



Caltrans Division of Research,
Innovation and System Information

Research



Results



Planning/Policy/
Programming

Sustainable and Affordable Housing Near Rail Transit

Refining and Expanding a Scenario Planning Tool to address the
State of California

WHAT IS THE NEED?

Affordable housing and climate change have become urgent issues in cities across the United States. Evidence from our previous research in Los Angeles showed that promoting transit-oriented development (TOD) to achieve greenhouse gas (GHG) emission reduction could be at odds with providing access to affordable housing near transit, because higher income households tend to reduce driving the most when living near transit.

Results from that study show how both goals can be met through development that favors density over inclusionary zoning. These results, however, had limited implications due to three factors: household vehicle miles travelled (VMT) was a proxy for GHG emissions, the results cannot be generalized beyond Los Angeles, and residential self-selection could hamper our estimates of household VMT.

WHAT DID WE DO?

This research project will address all three of these limitations through improvements to our existing model. For each of the four metropolitan regions, we will generate development scenarios. The scenarios will consist of a possible development future for a station area, including the number of new housing units, densities, and rents. GHG reductions will be estimated directly using household income, VMT, and vehicle characteristics as inputs.

This will forecast how emissions can be expected to change for households of different income levels if they move to neighborhoods with rail transit and if they adopt different emission

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Caltrans provides a safe, sustainable,
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system to enhance California's
economy and livability.

reduction technologies. We will model station-level impacts on affordable housing stock, VMT change, and emissions, and then aggregate station-area impacts into system-wide portfolios.

WHAT WAS THE OUTCOME?

The biggest differences in the characteristics of households by vehicle ownership status occur when households move from carless-ness to auto ownership. Yet there are still statistically-significant differences between auto-deficit and fully equipped households across many dimensions. Auto-deficit households tend to be larger, suggesting the need to coordinate household travel either in the form of carpooling or negotiating complementary use of the household vehicle. They are also more likely to live in dense urban areas where some household members might be able to take advantage of high levels of transit service.

The findings, underscore the importance of car ownership—having at least one household car—to mobility, particularly of low-income households. However, sharing vehicles among household drivers can be challenging. It requires that household members plan to either carpool or arrange their schedules so that they do not need to use the household vehicle at the same time. These arrangements may negatively affect household residential location, employment outcomes, and the ability of households to partake in other activities, topics for future research.

WHAT IS THE BENEFIT?

This analysis can become a transit station-area planning template basis, providing timely input for planning policies in California's major metropolitan areas, while informing policies and processes in other similar large metropolitan areas.

The new research project would improve on the previous studies in the following aspects:

- Assessing how changes in emission reduction technology relate to household VMT;
- Expanding the generalizability of the previous study beyond Los Angeles;
- Addressing residential self-selection and its impact on household VMT.

LEARN MORE

Review the complete report.

www.mettrans.org/research/sustainable-and-affordable-housing-near-rail-transit-refining-and-expanding-scenario