



COMMENTS ON:

California Air Resource Board's Advanced Clean Cars Midterm Review

Submitted March 20, 2017

By the

Natural Resources Defense Council (NRDC)

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1. Introduction

The Natural Resources Defense Council (NRDC) is a national nonprofit environmental organization with more than two million members and online activists. Over 400,000 of these members live and work in California. Our members live all around the state and are impacted by the various air quality and climate threats present in California.

The California Air Resource Board's (ARB) Advanced Clean Cars program sets strict vehicle tailpipe standards on greenhouse gas (GHG), on criteria emissions such as particulate matter and oxides of nitrogen and requires a certain percentage of vehicles sold have zero-emissions from the tailpipe. By doing so, the program will provide the state with air quality and public health benefits, as well as necessary reductions in carbon pollution. ARB's multi-year analysis conducted as part of its Midterm Review shows that the program is working well. The agency has provided substantial evidence that the standard can be met on time, with known technologies, and at reasonable costs. ARB has also shown that the standards technically could be strengthened between model years 2022 through 2025 but has deferred strengthening until post 2025 in order to provide industry with greater certainty. The NRDC supports the conclusions made by ARB as reasonable, well considered, and supported by substantial evidence.

As set forth in greater detail below, NRDC supports ARB's recommendation to:

- (1) Maintain its light-duty passenger vehicle greenhouse gas emissions standards for model years 2017 through 2025,
- (2) Further improve and strengthen the zero-emission vehicle (ZEV) program in the post 2025 timeframe, and,
- (3) Begin the administrative process and stakeholder discussions around development of post-2025 standards.

2. California's Advanced Clean Car Standards Are Needed to Continue Improving Air Quality and Preventing Carbon Pollution

While California has made great strides in cleaning up its air, large swaths of the state continue to suffer from dangerously poor air quality. Areas like Bakersfield, CA, the Los Angeles metropolitan area, and the Bay Area consistently fail to meet minimum state and federal air quality standards.¹ Over 80% of state residents continue to breathe unhealthy air for some part of the year in California, according to the American Lung Association of California.² Keeping

¹ See American Lung Association, *State of the Air 2016*; available at <http://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2016-full.pdf>

² Ibid.

California's vehicle emission standards strong is essential for protecting the health of state residents.

Cars and trucks are key contributors to state air pollution. ARB's own analysis shows that cars and trucks are responsible for over 80% of nitrogen oxide pollution (one of the key components of smog), and over 90% of diesel particulate matter pollution.³ Exposure to these pollutants is responsible for a range of respiratory and cardiovascular conditions, and leads to early death and increased hospital admissions.⁴ According to American Lung Association estimates, vehicle pollution results in over 2,000 premature deaths and costs \$37 billion per year.⁵

Cars and trucks are also produce a large share of the state's greenhouse gas emissions, nearly 40% according to ARB's figures.⁶ Like smog and particulate matter, the impacts from climate-change caused by anthropogenic sources of greenhouse gas (GHG or "carbon") emissions will likely have detrimental effects on human health. As EPA itself has found, increased greenhouse gas pollution is expected to worsen ozone pollution, which causes respiratory illness and premature death.⁷ The longer term effects of GHG emissions – increased temperatures, the increase in vector-borne diseases, and the increased potential for extreme weather events – also have damaging effects on human health.⁸

In addition to having immediate harmful effects on human health, carbon pollution has deadly effects in the long-term. Carbon pollution is a powerful climate change forcer. The world is already at its warmest point in over a century – the National Oceanic and Atmospheric Administration has reported that 2016 was the hottest year in its period of record⁹ – and more must be done to slow the current global warming trend. The effects of climate change are already being felt in California. As EPA acknowledged in granting California's 2013 vehicle waiver, climate change has particular effects in California, including devastating fires, deadly heat waves, destructive storm surges, and the loss of critical snow pack.¹⁰ Continued climate

³ Air Resource Board, *Mobile Source Strategy* (May 2016) pp. 19-20; available at <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>.

⁴ Environmental Protection Agency; *Benefits and Costs of the Clean Air Act* (March 2011) at 5-6; available at <https://www.epa.gov/clean-air-act-overview/benefits-and-costs-clean-air-act-1990-2020-second-prospective-study>

⁵ American Lung Association, *Clean Air Future – Health and Climate Benefits of Zero Emissions Vehicles* (Oct. 2016) at 12; available at <http://www.lung.org/local-content/california/documents/2016ZeroEmissionsReport.pdf>.

⁶ Air Resources Board, *Mobile Source Strategy* (May 2016) at p. 19; available at <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>

⁷ 74 Fed. Reg. 66496-01, 66525 (Dec. 15, 2009)

⁸ *Id.* at 66524.

⁹ National Oceanic and Atmospheric Administration, *State of the Climate Reports*. <http://www.ncdc.noaa.gov/sotc/>. Last Accessed December 21, 2016.

¹⁰ At 2130.

change will exacerbate these effects. Climate change is also expected to continue to impact food production and water resources, and also to threaten coastal areas at risk due to rising seas.¹¹

Clean car and fuel standards have made real differences in curbing greenhouse gas emissions from the transportation sector. In 2014, carbon pollution from the combustion of reformulated gasoline, which comprises over 99% of light duty vehicle fuel, dropped 9% below 2005 levels¹², even as the demand for driving increased.¹³ EPA reports that vehicle carbon dioxide emissions have declined over the past decade, with model year 2015 cars producing 22% fewer emissions than in 2004.¹⁴ The agency has also calculated that the standards since 2012 have avoided over 138 million metric tons of carbon pollution and saved American drivers over \$31 billion in fuel costs.¹⁵ Countries comprising 80% of the global passenger vehicle market have now established or proposed standards similar to those of California's and collectively represent one of the largest climate reduction strategy to date at a global level.¹⁶

Still more work is needed to continue protecting California's population and its environment over the coming years. As EPA itself noted in its Proposed Determination (PD), which were finalized as part of the Final Determination on January 13, 2017, that "emission reduction choices made today matter in determining impacts experienced not just over the next few decades, but in the coming centuries and millennia."¹⁷

3. The Board should reaffirm ARB's commitment to the existing Advanced Clean Cars Program – including the GHG, ZEV, and criteria emission standards – through model year 2025 based on the findings of the Midterm Review

ARB staff has recommended that California maintain its existing GHG, criteria, and ZEV emission standards for model years 2022 through 2025. NRDC supports this recommendation. The agency has provided substantial evidence within the technical record to support its conclusions.

We also note that ARB staff's conclusions on its GHG emission standards are similar to the formal decision made by EPA in its Final Determination published on January 13, 2017 to

¹¹ 74 Fed. Reg. 66496-01, 66530.

¹² EIA, Monthly Energy Review, Table 12.5, http://www.eia.gov/totalenergy/data/monthly/pdf/sec12_8.pdf, last accessed December 2016.

¹³ U.S. DOT, Bureau of Transportation Statistics, *National Transportation Statistics*, Table 1-35, http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_01_35.html, last accessed December 2016.

¹⁴ EPA, Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2016, <https://www.epa.gov/sites/production/files/2016-11/documents/420s16001.pdf>, last accessed December 2016.

¹⁵ EPA, <https://www.epa.gov/greenvehicles>. Accessed December 19, 2016.

¹⁶ <http://www.theicct.org/info-tools/global-passenger-vehicle-standards>

¹⁷ EPA, Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation (PD) at 12.

maintain the National Program standards.¹⁸ The report concluded that “[c]ompliance with the current national GHG standards for model years 2022-2025 will result in equivalent or greater GHG benefits (at the same or lower cost to manufacturers) than originally projected for California and...changes to the stringency of the national or California GHG standards are not necessary or warranted.”¹⁹

NRDC supports ARB’s conclusion and recommendation. As set forth below, EPA and ARB’s standards are supported by a strong technical record that can be readily met by manufacturers and provide significant public health benefits.

a. Manufacturers Can Readily Comply with ARB’s Proposed Standards By Relying on Existing Technology

As ARB has noted in the Midterm Review report, manufacturers can meet MY 2022 through MY 2025 GHG emission standards at the same or lower cost than originally estimated in 2012 rulemaking and using advanced gasoline engines and transmissions, design shifts reducing vehicle weight and improving aerodynamics.²⁰ NRDC concurs with this assessment.

As NRDC also stated in its comments to the joint Technical Assessment Report (“TAR”) released jointly by the U.S. EPA, California Air Resources Board, and National Highway & Transportation Safety Administration in the summer of 2016, independent analysis produced by the National Research Council confirms that MY 2025 standards can be met by conventional engine and transmission technologies and weight reduction measures.²¹

As shown in Figure 1, the 2015 NRC study confirms NHTSA and EPA’s assessment that a midsize car can comply with 2025 fuel economy and GHG emission standards using just conventional gasoline engine technologies such as downsized turbocharged engines, 8-speed automatic transmissions, and a 7.5 percent weight reduction (which the committee believes is well in-line with what manufacturers are likely to implement). Electrified powertrains –including stop/start systems, conventional hybrid electric vehicles, and battery electric vehicles –were found to be unnecessary for a midsize car to meet the vehicle’s 2025 targets. The study indicates that automakers can meet 2025 GHG emission standards on time, using known technologies, and at reasonable cost. The dramatic reductions from the NRC’s previous fuel economy study--

¹⁸ MTR Summary Report at ES-4.

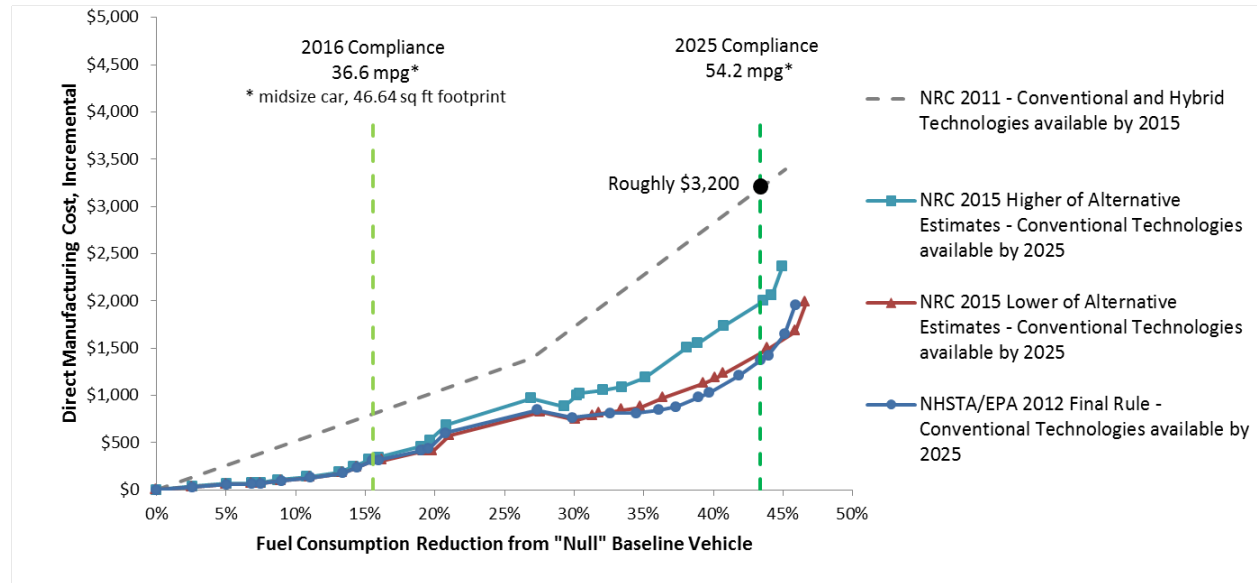
¹⁹ *Id.*

²⁰ MTR Summary Report at ES-17.

²¹ See NRDC Comments to Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation (December 29, 2016); *attached as Exhibit C*.

completed just four years ago--demonstrates how technological innovation is working to bring down the cost of meeting long-term standards.

Figure 1: 2025 Standards Can Be Met with Known Technologies at Reasonable Cost



The 2015 NRC study developed two possible direct manufacturing costs for a midsize car to meet 2025 standards of either \$1,181 or \$1,658 more than a 2016 baseline midsize car (see Table 8.5 of the study). For comparison, the study also estimated the cost using the values from NHTSA's and EPA's final rule for the 2017 to 2025 standards to be \$1,060. The lower of the committee's possible estimates, \$1,181, is consistent with the regulator's cost estimate of \$1,060.

Importantly, even the higher estimate is dramatically lower than the 2011 NRC study, bringing the latest NRC estimate in much greater agreement with the cost estimate using the regulators' values. As shown in Figure 1, using data from the 2011 NRC study results in a manufacturing cost increase of roughly \$3,200, compared to a baseline car.

The history of auto industry regulation shows automakers are typically able to innovate to meet standards on time and often at even lower cost than what regulators predicted. In fact, the 2015 NRC study agrees with regulator estimates for the cost to achieve 2016 standards. For the near-term 2016 standards, the latest NRC estimates of costs to meet the target – \$312 or \$343 – are virtually identical to the agencies' 2012 Final Rulemaking (FRM) cost estimate of \$312. If past trends hold, future NRC cost estimates will likely decrease the closer the industry gets to the 2025 compliance date.

Manufacturers can readily meet ARB's standards through existing technologies and simple improvements, and ARB should stand firm in upholding its proposed GHG emission standards through MY 2025.

b. *Manufacturer Compliance Costs Are Likely to Be Lower Than Anticipated*

In addition, because cost estimates do not fully keep pace with new technological innovations, and can overstate costs, manufacturer costs are likely to be lower than anticipated.

As the NAS committee noted, its estimates were conservative from the perspective of not being able to fully capture the impacts of future innovation that may lower costs:

The committee realizes that there will be unanticipated technological innovations and market trends that will produce vehicles with technologies not fully considered in the committee's analysis. The committee acknowledges the possibility that these unanticipated innovations may permit the industry to meet emission standards at lower than predicted cost. ...The committee does not believe that the automobile industry has reached the end of innovation, but quantifying possible improvements for unknown innovations was beyond the scope of the committee's study. (1-8)

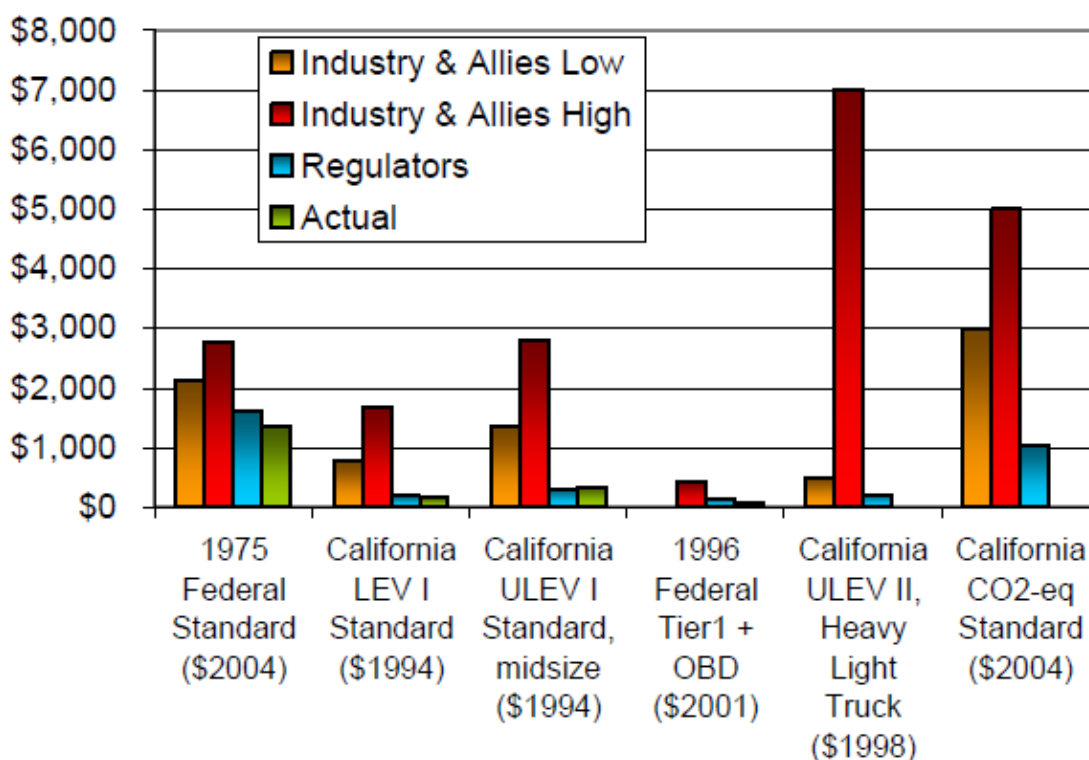
Further, long-term projections can overstate manufacturing costs. In testimony before the U.S. House of Representatives Energy and Commerce Committee Subcommittee on Commerce, Manufacturing, and Trade and the Subcommittee on Energy and Power automotive expert John German of the International Council on Clean Transportation summed up it up this way:

*During the course of my 40-year career, initial cost estimates for complying with emissions and efficiency requirements have consistently been overstated. Not some of the time, or even most of the time, but all of the time.*²²

The reason that compliance costs are overestimated, German asserted, is that future innovation cannot be predicted. This is also the finding of a 2006 study by NRDC's Roland Hwang, Co-Director of the Energy & Transportation Program, entitled "Innovation and Regulation in the Automobile Sector: Lessons Learned and Implications for California's CO₂ Standards Regulators," which is included as **Exhibit D** to these comments. The study provides decades of historical evidence that automakers and regulators overestimated the costs of complying with emissions and fuels regulations. Figure 2 below from the Hwang study compares initial estimates to actual compliance costs.

²² German, John, Statement before the Subcommittee on Commerce, Manufacturing, and Trade and the Subcommittee on Energy and Power Committee on Energy and Commerce, U.S. House of Representatives, Hearing on the Midterm Review and an Update on the Corporate Average Fuel Economy Program and Greenhouse Gas Emissions Standards for Motor Vehicles, September 22, 2016. Accessed at <http://docs.house.gov/meetings/IF/IF17/20160922/105350/HHRG-114-IF17-Wstate-GermanJ-20160922.pdf>.

Figure 2: Comparisons of Cost Estimates and Actual Costs for Meeting Select Emissions Standards



Since EPA’s 2012 FRM, new technologies have emerged—and are being deployed—that will provide additional options for meeting the 2022-2025 standards and could continue to lower costs. The TAR appropriately summed up the fact that innovation is on-going:

It is clear that the automotive industry is innovating and bringing new technology to market at a brisk pace and neither the GHG nor the CAFE analysis reflect all of the latest and emerging technology since the FRM.

While the cost, effectiveness, and implementation feasibility of individual technologies are generally consistent with the compliance pathways projected in the FRM, some developments were not foreseen by the agencies. Several new technologies or unforeseen application of technologies are now under active development and some have emerged into the light-duty vehicle market since the LD 2017-2025 Final Rule was completed. These technologies include the application of direct injection Atkinson Cycle engines in non-hybrids, greater penetration of continuously variable transmissions (CVT) and greater market penetration of diesel engines. In addition, the development of several technologies has proceeded differently than was assumed in the FRM, including development of downsized turbo-charged engines, cylinder deactivation and vehicle electrification. (TAR at 5-1)

Within vehicle electrification, John German also testified that emerging 48 volt mild hybrid systems will be less expensive than the 110 volt systems analyzed in the 2012 FRM. According to German, “48V [volt] systems provide much of the same benefits at lower cost, as they stay below the 60V lethal threshold, also improving safety. There are also excellent cost synergies with e-boost, as the same 48V controllers, inverters, and power electronics are used for both systems.”¹⁸

c. Consumers Reap Substantial Benefits From ARB’s Proposed Standards

In addition to manufacturers being able to readily comply with ARB’s proposed 2025 standards, such standards provide consumers with significant savings. When taking the average of the EPA and National Highway Traffic Safety Administration (NHTSA) cost estimates compared to today’s vehicle, the net savings to a vehicle owner is nearly \$4,000 as shown in the table below.

Figure 3: Average Per-Vehicle Cost of Compliance in 2025

	2012 Final Rule		2016 Draft TAR (2013 \$)		
	2010 \$	2013 \$	EPA	NHSTA	Average
Incremental 2022-25 Cost	\$1,070	\$1,130	\$894	\$1,245	\$1,070
	2012 Final Rule		2016 Draft TAR (2013 \$)		
	2010 \$	2013 \$	EPA	NHSTA	Average
Incremental 2017-25 Cost	\$1,836	\$1,939	\$1,287	\$1,920	\$1,604
Lifetime Fuel Savings, Net Present Value*	\$7,400	\$7,906	\$6,130	\$6,130	\$6,130
Net Lifetime Savings, Net Present Value *, **	\$5,000	\$5,342	\$4,310	\$3,640	\$3,970

* NRDC calculations based on 2016 Draft TAR, AEO 2015, and 3% discount rate

** Includes additional sales tax, insurance premiums and maintenance costs.

EPA’s most recent analysis shows consumers may save even more than projected as part of the Draft TAR published in June 2016. In response to extensive comments to the TAR and new analysis provided in the Proposed Determination, EPA finds that technology costs are lower than the TAR estimates. EPA’s updated analysis presented in the Proposed Determination and the accompanying Technical Support Document showed that the incremental MY2022-2025 costs have declined from \$920 (\$894 in 2013 dollars is \$920 in 2015 dollars) to \$875. This cost savings indicates that the net lifetime fuel savings per vehicle will be higher than those in the table above.

d. Strong Standards Are Beneficial for Innovation and Job Growth

ARB's currently enacted standards will incentivize manufacturers to develop new technologies, thereby spurring growth in engineering and manufacturing jobs.

Americans increasingly want their vehicles to be cleaner as well as more fuel efficient. Automakers have responded with innovative technologies to meet tightening standards that can cut carbon pollution as well as improve fuel efficiency, all the while turning large profits and creating jobs. Despite recent low gasoline prices, the automakers have been able to comply with the standards while increasing sales and bolstering their bottom lines.

Vehicle sales have been ramping up over the time that fuel economy and GHG standards have been tightening. EPA's Proposed Determination states that vehicle "sales have increased to record levels during the same time period that the MY2012-16 standards came into effect" (A-40). Jobs in the auto industry have grown along with sales and improved fuel economy. From June 2009 (an industry low point) to June 2016, the auto industry has added over 665,000 jobs, according to the Bureau of Labor Statistics. Over 300,000 of those jobs are in motor vehicle and parts manufacturing.²³ These are conservative estimates because they leave out jobs in other industries spurred by vehicle fuel efficiency, such as aluminum, high strength steel and other materials manufacturing.

There are over 1200 facilities in the United States where workers are employed to engineer and manufacturer vehicle components designed to improve efficiency and reduce carbon pollution according to recent analysis conducted by auto analysts Baum and Associates and commissioned by the Blue-Green Alliance and NRDC.²⁴ The facilities span 48 states to develop and supply the full range of technologies that improve fuel economy and cut carbon emissions, from lightweight automotive steel and aluminum, and advanced engines and transmissions, to electric motors and batteries. They range from facilities owned by major automakers and suppliers employing thousands of people, to small family- and entrepreneur-owned manufacturers with just a few employees.

This recent assessment includes three times more facilities than noted five years ago. In 2011, a joint report by NRDC, the United Auto Workers and National Wildlife Federation found that there were 300 facilities and over 150,000 U.S. engineering, research and manufacturing jobs associated equipment to make vehicles save fuel.²⁵ At the time, it was expected that these jobs

²³ Bureau of Labor Statistics, "Automotive Industry: Employment, Earnings, and Hours", <http://www.bls.gov/iag/tgs/iagauto.htm/>.

²⁴ BlueGreen Alliance, "SUPPLYING INGENUITY II PREVIEW : U.S. Suppliers of Key Clean, Fuel-Efficient Vehicle Technologies", December 2016. Available at <https://www.bluegreenalliance.org/wp-content/uploads/2016/12/Preview-of-Supplying-Ingenuity-II-vFINAL.pdf>.

²⁵ Natural Resources Defense Council, United Auto Workers and National Wildlife Foundation, "Supplying Ingenuity: U.S. Suppliers of Clean, Fuel-Efficient Vehicle Technologies", August 2011. Available at <https://www.nrdc.org/file/4293/download?token=Of4X6i7W>.

were poised to grow with the greater penetration of fuel efficient technologies and growing sales of fuel-efficient vehicles under the standards.

Conversely, a decision to weaken the standards could put these jobs and the global competitiveness of U.S. auto manufacturing at risk. Suppliers and automaker component operations are on the front lines of innovation, producing new fuel-saving and low-emission technologies that add new content to vehicles on the assembly line. By expanding production of these new technologies—including advanced internal combustion engine components, turbochargers, improved transmissions, lightweight structures, electric traction motors, electronic controllers, advanced battery materials, traction batteries, and smart charging systems—suppliers can maintain existing jobs and create new ones.

Further, improved vehicle fuel economy and GHG emission standards provide the certainty necessary to foster investment in fuel-saving technologies. Long-range standards in the U.S., Europe and Asia, allow automakers and their suppliers to leverage the efficiency of global platforms and powertrains that add scale and reduce costs, leading to lower prices and higher profits.

4. NRDC supports significant strengthening of the ZEV program for 2026 and subsequent model years together with renewed emphasis on complementary state ZEV policies.

ARB's and NRDC's analysis show that the percentage sales and cumulative sales required under the current ZEV program will fall far short of the original intended 2025 targets – providing strong evidence that weakening of the standard by awarding additional credits is not warranted. As our attached consultant report (Exhibit B) published in June 2016 shows, automakers will likely need to only reach a 6% sales target for zero-emission vehicles and plug-in hybrids by 2025 under the ZEV program, far below the originally estimated 15.4% sales level by 2025.²⁶ ARB's subsequent Midterm Review, like NRDC's consulting study, also found that vehicle sales required under the ZEV program would be far lower – 8% sales by 2025 – due to the significant amounts of banked credits, improvements in technology and battery range leading to higher credits being generated per vehicle, among other flexibilities. We also note that even Auto Alliance – which commissioned Sierra Research to conduct a counter-analysis to NRDC's report – still found that the industry would need to only reach 10% sales by 2025, despite a perfect storm of pessimistic assumptions about credit generation.

²⁶ Exhibit B. Attachment. *Manufacturer Sales Under Zero Emission Vehicle Regulation: 2012 Expectations and Governors' Commitments Versus Today's Likely Outcomes* (July 21, 2016); available at https://www.nrdc.org/sites/default/files/media-uploads/nrdc_commissioned_zev_report_july_2016_0.pdf

We note that none of the analysis by NRDC, ARB, or Auto Alliance truly captures the potential impact of one single automaker – Tesla – in the supply of ZEV credits. As noted in our letter in response to the Auto Alliance study (Exhibit A, attachment), just the Tesla Model 3 alone would generate more than enough ZEV credits to satisfy the entire projected Large Volume Manufacturers (LVM) volume obligations for model years 2020, 2021, 2022, and 2023 combined.²⁷ Including Tesla credit sales into the equation would result in OEM obligations being much less than the 10% sales by 2025 under the Auto Alliance, ARB, and even NRDC report.

The results by NRDC and ARB also point to lower volumes and percent sales for Section 177 ZEV states relative to California due to additional crediting opportunities for early placement in those states, credits being earned through battery electric vehicle (BEV) credit travel (which ends in MY2018), and continuation of fuel cell vehicle (FCV) travel indefinitely.

Given the findings above, ARB can have high confidence that the ZEV requirements in California and Section 177 states can be readily met by automakers, particularly since the percent sales will be roughly 50 to 60% lower than originally targeted by the Board back in 2012. Some automakers – such as BMW and GM – were already approaching the 2025 sales level for ZEVs and TZEVs in 2016. With the number of model offerings expanding from over 25 the past year to over 70 within several years, automakers will be on a trajectory to meet and exceed the ZEV standard. In fact, if ARB accounted for Tesla credits being generated and available, the auto industry as a whole would likely greatly exceed the ZEV requirements.

a. ARB should begin the process to significantly strengthen and improve the ZEV program for the 2026 model years and beyond

Therefore, NRDC supports ARB staff's recommendations to reject proposals that could weaken the ZEV standards further and to maintain them through 2025, followed by significant strengthening of the program for the 2026 model year and beyond. As ARB's Mobile Source Strategy shows, sales of ZEV and plug-in hybrids will need to be between 30 to 40% by 2030 in order to stay on course to meet state climate and air quality targets. ARB can develop a number of solutions to align the ZEV credit requirements with actual annual sales level needed to meet future targets. These include including adjusting the credit structure to increase market certainty in terms of percent sales, increasing the overall stringency, phasing out historic credits, and removing extra-crediting provisions as ZEV technologies mature.

b. ARB should “double-down” on complementary measures to accelerate transportation electrification

²⁷ Exhibit A. Attachment, NRDC letter in response to Auto Alliance's Sierra Research comments on NRDC's ZEV consultant report. March 19, 2017.

ARB can further ensure that it is working with other agencies to accelerate efforts to electrify the transportation sector. This includes working in partnership with CPUC as it works to implement the transportation electrification provisions under SB350 that will increase utility-investments in EV infrastructure, as well as the use of LCFS credits by utilities to expand the EV market. We also support ARB's efforts aimed at ensuring VW settlement funds are used in a manner that is additional and complementary to utility and state investments in EV infrastructure.

ARB can also continue to work to educate the public and policymakers on the benefits of electrification as well as the importance of monetary and non-monetary incentives in this relatively early period of market development.

5. California Should Begin the Process and Discussions On Post 2025 Standards

With the Midterm Review showing that the current standards are working, the Board should direct ARB staff to begin focusing on the post 2025 standards that are necessary to meet both GHG emission reduction requirements under SB32, the state and national ambient air quality requirements, as well as the transportation electrification goals under SB350.

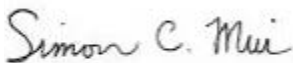
Staff should provide automakers and stakeholders with increased certainty around California's next steps by beginning the process and discussions around development of post-2025 vehicle emission standards including GHG emissions, criteria emissions, and ZEVs. This will likely require a multi-year process that will benefit from continued and early discussions with the industry and stakeholders.

Should you have any questions or require any further information, please do not hesitate to contact us at 415.875.6100 and smui@nrdc.org; igutierrez@nrdc.org.

Sincerely,



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Attachments:

Exhibit A: NRDC Letter to ARB Re: ZEV Numbers in California by 2025 (March 19, 2017)

Exhibit B: NRDC Commissioned Report, *Manufacturer Sales Under Zero Emission Vehicle Regulation: 2012 Expectations and Governors' Commitments Versus Today's Likely Outcomes*.

Exhibit C: NRDC Comments to Proposed Determination on the Appropriateness of the Model Year 2022-2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards under the Midterm Evaluation (December 29, 2016)

Exhibit D: Innovation and Regulation in the Automobile Sector: Lessons Learned and Implications for California's CO₂ Standards Regulators