well-being that the individual expects to experience.

Significance to the Board

This study will extend both the empirical and the methodological basis for economic benefit valuation of air quality control measures and increase ARB’s ability to assess the benefits of reducing air pollution exposure. A WTP estimate for CVD morbidity, along with established mortality estimates, can be combined with exposure data and relevant dose-response functions to more accurately determine the health benefits of California regulations that reduce exposure to air pollutants associated with cardiovascular disease.

Contractor:

San Diego State University Research Foundation

Contract Period:

30 months

Principal Investigator (PI):

Mark Thayer, Ph.D.

Contract Amount:

\$349,632

Basis for Indirect Cost Rate:

San Diego State University Research Foundation’s federally negotiated indirect cost rate for research projects is 52 percent. However, the University agreed to reduce its rate to 26 percent in support of this project.

Past Experience with this Principal Investigator:

Dr. Mark Thayer was the PI for two ARB contracts: “Economic Value of Hospitalizations Associated with Particulate and Ozone Air Pollution,” and “Development of Methods to Estimate the Benefits of Visibility Improvement.” Dr. Thayer completed both of his previous ARB-funded studies in a competent, timely and professional manner.

Prior Research Division Funding to SDSU:

Year	2005	2004	2003
Funding	\$0	\$0	\$0

BUDGET SUMMARY

San Diego State University Research Foundation

“Economic Value of Reducing Cardiovascular Disease Morbidity Associated with Air Pollution”

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	83,881
2.	Subcontractors	\$	219,120 ¹
3.	Equipment	\$	0
4.	Travel and Subsistence	\$	3,000
5.	Electronic Data Processing	\$	0
6.	Reproduction/Publication	\$	0
7.	Mail and Phone	\$	700
8.	Supplies	\$	3,000
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>0</u>
	Total Direct Costs		\$309,701

INDIRECT COSTS

1.	Overhead	\$	39,931
2.	General and Administrative Expenses	\$	0
3.	Other Indirect Costs	\$	0
4.	Fee or Profit	\$	<u>0</u>
	Total Indirect Costs		<u>\$ 39,931</u>

TOTAL PROJECT COSTS **\$349,632**

¹ Includes \$101,120 for Stratus Consulting, Inc., \$105,000 for Knowledge Networks Inc., \$10,000 for James Murdoch, University of Texas, Dallas (Econometrician), and \$3,000 for three survey reviewers.

Attachment 1

SUBCONTRACTOR'S BUDGET SUMMARY

Subcontractor: Stratus Consulting

Stratus Consulting will be primarily responsible for: Task 1, (literature review), Task 3 (Survey Instrument Development), and Task 7 (report writing), as well as portions of study plan design, survey pre-test, implementation, and data analysis.

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	96,820
2.	Subcontractors	\$	0
3.	Equipment	\$	0
4.	Travel and Subsistence	\$	1,600
5.	Electronic Data Processing	\$	0
6.	Reproduction/Publication	\$	0
7.	Mail and Phone	\$	400
8.	Supplies	\$	400
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>1,900</u>
	Total Direct Costs		\$101,120

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 **\$ 101,120**

Attachment 2

SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: Knowledge Networks Inc.

Knowledge Networks Inc. will be responsible for survey pretest and survey implementation, and will provide access to a pre-qualified, representative panel of survey respondents.

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	105,000
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	\$	0
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>0</u>
	Total Direct Costs		\$105,000

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 **\$ 105,000**