

PROPOSED SCOPING PLAN

Cap-and-Trade Economic Analysis

An economic analysis of the California Air Resources Board's proposed plan for achieving the state's 2030 greenhouse gas reduction goal shows cap-and-trade to be the most cost effective approach, guaranteeing emissions reductions while minimizing costs to the economy.

Results demonstrate that the California economy will continue to grow – to an estimated \$3.4 trillion in 2030 – while we achieve our 2030 GHG target of a 40 percent reduction below 1990 levels and reduce air pollution. Using cap-and-trade will avoid tens of billions of dollars in costs to the economy compared with command and control measures.

Background

CARB is currently engaged in an ongoing planning process to achieve the state's 2030 greenhouse gas reduction goal. CARB released a Proposed Scoping Plan in January 2017 building on California's progress since the adoption of the first climate plan under AB 32 which established California's first GHG target – calling on the state to reduce emissions to 1990 levels by 2020.

California is currently on track to exceed our 2020 climate target, while the economy continues to grow. Since many of the State's major climate programs, including the cap-and-trade program, have launched, economic growth in California has consistently outpaced the rest of the country. California had the third-highest average annual growth rate in the country from 2012-2016. In short, California has a thriving, more efficient economy.

To guarantee the state achieves its 2030 GHG target in a cost-effective way, CARB's Proposed Scoping Plan includes extending the cap-and-trade program and enhancing the Low Carbon Fuel Standard complemented by a measure to directly reduce refinery emissions.

CARB also evaluated several different alternatives in the process including:

- Alternative 1: No Cap-and-Trade (Prescriptive Regulations or "Command and Control")
- Alternative 2: Carbon Tax
- Alternative 3: All Cap-and-Trade
- Alternative 4: Cap and Tax

The proposed plan and 4 alternative scenarios were developed by CARB in consultation with stakeholders and State agencies and modeled by Energy and Environmental Economics, Inc. (E3) using the California PATHWAYS model. The PATHWAYS model evaluates the long-term greenhouse gas reductions and costs of transitioning to lower carbon goods and fuels.

The economic costs and savings of the proposed plan and 4 alternatives –the overall impact to the California economy - were estimated using the PATHWAYS model and a macroeconomic model (REMI) of the State's economy through 2030. The economic modeling was developed in consultation with reviewers from UC Berkeley, UC Davis, and MIT.

Proposed Plan: Cap-and-Trade with Enhanced Low Carbon Fuel Standard and Proposed Refinery Measure

- Cost-effective approach to meet 2030 target
- Guarantees emissions reductions to meet 2030 target
- Mitigates leakage

Alternative 1: No Cap-and-Trade

- Higher cost on California economy than proposed plan
- Higher cost to California households than the proposed plan
- Higher uncertainty of meeting 2030 target
- Limited options to mitigate for leakage

Alternative 2: Carbon Tax

- Difficult to set tax correctly to hit an emissions target. Existing carbon tax in British Columbia shows setting the right tax to hit a target is difficult.
- Higher uncertainty of meeting 2030 target than proposed plan
- Limited options to mitigate for leakage

Alternative 3: All Cap-and-Trade with no Enhanced Low Carbon Fuel Standard or Proposed Refinery Measure

- Cost-effective approach to meet 2030 target
- Mitigates leakage
- Not as responsive to AB 197 as proposed plan

Alternative 4: Cap and Tax

- Highest cost of all alternatives considered
- Largest impact on jobs in California
- High potential to reduce industrial production in California
- No options to mitigate leakage

Economic Impacts in 2030 Compared with Business as Usual

The table below compares the impact of the proposed plan and 4 alternatives in 2030 using three indicators: gross domestic product, employment and personal income.

The values in the tables are all relative to business as usual trends – which projects the California economy will grow from today’s levels to \$3.4 trillion in 2030, employment grows 23.5 million jobs, and personal income is \$3 trillion – informed by projections from the California Department of Finance. The California economy is expected to continue to grow under business as usual and all the scenarios.

The analysis shows:

- CARB’s proposed cap-and-trade scenario is the most cost-effective approach to meeting California’s 2030 climate goals.
- Command and control measures – Alternative 1 and 4 – are three to five times more expensive to the economy than the proposed cap and trade scenario.
- The proposed cap-and-trade scenario costs households up to \$210 less per year than a command and control measure.

	Proposed Plan	No Cap-and-Trade Alt. 1	Carbon Tax Alt. 2	All Cap-and-Trade Alt. 3	Cap-and-Tax Alt 4.
California GDP (Billion \$2015)*	-\$13.2 to -\$22.5 (-0.4% to -0.6%)	-\$40.0 (-1.2%)	-\$21.3 (-0.6%)	-\$8.3 to -\$17.7 (-0.2% to -0.5%)	-\$67.8 (-2.0%)
Employment (Thousand Jobs)*	-67.7 to -104.1 (-0.3% to -0.4%)	-271.6 (-1.2%)	-103.6 (-0.4%)	-34.7 to -74.3 (-0.2% to -0.3%)	-356.3 (-1.5%)
Personal Income (Billion \$2015)*	-\$6.4 to -\$4.2 (-0.2% to -0.1%)	-\$27.5 (-0.9%)	-\$2.9 (-0.1%)	-\$3.1 to -\$1.0 (-0.1% to 0.0%)	-\$30.6 (-1.0%)
Cost per Household** (\$2015 dollars)	\$30 to \$215	\$240	\$130	Not available***	Not available***

Methodology

- To estimate the cost of achieving the 2030 target on the California economy, first the California economy in 2030 is modeled using Department of Finance projections for population growth, migration, and economic growth. This produces a model of the California economy in 2030 if California does NOT implement any new measures to reduce GHGs. This is called the reference, or business as usual, scenario.
- To estimate the costs of achieving the 2030 target, for each scenario, CARB staff modeled the California economy each year through 2030 while implementing the measures needed to achieve the 2030 target.

- The California economy in 2030 under the reference case (no additional measures to reduce GHGs) is then compared to the California economy in 2030 under the proposed plan and each alternative. This allows for comparison of the impact of each of the scenarios against the business as usual or reference case.

* Source: <https://www.arb.ca.gov/cc/scopingplan/meetings/032817/sp-march-workshop-slides.pdf>

** Source: https://www.arb.ca.gov/cc/scopingplan/app_e_economic_analysis_final.pdf

*** Household cost estimates based on January 2017 economic analysis that did not include Alternative 3 or Alternative 4. Alternative 3 and 4 were added to the economic analysis based on feedback from the board and stakeholders during January 2017 board meeting. Initial evaluation of all 4 alternatives was presented at the March 2017 workshop.