

CTP 2050 MODELING FACTSHEET

What is the purpose of modeling in the CTP 2050?

To inform the selection of recommendations in the CTP 2050. The model is used to demonstrate one path to achieving the state's GHG emissions reduction targets, as required by State law. Modeling in the CTP is useful for illustrating the magnitude of change in VMT, GHG emissions, delay, and other measures of transportation system performance, but does not dictate or preempt CTP recommendations. Modeling results are considered alongside a variety of other non-modelable strategies to address the full range of plan goals, such as social equity and quality of life. The CTP 2050 recommendations are therefore developed through a holistic assessment that draws on modeling results, research, best practices, and stakeholder input from the TAC, PAC, and the public.

What is the California Statewide Freight Forecasting and Travel Demand Model (CSF2TDM)?

The CSF2TDM forecasts all personal and freight travel throughout the state based on changes in population and employment growth, development patterns, travel behavior, and transportation infrastructure improvements. The travel demand model tells us how individual and groups of strategies (scenarios) may impact VMT, mode split, trip length, vehicle hours of delay, and vehicle hours traveled.

What strategies were modeled?

Ten strategies were modeled to assess the scope of impact on VMT and GHG emissions reduction:

1. Local Transit
2. Intercity & High-Speed Rail
3. Managed Lanes
4. Alternative Freight Deliveries
5. Mobility as a Service
6. Roadway Pricing
7. Connected & Autonomous Vehicles
8. Zero-Emission Vehicles
9. Land Use
10. Telework

These strategies, and their modeling assumptions shown on the following page, were selected based on input from the TAC and approved by the PAC. Some strategies, such as bicycle and pedestrian improvements, cannot be directly modeled using the CSF2TDM and are therefore not included in this list of strategies. However, the model is able to determine the

WHAT CAN THE MODEL TELL US?

How far can we move the needle?



What would it take to achieve CTP goals?



What consequences might arise?



CAN

-  Understand sensitivities to changes in travel cost, time, and other variables
-  Evaluate impacts of major infrastructure investments such as high-speed rail
-  Produce useful data to inform policymaking

CANNOT

-  Dictate or preempt policy decision-making
-  Model specific micro-level improvements such as bike lanes and pedestrian infrastructure. Local or regional models may be better suited to analyze these and other improvements to intersections and local transit service

impact of these ten strategies on bicycle and pedestrian travel and mode share, which was considered when developing plan recommendations.

What are the modeling assumptions for each of the strategies?

STRATEGY	ASSUMPTION	VMT REDUCTION (from 2050 Baseline)
HOV Lanes	Require 3 or more occupants in all existing HOV lanes.	-1%
Local Transit	Local transit service headways reduced by 50% and rides are free (no fares). The model does not account for individual service improvements or for existing or new capital costs. Increases can be within existing bus services or through other forms of transit, including micro transit – the model is unable to differentiate between types of service improvements.	-4%
Mobility as a Service (MaaS)	Increase MaaS options and pooled-ride services. This is accomplished in the model by reducing the desirability of driving alone.	-2%
Alternative Freight Deliveries	50% reduction in truck last-mile deliveries through drone deliveries, drop-off services, and alternative delivery methods.	-1%
Roadway Pricing	50% increase in urban county driving costs (MTC, SCAG, SANDAG, and SACOG), excluding the lowest income quintile households. Cordon pricing of \$10 in six downtown core areas of LA, SF, OAK, SAC, SJ & SD. The model does not differentiate between pricing strategies designed to increase the cost of driving. Therefore, the increase in auto-operating costs was used as a proxy for road pricing.	-8%
Intercity Rail	2018 State Rail Plan Vision	-5%
Connected & Autonomous Vehicles	Assumes the government works to strongly regulate the use of future CAVs so that they are shared, efficient, and electric, reducing overall VMT and GHG emissions from an unregulated scenario.	+7%
Telework	Half of work trips are eliminated. This strategy does not assume changes to non-work trips.	-8%
Zero-Emission Vehicles	2017 Climate Change Scoping Plan plus an additional 3% ZEV passenger vehicles, 6% ZEV light and medium duty vehicles, and 7% ZEV heavy duty vehicles.*	None
Land Use	75% of assumed population and employment growth is moved to adjacent higher density locations. Rural growth is moved to nearby	-8%



suburban areas, suburban growth moved to nearby urban areas, etc.

** Note that the impacts of Executive Order N-79-20 on future vehicle fleet mix and GHG reduction are not included. These are under review, and CTP 2050 will be updated to incorporate them.*

The combined strategies would achieve an estimated 30 percent reduction in GHG emissions from forecasted 2050 levels. Individual strategy contributions to GHG reduction were not modeled. Full implementation of strategies is assumed by 2050.

What was the process for modeling CTP 2050 strategies?

First, sensitivity testing of individual strategies was conducted to estimate the range of VMT impact of each strategy (see Section 5 of the Technical Analysis Element for the strategies that were tested). Based on these results, two initial scenarios were developed, with the input of the TAC and PAC, to estimate the cumulative impact of different combinations of strategies. The results of the first round were presented to the PAC & TAC, which informed the development of three final CTP scenarios:

Transportation Focus – examines a future in which we focus our efforts solely on transportation-related strategies such as rail and transit investments, roadway pricing, and emerging technology regulation. These improvements are intended to incentivize a shift toward transit, rail, walk, and bike modes through providing better transportation options. This scenario would lead to significant revenue generation as a result of pricing, which would reinvest in non-auto modes to spur the shift.



Land Use Focus – examines a future in which housing and land development policies implemented over the next three decades encourage greater density in urban areas, leading to concentrated population and employment growth. This scenario explores the impacts of reducing travel distances between destinations to see how far land use alone can get us to reaching our goals.



Combined – explores the impacts of implementing the strategies in both the transportation and land use focus scenarios, as well as expanded telework for jobs that can accommodate it.



To view modeling results and how they informed the development of CTP 2050 recommendations, see the Chapter 4 of the CTP 2050.