

State of California
AIR RESOURCES BOARD

Estimating Induced Travel from Capacity Expansions on Congested Corridors

RESEARCH PROPOSAL

Resolution 18-41

October 25, 2018

Agenda Item No.: 18-8-1

WHEREAS, the California Air Resources Board (CARB 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 2820-289, titled "Estimating Induced Travel from Capacity Expansions on Congested Corridors," has been submitted by the University of California, Berkeley for a total amount not to exceed \$249,371;

WHEREAS, the Research Division staff has reviewed Proposal Number 2820-289 and finds that, in accordance with Health and Safety Code section 39701, the results of this study will help CARB evaluate the environmental impacts of transportation infrastructure projects to inform CARB's future reviews of sustainable communities' strategies; and

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

NOW, THEREFORE BE IT RESOLVED, that CARB, pursuant to the authority granted by Health and Safety Code section 39700 through 39705, hereby accepts the recommendations of the Research Screening Committee and staff and approves the Research Proposal.

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 Proposal as further described in Attachment A, in an amount not to exceed \$249,371.

I hereby certify that the above is a true and correct copy of Resolution 18-41 as adopted by the Air Resources Board.

Cristina Granados, Clerk of the Board

Resolution 18-41

October 25, 2018

Identification of Attachments to Board Resolution 18-41

Attachment A: “Estimating Induced Travel from Capacity Expansions on Congested Corridors” Summary and Budget Summary

ATTACHMENT A

“Estimating Induced Travel from Capacity Expansions on Congested Corridors”

Background

In California, roadway expansion has often been used as a strategy to relieve traffic congestion. Research shows, however, that capacity expansion leads to increases in vehicle miles traveled (VMT) because congestion relief translates to reduced travel times and thereby a reduced social/time cost of driving. In fact, long-run VMT increases—referred to as “induced travel”—can be significant enough to offset congestion relief entirely. As acceptance of the induced travel phenomenon has grown, planning practices have begun to shift away from general purpose lane expansions to address congestion. An alternative approach has been to expand non-general purpose lanes, like high occupancy vehicle (HOV), high occupancy toll (HOT), and auxiliary lanes, among others. While some of the research literature has included cases of these types of lane expansions in their analyses, no study has focused purely on the induced travel impacts of these kinds of projects, which makes it difficult to estimate if and by how much these projects benefit air quality and reduce greenhouse gas emissions (GHG) in line with the goals of Senate Bill (SB) 375. Additionally, little is known about if/how regional transportation demand models account for induced travel, particularly long-term induced travel that tends to influence land use. This study will attempt to fill these knowledge gaps in order to better inform CARB, metropolitan planning organizations (MPOs), and others of the induced travel impacts of these types of lanes and will also examine how transportation models and forecasts can be improved to account for these impacts so that future regional VMT is not underestimated.

Objective

The project’s objectives are twofold: 1) to estimate (quantitatively) the short- and long-run VMT-related outcomes of adding non-general purpose lane roadway capacity to congested freeways in California; and 2) to assess the use of these estimates to inform CARB’s review of regional transportation plans/sustainable communities strategies (RTP/SCSs) and to improve regional transportation demand models.

Methods

This proposed project would estimate the effects of non-general purpose lane capacity expansions on VMT. To do this, the researchers will perform a comprehensive review of the existing economic, transportation, and planning literature on induced travel and characterize its relevance for modern roadway capacity enhancement projects, particularly for non-general purpose lane expansions. Additionally, they will assemble and analyze empirical data to estimate the short- and long-run VMT-related outcomes of adding non-general purpose lane roadway capacity to congested freeways in California. The project will also assess how induced travel is considered in regional transportation planning efforts, and the researchers will use this assessment and their overall analysis to provide recommendations for MPOs and CARB.

Expected Results

The project will result in quantitative estimates of the potential impact to VMT of increasing non-general purpose lane capacity expansions. Additionally, the researchers will qualitatively assess and make recommendations on how the research results could or should be used: 1) in CARB's review of RTP/SCSs; and; 2) to improve regional and state transportation demand models to account for these induced travel effects.

Significance to the Board

The research will allow the Board to more confidently estimate the VMT impacts of non-general purpose lane capacity expansions, particularly when these projects are used on congested roadways in the State. Additionally, the research will inform the overall improvement of regional and state transportation planning models and tools, and may also help the Board and its sister agencies with the prioritization and selection of future transportation infrastructure projects.

Contractor:

University of California, Berkeley

Contract Period:

18 months

Principal Investigator (PI):

Dr. Michael Anderson, Ph.D.

Contract Amount:

\$249,371

Basis for Indirect Cost Rate:

The State and the UC system have agreed to a twenty-five percent indirect cost rate.

Past Experience with this Principal Investigator:

Dr. Michael Anderson is an Associate Professor of Agricultural and Resource Economics and an affiliate faculty in the Institute of Transportation Studies at the University of California, Berkeley. CARB has not previously contracted with Dr. Anderson, but his qualifications make him uniquely qualified to lead this project. He received a Ph.D. in Economics from MIT in 2006 and has 12 years of experience working on environmental, health, and transportation-related topics. He has been published in top economic journals and is an expert in the statistical techniques that he proposes to use in this analysis.

Prior Research Division Funding to the University of California, Berkeley:

Year	2017	2016	2015
Funding	\$ 0	\$ 0	\$ 730,514

BUDGET SUMMARY

Contractor: University of California, Berkeley

Estimating Induced Travel from Capacity Expansions on Congested Corridors

DIRECT COSTS

1.	Personnel (Salary and Fringe Benefits)	\$ 205,481
2.	Travel	\$ 0
3.	Materials & Supplies	\$ 0
4.	Equipment	\$ 0
5.	Electronic Data Processing	\$ 0
6.	Consultant(s)	\$ 0
7.	Subreceptient(s)	\$ 0
8.	Other Direct Costs	<u>\$ 1,748</u>

Total Direct Costs \$ 207,229

INDIRECT COSTS

1.	Indirect (F&A) Costs	<u>\$ 42,142</u>
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Total Indirect Costs \$ 42,142

TOTAL PROJECT COSTS **\$ 249,371**