

State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 05-45

September 15, 2005

Agenda Item No.: 05-8-2

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 2587-249, entitled "Follow-on Development of CARBITS", 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 Air Resources Board will fund this proposal for a total amount not to exceed \$100,000; and

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

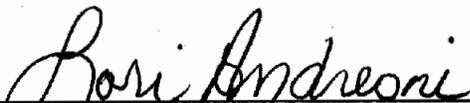
Proposal Number 2587-249, entitled "Follow-on Development of CARBITS", has been submitted by the University of California, Davis for a total amount not to exceed \$100,000.

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 2587-249, entitled "Follow-on Development of CARBITS", has been submitted by the University of California, Davis 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 05-45, as adopted by the Air Resources Board.


Leri Andreoni, Clerk of the Board

ATTACHMENT A

"Follow-on Development of CARBITS"

Background

CARBITS is a microsimulation forecasting model for the passenger vehicle market in California and was developed for ARB by Professor David Bunch of the University of California, Davis. The purpose was to develop vehicle choice models for California, with an emphasis on understanding market response to the introduction of alternative fuel vehicles (e.g. battery-powered electric vehicles). Although time and monetary constraints prevented development of a full range of features, the model was also successfully used in support of the climate change regulation adopted by the Board in September 2004. It is important to continue the improvement of CARBITS and ARB's in-house ability to model the California vehicle market in order to address concerns raised by automobile manufacturers and other stakeholders with respect to future regulations.

Objective

The objective is to upgrade and enhance CARBITS by adding new data and refining some of the model's features.

Methods

The activities required to perform the work in this project are narrow and technical in scope, and involve: (1) reviewing and including new data, (2) formulating behavioral models, (3) performing statistical analysis and model estimation, (4) implementing models into CARBITS for use in a forecasting mode, and (5) validating and testing.

Expected Results

Improving CARBITS will provide ARB with a more comprehensive scenario tool to evaluate market response under alternative regulation scenarios. Specifically, ARB will have the ability to use recent vehicle choice models, address the important emerging market for hybrid electric vehicles, use annual data on vehicle registrations or sales, address vehicle scrappage rates, and address issues related to model runtime requirements and statistical noise levels.

Significance to the Board

The improvements to CARBITS will enable staff to a more realistic analysis of the response of consumers to changes in passenger vehicle prices and attributes resulting from proposed regulations.

Contractor:

University of California, Davis

Contract Period:

24 months

Principal Investigator (PI):
Professor David Bunch

Contract Amount:
\$100,000

Basis for Indirect Cost Rate:
The State and UC system have agreed to a ten percent indirect cost rate.

Past Experience with this Principal Investigator:
Professor Bunch, a leading expert in modeling consumer choice with 15 years of experience in that field, developed the CARBITS model. ARB successfully used CARBITS to model consumer response for its climate change regulation for passenger vehicles.

Prior Research Division Funding to UCD:

| Year | 2005 | 2004 | 2003 |
|---------|------|-----------|-----------|
| Funding | \$0 | \$159,715 | \$220,896 |

BUDGET SUMMARY

University of California, Davis

"Follow-on Development of CARBITS"

DIRECT COSTS AND BENEFITS

| | | | |
|-----|------------------------------------|----|---------------------|
| 1. | Labor and Employee Fringe Benefits | \$ | 66,693 |
| 2. | Subcontractors | \$ | 0 |
| 3. | Equipment | \$ | 0 |
| 4. | Travel and Subsistence | \$ | 0 |
| 5. | Electronic Data Processing | \$ | 0 |
| 6. | Reproduction/Publication | \$ | 250 |
| 7. | Mail and Phone | \$ | 250 |
| 8. | Supplies | \$ | 12,138 ¹ |
| 9. | Analyses | \$ | 0 |
| 10. | Miscellaneous | \$ | <u>12,736</u> |

Total Direct Costs \$92,067

INDIRECT COSTS

| | | | |
|----|-------------------------------------|----|----------|
| 1. | Overhead | \$ | 7,933 |
| 2. | General and Administrative Expenses | \$ | 0 |
| 3. | Other Indirect Costs | \$ | 0 |
| 4. | Fee or Profit | \$ | <u>0</u> |

Total Indirect Costs \$ 7,933

TOTAL PROJECT COSTS

\$100,000

¹ Purchase of software licenses, \$700. Purchase of data sets, \$11,438.