State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 02-9

March 21, 2002

Agenda Item No.: 02-2-2

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 2512-224, entitled "A Post-Regulatory Evaluation of the Cost and Economic Impact Estimates of Air Pollution Control Regulations," has been submitted by the University of California, Riverside;

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 2512-224 entitled "A Post-Regulatory Evaluation of the Cost and Economic Impact Estimates of Air Pollution Control Regulations," submitted by the University of California, Riverside, for a total amount not to exceed $149,997.

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 2512-224 entitled "A Post-Regulatory Evaluation of the Cost and Economic Impact Estimates of Air Pollution Control Regulations," submitted by the University of California, Riverside, for a total amount not to exceed $149,997.

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 $149,997.

I hereby certify that the above is a true and correct copy of Resolution 02-9, as adopted by the Air Resources Board.

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Marie Kavan, Clerk of the Board

## ATTACHMENT A

"A Post-Regulatory Evaluation of the Cost and Economic Impact Estimates of Air Pollution Control Regulations"

**Background**

California has made great strides in improving the air quality over the past few decades. However, despite the dramatic air quality improvement, California has not been able to achieve the federal clean air standards. A majority of Californians still breathe unhealthy air on at least some days during the year. Additional regulations are needed to meet the federal requirements for attaining national air quality standards within this decade. New regulations may be more expensive if businesses must meet more

stringent air quality standards. Yet there is numerous evidence showing that costs may not be as high as originally estimated. This may be due to the fact that the regulatory agencies, when estimating costs, usually assume that more stringent standards will be attained with current technologies. But, history shows that technology continues to improve and technological innovation tends to lower future compliance costs.

Although anecdotal evidence indicates that regulation stimulates innovation, there are no comprehensive studies to assess the impact of innovation on the actual costs of regulations. This study plans to collect and analyze data on actual regulatory costs and economic impacts of a selected number of ARB and South Coast Air Quality Management District (SCAQMD) regulations and rules, and then compare them to the original estimates. The study will also conduct a comparison of emission reduction data before and after a regulation if such data are available. The results may shed light on how innovation can lower compliance costs.

**Objective**

The objective of this study is to conduct a post-regulation engineering and economic evaluation of the accuracy of the costs, economic impacts, and emission reductions of air pollution control regulations in California. This study also intends to identify the primary causes of the differences between the original estimates and the actual results.

**Methods**

The contractor proposes to select a minimum of ten key ARB and SCAQMD rules and regulations that have affected a variety of industries and geographic areas and that have required different technologies to assess the accuracy of their cost, economic impact, and emission reduction estimates. The contractor will develop a profile of candidate regulations. The profiles include estimates of costs, economic impacts, and emission reductions, along with underlying assumptions made by various stakeholders and regulatory agencies to develop those estimates. Information will be obtained from the initial regulatory process, including staff reports, published reports and materials, stakeholder comments, and actual rule adoption records. Stakeholders will also be contacted to collect any historical information available.

The contractor will utilize a variety of sources to collect or develop actual data on costs, economic impacts and emission reductions for the candidate regulations. Such sources include the Internet, documents and reports, trade publications and surveys, interviews of affected industries, consumers, and equipment vendors, and emission reduction transaction costs from RECLAIM or offsets where appropriate. The main focus of this study will be to collect the actual data on control/process equipment costs, operating/maintenance costs, and indirect costs associated with the selected regulations. However, information will also be collected on the actual technologies used to comply with the candidate regulations. Special attention will be given to accounting for any productivity effects these technologies may have created.

**Expected Results**

This study will provide the Board with a report on the accuracy of the projected vis-à-vis actual costs, economic impacts, and emission reduction impacts for a number key of regulations. It will also provide an explanation of any significantly inaccurate estimates,

and suggest specific recommendations on how to improve cost and emission reduction projections for future rulemaking efforts.

**Significance to the Board**
The insights gained from this study will assist the board and the districts to improve estimates of cost, economic impacts, and emission reductions of their proposed regulations and rules.

**Contractor:**
University of California, Riverside

**Contract Period:**
18 months

**Principal Investigator (PI):**
Dr. James M. Lents

**Contract Amount:**
$149,997

**Cofunding:**
None

**Basis for Indirect Cost Rate:**
The 10 percent rated used is a negotiated rated between the ARB and University of California campuses.

**Past Experience with this Principal Investigator:**
Dr. James Lents, the principal investigator for this project, was the Executive Officer of the South Coast Air Quality Management District for 11 years. He has impeccable credentials in the fields of environmental science, technology, and policy.

**Prior Research Division Funding to the University of California, Riverside:**

| Year | 2001 | 2000 | 1999 |
|---|---|---|---|
| Funding | $79,884 | $654,788 | $659,987 |

# B U D G E T  S U M M A R Y

University of California, Riverside

A Post-Regulatory Evaluation of the Cost and Economic Impact Estimates of Air Pollution Control Regulations

| | | | |
|---|---|---|---|
| **DIRECT COSTS AND BENEFITS** | | | |
| 1. | Labor and Employee Fringe Benefits | $99,475 | |
| 2. | Subcontractors | $18,000 | |
| 3. | Equipment | $ 0 | |
| 4. | Travel and Subsistence | $ 2,133 | |
| 5. | Electronic Data Processing | $ 0 | |
| 6. | Photocopying and Printing | $ 0 | |
| 7. | Mail, Telephone and Fax | $ 3,030 | |
| 8. | Materials and Supplies | $ 0 | |
| 9. | Analyses | $ 0 | |
| 10. | Miscellaneous | $15,600 | |
| | Total Direct Costs | | $138,238 |
| **INDIRECT COSTS** | | | |
| 1. | Overhead | $11,759 | |
| 2. | General and Administrative Expenses | $ 0 | |
| 3. | Other Indirect Costs | $ 0 | |
| 4. | Fee or Profit | $ 0 | |
| | Total Indirect Costs | | $11,759 |
| **TOTAL PROJECT COSTS** | | | **$149,997** |

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**Attachment (##)**

# S U B C O N T R A C T O R S' B U D G E T S U M M A R Y

Subcontractor: NN Environmental Consulting

Description of subcontractor's responsibility: includes identifying regulations, gathering data, and analyzing the estimated and actual costs.

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|---|---|---|---|
| **DIRECT COSTS AND BENEFITS** | | | |
| 1. | Labor and Employee Fringe Benefits | $18,000 | |
| 2. | Subcontractors | $ 0 | |
| 3. | Equipment | $ 0 | |
| 4. | Travel and Subsistence | $ 0 | |
| 5. | Electronic Data Processing | $ 0 | |
| 6. | Photocopying and Printing | $ 0 | |
| 7. | Mail, Telephone and Fax | $ 0 | |
| 8. | Materials and Supplies | $ 0 | |
| 9. | Analyses | $ 0 | |
| 10. | Miscellaneous | $ 0 | |
| | Total Direct Costs | | $18,000 |
| **INDIRECT COSTS** | | | |
| 1. | Overhead | $ 0 | |
| 2. | General and Administrative Expenses | $ 0 | |
| 3. | Other Indirect Costs | $ 0 | |
| 4. | Fee or Profit | $ 0 | |
| | Total Indirect Costs | | $ 0 |
| **TOTAL PROJECT COSTS** | | | **$18,000** |

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