State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 12-40

December 6, 2012

Agenda Item No.: 12-9-4

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 2746-275, entitled "Evaluating the Benefits of Light Rail Transit," has been submitted by the University of California, Irvine;

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

> Proposal Number 2746-275 entitled "Evaluating the Benefits of Light Rail Transit," submitted by the University of California, Irvine, for a total amount not to exceed $200,000.

WHEREAS, the Research Division staff has reviewed Proposal Number 2746-275 and finds that in accordance with Health and Safety Code section 39701, the research results for this study can provide insights into whether and to what extent light rail transit investments may be useful for SB 375 implementation. Research Division staff recommends this proposal for approval.

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 2746-275 entitled "Evaluating the Benefits of Light Rail Transit," by University of California, Irvine, for a total amount not to exceed $ 200,000.

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 $200,000.

I hereby certify that the above is a true and correct copy of Resolution 12-40, as adopted by the Air Resources Board.

Tracy Jensen, Clerk of the Board

ATTACHMENT A

"Evaluating the Benefits of Light Rail Transit"

Background

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) requires Metropolitan Planning Organizations (MPOs) in California to develop a Sustainable Communities Strategy (SCS) that demonstrates how they will meet regional greenhouse gas reduction targets set by ARB through coordinating land use, transportation, and housing planning. The introduction and expansion of light rail transit (LRT) systems and the densification of communities living around LRT stations are among the strategies being considered and pursued by regions to reduce vehicle demand and greenhouse gases. For instance, the Southern California Association of Governments (SCAG) region's recently adopted 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy calls for investment in public transportation and directs substantial development and densification in High-Quality Transit Areas — areas within a half mile of well-serviced transit stops. In alignment with this goal, the Los Angeles Metropolitan Transportation Authority's long-range plan commits funds to six new LRT lines over the next decade. One of the first of these lines, the Exposition Line (Expo Line) has two phases; phase one — the subject of this study — opened in 2012 and runs 8.7 miles from downtown Los Angeles to Culver City. Other California cities and regions are also considering new LRT systems or expanding existing ones as strategies to reduce vehicle demand. While these strategies are being pursued, the impact transit investment and transit-oriented development projects have on travel demand and co-benefits remains poorly understood. This study will evaluate whether or not, and to what extent, LRT investment in California can support the goals of SB 375 and regions' Regional Transportation Plan/Sustainable Communities Strategy.

Objective

The objective of this study is to advance our understanding of the impact of light rail transit through time on the travel behavior of local residents, including travel mode, trip distance, and the physical activity co-benefits of active transportation. This study will also evaluate how the built environment, demographics, and attitudes and perceptions affect travel behavior.

Methods

This project consists of three data collection phases. Phase 1 is comprised of data previously collected in Fall 2011 before the April 2012 opening of the Expo line from 248 households living within a ½ mile (experimental group) or within ½ -2 mile distance of new Expo LRT stations. For phase 2, this project will recruit from the same original cohort of households to collect information on travel behavior and physical activity levels approximately a half year after the Expo line opened (Phase 2). It will also repeat this year and a half after the light rail opened in order to analyze changes in behavior through time. Using paper and web-based travel surveys, portable GPS location tracking, and accelerometer activity monitoring, data will be collected on trips by mode,

vehicle miles traveled, and minutes walking or biking for seven days. In addition, information on household income, transportation resources, individual and household demographics, and health status were collected to analyze the effect size due to these variables. This study will also examine the issue of self-selection to see if the travel impacts of new, compact, transit-oriented strategies are influenced by new residents who relocate from outside the area because of their preference to live in denser, transit-accessible areas.

Expected Results
This project will result in an understanding of how living near light rail transit can change residents' travel behavior, including their passenger vehicle travel and physical activity. It will analyze changes in travel behavior through time, and also evaluate how these potential changes are affected by demographic factors, perceptions and attitudes, and other built environment features. It will also provide a better understanding of whether light rail transit attracts new residents seeking to live in more transit-oriented areas and if these residents have different travel behavior than their long-term neighbors.

Significance to the Board
MPOs are doing their part to achieve the goals of SB 375 by creating long range transportation and land use plans to reduce greenhouse gas emissions and meet the State assigned targets. The Sustainable Communities Strategies lay the foundation for smarter, more efficient growth and healthier communities. ARB's support in this area is important and will help strengthen the technical underpinnings of strategies being pursued through SB 375; lay the foundation for what is achievable; and offer lessons learned and best practices for other regions to follow. The research results for this study can provide insights into whether and to what extent light rail transit investments may be useful for SB 375 implementation.

Contractor:
University of California, Irvine

Contract Period:
28 months

Principal Investigator (PI):
Douglas Houston, Ph.D.

Contract Amount:
$200,000

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

Past Experience with this Principal Investigator:
ARB has not worked directly with Dr. Douglas Houston. Dr. Houston is Assistant Professor in the department of Planning, Policy and Design at UC Irvine, and has over a decade of experience focused on the environmental, health, and equity impacts of transportation systems and has several publications focused on the impacts of traffic exposure, transit access, travel behavior, and methodological considerations for using GPS as a data collection method. ARB's Planning and Technical Support Division has worked with the project subcontractor, Dr. Marlon Boarnet on developing policy briefs on land use and transportation GHG-reduction strategies. Dr. Boarnet is an expert in the land use transportation field, having published extensively on the role of land use and the built environment on travel behavior, including serving as a member of the authoring committee for a chapter in the National Academy of Sciences book "Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO_2 Emissions."

Prior Research Division Funding to University of California, Irvine:

Year	2012	2011	2010
Funding	$ 519,997	$ 285,000	$ 274,931

BUDGET SUMMARY

Contractor: University of California, Davis

Evaluating the Benefits of Light Rail Transit

DIRECT COSTS AND BENEFITS				
1.	Labor and Employee Fringe Benefits	$	113,960	
2.	Subcontractors	$	50,000	
3.	Equipment	$	0	
4.	Travel and Subsistence	$	2,578	
5.	Electronic Data Processing	$	0	
6.	Reproduction/Publication	$	660	
7.	Mail and Phone	$	2,189	
8.	Supplies	$	324	
9.	Analyses	$	0	
10.	Miscellaneous	$	17,375	
	Total Direct Costs			$ 187,086
INDIRECT COSTS				
1.	Overhead	$	12,914	
2.	General and Administrative Expenses	$	0	
3.	Other Indirect Costs	$	0	
4.	Fee or Profit	$	0	
	Total Indirect Costs			$ 12,914
TOTAL PROJECT COSTS				**$ 200,000**

Attachment B

SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: University of Southern California

Description of subcontractor's responsibility: The USC subcontractor will manage the field data collection associated with the survey of Expo Line study area households and will analyze the accelerometer data. Both tasks draw on unique experience and expertise at USC. Marlon Boarnet (Co-PI) will oversee the data collection and analysis for the USC subcontract, and will also collaborate fully with the UC Irvine team on all aspects of this research. He will donate additional time to this research to maintain full supervision of the sub-contract during the duration of the research.

DIRECT COSTS AND BENEFITS				
1.	Labor and Employee Fringe Benefits	$	35,776	
2.	Subcontractors	$	0	
3.	Equipment	$	0	
4.	Travel and Subsistence	$	300	
5.	Electronic Data Processing	$	0	
6.	Reproduction/Publication	$	391	
7.	Mail and Phone	$	0	
8.	Supplies	$	0	
9.	Analyses	$	0	
10.	Miscellaneous	$	1,995	
	Total Direct Costs			$ 38,462
INDIRECT COSTS				
1.	Overhead	$	11,538	
2.	General and Administrative Expenses	$	0	
3.	Other Indirect Costs	$	0	
4.	Fee or Profit	$	0	
	Total Indirect Costs			$ 11,538
TOTAL PROJECT COSTS				**$ 50,000**