

TABLE 4-7: HOW THE PLAN REDUCES PER CAPITA GREENHOUSE GAS EMISSIONS IN 2040

Strategy/Model Assumption¹	Net Change in 2040 CO₂ Per Capita Emissions (lbs.)	Percentage Point Change in 2040 CO₂ Per Capita Emissions (compare to a 16.7% plan reduction below 2005)²	Model Sensitivity Testing/ Estimation Method
Pricing (2/3rds increase in fuel costs)	- 1.3216	- 7.91%	2040 plan with/without fuel cost change between 2013-2040
Economic Activity Decrease (recession)	- 0.6488	- 3.88%	2040 plan with/without jobs/housing ratio change from 1.1 to 1.3
Land Use (jobs/housing mix closer/re-balanced)	- 0.4228	- 2.53%	2040 plan network with/without on old plan land use
Road Projects (reduce out of direction travel)	- 0.0363	- 0.22%	2040 plan with/without 2015 network
Transit Improvements			
Local transit system	- 0.0031	- 0.02%	removed new BRT/rapid/express/express routes
Commuter rail system	- 0.0017	- 0.01%	removed new Amtrak/MetroLink stops
Enhanced intercity passenger rail	- 0.0039	- 0.02%	removed enhanced Amtrak/HSR in 2040
Transportation Demand Management			
Complete streets/bike/ped. improvements	- 0.0031	- 0.02%	removed bike and ped enhancements in model
Employer based trip reduction (E-Trips)	< - 0.002	< - 0.02%	est. based on 2013 E-Trip VMT of 76,000 emps. (60% of emps. at 100+ employers) ³
Transportation System Management			
Traffic signalization/synchronization	< - 0.024	< - 0.15%	est. based on smoother traffic flow speeds resulting in a 10% CO ₂ emissions reduction ⁴
HOV/ramp metering	< - 0.002	< - 0.01%	est. based on 16 lane miles of HOV facilities ⁵

¹ Note that SB 375 related CO₂ emission reductions from strategies and assumptions are not additive. When run separately some strategies result in a larger change in emission because they compete with each other for trips when combined in a single model run. Many strategies are included in the model based on model inputs from household travel surveys (lower multi-family trip generation rates, high vehicle occupancy rates), traffic data, etc. that are difficult to analyze because they exist in the base year condition. Very small changes in CO₂ may exceed EMFAC model tolerances.

² An 8 percentage point reduction in the SB 375 related CO₂ per capita of 16.7% for the 2040 plan alternative means the plan would only result in an 8.7% reduction in CO₂ per capita compared to 2005.

³ E-Trips is a San Joaquin Valley Air District program requiring large employers of 100 or more employees to promote ridesharing and other modes to reduce travel and emissions. The estimate assumes that the equivalent of 60% of Kern's 2013 large employers carpooled with one other person, reducing VMT from 76,000 employees by 50%, resulting in a corresponding reduction in emissions.

⁴ Barth/Boriboonsomsin, 2008 (<http://www.uctc.net/papers/846.pdf>), suggest that up to a 20% reduction in CO₂ emissions on congested streets in Southern California can occur if traffic smoothing techniques are employed. The estimate above assumes conservatively 10% emissions savings for new traffic on arterial streets which are estimated to be 1/10th as congested overall as Southern California arterials.

⁵ Assumes additional 16 HOV lane miles and approximately 60 metered HOV bypass ramps by 2040 will have only a minor effect on the 2040 HOV mode share of 50%.

State-Level Strategies

For SB 375, the State of California has implemented numerous strategies that are assisting the region in attaining the SCS targets. For example:

- AB 118 – Air Quality Improvement Program
- AB 2766 – Motor Vehicle Fee Program
- CalStart
- Cap and Trade Program
- Clean Diesel
- Clean Vehicle Rebate Project