State of California
AIR RESOURCES BOARD

Examining Factors that Influence ZEV Sales in California

RESEARCH PROPOSAL

Resolution 13-18

June 27, 2013

Agenda Item No.: 13-6-1

WHEREAS, the Air Resources Board (ARB or 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 2758-276, entitled "Examining Factors that Influence ZEV Sales in California," has been submitted by the University of California, Los Angeles; and

WHEREAS, in accordance with Health and Safety Code section 39705, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 2758-276, entitled "Examining Factors that Influence ZEV Sales in California," submitted by the University of California, Los Angeles, for a total amount not to exceed $302,992.

WHEREAS, the Research Division staff has reviewed Proposal Number 2758-276 and finds that in accordance with Health and Safety Code section 39701, the results of this study will be used to describe the current ZEV market and to refine future estimates of ZEV market potential in California.

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 recommendations of the Research Screening Committee and Research Division staff and approves the following:

> Proposal Number 2758-276, entitled "Examining Factors that Influence ZEV Sales in California," submitted by the University of California, Los Angeles not to exceed $302,992.

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 $302,992.

I hereby certify that the above is a true and correct copy of Resolution 13-18, as adopted by the Air Resources Board.

Tracy Jensen

Tracy Jensen, Clerk of the Board

ATTACHMENT A

"Examining Factors that Influence ZEV Sales in California"

Background

Renewed interest in zero-emission vehicle (ZEV) technology has led to growing volumes of plug-in hybrid electric vehicles (PHEV) and full battery electric vehicles (BEV) recently being sold in California. While still relatively small in market share compared to the full offerings of new vehicles sold each year, these sales numbering in the tens of thousands provide an initial opportunity for empirical research on this evolving market. ARB has recently sponsored multiple projects related to current and potential consumers of ZEVs, which rely on direct communication with consumers and their voluntary participation. Complementary research is needed to evaluate the ZEV market from a more holistic perspective and provide a measure of the representativeness of survey and interview respondents to the overall ZEV buying population.

Objective

The objective of this research proposal is to test various hypotheses related to spatial or temporal factors associated with current ZEV sales trends and factors to be evaluated include public policy (e.g. incentives, infrastructure), pricing and vehicle attributes, and socioeconomic and geographic characteristics and based on the findings, develop a method and model to project ZEV sales under different policy or market scenarios.

Methods

This research proposal would merge monthly ZEV registration data for December 2010 to December 2013 with census tract level data in order to correlate the spatial and temporal factors that influence ZEV sales across California. The researchers will employ fixed-effects and random-effect panel-data models to test how different variables affect ZEV sales in different census tracts statewide. Although causation may be difficult to establish between certain factors within a census tract and the presence of a ZEV sale, the researchers will employ quasi-experimental methods to exploit sudden/discrete events occurring during the study period, e.g. changes in rebate levels or fuel prices, or the introduction of new models, to increase confidence in a causal relationship.

Expected Results

The researchers will develop a model to project how future sales may vary under different scenarios. Scenarios may differ based on assumptions about changes in public policies, vehicle characteristics and offerings, prices, socio-economics, and/or land use patterns. Additionally, this proposal will develop and demonstrate a data analysis method that if proven useful can be fairly easily repeated in the future on an expanded data set as new ZEV types are introduced into the market.

Significance to the Board

The results of this study will be used to describe the current ZEV market and to refine future estimates of ZEV market potential in California.

Contractor:

University of California, Los Angeles

Contract Period:
24 months

Principal Investigators:
J.R. DeShazo, Ph.D.
Brett Williams, Ph.D.

Contract Amount:
$302,992

Basis for Indirect Cost Rate:
The State and the University of California, Los Angeles has agreed to a 10 percent indirect cost rate.

Past Experience with the Principal Investigators:
ARB has no direct experience with either in a Principal Investigator capacity. However, Dr. Brett Williams was a member of the research team for ARB research contract 08-312, "Potential Design, Implementation, and Benefits of a Feebate Program for New Passenger Vehicles in California" and has worked for twenty years with automakers and government agencies to support commercialization of alternative fuel vehicles.
Dr. J.R. DeShazo has a strong background in econometrics related to consumer research that will be critical for this research project. Both investigators currently serve as the prime research contractors for the United States Department of Energy and California Energy Commission's Plug-in Electric Vehicle Readiness Plan for the Southern California Association of Governments region and the Southern California Plug-in Electric Vehicle Readiness Atlas.

Prior Research Division Funding to the University of California, Los Angeles:

Year	2012	2011	2010
Funding	$400,000	$630,264	$290,000

BUDGET SUMMARY

University of California, Los Angeles

"Examining Factors that Influence ZEV Sales in California"

DIRECT COSTS AND BENEFITS			
1.	Labor and Employee Fringe Benefits	$ 183,664	
2.	Subcontractors	$ 71,233	
3.	Equipment	$ 0	
4.	Travel and Subsistence	$ 5,181	
5.	Electronic Data Processing	$ 0	
6.	Reproduction/Publication	$ 0	
7.	Mail and Phone	$ 0	
8.	Supplies	$ 20,700	
9.	Analyses	$ 0	
10.	Miscellaneous	$ 1,145	
	Total Direct Costs		$281,923
INDIRECT COSTS			
1.	Overhead	$ 21,069	
2.	General and Administrative Expenses	$ 0	
3.	Other Indirect Costs	$ 0	
4.	Fee or Profit	$ 0	
	Total Indirect Costs		$ 21,069
TOTAL PROJECT COSTS			**$302,992**

Attachment 1

SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: University of California, San Diego

Description of subcontractor's responsibility: The subcontractor will be the primary econometrician, collecting and preparing data as well as developing and running the econometric models.

DIRECT COSTS AND BENEFITS				
1.	Labor and Employee Fringe Benefits	$	39,639	
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	$	27,630[1]	
	Total Direct Costs			$67,269
INDIRECT COSTS				
1.	Overhead	$	3,964	
2.	General and Administrative Expenses	$	0	
3.	Other Indirect Costs	$	0	
4.	Fee or Profit	$	0	
	Total Indirect Costs			$ 3,964
TOTAL PROJECT COSTS				**$71,233**

[1] Miscellaneous costs are dedicated exclusively to graduate student in-state fees which are required by university policies when hiring graduate student personnel.