

Meeting California's Greenhouse Gas Reduction Goals Under Wide-Ranging Transportation, Technology, Economic, and Land Use Scenarios

Robert Lempert, Debra Knopman, Liisa Ecola, Nidhi Kalra, Marty Wachs

RAND

California Metropolitan Planning Organizations (MPOs) face significant challenges. The MPOs' regional transportation plans (RTPs) and Sustainable Communities Strategies (SCSs) must describe how they will help their communities to enhance mobility, improve air quality, promote economic development, and enhance quality of life. As one important requirement, California MPOs must align land use, housing, and transportation strategies to meet the state's aggressive greenhouse gas emission reduction targets. The MPOs must pursue all these goals in the face of deep uncertainties regarding not only the best pathways to low emissions, but also the timing and extent of major demographic, social, climate, and technological changes that may lead to significantly different land use and travel patterns in the future. Current planning methods are not always sufficient to help MPOs best manage this complexity.

With generous support from the John D. and Catherine T. MacArthur Foundation, RAND will work with three California MPOs – Sacramento Council of Governments (SACOG), the Metropolitan Transportation Commission (MTC), and the San Joaquin Council of Governments (SJCOG) – to explore the ways in which new analytical and planning capabilities can help them better navigate this complex terrain. In particular, this collaboration aims to help MPOs better understand how their individual plans fit together from the point of the view of the three MPO region -- consisting of SACOG, MTC, and SJCOG -- and how the MPOs can best meet the state's greenhouse gas reduction goals amidst the fast-moving and extensive changes they confront. This collaboration also intends, by its example, to help MPOs state- and country-wide to pursue more effective climate risk management and to adapt to significant changes in their planning assumptions in more timely and effective ways.

Scope of Analysis and Project Tasks

The study will focus on the three MPO region consisting of the service areas of the Sacramento Area Council of Governments (SACOG), the Metropolitan Transportation Commission (MTC), and the San Joaquin Council of Governments (SJCOG). We focus on the three MPO region for several reasons. First, the connections between service areas are not as fully treated in the MPOs' individual plans as are development within each region. Second, given the significant and growing connections among the regions, coordinating some policies across MPO boundaries may prove effective in helping the MPOs meet their ambitious climate and other goals. Third, considering three regions may provide more easily generalizable results from the study than would focusing on a single region.

To best balance among the interest in considering the three MPO region, conducting a quantitative analysis, and the resource constraints on the project, RAND will conduct this project in three sets of tasks:

- I. RAND will first work with MTC, SACOG, and SJCOG to conduct a semi-quantitative analysis of the assumptions underlying the MPO's current regional transportation plans and sustainable community strategies. The MPOs have recently published such plans and are already working on new versions that will come out in the next few years. To help inform this new planning cycle, RAND will conduct a workshop with the MPOs' staff to identify and compare the key assumptions underlying the three MPOs' current plans. The workshop will employ assumption-based planning (ABP), a RAND-developed strategic-planning methodology specifically designed to help decisionmakers recognize and respond to potential vulnerabilities, surprises, and opportunities relevant to the strategies they propose. As one key output, this effort will suggest assumptions regarding future technology, demographics, economics, and consumer preferences that might significantly affect the MPOs' plans.
- II. Based on this analysis, RAND and SACOG will next conduct a more detailed quantitative analysis of the implications of these assumptions for SACOG's 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). In particular, the study will examine how SACOG might adapt to these changes, be responsive to the state mandates to reduce greenhouse gas emissions, while serving the transportation needs of their service area. Using SACOG's Sketch 7 model within a Robust Decision Making (RDM) analysis, RAND will stress-test the 2016 MTP/SCS against thousands of plausible futures, using the results of the ABP workshop to guide the choice of assumptions varied to generate these futures. This RDM analysis will identify potential vulnerabilities of the MTP/SCS – that is futures in which it might prove challenging for the plan to meet its goals – and potential responses that SACOG might consider in future plans to respond to these vulnerabilities. In particular, the analysis will aim to identify ways to make future plans more robust in the sense that they perform well over a wide range of plausible futures.
- III. Finally, RAND will hold a concluding workshop with staff from all the MPO's and suggest how the findings for SACOG could inform each MPO's planning, both individually as collaboratively as a three MPO region.

Project Schedule and Products

RAND will conclude the study by producing a RAND Research Report and summary Research Brief that document the process, analytical methods, and recommendations. RAND will provide SACOG, MTC, and SJCOG staff with analytic tools used in the work so they can conduct similar analysis in the future. We will also conduct a final series of briefings with our partners and other local audiences to widely disseminate the methods and results across the region.

This pilot effort would be conducted over a 12-month period, beginning in December 2015.