

# Technical Assessment of CO<sub>2</sub> Emission Reductions for Passenger Vehicles in the Post-2025 Timeframe

The following slides present the high level results of a February 2017 Report prepared with support from Environmental Defense Fund, a non-profit, non-governmental, non-partisan environmental advocacy group with over two million members. The full report is available at [https://www.edf.org/sites/default/files/content/final\\_public\\_white\\_paper\\_post\\_2026\\_co2\\_reductions\\_2.27\\_clean.pdf](https://www.edf.org/sites/default/files/content/final_public_white_paper_post_2026_co2_reductions_2.27_clean.pdf), and has been submitted to the ARB for the record.

With over 60 years of collective experience and deploying state-of-the-art OMEGA modeling, the authors have carried out extensive technical analysis summarized in this report examining what CO<sub>2</sub> reductions may be possible considering technologies, vehicle cost and overall cost savings to customers when fuel savings are considered, to help initiate and facilitate future analysis and discussion. The report does not recommend adoption of specific CO<sub>2</sub> emission standards for 2026 and beyond. Additional technical and economic analyses, and input from all interested stakeholders, are necessary prior to adoption of new emissions performance standards.

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# Opportunities to Further Reduce CO2 Emissions Post-2025. – An Evaluation

Tom Cackette

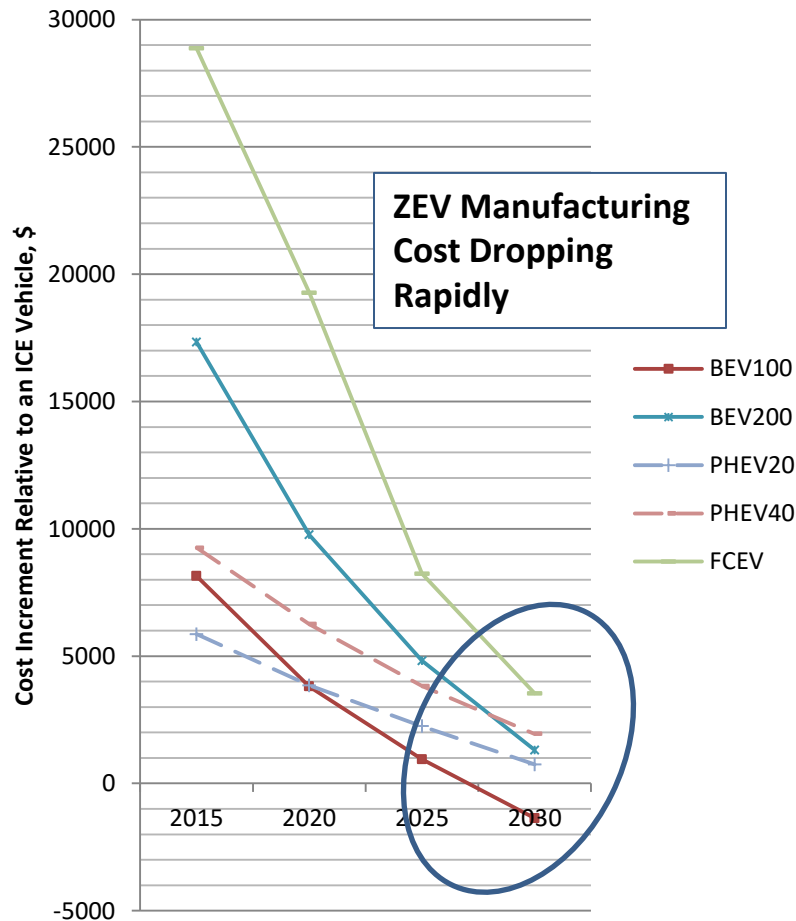
Study<sup>1</sup> supported by the Environmental Defense Fund

## About the study

- Uses same modeling tools as CARB/EPA
- Changes made to model were:
  - Extend modeling domain to 2030
  - Update projected cost of ZEVs to reflect recent study (ICCT 2016)
- Evaluated 7 different scenarios, varying future ZEV adoption and ZEV cost

<sup>1</sup> [https://www.edf.org/sites/default/files/content/final\\_public\\_white\\_paper\\_post\\_2026\\_co2\\_reductions2.27\\_clean.pdf](https://www.edf.org/sites/default/files/content/final_public_white_paper_post_2026_co2_reductions2.27_clean.pdf)

# ZEV Cost Reduction Opens an Opportunity for Additional GHG Reduction



Source: ICCT (2016)

## Study Results – 2030

- **Without more ZEVs**
  - Future CO2 reductions limited to 10 to 30 gpm
    - Even when all conventional technologies used
- **ZEVs widely available**
  - Greater CO2 reductions up to 90 gpm achievable
    - ZEVs become cost effective choice

# Study Results: 2030

- Up to 90 gpm CO2 reduction from current standard is technically feasible
- Fuel savings 2 to 3 times greater than price increase of average new vehicle
- Increased price of new vehicle fully offset by fuel savings in about 5 years
  - Net cost savings realized more quickly by those financing new vehicle
- ZEVs are the most cost effective technology to reduce CO2 emission by 2030
  - ZEV price becomes comparable to gasoline vehicle
  - ZEV CO2 reduction much greater than gasoline vehicle

Metric <sup>1</sup>	50 gpm CO2 Reduction	90 gpm CO2 Reduction
Price increase, average vehicle sold	\$1350	\$2500
Fuel cost savings, lifetime <sup>2</sup>	\$3860	\$6855
Payback Period, years <sup>3</sup>	5.3	5.3
ZEV sales, %	21%	40%

<sup>1</sup> Assumes ZEV sales are 50% BEV100 and 50% BEV200   <sup>2</sup> Present value, 3% discount   <sup>3</sup> Average ownership of new vehicle is 6.5 years

# ZEVs Provide a Pathway to Achieving CA 2050 GHG Goal

