



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Planning
Policy
Programming

MARCH 2015

Project Title:
Synergistic Interactions of New
Transportation Technologies and Services
with Land Use, Transit, and Auto Pricing Policies

Task Number: 2636

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Completion Date: May 1, 2015

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Greenhouse Gas Reductions Relating to Transportation Technologies and Public Policies

Illustrate and understand how new transportation technologies (i.e., dynamic ridesharing and electric vehicles) may have synergistic interactions with land use, transit, and auto pricing policies.

WHAT IS THE NEED?

Very little research has explored how new transportation technologies and services (e.g., dynamic ridesharing and electric vehicles) may have synergistic interactions with land use, transit, and auto pricing policies and what the magnitude of those interactions might be with respect to VMT (Vehicle Miles Traveled) and/or Greenhouse Gas (GHG) reductions. The proposed study would use the San Francisco Bay Area ABM (Activity Based Model) to examine the potential magnitude of markets for and VMT and/or GHG reductions from dynamic ridesharing and adoption of electric vehicles created by land use/transit and auto pricing policies.

For dynamic ridesharing, decision rules will applied to the rich data outputs from the Bay Area ABM to identify the number of potential participants as well as the number of trips and VMT that could be satisfied by the service in both the business-as-usual and alternative scenarios. For electric vehicles, the focus will be on how land use and transit scenarios could increase their market penetration. Shorter driving ranges possible from land use/transit and pricing scenarios may increase the adoption of electric vehicles. Analytical uncertainties will be addressed through extensive sensitivity analyses.



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WHAT ARE WE DOING?

The consultant will first review the literature and consult with experts to develop decision rules, criteria, and key uncertainties in the evaluation of dynamic ridesharing and electric vehicles potential for the TOD and VMT pricing scenarios. This step will then be used to develop the code to identify the potential market for dynamic ridesharing and sensitivity analyses. The code will then be tested and results will be evaluated. A Draft Final Report will be prepared and a revised Final Report will be completed based on comments from peer reviews.

WHAT IS OUR GOAL?

The outcome of the of this study will provide Caltrans with a greater understanding of the connections between advancing vehicle technology as it relates to land use and public policy decisions. This linkage is critical in assessing how transportation and the environment can work together, or in opposition, to legislation that mandates reduction in GHGs, as per California's landmark AB (Assembly Bill) 32.

The results of this research will be disseminated through journal articles and presentations at the Transportation Research Board's (TRB's) Annual Meetings and other conferences. Presentations to Caltrans and other state agencies on the results of this project will also be part of the Technology Transfer of the study's results.

WHAT IS THE BENEFIT?

Caltrans, along with technology professionals, will gain insight into the relative importance of land use and transportation decisions on their ability to implement new technologies and services. They will also gain an understanding of how emerging modeling tools can be used to gauge markets for new services. Transportation and land use professionals can also use the results to evaluate and advocate for methods to achieve deeper GHG reductions from land use and transportation scenarios.

WHAT IS THE PROGRESS TO DATE?

The final draft is being revised in response to peer review comments.