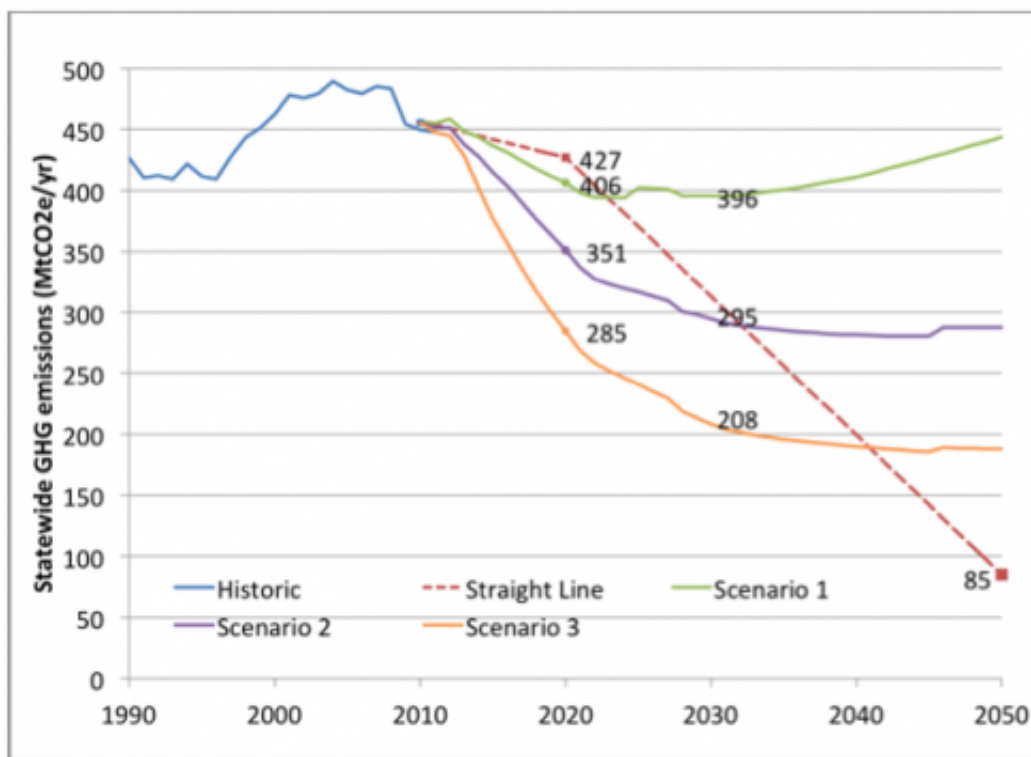


# New ideas needed to meet California's 2050 greenhouse gas targets, study reports

November 5 2013



A comparison of greenhouse gas emissions by Scenario, along with historical and “straight-line” connections between 2020 and 2050 policy targets. Credit: California Greenhouse Gas Inventory Spreadsheet

California is on track to meet its state-mandated targets for reducing greenhouse gas emissions for 2020, but it will not be able to meet its 2050 target without bold new technologies and policies. This is the

conclusion of the California Greenhouse Gas Inventory Spreadsheet (GHGIS), a new model developed by the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) to look at how far existing policies and technologies can get us in emissions reductions.

A 2005 executive order requires California to reduce its emissions of heat-trapping greenhouse gases—including carbon dioxide, methane, nitrous oxide and hydrofluorocarbons—to 80 percent below 1990 levels by 2050. "This is quite a stringent requirement, and even if we aggressively expand our policies and implement fledgling technologies that are not even on the marketplace now, our analysis shows that California will still not be able to get emissions to 85 metric tons of CO<sub>2</sub>-equivalent per year by 2050," said Jeff Greenblatt, a Berkeley Lab researcher who created the GHGIS.

Next, Greenblatt took official state projections of growth in population and gross state product, the two main drivers for the expected increase in [greenhouse gas](#) emissions. In the next 40 years, the state's population is forecast to cross the 50-million mark, gaining 15.4 million people between 2010 and 2060, according to the California Department of Finance's latest projections.

What the GHGIS model found was that, across the three scenarios, emissions in 2020 fall to between 285 and 406 metric tons of CO<sub>2</sub>-equivalent per year (MtCO<sub>2</sub>/year). Total emissions for 2011 were 448 MtCO<sub>2</sub>/year and have been trending down over the last decade. Greenblatt's model found they fall further in 2030 to between 208 and 396 MtCO<sub>2</sub>/year, depending on the scenario.



Credit: AI-generated image ([disclaimer](#))

By 2050 [emissions](#) start to rise slightly in Scenarios 1 and 2, to 444 and 288 MtCO<sub>2</sub>/year, respectively, and to 188 MtCO<sub>2</sub>/year in Scenario 3, still far short of the 85 MtCO<sub>2</sub>/year target. Some of the policies assumed in Scenario 3 include: average fuel efficiency of 77.9 mpg for light-duty vehicles in 2050, 51 percent of electricity produced from renewable sources, cleaner fuels and 1 percent renewable jet fuel by 2015.

Greenblatt is also co-author of a 2011 report for the California Council on Science and Technology looking at what technologies and policies would be required to meet the 2050 target. That report found that meeting the goal would require aggressive efficiency and electrification as well as maturation of technologies still in development, such as advanced batteries and more efficient biofuels.

The GHGIS model covers 2010 to 2050 and includes all sectors of the California economy known to emit [greenhouse gases](#), including water, waste, electricity generation, light-duty vehicles, heavy-duty vehicles, fuels and buildings.

**More information:** [eetd.lbl.gov/publications/esti ... -driven-greenhouse-g](https://eetd.lbl.gov/publications/esti...-driven-greenhouse-g)

Provided by Lawrence Berkeley National Laboratory

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