

State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 07-34

September 27, 2007

Agenda Item No.: 07-9-2

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 2638-257, entitled "Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to Greenhouse Gas Emission Reduction Targets," has been submitted by the University of California, Berkeley/Lawrence Berkeley National Laboratory;

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

WHEREAS, the South Coast Air Quality Management District has proposed to cosponsor this proposal for a total amount of \$50,000; and

WHEREAS, the Air Resources Board would fund this proposal for a total amount not to exceed \$50,000; and

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

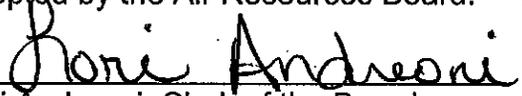
Proposal Number 2638-257, entitled "Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to Greenhouse Gas Emission Reduction Targets," submitted by the University of California, Berkeley/Lawrence Berkeley National Laboratory, for a total amount not to exceed \$100,000.

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 2638-257, entitled "Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to Greenhouse Gas Emission Reduction Targets," submitted by the University of California, Berkeley/Lawrence Berkeley National Laboratory, for a total amount not to exceed \$100,000.

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 \$100,000.

I hereby certify that the above is a true and correct copy of Resolution 07-34, as adopted by the Air Resources Board.

A handwritten signature in cursive script that reads "Lori Andreoni". The signature is written in black ink and is positioned above a horizontal line.

Lori Andreoni, Clerk of the Board

ATTACHMENT A

“Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to Greenhouse Gas Emission Reduction Targets”

Background

The California Global Warming Solutions Act of 2006 calls for reducing greenhouse gas (GHG) emissions to 1990 levels by 2020. This aggressive goal will require emission reductions in all sectors, including the industrial sector. This research is needed to inform the process of regulating this sector and facilitate our collaborations with sister agencies. There are voluntary programs that encourage industrial facilities to set targets for reduced energy consumption such as the California Climate Action Registry and the Environmental Protection Agency's Climate Leaders Program. These programs have been successful to the extent they have been used. However, considerable opportunities remain for increased energy efficiency and use of clean energy technologies in the industrial sector.

Other industrialized countries such as Australia, Canada, Denmark, France, Japan, Netherlands, and the United Kingdom have had successful comprehensive industrial sector energy efficiency programs since the 1990s. Further exploration of the international programs should provide new ideas that can be implemented by California industry to reduce GHG emissions.

Objective

The objective of this research is to identify the characteristics of successful industrial sector GHG emissions reduction and energy efficiency programs in other countries in order to summarize lessons learned and make recommendations for specific industrial sector program designs that could be implemented in California.

Methods

Investigators will determine the industrial sub-sectors in California that are the top energy consumers and largest carbon dioxide (CO₂) emitters. This will involve updating primary data sources such as the California Energy Balance with additional information from investor-owned utilities, industrial associations, and the U.S. Geological Survey. Five key industrial sub-sectors will be chosen in consultation with ARB staff as the focus of the remaining project tasks.

Next, investigators will examine energy efficiency and GHG emission reduction programs in other countries that focus on the industrial sub-sectors previously identified. Investigators will report on the key elements of these programs such as relevancy in supporting national goals, establishing targets, the level of industry participation, and the realized energy savings. Specific design elements of the programs will be discussed such as facility auditing, benchmarking, monitoring of progress, and financial incentives. Investigators will also discuss the top barriers managers faced when initiating the programs.

Program managers and industrial participants of the programs will be interviewed to glean information on specific actions the industrial firms took to promote energy efficiency and GHG emission reductions. To the extent possible, implementation costs and estimated annual savings will be reported.

Expected Results

This research will provide a summary of lessons learned from comprehensive industrial energy efficiency or GHG mitigation programs in other countries and will make recommendations for specific industrial sector program designs that could be implemented in California. Program design elements, the level of industry participation, and the realized energy savings will be reported.

Significance to the Board

Information from the project will assist ARB in designing programs and policies to achieve energy and CO₂ savings from top emitting California industries. It is anticipated that these results will provide guidance to both ARB and the California Energy Commission in developing a suite of regulations, voluntary programs, and outreach activities to achieve the 2020 target of GHG emissions equivalent to 1990 levels.

Contractor:

University of California, Berkeley (UCB) and Lawrence Berkeley National Laboratory (LBNL)

The University of California operates the LBNL for the US Department of Energy. ARB has had several contracts through UCB for LBNL services. These contracts have been successful in obtaining the expertise of both entities.

Contract Period:

18 months

Principal Investigator (PI):

The principal investigator from UCB, Dr. Horvath, will direct and review the work of the LBNL team. Dr. Horvath has valuable expertise in environmental assessment of products, processes, and services. He has worked closely with the LBNL team on other projects. His experience as Director of the Consortium on Green Design and Manufacturing, and Director of the Engineering and Business for Sustainability certificate program will contribute to this study. The LBNL staff will perform the day-to-day research under the coordination of Lynn Price, who will be responsible for coordinating the technical researchers for each task.

Contract Amount:

\$100,000

Cofunding:

The South Coast Air Quality Management District is contributing \$50,000 to the cost of this study.

Basis for Indirect Cost Rate:

The State and the UC system have agreed to a ten percent indirect cost rate. The indirect rates for the subcontractor are established by the U.S. Department of Energy and are non-negotiable.

Past Experience with this Principal Investigator:

ARB has not had previous experience with Dr. Horvath. However, the bulk of the work will be done by the subcontractor, LBNL, under the direction of Ms. Lynn Price.

Ms. Price is currently working on another contract with ARB where she is responsive to suggestions of ARB staff, responds in a timely manner, and is contributing excess time to the project. She has also delivered successful projects to the California Energy Commission.

Prior Research Division Funding to UCB:

Year	2007	2006	2005
Funding	\$30,000	\$1,713,789	\$1,204,449

BUDGET SUMMARY

UCB/LBNL

Evaluation of Efficiency Activities in the Industrial Sector Undertaken in Response to
Greenhouse Gas Emission Reduction Targets

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	2,273
2.	Subcontractors	\$	95,000 ¹
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			\$97,273

INDIRECT COSTS

1.	Overhead	\$	2,727
2.	General and Administrative Expenses	\$	0
3.	Other Indirect Costs	\$	0
4.	Fee or Profit	\$	<u>0</u>
Total Indirect Costs			<u>\$2,727</u>

TOTAL PROJECT COSTS

\$100,000

¹ The subcontractor, Lawrence Berkeley National Laboratory, will actually conduct the entire project under the direction of Dr. Horvath, the PI at University of California, Berkeley.

Attachment B

SUBCONTRACTORS BUDGET SUMMARY

Subcontractor: Lawrence Berkeley National Laboratory

Description of subcontractor's responsibility: The subcontractor will conduct all of the research for this project. The major tasks include: 1) characterize the industrial sector in California to determine the greatest energy users, 2) identify and describe GHG emission reduction programs in other countries that are relevant to California, and 3) identify and describe specific GHG emission reduction technologies and measures that were undertaken in response to GHG emission reduction target-setting programs in other countries.

DIRECT COSTS AND BENEFITS

1.	Labor and Employee Fringe Benefits	\$	47,746
2.	Subcontractors	\$	0
3.	Equipment	\$	0
4.	Travel and Subsistence	\$	2,500
5.	Electronic Data Processing	\$	0
6.	Reproduction/Publication	\$	0
7.	Mail and Phone	\$	0
8.	Supplies	\$	0
9.	Analyses	\$	0
10.	Miscellaneous	\$	<u>3,404</u>
	Total Direct Costs		\$53,650

INDIRECT COSTS

1.	Overhead	\$	41,350
2.	General and Administrative Expenses	\$	0
3.	Other Indirect Costs	\$	0
4.	Fee or Profit	\$	<u>0</u>
	Total Indirect Costs		<u>\$41,350</u>

<u>TOTAL PROJECT COSTS</u>	<u>\$95,000</u>
-----------------------------------	------------------------