State of California
AIR RESOURCES BOARD

PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE LOW-EMISSION VEHICLE III GREENHOUSE GAS EMISSION REGULATION

STAFF REPORT: INITIAL STATEMENT OF REASONS

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

For more than fifty years, California has used its ongoing authority, established and by the federal Clean Air Act and repeatedly affirmed by U.S. EPA and the courts, to issue its own standards for motor vehicle emission control to protect public health and welfare. These standards may be adopted by other states, and currently a dozen other states and the District of Columbia use California programs as part of their solution to control air pollution, including climate-change-causing emissions from mobile sources.

California's greenhouse gas emission programs for light-duty vehicles (passenger vehicles) are a fundamental component of the State's strategy to protect the health of its citizens and its natural resources, including from the threats of climate change.[1] California's programs have operated successfully in tandem with complementary standards set by other agencies for many years. Recognizing the value of a national program, California has accepted compliance with greenhouse gas emission standards adopted by the United States Environmental Protection Agency (U.S. EPA) for the 2012 through 2025 model years. To do so, the California Air Resources Board (CARB or Board) adopted the so-called "deemed to comply" option, which allows compliance with U.S. EPA's regulations as an alternative to complying with California's regulations for these model years, because the U.S. EPA standards, at the time, would deliver equivalent greenhouse gas emission reductions as California's standards.[2,3]

One important element of the originally adopted federal greenhouse gas emission standards was a requirement that U.S. EPA later conduct a midterm evaluation (MTE) to re-assess the appropriateness of the greenhouse gas emission standards for the 2022 through 2025 model years. This report was required by law to be based upon a joint Technical Assessment Report,[4] which was prepared jointly by U.S. EPA, CARB, and National Highway Traffic Safety Administration (NHTSA) staff. On January 13, 2017, U.S. EPA released its final determination (Final Determination[5]) to maintain the current National Program of greenhouse gas emission standards for 2022 through 2025 model year vehicles, finding that automakers are well positioned to meet the standards at lower costs than previously estimated.

CARB also conducted a California-specific Midterm Review[6] of the appropriateness of these standards, which also examined a number of other issues relating to the Low-Emission Vehicle III (LEV III) regulations and Zero-Emission Vehicle (ZEV) regulations and a report on the findings. Based on the CARB Midterm Review, that culminated in a comprehensive staff report of over 700 pages, and which also included a careful staff

[1] *See* Reference CARB 2017e. p. 47, *infra*.
[2] All manufacturers are currently exercising the option of complying with the federal greenhouse gas emission standards.
[3] California's light-duty greenhouse gas regulations also apply to model years beyond 2025. But since the "deemed to comply" option is not available for the 2026 and subsequent model years, they are not discussed in detail in this report.
[4] *See* 40 C.F.R. § 86.1818-12(h)(2).
[5] U.S. EPA 2017. p. 8.
[6] CARB 2017a.

analysis of the joint agency Technical Assessment Report[7] that contains over 1,200 pages of technical analysis, the Board concluded (in Resolution 17-3[8]) that:

> Given U.S. EPA has issued a Final Determination affirming the 2022 through 2025 model year federal greenhouse gas standards will remain as adopted, it is appropriate to continue California's participation in the 2017 through 2025 model year National Program by maintaining the "deemed to comply" provision allowing for compliance with the adopted U.S. EPA greenhouse gas standards for the 2022 through 2025 model years.

On March 22, 2017, shortly after the new federal Administration took office, U.S. EPA announced it would be abandoning its Final Determination. On April 13, 2018, U.S. EPA issued a notice withdrawing its previous Final Determination for the MTE of the federal passenger vehicle greenhouse gas regulations and issuing an 11-page revised Final Determination that the federal greenhouse gas standards are not appropriate, "may be too stringent," and should be changed.[9] U.S. EPA did this without properly explaining why it was departing from the extensive evidence within the Technical Assessment Report, and without sharing any data or analysis with CARB or adequately explaining the reasons for reaching a different conclusion than had been reached by the previous well-reasoned Final Determination.

On August 1, 2018, continuing the error of U.S. EPA's new Final Determination, the Acting Administrator for the U.S. EPA and the Deputy Administrator for NHTSA signed a joint Notice of Proposed Rulemaking (NPRM) that would profoundly weaken the U.S. EPA standards. The NPRM provided a comment period that will end 60-days after publication of the NPRM in the Federal Register. The proposal announces a federal intention to flat-line emissions standards at model year 2020 levels and make further changes to weaken and disrupt the program.

This threat of weakening the standards of the unified national program, left unaddressed, could substantially slow progress towards the emission reductions needed to address the serious threat climate change poses to California, the country, and the world, waste billions of gallons of gasoline, and cost consumer money on fuel. Now that U.S. EPA has stated that it intends to abandon the rigorous U.S. EPA standards the record supports, regulated entities and the public confront considerable uncertainty as to the fate of the program, undermining the goals of the unified national program to provide a clear path towards necessary pollution reductions.

This uncertainty is particularly pressing for CARB, given its responsibilities as an independent co-regulator for the light-duty vehicle industry. Several other states have exercised their authority to voluntarily adopt CARB standards, thereby reaching

[7] 2016 TAR.
[8] CARB 2017b.
[9] 83 Fed.Reg. 16,077 (April 13, 2018).

approximately a third of the domestic auto fleet.[10] Because of the capital-intensive nature of the automotive industry, production decisions for the affected model years need to be made in the near future. These decisions will have a very significant influence on whether California can stay on track to meet the critical statewide air pollution and greenhouse gas emission reduction goals necessary to protect public health and welfare. California state law requires that CARB achieve a 40 percent greenhouse gas reduction by at least 40 percent below 1990 levels by 2030.[11] State law also directs CARB to develop "alternative regulations" for mobile sources if existing programs fall short of their projected greenhouse gas emission benefits.[12] Accordingly, if expected reductions from the current program do not materialize, or are prevented from occurring, the required emission reductions may need to be achieved from other sectors, including potentially from transportation fuel sectors (e.g. petroleum extraction and refining industries) by appropriate regulatory means.

Moreover, CARB is aware that states using CARB standards also need lead-time to appropriately make regulatory decisions, potentially including whether to follow CARB's program or follow potentially less rigorous federal standards. All of these decisions must be considered this year, given the production cycle of the auto industry, and to respond appropriately to the federal processes that have been set in motion on the same timeline.

As such, CARB is proposing regulatory amendments to provide certainty in this context and to allow appropriate time for necessary public processes and business decisions. Accordingly, this regulatory proposal amends the "deemed to comply" option to ensure the emission benefits from compliance in the model years 2021 through 2025 of the current program are maintained. Specifically, CARB is proposing amendments to California's light-duty greenhouse gas emission regulations to clarify that the "deemed to comply" option is available only if the currently adopted federal greenhouse gas regulations remain in effect, which will prevent any federal weakening for model years 2021 through 2025 from being felt in California during those model years. Weakening the standards, as U.S. EPA has proposed, would be unfounded and contrary to the intent of the Clean Air Act. Such an unfounded weakening removes a material predicate of California's decision to accept compliance with U.S. EPA standards. This clarification is thus consistent with the fundamental understandings underlying the current unified national program for light-duty emissions control.

The proposed amendments will ensure that appropriate and necessary greenhouse gas emission reductions and public health protections[13] are achieved by California's

[10] Twelve states and the District of Columbia have adopted California's LEV III greenhouse gas emission standards pursuant to Section 177 of the federal Clean Air Act (42 U.S.C. § 7507): New York, Massachusetts, Vermont, Maine, Pennsylvania, Connecticut, Rhode Island, Washington, Maryland, Oregon, New Jersey, and Delaware.
[11] Senate Bill 32 (Chapter 249, Statutes 2016, Pavley). Additionally, Executive Order S-3-05 sets a goal of 80 percent emission reductions below 1990 levels by 2050.
[12] Health & Safety Code, § 38590
[13] Although the vehicle standards in question directly regulate greenhouse gas emissions, and the LEV III criteria pollutant emission fleet average standards are not being changed, reducing greenhouse gases is critically important to protect public health in California. Greenhouse gases worsen climate change; in turn, climate change results in hotter weather conditions that are already eroding California's ability to attain and maintain compliance with ambient

standards. They are also important for maintaining the pace of greenhouse gas emission reductions that are necessary to achieve our statutory targets. The proposed amendments are also consistent with the extensive technical determinations from the original Final Determination and CARB's midterm review (MTR), showing that the standards are appropriate. These proposed amendments will provide predictability for manufacturers to make the necessary investments in cleaner vehicles for Californians that have reduced climate, public health and welfare impacts, promote innovation, and are less costly to operate.

These proposed amendments do not have any impacts on projected emission reductions in California given they are only clarifying the option for "deemed to comply" and do not change the standards for compliance with the California regulations. Specifically, given the federal regulations are nearly identical to the California regulations, there are no changes to the projected emission benefits for California when comparing automaker compliance under the current federal regulations to compliance with the California regulations if the federal rule changes. Additionally, there are no significant costs associated with these proposed amendments.

CARB continues to support the unified national program as structured by the current state and federal regulations. Although CARB must initiate rulemaking processes at this juncture in order to ensure that California, other states, manufacturers, and the public retain strong standards for these critical pollutants, CARB is closely monitoring the actions taken in regards to the federal passenger vehicle greenhouse gas regulations. Because neither the best available data nor the law support U.S. EPA's recently initiated course of action, CARB will continue to advocate that U.S. EPA alter its current course of attempting to weaken the federal passenger vehicle greenhouse gas emission standards. CARB remains committed to a national program that is based on a robust technical foundation and sound economic analysis, such that it fulfills CARB's statutory mandates to protect public health and welfare and the environment. CARB has been, and remains, willing to consider well-founded and necessary changes to the program, including flexibilities that reduce compliance costs, so long as they continue to provide the necessary greenhouse gas emission reductions. Federal action that is consistent with these principles could render this CARB rulemaking unnecessary.

air quality standards. Moreover, criteria pollutant emissions in California from the production and delivery of petroleum and gasoline could change as a result of the federal action, thus increasing public health risks.

I. INTRODUCTION AND BACKGROUND

Recognizing the increasing threat climate change poses to the well-being of California's citizens and the environment, in 2002 the legislature adopted and the Governor signed Assembly Bill (AB) 1493 (Chapter 200, Statutes 2002, Pavley). AB 1493 directed CARB to adopt the maximum feasible and cost-effective reductions in greenhouse gas emissions from light-duty vehicles. Vehicle greenhouse gas emissions included carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) that are emitted from the tailpipe, as well as emissions of HFC134a, the refrigerant currently used in most vehicle air conditioning systems.

In 2004, in response to AB 1493, CARB approved what are commonly referred to as the Pavley regulations, the first in the nation to require significant reductions of greenhouse gases from motor vehicles. These regulations, which established increasingly stringent emission standards for the 2009 through 2016 model years, were projected to have a 17 percent overall reduction in climate change emissions from the light-duty fleet by 2020 and a 25 percent overall reduction by 2030. They also formed the foundation for the national greenhouse gas program for light-duty vehicles for the 2012 through 2016 model years that was developed by U.S. EPA, in coordination with NHTSA, which administers Corporate Average Fuel Economy (CAFE) Standards.

This initial national greenhouse gas program extended California's promotion of lower greenhouse gas technologies (e.g., for engines, transmission, and air conditioning technologies) nationwide to achieve comparable 2016 new vehicle fleet greenhouse gas emission reductions nationally. The national 2012 through 2016 model year greenhouse gas program was also the subject of commitment letters from the State of California and major automakers agreeing to a harmonized nationwide program because of its benefits and certainty. As a result, CARB modified its regulations to explicitly accept federal compliance with U.S. EPA standards as sufficient to demonstrate compliance with California's standards for the 2012 through 2016 model years. This acceptance of compliance with federal regulations as an alternative to California's regulations is commonly referred to as the "deemed to comply" option.

Subsequent to CARB's adoption of the Pavley regulations, the State legislature adopted and the Governor signed AB 32, the California Global Warming Solutions Act (Chapter 488, Statutes 2006, Nuñez/Pavley). AB 32 charged CARB with the responsibility of monitoring and regulating greenhouse gas emissions in the State. AB 32 also directed CARB to prepare a Scoping Plan outlining the State's strategy to achieve the maximum feasible and cost-effective reductions in furtherance of reducing greenhouse gas emissions to 1990 levels by 2020.

Building upon a 2010 joint agency Technical Assessment Report (2010 TAR),[14] in July 2011, automakers, California, and the federal government committed to a series of actions that would allow for the development of national greenhouse gas standards (and complementary CAFE standards) for model years 2017 through 2025 that would meet the needs of California as well as the nation as a whole. As part of that agreement, California committed to a continuation of the "deemed to comply" option, accepting federal program compliance for model years 2017 through 2025 with the understanding that it would provide equivalent or better overall greenhouse gas reductions in the state compared to California's program. California also understood that any changes to the national program would be based on extensive technical review jointly conducted by all three agencies.

Consistent with the national program commitment, in 2012, CARB adopted its second generation of greenhouse gas emission standards for light-duty vehicles as part of the Low-Emission Vehicle III (or LEV III) program. The LEV III regulations established increasingly stringent greenhouse gas standards for 2017 through 2025 model year light-duty vehicles, and maintained the stringency for subsequent model years. The LEV III program was adopted by the Board as part of the Advanced Clean Cars rulemaking package that also includes the state's zero-emission vehicle (ZEV) regulation.

Later that year, with the involvement of CARB, U.S. EPA and NHTSA adopted federal passenger vehicle greenhouse gas standards and fuel economy standards (2012 Final Rule) that were consistent with the California standards. The 2012 Final Rule is referred to as the "2017 through 2025 model year National Program." Since the federal program was expected to achieve greenhouse gas emission reductions that are equivalent to the California program, CARB modified the LEV III regulations to continue to allow the "deemed to comply" option beyond model year 2016, by accepting federal compliance with the U.S. EPA standards as sufficient to demonstrate compliance with California's standards for the 2017 through 2025 model years.[15]

As part of the National Program, U.S. EPA included a requirement that they and NHTSA conduct a midterm evaluation (MTE) to assess the appropriateness of the greenhouse standards for the 2022 through 2025 model years. When the Board adopted the "deemed to comply" option for model year 2017 through 2025, CARB also agreed to participate in the federal mid-term evaluation. The Board also directed staff in the Resolution (CARB, Resolution 12-11, January 26, 2012)[16] to conduct a California-specific MTR to examine a number of

[14] 2010 TAR.
[15] Although California's light-duty greenhouse gas regulations also apply to model years beyond 2025, since the "deemed to comply" option is not available for the 2026 and subsequent model years, they are not discussed in detail in this report.
[16] CARB 2012a.

issues relating to the LEV III and ZEV regulations and report back on their findings.

The first milestone in the federal MTE was an extensive multi-year study that updated the technical and cost data used in the original 2012 analysis. The results of this joint agency study were presented in a July 2016 report titled *Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025*[17] (2016 TAR). The 2016 TAR provided the technical basis for determining the feasibility and cost of compliance with the federal passenger vehicle greenhouse gas standards in the 2022 through 2025 model years. The 2016 TAR itself was not a determination of the appropriateness of the standards; rather it provided a core input to future policy decisions on the 2022 through 2025 model year greenhouse gas and CAFE standards.[18]

During the same period, the California Legislature adopted, and the Governor signed, Senate Bill 32 (SB 32, Chapter 249, Statutes 2016, Pavley), a substantial expansion of the state greenhouse gas requirements, mandating that the state reach 40 percent emission reductions below 1990 levels by 2030. Knowing the light-duty vehicle sector is projected to emit approximately 25 percent of the greenhouse gas emissions in the state, maintaining the LEV III emission benefits is paramount. As noted above, included in this statute is a provision that authorizes CARB to develop "alternative regulations" for mobile sources if existing programs fall short of their projected greenhouse gas emission benefits.[19]

On November 30, 2016, U.S. EPA provided for public comment its "proposed adjudicatory determination (Proposed Determination) that the [National Program] greenhouse gas standards currently in place for model years 2022 through 2025 remain appropriate under the Clean Air Act and therefore should not be amended to be either more or less stringent;"[20] U.S. EPA based the Proposed Determination on:

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[17] The 2016 TAR built upon the *Interim Joint Technical Assessment Report: Light Duty-Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards for Model Years 2017-2025* (September 2010), available at: https://www.epa.gov/regulations-emissions-vehicles-and-engines/interim-joint-technical-assessment-report-light-duty.

[18] *See* 40 C.F.R. § 86.1818-12(h)(2).

[19] Health & Safety Code, § 38590

[20] The "proposed adjudicatory determination" was published in the *Federal Register* on December 6, 2016. 81 Fed. Reg. 87,927 (December 6, 2016) [Notice of availability of a proposed order, Environmental Protection Agency, "Proposed Determination on the Appropriateness of the Model Year 2022–2025 Light-Duty Vehicle Greenhouse Gas Emissions Standards Under the Midterm Evaluation"], available at: https://www.gpo.gov/fdsys/pkg/FR-2016-12-06/pdf/2016-29255.pdf

Consideration of more than 200,000 public comments on the 2016 TAR, with comments from about 90 organizations and the rest from individuals; [21] and

Updates and improvements to the analyses in the 2016 TAR, using the most current information available, as informed by public comment, including updates to technology costs, technology effectiveness, modeling, consumer assessment, and other elements of the analysis.[22]

The analyses conducted for the Proposed Determination corroborated the key conclusions[23] reached in the 2016 TAR:

A wider range of technologies exist for manufacturers to use to meet the 2022 through 2025 National Program model year standards at costs that are similar to or lower than those projected in the 2012 Final Rule;

The auto industry can meet the standards primarily with advanced gasoline vehicle technologies and a small amount of hybridization and electrification; and

The updated 2025 projections of fuel prices, car/truck mix, and the fleet-target illustrate that the footprint-based standards will continue to accommodate consumer choice and achieve significant greenhouse gas reductions and fuel savings across all vehicle types.

On January 13, 2017, U.S. EPA released its final determination (Final Determination) to maintain the current National Program greenhouse gas emission standards for 2022 through 2025 model year vehicles, finding that automakers are well positioned to meet the standards at lower costs than previously estimated. U.S. EPA concluded that "there has been no information presented in the public comments on the Proposed Determination that materially changes the Agency's analysis documented in the Proposed Determination;"[24] Additionally, CARB released its final MTR report for public consideration on January 18, 2017.[25]

Following the change of Administrations, on March 15, 2017, the President announced he was "cancelling" the Final Determination, despite the extensive analyses and robust record that supports maintaining the current National Program greenhouse gas emission standards for 2022 through 2025 model year vehicles. He characterized the regulations as "job-killing",[26] despite 2016 as the

[21] U.S. EPA 2016a. p. ES-1.
[22] U.S. EPA 2016b.
[23] U.S. EPA 2016a. p. ES-2.
[24] U.S. EPA 2017. p. 3.
[25] CARB 2017a.
[26] Remarks by President Trump at American Center for Mobility, Detroit, Michigan, March 15, 2017, available at: https://www.whitehouse.gov/the-press-office/2017/03/15/remarks-president-trump-american-center-mobility-detroit-mi.

"best year on record" for U.S. light-vehicle sales, following previous years of similarly strong sales.[27]

On March 22, 2017, U.S. EPA published a notice in the *Federal Register* announcing its intent to reconsider the Final Determination, despite the robust record on which it is based.[28]

On March 24, 2017, CARB staff presented the results of the California-specific MTR[29] to the Board at a public hearing. The CARB review agreed with U.S. EPA's Final Determination, concluding that the originally projected California greenhouse gas benefits in 2025 will still be achieved (at the same or lower cost to manufacturers), provided that the federal program is maintained, despite increased truck sales, largely due to the actual share of passenger cars in the fleet mix being higher than originally estimated for California (2012 projected benefit: 166 grams CO_2e per mile; March 2017 projected benefit: between 153 and 167 grams CO_2e per mile).[30]

Based on the CARB MTR, the Board concluded (in Resolution 17-3[31]) that

> Given U.S. EPA has issued a Final Determination affirming the 2022 through 2025 model year national greenhouse gas standards will remain as adopted, it is appropriate to continue California's participation in the 2017 through 2025 model year National Program by maintaining the "deemed to comply" provision allowing for compliance with the adopted U.S. EPA greenhouse gas standards for the 2022 through 2025 model years.

II. STATEMENT OF REASONS

A. THE PROBLEM THAT THE PROPOSAL IS INTENDED TO ADDRESS

U.S. EPA completed a revised Final Determination[32] on April 2, 2018 (published in the *Federal Register* on April 13, 2018) concluding that the federal passenger vehicle greenhouse gas emission standards for model years 2022 through 2025 are inappropriate and may need to be weakened[33] despite the comprehensive data and analyses of the MTE[34] that demonstrated they should be maintained, and could be strengthened. The Executive Orders and other statements by the current federal administration demonstrate it believes these regulations, which provide significant greenhouse gas emission reductions, public health benefits (via fuel facility emission reductions), and fuel savings for consumers, and are

[27] Stoddard, Haig, Wards Auto, December Surge Lifts 2016 Sales to Record 17.5 Million Units, January 4, 2017.
[28] 82 Fed.Reg. 14,671 (March 22, 2017).
[29] CARB 2017a.
[30] CARB 2017a. Appendix M. p. 13.
[31] CARB 2017b.
[32] 83 Fed.Reg. 16,077 (April 13, 2018).
[33] 82 Fed.Reg. 14,671 (Mar. 22, 2017).
[34] Up to April 2, 2018.

fully supported by the record, are nonetheless not worth the perceived burden to manufacturers and other industry. The federal administration's expressed purpose for significantly reducing the stringency of the U.S. EPA greenhouse gas emission standards does not reflect automakers' support for increasing fuel efficiency requirements and maintaining a single national program. In May 2018, the Alliance of Automobile Manufacturers sent a letter to the Office of Management and Budget expressing their continuing desire for a single national program, which said

> In keeping with the original agreement that was reached in 2012, we have urged the Administration and California to work together to increase standards year over year and keep new vehicles affordable to more Americans. We believe that an agreement is within reach that ensures continuation of the One National Program, with automakers subject to increasing, yet attainable, fuel efficiency standards.[35]

On August 1, 2018, continuing the error of U.S. EPA's new Final Determination, the Acting Administrator for the U.S. EPA and the Deputy Administrator for NHTSA signed a joint Notice of Proposed Rulemaking (NPRM) that would profoundly weaken the U.S. EPA standards. The NPRM provided a comment period that will end 60-days after publication of the NPRM in the Federal Register.

The NPRM proposes that U.S. EPA's CO_2 targets for model years 2021-2026 remain at model year 2020 levels. Notably, the proposed standards would address only CO_2 emissions and would fail to address other, more potent greenhouse gas emissions. This proposal is contrary to the U.S. EPA's original 2017 Final Determination, which concluded that the current standards are appropriate and achievable, building upon the robust 2016 Draft TAR. Instead, it is premised on flawed compliance cost estimates and analyses that wrongly conclude the current standards will have negative economic and safety impacts.

The NPRM also proposed to find CARB's greenhouse gas and ZEV standards preempted by federal law, and to withdraw the waiver of federal preemption that the U.S. EPA granted to California in 2013 for the greenhouse gas and ZEV requirements of its Advanced Clean Cars program, at 78 Federal Register 2,112 (Jan. 9, 2013). This is contrary to the facts and the law. It frustrates Congressional intent, upheld by the Supreme Court and lower federal courts, in the Clean Air Act and the Energy Policy and Conservation Act to conserve energy and protect the environment by setting maximum feasible standards, and to preserve California's authority to take the measures it deems necessary to set its own motor vehicle emission standards. It jeopardizes the successful coordinated national program for reducing these emissions that has helped position the auto industry for continued innovation and competitiveness in an international market.

[35] Alliance.

In light of these pronouncements, California must act to guard against this risk to ensure it can maintain the benefits of its emission standards. Consistent with CARB's commitment to a single national program, the California regulatory provision accepting compliance with the U.S. EPA standards was predicated on the federal standards providing substantially equivalent greenhouse gas reductions as the California standards. California cannot accept radically less protective standards, especially because the extensive analysis of the MTE process demonstrated the current standards are entirely appropriate. The evidence supporting the MTE and provided in response to additional requests for comment showed the standards are technologically feasible, the benefits and fuel savings each outweigh the costs, and the standards have not inhibited sales. If anything, they could be strengthened.

The amendments proposed in this staff report will preserve the environmental benefits and welfare protections of the current standards by restricting the "deemed to comply" option to compliance with the U.S. EPA standards as they existed as of the date the 2017 Final Determination was released.

Proposals to weaken the U.S. EPA program or to preempt California's program or to withdraw waivers are entirely legally unfounded, unsupported by the evidence, and contrary to the core structure of the federal Clean Air Act and decades of precedent. They threaten public health and undermine California's sovereign responsibilities to protect the public. CARB has provided its views to U.S. EPA and NHTSA on this point,[36,37] and will respond in court to the finalization of any such proposals as appropriate.

B. SPECIFIC PURPOSE FOR THE ADOPTION, AMENDMENT, OR REPEAL

Currently, the LEV III greenhouse gas emission regulations incorporate the "deemed to comply" option for the 2017 through 2025 model years without specifying the promulgation date of the federal greenhouse gas regulations for which this option is allowed. Nonetheless, when the Board adopted the "deemed to comply" option, it was predicated on California retaining the greenhouse gas benefits of the LEV III regulations.[38] As mentioned above, the Board reaffirmed its conditional continuing acceptance of the "deemed to comply" at the conclusion of the California-specific MTR that was presented to the Board at a March 24, 2017 public hearing.[39] The purpose of these proposed amendments is to clarify that the "deemed to comply" option for model years 2021 through 2025 is applicable only if the currently adopted federal regulations, as they existed as of

[36] CARB 2017c.
[37] CARB 2017d.
[38] CARB 2012b. When adopting the "deemed to comply" option for the 2017 through 2025 model years, in November 2012, the Board found (Resolution 12-35): "The proposed amendments are necessary to effectuate a carefully balanced compromise between ARB, the auto industry, and the federal government that will preserve California's ability to regulate greenhouse gases while retaining equivalent or greater emission reductions;"
[39] CARB 2012a.

the date the 2017 Final Determination was released (incorporated in the Code of Federal Regulations and last amended on October 25, 2016), is in effect.

The rationale for CARB's determination that each adoption, amendment, or repeal is reasonably necessary is further described in Appendix C.

III. TECHNOLOGICAL FEASIBILITY OF PROPOSED AMENDMENT

On October 5, 2017, CARB submitted a letter[40] based upon its prior analyses to U.S. EPA and NHTSA in response to their request for comments on the collective reconsideration by U.S. EPA and NHTSA of the Final Determination of the Mid-Term Evaluation of Greenhouse Gas Emissions Standards for Model Year (MY) 2022-2025 Light-Duty Vehicles, and of the preceding model year 2021 Greenhouse Gas Emissions Standards (docket: EPA-HQ-OAR-2015-0827). This letter and the supporting information submitted in conjunction with the letter concluded that:

> The latest information affirms the January 2017 Final Determination: the one national program for controlling greenhouse gas emissions and setting fuel economy standards is working as intended, and technology development has been faster than expected at lower costs than predicted.

Subsequent to the submittal of this letter, additional information was posted to this docket, some of which contested the appropriateness of the January 2017 Final Determination. After reviewing the additional information, CARB has concluded that none of the new information changes the findings of the January 2017 Final Determination, as discussed in the October 5, 2017 letter. Moreover, nothing more recent changes these findings.[41] This conclusion is supported by the following record that addresses the factors relevant to the technological feasibility of the proposed amendment and the current U.S. EPA standards, including those factors examined by the federal midterm evaluation[42]:

1) Incremental Vehicle Costs.

   The latest information continues to confirm that the greenhouse gas emission standards and the established and augural fuel economy standards for model years 2022 through 2025 should be maintained or strengthened. The extensive multi-year joint-agency work presented in the joint agency 2016 TAR and the subsequent development of several other new advanced vehicle technologies being introduced by vehicle

[40] CARB 2017d.
[41] CARB is aware that U.S. EPA and NHTSA have proposed to rely on additional new analyses in their recent regulatory proposals. CARB staff will review this additional information as necessary in the course of this rulemaking further, but do not view this information at this juncture as either properly justifying the new U.S. EPA and NHTSA proposals nor as warranting a different course of action in this proposal.
[42] 77 Fed.Reg. 62,784 (October 15, 2012)

manufacturers in the next few years[43] clearly show that the current federal 2022 through 2025 model year greenhouse gas emission standards can be readily met at the same or lower cost than originally projected when the standards were adopted in 2012, predominantly with advanced gasoline engines and transmissions.

The costs of conventional vehicle powertrain improvements and light-weighting continue to decline. When the federal agencies approved new standards in 2012, they estimated an incremental cost for a model year 2025 vehicle of $1,163 (2015 dollars) for the greenhouse gas standards alone, above a vehicle meeting the model year 2021 standards. Since then, in the 2016 TAR the three agencies estimated that complying with model year 2025 greenhouse gas emission standards would cost between $920 to $1,148 per vehicle above a vehicle meeting the model year 2021 standards, reflecting a reduction of up to 20 percent from the original rulemaking analysis.[44] U.S. EPA's first Final Determination estimated slight additional cost reductions of about 4 percent, bringing the incremental cost to $875 for a 2025 model year vehicle.[45]

The incremental changes in costs for automakers to manufacture new vehicles were estimated using U.S. EPA's "Optimization Model for reducing Emissions of Greenhouse gases from Automobiles" (OMEGA).[46] OMEGA is a modeling tool developed by U.S. EPA that is used to estimate the incremental technologies (and their associated costs) that would be required for vehicle manufacturers to achieve a designated fleet average greenhouse gas emission standard. Inputs to OMEGA include details on the current and projected vehicle fleet such as model-specific: sales volumes, vehicle footprints, currently equipped greenhouse gas-related technologies (e.g., engine, transmission, etc.), and current CO_2 emission levels. OMEGA then identifies the least cost pathway for each vehicle manufacturer to comply with the fleet average standard by analyzing different combinations of added technologies to each vehicle model platform. Outputs of OMEGA include, for each vehicle model platform, identification of the specific technologies added on a sales volume basis, the costs associated with those incremental technologies, and the resultant sales-weighted CO_2 emission levels.[47]

The analysis in the CARB Standardized Regulatory Impact Analysis (SRIA) Equivalent Document (Appendix D) relied on the same OMEGA model and pre-processors that were used by U.S. EPA for its Proposed

[43] CARB 2017a. pp. ES-20 to ES-22.
[44] 2016 TAR. pp. 12-14. 2015 dollars.
[45] U.S. EPA 2017. p. 20. 2015 dollars.
[46] U.S. EPA, *Optimization Model for reducing Emissions of Greenhouse Gases from Automobiles (OMEGA)*, 17 August 2017, https://www.epa.gov/regulations-emissions-vehicles-and-engines/optimization-model-reducing-emissions-greenhouse-gases
[47] U.S. EPA 2016a. p.35.

Determination and made publicly available through U.S. EPA's website and docket in late-2016. However, while the Proposed Determination used vehicle fleet information specific to model year 2015 for the input files, CARB staff updated the input files to use vehicle fleet information from model year 2016 as the baseline year to reflect newer available data. In addition to national sales, staff used California-specific actual sales volumes for model year 2016 and California-specific projected sales volumes through model year 2025 based on sales volume assumptions consistent with the latest version of CARB's emission factor and inventory model for motor vehicles, EMFAC2017.[48] The baseline input file also includes assumptions of the number of ZEVs produced by each vehicle manufacturer to comply with the ZEV regulation, consistent with what was shown in Appendix A of the CARB Midterm Review report.[49]

While compliance analysis in the 2016 TAR,[50] Proposed Determination,[51] and Final Determination[52] concluded that minimal usage of electrification would be needed in the national fleet to comply with existing standards, California's fleet is likely to have higher electrification sales rates to comply with the ZEV regulation requirements. Although the current incremental cost of these ZEV technologies is higher than for conventional vehicles, their costs are now anticipated to continue to fall dramatically within the next decade based on economies of production scale and further advancements or technology learnings that increase performance. For example, between the 2012 Advanced Clean Cars rulemaking and the 2016 TAR, lithium-ion battery system costs have declined between 20 and 35 percent for the 2025 projected year.[53] These improvements in energy storage as well as electric-drive components such as motors and inverters, in turn allow manufacturers to offer new vehicles with longer all-electric range, on a more diverse set of platforms and vehicle segments, and at a lower price point that will appeal to a broader consumer base.

2) Development of powertrain improvements to gasoline and diesel powered vehicles.

A primary function of the 2016 TAR was to summarize the state of technologies that are currently in production by automakers, pending near term release, or those that could be feasibly deployed in the timeframe of the regulations. The Proposed Determination built on the 2016 TAR by updating technology assumptions which are summarized in Appendix A of

[48] EMFAC is approved by U.S. EPA for meeting air quality planning requirements under the federal Clean Air Act. See, e.g., Official Release of EMFAC2014 Motor Vehicle Emission Factor Model for Use in the State of California, 80 Fed.Reg. 77,337 (Dec. 14, 2015). More information on EMFAC2017 is available at: https://www.arb.ca.gov/msei/categories.htm#onroad_motor_vehicles.
[49] CARB 2017a. Appendix A. pp. A-13 to A-15. See Mid-Range Scenario Results.
[50] 2016 TAR. p. ES-10.
[51] U.S. EPA 2016a. p. ES-4.
[52] U.S. EPA 2017. pp. 4-5.
[53] CARB 2011c. p. 60. and 2016 TAR. p. 5-349.

the Proposed Determination[54] and Chapter 2 of the corresponding Technical Support Document[55] for the Proposed Determination. During the California MTR, CARB identified advanced technologies that were not evaluated in the 2016 TAR. As stated in the MTR report, variable compression ratio engines and Dynamic Skip Fire cylinder deactivation systems were two examples which show how rapidly technology is improving beyond those evaluated in the 2016 TAR.

Both of these technologies are now expected to be deployed in production vehicles in the 2019 model year. Nissan has announced that its variable compression ratio engine will be introduced in the production version of the 2019 Infiniti QX50 crossover.[56] Nissan's engine uses a system of links and actuators to modify its compression ratio from 8:1 to 14:1 based on the power demand from the vehicle. Nissan claims that the new QX50 with its turbocharged, downsized, variable compression ratio engine has a 27 percent fuel efficiency improvement compared to the previous version of the vehicle with a larger non-variable compression ratio engine[57]. Meanwhile, recent announcements have indicated that General Motors will release Dynamic Skip Fire technology in a production version of the 2019 Chevrolet Silverado pickup truck. Cylinder deactivation systems have been previously implemented in production vehicles but the Dynamic Skip Fire technology is estimated to increase fuel economy by 5 percent compared to existing cylinder deactivation systems.[58]

Beyond the MTR, CARB staff continued to track new technologies and have found that automotive manufactures have announced the release of several new technologies that will improve fuel efficiency. Mazda is planning to release a new Skyactiv-X engine that is projected to increase engine efficiency by 20 to 30 percent compared to its current Skyactiv-G engine.[59] To achieve these efficiency levels, the Skyactiv-X engine makes use of new technologies that include gasoline lean-burn combustion and spark assisted compression ignition.[60] The automaker is targeting for the Skyactiv-X engine to reach production in 2019. Further, Toyota is launching a new direct-shift continuously variable transmission with improved gear, pulley, and belt designs.[61] Toyota's new transmission

[54] U.S. EPA 2016a.
[55] U.S. EPA 2016b.
[56] Infiniti USA, "World's First Technology Infiniti VC-Turbo Engine", https://www.infinitiusa.com/about/technology/vc-turbo-engine.html,
[57] Infinity, "Meet Infiniti's VC-Turbo Engine", https://www.infiniti.com/what-drives-us/power-and-performance/vc-turbo-engine.html
[58] Halvorson, Bengt, "https://www.caranddriver.com/news/2019-chevy-gmc-trucks-get-smarter-fuel-saving-cylinder-deactivation", Car and Driver, January 16, 2018.
[59] Mazda, "Mazda Announces Long-Term Vision for Technology Development, Sustainable Zoom-Zoom 2030", http://www2.mazda.com/en/publicity/release/2017/201708/170808a.html, 8 August 2017,
[60] Goodwin, Antuan, "It's amazing that Mazda's Skyactiv-X engine tech works so well", https://www.cnet.com/roadshow/news/porsche-augmented-reality-tech-live-look/, 1 February 2018
[61] Toyota, "Direct Shift-CVT: A New Type of Continuously Variable Transmission", https://newsroom.toyota.co.jp/en/powertrain2018/cvt/

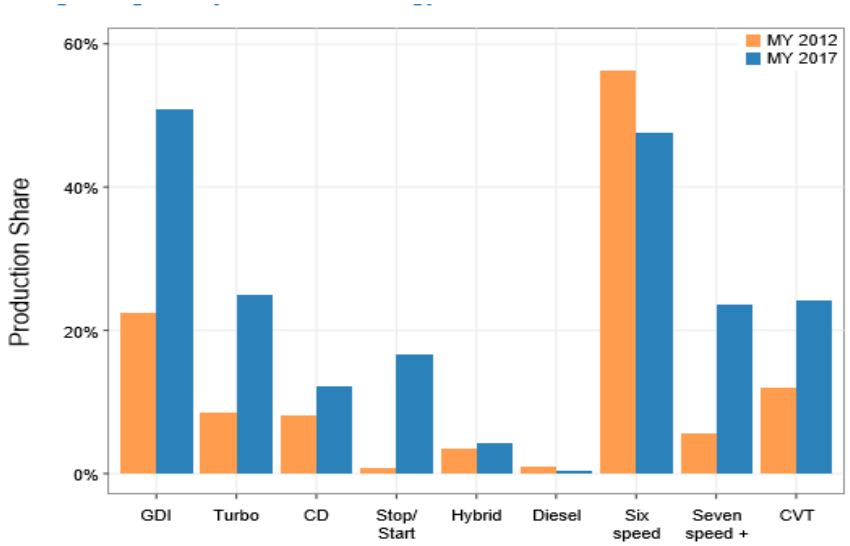
design can improve vehicle fuel efficiency by 6 percent. The new transmission will be implemented in the 2019 Toyota Corolla hatchback.[62]

3) Market penetration across the fleet of fuel efficient technologies.

Since the adoption of the greenhouse gas emission standards in 2009, manufacturers continue to deploy a variety of technologies to reduce greenhouse gas emissions and many at a more rapid pace than originally anticipated. According to the latest U.S. EPA 2017 Trends Report[63] engines and transmissions in light-duty vehicles continue to evolve and manufacturers continue to adopt new technologies. Figure 1 below shows the penetration of key technologies in model year 2012, and projected technologies in model year 2017 to illustrate the five-year change in technology market penetration rates.

Over the five-year span, gasoline direct injection is projected to increase by 33 percent, continuously variable transmissions (CVTs) by 10 percent, transmissions with 7 or more speeds by more than 15 percent, and Stop/Start by more than 15 percent as an industry. The individual technology penetration for each manufacturer may vary.

Figure 1: Five Year Change in Light-Duty Vehicle Technology Penetration Share[64]



[62] Goodwin, Antuan, "How does the 2019 Toyota Corolla Hatchback's Direct Shift-CVT work?", https://www.cnet.com/roadshow/news/how-does-the-2019-toyota-corolla-hatchbacks-direct-shift-cvt-work/, 3 May 2018
[63] U.S. EPA 2018.
[64] U.S. EPA 2018. p. 98. Figure 6.5.

4) Payback periods for any incremental vehicle costs associated with meeting the standards.

The most recent comprehensive analysis of consumer net costs from the vehicle regulations was conducted by U.S. EPA as part of the Proposed Determination. Net costs, accounting for consumer fuel savings and increased incremental vehicle costs, are shown in section IV.A.5 of the Proposed Determination.[65] The analysis shows that consumers would achieve a payback of the incremental vehicle cost from fuel savings by the fifth year of ownership, but that consumers financing the vehicles would see net savings within the first year of their loan. The agency further studied the used vehicle market to evaluate the impacts on lower income consumers and found used vehicle prices to be relatively stable. This, coupled with fuel savings from more efficient vehicles entering the used car market, result in improved affordability for lower income vehicle consumers. Vehicle lifetime savings from reduced fuel expenditures were estimated to be between $1,000 and $1,600 depending on either a 7 percent or 3 percent discount rate respectively.[66]

The Proposed Determination analysis relied on the Energy Information Administration's Annual Energy Outlook (AEO) 2016[67] fuel price projections which assume motor gasoline fuel will be $2.97/gallon in 2025 and $3.19/gallon in 2030 (2015$).[68] Today's fuel prices are already approaching these levels[69] and may rise further given global demand on oil production levels. CARB's economic analysis to support this rulemaking relied on more recent fuel cost projections from the California Energy Commission.[70]

5) Total light-duty vehicle sales and projected fleet mix.

National sales of light-duty vehicles have grown since the economic recession of 2009 and have reached record high levels of over 17 million passenger cars and light trucks in 2017. Additionally, since 2013, the proportion of national sales that are light-duty trucks has grown. In California sales reached record levels of approximately 2 million vehicles in 2015, and CARB's vehicle inventory projection assumes this will gradually grow over time.[71] The U.S. EPA's Proposed Determination did not conduct a quantitative evaluation of the correlation between new

[65] U.S. EPA 2016a. p. 41.
[66] U.S. EPA 2017a. pp. 42-43. Tables IV.10 through IV.12
[67] AEO 2016.
[68] The updated AEO 2018 report increased its projected national gasoline prices to be $3.13/gallon in 2025 and $3.21/gallon in 2030 (2015$, adjusted down from 2017$ in the report).
[69] U.S. EIA projects national gasoline prices to average $2.79/gallon in 2018, and $2.90 for the summer specifically (2018$): https://www.eia.gov/todayinenergy/detail.php?id=33562
[70] CEC-200-2018-003
[71] EMFAC2017 Technical Documentation Figure 4.5-1: https://www.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf

vehicle sales and the presence of the federal regulation. However, the document noted that sales can be both influenced by incremental vehicle costs (potential sales decrease) and fuel savings (potential sales increase), and concluded:

> Nevertheless, there is no evidence to suggest that the standards have impeded sales, and some evidence that the technologies being used to meet the standards provide ancillary benefits that may enhance consumers' acceptance of the vehicles.[72]

California's MTR[73] showed that actual car sales in the state (compared to light trucks) were a higher proportion of the total new vehicle fleet than originally projected in the Advanced Clean Cars 2012 rulemaking (70 percent in 2014 compared to 63 percent projected).[74] Based on the AEO 2016 fuel price projections, the car sales ratio was projected to remain between 67 percent and 76 percent through 2025 model year in the MTR report.

6) Availability and implementation of methods to reduce weight, including any impacts on safety.

The 2022 through 2025 model year greenhouse gas emission standards and augural CAFE standards do not require mass reduction, nor do they require that mass reduction occur in any specific manner. However, a manufacturer may choose to reduce vehicle mass in order to comply with these standards.

The 2016 TAR estimated the possible safety effects of compliance with these standards using the CAFE model, stating:

> The CAFE model uses coefficients from the 2016 preliminary report along with the mass reduction level applied to each vehicle model to project societal fatality effects in each model year. NHTSA used the CAFE model and conducted iterative modeling runs varying the maximum amount of mass reduction applied to each subclass in order to identify a combination that achieved a high level of overall fleet mass reduction while not adversely affecting overall fleet safety. These maximum levels of mass reduction for each subclass were then used in the CAFE model for the Draft TAR analysis. The agencies believe that mass reduction of up to 20 percent is feasible on light trucks, CUVs and minivans. Thus, the amount of mass reduction selected is

[72] U.S. EPA 2016a. p. 27, Section III.A
[73] CARB 2017a. Appendix M.
[74] CARB 2017a. Appendix M. Figure 4.

based on our assumptions about how much is technologically feasible without compromising safety.[75]

While the mass reduction constraints used during modeling do not prohibit manufacturers from using mass reduction beyond the constraints or in other subclasses of vehicles, manufacturers would not be expected to do so in a manner that compromises vehicle safety. All manufacturers have continually improved the crash safety designs of their vehicles and have publicly stated as much including General Motors and Volvo's stated goals of reaching zero crashes and zero fatalities.[76] Mass reduction is just one of several technologies available to meet the greenhouse gas standards and mass reduction includes a variety of techniques including improved design and better component integration as well as using lighter, higher-strength materials.

U.S. EPA, NHTSA, and CARB conducted numerous studies to determine the effect of light-weighting on vehicles as well as analyzed market trends and looked at vehicles on the road. In the 2016 TAR, NHTSA provided a detailed analysis of the relationship between mass reduction and safety in Chapter 8. Further, the Technical Support Document[77] for the Proposed Determination provided an updated state of technology of mass reduction in section 2.2.7. As shown in Table ES-1[78] of the Proposed Determination, the average percent of mass reduction modeled to meet the federal greenhouse gas standard is 9 percent relative to the 'null' package (which is roughly equivalent to 2008 model year vehicle levels of mass reduction) while individual vehicles such as the aluminum body Ford F150 introduced in 2015 model year already far exceed those average amounts.

7) Operating cost savings for plug-in electric vehicles.

In evaluating electric vehicles, the fuel operating costs for plug-in electric vehicles are projected to be substantially lower than that of conventional vehicles. The California Energy Commission (CEC) projects electricity prices for light-duty vehicles will be approximately 19 to 19.5 cents/kWh from 2020 through 2030 (2015$). For reference, this equates to 4.9 cents/mile assuming a battery electric vehicle at an efficiency of 4 miles/kWh. Using the AEO 2016 reference gasoline price of $2.97/gallon in 2020, this can be compared to 7.5 cents/mile assuming a conventional vehicle fuel economy of 40 miles/gallon. How this comparison in

[75] 2016 TAR. pp. 8-57 and 8-58
[76] General Motors 2017 Sustainability Report describing goal of zero crashes: www.gmsustainability.com/_pdf/downloads/GM_2017_SR.pdf; Volvo 2013 Sustainability Report describing Vision 2020 goal of zero fatalities: https://assets.volvocars.com/en-ca/~/media/shared-assets/downloads/this-is-volvo/sustainability-report/gri_report_2013.pdf?la=en-ca
[77] U.S. EPA 2016b.
[78] U.S. EPA 2016a. p. ES-4.

operating costs per mile changes over time will depend on the relative prices of the fuels and the relative changes in vehicle efficiency as technology progresses through 2025. The CEC official estimates of the relative fuel operating costs project midsize vehicles to be approximately 11 cents/mile for conventional vehicles and 5 cents/mile for battery electric vehicles between 2020 and 2030.[79]

8) Actual and projected availability of public and private charging infrastructure for electric vehicles, and fueling infrastructure for alternative fueled vehicles

California's MTR provided a status update of current electric vehicle service equipment (EVSE) and hydrogen stations and a description of new programs to support the station network expansion.[80] Using an analysis tool developed by the National Renewable Energy Laboratory (NREL), partially funded by the CEC, the projected need for public EVSE connectors by 2025 in California was between 142,000 and 250,000 from their 2014 study. NREL continues to be the national leader in compiling a tally and geospatial map of all national alternative fuel stations currently available,[81] which shows the growing number of chargers accessible for drivers and can be viewed at the state level.

The CEC and NREL analysis has since been updated,[82] and a number of new state programs for EVSE have been initiated to close the gap between expected and projected charging connectors needed to support the electric vehicle market. As part of consent decree between U.S. EPA, CARB, and Volkswagen, Volkswagen's subsidiary Electrify America committed to $2 billion in investments nationally for electric vehicle fueling infrastructure, electric vehicle outreach, and related initiatives. Forty percent of this investment will be in California alone and their first investment plan was approved by the Board in July of 2017.[83] Further, California passed legislation requiring electric utilities to heavily invest in charging infrastructure for transportation sufficient to support the 2030 climate and air quality requirements (Senate Bill 350, 2015). The Public Utilities Commission implements this requirement and has already approved the first round of large investments from utilities for chargers.[84] The projected need for publicly available EVSE will evolve as battery

[79] CEC-200-2018-003. Figure 4-21.
[80] CARB 2017a. Appendix D.
[81] NREL Alternative Fuels Data Center: https://www.afdc.energy.gov/fuels/electricity_locations.html#/find/nearest?fuel=ELEC
[82] CEC EVI-Pro updated study: https://efiling.energy.ca.gov/URLRedirectPage.aspx?TN=TN222986_20180316T143039_Staff_Report__California_PlugIn_Electric_Vehicle_Infrastructure.pdf
[83] Electrify America ZEV Investment Plan, Cycle 1: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/vw-zevinvest.htm
[84] California Public Utilities Commission Transportation Electrification activities as part of Senate Bill 350: http://www.cpuc.ca.gov/sb350te/

electric vehicle driving ranges increase; the current analysis was based on a driving range of 100-200 miles, whereas new models coming to market in the next few years will have driving ranges of 300 or more miles. There likely will be a reduced need for public Level 2 EVSE and an increased need for direct-current fast charging (DCFC).

9) In-use Fleet Implications and Relation to Safety.

It is possible that reduced vehicle operating costs (e.g. fuel savings) would increase the number of miles vehicles are typically driven, often referred to as the rebound effect. A large rebound of vehicle activity in turn may erode some of the expected environmental benefits of more stringent greenhouse gas standards. The amount of rebound is estimated by multiplying the percent change in vehicle operating costs by estimates of how responsive driving is to changes in vehicle operating costs.[85] For the 2012 LEV III rulemaking, CARB estimated that new model year 2021 vehicles would have 29 percent to 38 percent lower operating costs compared to model year 2009 vehicles and as a result of the rebound effect be driven 1.1 percent to 1.4 percent more than without the proposed changes in standards.[86] These additional vehicle miles traveled (VMT) resulting from the tighter greenhouse gas standards were then incorporated into the estimates of emission reductions from the program.

While increasing the number of vehicle miles traveled increases the risk of vehicle-related accidents, injuries and mortality, new safety technologies such as those that brake the vehicle automatically, prevent vehicle lane departures, or assist drivers to remain alert can mitigate the risk of a vehicle being involved in a collision or reduce the severity of the incident. To the extent there remain any negative safety impacts that result from increased rebound, they are outweighed by the reduced impacts to health and mortality related to climate change emissions and criteria pollutant emissions by ensuring the current vehicle program benefits are retained.

Furthermore, the rebound effect from the standards is just one component to the overall demand for driving, with other factors such as income, fuel prices, the distance between a person's home and job, the time cost of travel, transit options, and highway capacity also playing a role in total statewide VMT. The Scoping Plan Update relies on a 7.5 percent reduction in the growth of statewide VMT from 2035 baseline levels through a combination of VMT reduction strategies. These include efforts related to implementation of regional planning in accordance with the Sustainable Communities and Climate Protection Act of 2008, Senate Bill (SB) 375, (Chapter 728, Statutes of 2008), housing and land use planning,

[85] See CARB 2011b. pp. S-1 to S-11. for a detailed discussion of the rebound effect.
[86] https://www.arb.ca.gov/msprog/clean_cars/clean_cars_ab1085/rebound%20scenarios%20final.xlsx. Accessed 5/3/2018.

infill development, expanded investments in transit and active transportation, and pricing policies like road user, congestion, and/or parking fees.

Motorist safety is also impacted by the average age of the vehicle fleet given that newer vehicles will incorporate newer safety attributes. As new vehicle sales rates increase or decrease, the average age of the vehicle fleet may change after accounting for scrappage, retirement, and vehicle movement out-of-state. However, as noted in Chapter III, factor 5, above, and consistent with CARB's prior LEV III rulemaking analysis, CARB agrees with U.S. EPA's assessment in the Proposed Determination that there is no evidence to date that suggests the vehicle regulations are appreciably depressing new vehicle sales to substantially decrease the overall safety of the fleet.

In conclusion, CARB is confident, based on the extensive record of publically available information, including the thousands of pages of analyses in the 2016 TAR and the *Proposed Determination*, that the current LEV III greenhouse gas emission standards, with or without the "deemed to comply" option, are technologically and economically feasible.[87,88]

IV. BENEFITS ANTICIPATED FROM THE REGULATORY ACTION, INCLUDING THE BENEFITS OR GOALS PROVIDED IN THE AUTHORIZING STATUTE

The goal of the proposed amendments is to preserve the California greenhouse gas emission reductions anticipated from the LEV III light-duty vehicle greenhouse gas emission regulation. There are a number of benefits to this regulatory action. When LEV III was adopted in 2012, it was justified based on the emission reduction requirements from AB 1493 (2002) and AB 32 (2006). The requirements of AB 1493 are still applicable in the limited model years included in these changes (2021 through 2025 model years), with the statute requiring on-going, maximum feasible, emission reductions.

However, ongoing scientific assessments showing the escalating effects of climate change caused in substantial part by vehicle pollution led to state legislation with SB 32 (2016) that reflects the significantly enhanced need for robust emission reductions. *California's 2017 Climate Change Scoping Plan*, written in response to the new SB 32 legislation, documents the growing science and data showing direct impacts already occurring in California from climate change.[89] Major California studies are cited, including the 2018 *Indicators of Climate Change in California*, identifying the impacts in our state, including

[87] Health & Safety Code, §§ 43013, 43018.5.
[88] CARB 2017d.
[89] CARB 2017e. p. 6.

increasing difficulty with protecting air quality in a warming world.[90] Studies sponsored by CARB with researchers at the University of California campuses at Berkeley and Davis showed that the number of days with conditions conducive to higher ground-level ozone will increase with climate change. This will result in an "air quality penalty" in the sense that more than the anticipated reduction of emissions of ozone precursors will have to be realized to be able to continue to improve air quality in California and eventually comply and maintain compliance with state and federal air quality standards.[91,92] Further threats include major droughts, reduced winter mountain snowpack for agriculture irrigation, flooding in the spring, wildfires in the summer and fall, and dramatically increased forest infestation of insects killing trees (and therefore carbon sinks).[93,94,95] U.S. EPA has also recognized these threats in its Endangerment Finding,[96] and the National Climate Assessment has further emphasized these escalating threats.[97]

As noted earlier, with the adoption of more stringent statewide greenhouse gas emission requirements under SB 32 for 2030, maintaining the emission benefits from the full LEV III program is critical, in addition to developing further programs beyond 2025 that are needed to fully address these threats to public health and welfare. Steady reductions in vehicle emissions, and increasing use of technologies to reduce emissions, are required to maintain an appropriate trajectory to address these issues.

Additionally, with the passage of Assembly Bill 617 (C. Garcia, Ch. 136, Statutes 2017), further state requirements were established to ensure local emissions are reduced for criteria and toxic pollutants in the state's most impacted communities. As outlined in the attached economic and environmental analysis (Appendix D), weakening the California standards could lead to increased local criteria and toxic pollutants from fuel production and distribution.

Maintaining the existing standards also ensures consumers save on fuel costs, and that clean technology jobs are protected and enabled. Fuel savings are projected to be noticeably higher than incremental vehicle costs over time as outlined in Appendix D. Further, clear investment signals long-term encourage innovative development and job creation in the area of advanced conventional vehicle systems, as well as electric drive systems. These jobs would be at risk if the standards are relaxed. Finally, maintaining the existing standards may also promote the development of technologies that not only reduce greenhouse gas emissions, but also improve vehicle efficiency, thereby decreasing our

[90] OEHHA 2018.
[91] Millstein.
[92] Rasmussen.
[93] Diffenbaugh.
[94] U.C. Davis.
[95] OEHHA 2018.
[96] *See* 74 Fed. Reg. 66,496 (Dec. 15, 2009).
[97] *See https://science2017.globalchange.gov/*.

consumption of domestic oil and dependence on foreign oil and other natural resources and energy supplies.[98]

In Appendix D of this report, the sensitivity scenario from the economic analysis revealed a potential health impact from increased fuel production facility emissions due to relaxation of the federal greenhouse gas standards; Table A-7 identifies the potential rise in premature deaths and hospitalizations in California as a result of potential weakened federal rules. Similar types of health impacts were identified in the Proposed Determination.[99] These direct health impacts from criteria pollutants do not account for additional health impacts from climate change. There are no expected benefits to public safety or worker safety as a result of this rulemaking.

V. AIR QUALITY

There would be no change in either vehicle greenhouse gas emissions or criteria pollutant emissions under the proposed amendments, relative to the current standards (referred to as the "baseline" in this document). Consequently, there are no air quality impacts of the proposed changes to the LEV III greenhouse gas regulations in themselves. Should U.S. EPA standards be changed, the regulations will prevent negative impacts from occurring in California.

VI. ENVIRONMENTAL ANALYSIS

A. INTRODUCTION

CARB's regulatory program that involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality has been certified by the California Secretary for Natural Resources under Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA) (14 CCR 15251(d)). Public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to, preparing environmental impact reports, negative declarations, and initial studies. CARB as a lead agency, prepares an environmental document (referred to as an Environmental Analysis or EA) as part of the Staff Report to comply with CEQA. (17 CCR 60000-60008). This section serves as a substitute document equivalent to an addendum to the 2012 Advanced Clean Cars (ACC) Program Environmental Analysis[100] (ACC EA) prepared under CARB's certified regulatory program to

[98] Per the U.S. Energy Information Administration, the top sources and amounts (million barrels per day; percent of U.S. imports) of U.S. petroleum imports are: Canada (4.02; 40%), Saudi Arabia (0.95; 9%), Mexico (0.68; 7%), Venezuela (0.67; 7%), and Iraq (0.61; 6%). See https://www.eia.gov/tools/faqs/faq.php?id=727&t=6 . Last updated: April 4, 2018.
[99] U.S. EPA 2016b. Chapter 3.6. pp. 3-36 to 3-41.
[100] CARB 2011a.

document CARB's determination that no subsequent or supplemental environmental analysis is required for the proposed amendments to the LEV III greenhouse gas regulation.

As discussed in greater detail below, CARB staff have determined that the proposed amendments do not involve any changes that result in any new significant adverse environmental impacts or a substantial increase in the severity of the significant adverse impacts previously disclosed in the EA prepared for the LEV III greenhouse gas regulation when it was approved as part of the ACC Program in 2012. Further, there are no substantial changes in circumstances or new information of substantial importance that would otherwise warrant any subsequent or supplemental environmental review. Therefore, the ACC EA remains adequate, as considered and supplemented by this EA equivalent to an addendum, to address the LEV III greenhouse gas regulation as modified by the proposed amendments and no supplemental or subsequent environmental analysis is required.

B. PRIOR ENVIRONMENTAL ANALYSIS

When LEV III was proposed as part of the package of regulations referred to as the ACC Program in December 2011, the Staff Reports: Initial Statement of Reasons (ISORs) prepared for each of those regulations included as an appendix, an environmental analysis prepared under CARB's certified regulatory program (ACC EA). The ACC EA provided a programmatic level analysis of the potential environmental impacts associated with the ACC Program, including LEV III. Comments received on the ACC EA were responded to in writing in a document entitled *Response to Comments on the ACC EA* released on March 12, 2012. At its hearing on March 22, 2012, the Board adopted Resolution 12-21 certifying the ACC EA, approving the written responses to comments on the ACC EA, and adopting the findings and statement of overriding considerations. A Notice of Decision was filed with the Secretary of the Natural Resources Agency for public inspection and on CARB's website on March 27, 2012. These documents are available at http://www.arb.ca.gov/regact/2012/leviiighg2012/leviiighg2012.htm.

The ACC EA was based on the reasonably foreseeable compliance responses of the regulated entities covered by the ACC Program. The ACC EA concluded that the compliance responses to the proposed ACC Program would result in beneficial impacts to air quality through reductions in emissions, including greenhouse gases, criteria air pollutants and precursors, and toxic air contaminants. It further concluded that the proposed ACC Program would result in less-than-significant impacts to agricultural and forest resources, land use, minerals, population and housing, public services, and recreation.

Staff's analysis also examined the potential changes to the environmental benefits of the ACC Program due to the rebound effect. When rebound rates were included in the inventory, there were negligibly (approximately one percent)

fewer emission reductions compared to the substantial overall emission reductions expected from the ACC Program.

No adverse environmental impacts were identified for the LEV III regulations. The ACC EA concluded there could be potentially significant adverse impacts due to construction activities related to the Clean Fuels Outlet Regulation (which was part of the originally proposed package of regulations in 2011) and due to construction and operation of new battery manufacturing facilities, as needed, to achieve compliance with the ZEV Regulation. As pertains to those components, the EA identified potentially significant impacts to aesthetics, air quality, and noise (both related to construction), biological resources, cultural resources, geology/soils, hazards/hazardous materials (related to accidental releases), hydrology/water quality, traffic and utilities.

The ACC EA identified mitigation measures to reduce these potentially significant impacts to a less-than-significant level; however, it was determined that the authority to determine project-level impacts and require project-level mitigation lies with the local lead agency for individual projects, which is beyond CARB's authority. Since the ACC EA programmatic analysis could not determine project-specific details of mitigation, there is an inherent uncertainty in the degree of mitigation ultimately implemented to reduce the potentially significant impacts. Therefore, the ACC EA took a conservative approach in its post-mitigation significance conclusion and disclosed, for CEQA compliance purposes, that the potentially significant impacts to these resource areas resulting from the construction and operation of new manufacturing plants may be significant and unavoidable.

C. PROPOSED MODIFICATIONS

As previously described in Chapter II of this Staff Report, the proposed amendments to the LEV III greenhouse gas regulation simply clarifies that the "deemed to comply" option is available only if the currently adopted federal greenhouse gas regulations are in effect (as last amended October 25, 2016) for the model years affected by a federal rulemaking that weakens those standards, anticipated to be 2021 to 2025. Absent any change to the U.S. EPA standards, automakers would be able to continue to exercise this option to solely comply with the U.S. EPA standards. Should the U.S. EPA standards be changed, however, the proposed amendments would eliminate the option for manufacturers to opt for compliance on a national basis to the U.S. EPA standards for those model years for which the U.S. EPA standards are changed.

D. ANALYSIS

1. Legal Standards

Under its certified regulatory program, CARB prepares the required CEQA documentation as part of the Staff Report for the proposed action (17 CCR 60000-60008). When the equivalent of an EIR or negative declaration has been prepared for a rule, regulation, order, standard or plan, CARB looks to Public Resources Code section 21166 and CEQA Guidelines section 15162 and 15163 for guidance on the triggers for further environmental review when considering changes to that project. When an EIR for a project has been certified, that EIR is conclusively presumed valid unless a lawsuit challenging the EIR is timely filed (PRC 21167.2). This presumption precludes reopening the prior CEQA process unless one of the events triggering additional review as specified in Public Resources Code section 21166 and CEQA Guidelines section 15162 has occurred.

Public Resources Code, Section 21166 provides that when an environmental impact report has been prepared and certified for a project, no subsequent or supplemental environmental impact report shall be required by the lead agency or by any responsible agency, unless one or more of the following events occurs:

(1) Substantial changes are proposed in the project, which will require major revisions of the environmental impact report.

(2) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.

(3) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available.

Public Resources Code, Section 21068 defines “Significant effect on the environment” as a substantial, or potentially substantial, adverse change in the environment. CEQA Guidelines, section 15382 further defines, in relevant part, a “Significant effect on the environment” as meaning a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

CEQA Guidelines section 15162 states:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless

the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

If a subsequent or supplemental EIR or negative declaration is not required, the lead agency may document its decision and supporting evidence in an addendum (14 CCR 15164 (e)). The addendum and lead agency's findings should include a brief explanation of the decision not to prepare a subsequent or supplemental EIR or negative declaration (14 CCR 15164(e)). An addendum need not be circulated for public review, but must be considered by the lead agency prior to making a decision on the project (14 CCR 15164(c), (d)).

2. Basis for Determination

A brief explanation is provided below of staffs' determination that none of the conditions requiring further environmental review are triggered by the proposed amendments to the LEV III greenhouse gas regulations.

(a) *There are no substantial changes to the project (LEV III) that would result in new significant environmental effects or a substantial increase in the severity of significant impacts previously analyzed in the ACC EA which would require revisions to the ACC EA.*

The proposed amendments do not change LEV III as analyzed in the ACC EA. Rather, the amendments ensure that the stringency of LEV III as analyzed in the ACC EA are maintained in the event that U.S. EPA weakens the federal greenhouse gas emission standards.

The proposed amendments do not consintute a substantial change to LEV III that would result in new significant environmental effects or a substantial increase in the severity of significant impacts previously analyzed in the ACC EA. The primary difference between LEV III and the proposed amendments is that the proposed amendments will clarify that the "deemed to comply" option is available only if the currently adopted federal greenhouse gas regulations remain in effect. These changes do not alter the compliance responses of the regulated entities identified in the ACC EA, which included technology improvements to engines, emission control systems, transmissions, air conditioning systems, materials, and tires. Therefore, the analysis of air quality emissions and impacts to any other resource area covered in the ACC EA remains adequate and the proposed amendments would not result in any new significant environmental effects or a substantial increase in the severity of significant impacts previously analyzed in the ACC EA.

(b) *There are no substantial changes with respect to the circumstances under which the project (LEV III) is being undertaken, which require major revisions to the* ACC EA *due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects.*

The proposed amendments would ensure the stringency of existing LEV III requirements is maintained. There are no substantial changes in the circumstances under which LEV III is being implemented that require major revisions to the ACC EA. As explained above, the proposed amendments clarify that the "deemed to comply" option is available only if the currently adopted federal greenhouse gas regulations are in effect (as of the date of the revised Final Determination) for the model years affected by a federal rulemaking that weakens those standards. Absent any change to the U.S.

EPA standards, automakers would be able to continue to exercise this option to solely comply with the U.S. EPA standards. Should the U.S. EPA standards be changed, however, the proposed amendments would eliminate the option for manufacturers to opt for compliance on a national basis to the U.S. EPA standards for those model years for which the U.S. EPA standards are changed. Since the proposed amendments do not change the stringency of the LEV III greenhouse gas regulations, they would not alter the compliance responses of the regulated entities or result in any changes that affect the physical environment.

(c) *There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the ACC EA was certified as complete, that changes the conclusions of the ACC EA with regard to impacts, mitigation measures, or alternatives.*

No new information of substantial importance that changes the conclusions of the ACC EA with regards to impacts, mitigation measures, or alternatives has become available to CARB staff since the ACC EA was certified. Therefore, the conclusions found in the ACC EA about the compliance responses for LEV III or potential environmental impacts to any resource areas have not changed.

E. CONCLUSION

The ACC EA certified in 2012 evaluated the LEV III greenhouse gas regulation. It concluded there were no adverse environmental impacts associated with implementation of the LEV III greenhouse gas regulation. CARB staff has determined that the ACC EA remains adequate, as considered and supplemented by this EA equivalent to an addendum, to address the LEV III greenhouse gas regulation as modified by the proposed amendments and no supplemental or subsequent environmental analysis is required. An EA equivalent to an addendum is appropriate for the Board's approval of the current proposed amendments to the LEV III greenhouse gas regulation because, as described above, the changes do not result in any new significant environmental impacts or in a substantial increase in the severity of the prior impacts disclosed for the LEV III greenhouse gas regulation in the ACC EA. Further, there are no changes in circumstances or new information that would otherwise warrant any subsequent environmental review, and therefore, the ACC EA adequately addresses the potential environmental impacts of implementation of the LEV III greenhouse gas regulation as modified by the proposed amendments and no supplemental or subsequent environmental analysis is required to comply with CEQA.

The LEV III greenhouse gas regulation, which is being modified by the proposed amendments is not included as part of California's State Implementation Plan.

Consequently, the proposed amendments will have no effect on attaining California's State Implementation Plan goals.

VII. ENVIRONMENTAL JUSTICE

State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. Government Code, section 65040.12, subdivision (c). CARB is committed to making environmental justice an integral part of its activities. The Board approved its Environmental Justice Policies and Actions (Policies) on December 13, 2001, to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State law (CARB 2001). These policies apply to all communities in California, but recognize that environmental justice issues have been raised more in the context of low-income and minority communities.

The proposed amendments are designed to preserve the greenhouse gas emission reductions from the LEV III greenhouse gas regulation. Reducing greenhouse gas emissions will help stabilize the climate, which will benefit all communities.

In terms of affordability of used vehicles, which are most likely to be purchased by lower-income households, the *Proposed Determination* concluded:

> Used vehicle prices do not appear to be increasing. In the MY2022-2025 timeframe, the primary effects on affordability of vehicle sales are still likely to be due to broader macroeconomic factors, such as economic activity and overall employment; any impacts of the standards are likely to be secondary to those broader economic factors. The vehicles will also become less expensive to operate, due to fuel savings from more fuel-efficient technologies. The reduced operating costs from fuel savings over time are still expected to exceed the increase in up-front vehicle costs, as a further mitigation of any effects on vehicle affordability.[101]

The proposed amendments, therefore, will preserve these cost savings for lower-income households.

VIII. ECONOMIC IMPACTS ASSESSMENT

A. LEGAL REQUIREMENTS

Sections 11346.3 and 11346.5 of the Government Code require state agencies to assess the potential adverse economic impacts on California business

[101] U.S. EPA 2016a. p. A-79.

enterprises and individuals when proposing to adopt or amend any administrative regulation. The assessment shall evaluate whether and to what extent the regulatory proposal will affect the creation or elimination of jobs within the state, the creation of new businesses or the elimination of existing businesses within the state, the expansion of businesses currently doing business within the state, and the benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.

State agencies are also required to estimate the cost or savings of any state or local agency and school districts in accordance with instructions adopted by the Department of Finance. This estimate is to include any nondiscretionary costs or savings to local agencies and the costs or savings in federal funding to the state.

B. CALIFORNIA HEALTH AND SAFETY CODE SECTION 57005 - MAJOR REGULATION REQUIREMENTS

Per California Health and Safety Code section 57005, for a major regulation proposed on or after January 1, 2014, a standardized regulatory impact analysis (SRIA) is required. Health and Safety Code section 11342.548 defines "major regulation" as "any regulation that will have an economic impact on the state's business enterprises in an amount exceeding fifty million dollars ($50,000,000), as estimated by the board, department, or office within the agency proposing to adopt the regulation. These LEV III proposed amendments result neither in costs or cost savings exceeding fifty million dollars ($50,000,000) in any 12-month period between the date the major regulation is filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented.

The proposed amendments do not qualify as major, because they would leave current regulatory conditions intact. Accordingly, the proposed amendments will not have an economic impact on California businesses and individuals compared to a baseline of current conditions, and formal requirements for major regulations do not apply. However, given the importance of this vehicle program, and the attention now being given to it, CARB voluntarily developed an extended economic analysis of the program of a rigor similar to those offered in a SRIA (Appendix D: *SRIA Equivalent Document*).[102] Moreover, due to the uncertainty as to which actions U.S. EPA might take to weaken the currently adopted U.S. EPA standards for the 2021 through 2025 model years, a sensitivity analysis was developed to examine the potential range of economic impacts that might occur if U.S. EPA relaxes its standards. This is in addition to the economic analysis of the proposed amendments and the two alternatives.

Comment from the California Department of Finance on the *SRIA Equivalent Document*:

[102] The SRIA Equivalent Document was submitted to the California Department of Finance on June 7, 2018. Comments received from the California Department of Finance are in Appendix E.

Finance generally concurs with the methodology used to estimate impacts of proposed regulations. If the federal standards were to change, the timing and details would be important to model in order to assess any impacts to California. However, if the sensitivity analysis captures most of the components, only the magnitudes of estimates may change.

CARB Response to Comment from the California Department of Finance on the *SRIA Equivalent Document*:

Thank you for your review. We will update the analysis in the Standard Form 399 and other documents, as appropriate, if there are any developments at the federal level.

C. COSTS AND SAVINGS FROM PROPOSAL

1. Impacts on the California Economy

The proposed amendments will have no impact on the California economy.

2. Potential Costs to a Small Business

The proposed amendments will not impact small business, because they will not change the stringency of current regulations.

3. Potential Costs to a typical Business

The proposed amendments will not impact California businesses, because they will not change the stringency of current regulations. Therefore, under Government Code 11346.2, subdivision (b)(5), the Executive Officer has made an initial determination that the proposed regulatory action would not have a significant statewide adverse economic impact directly affecting businesses.

4. Costs and Savings to an Individual

The proposed amendments will not create any costs or savings to an individual, because they will not change the stringency of current regulations.

D. POTENTIAL IMPACT ON JOBS

The proposed amendments will not change employment in California, because they will not change the stringency of current regulations.

E. POTENTIAL IMPACT ON BUSINESS CREATION, ELIMINATION, OR EXPANSION

The proposed amendments will only slightly impact those businesses that are already subject to the requirements of California's LEV III greenhouse gas regulations. Because cost and cost savings are minimal, no businesses will be created or eliminated by the proposed amendments, and the proposed amendments will not affect the expansion of businesses currently doing business within the State of California.

F. POTENTIAL IMPACT ON BUSINESS COMPETITIVENESS

The proposed amendments would not create either a competitive advantage or a competitive disadvantage for California businesses.

G. POTENTIAL BENEFITS INCLUDING THE IMPACT ON HEALTH AND WELFARE, WORKER SAFETY, AND THE STATE'S ENVIRONMENT

There are no impacts on health and welfare, worker safety, or the state's environment from the proposed amendments.

H. FISCAL IMPACT TO STATE AND LOCAL AGENCIES

State and local government agencies would not be affected by the proposed amendments.

IX. EVALUATION OF REGULATORY ALTERNATIVES

Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. This section discusses alternatives evaluated and provides reasons why these alternatives were not included in the proposal. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner than ensures full compliance with the authorizing law. The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

A. SMALL BUSINESS ALTERNATIVE

The Board has not identified any reasonable alternatives that would lessen any adverse impact on small businesses because the LEV III greenhouse gas regulations do not apply specifically to small businesses.

B. PERFORMANCE STANDARDS IN PLACE OF PRESCRIPTIVE STANDARDS

The LEV III greenhouse gas regulations already incorporate performance-based standards. The use of specific technologies is not mandated by the existing LEV III greenhouse gas regulations or the proposed amendments.

C. HEALTH AND SAFETY CODE SECTION 57005 MAJOR REGULATION ALTERNATIVES

The proposed regulation will not result in a total economic impact on state businesses of more than $10 million in one or more years of implementation. Therefore, this proposal is not a major regulation as defined by Health and Safety Code section 57005.

D. REGULATORY ALTERNATIVES

1. Alternative 1 – Eliminate "Deemed to Comply" and Increase Stringency of California's Standards

As first described in the published SRIA Equivalent Document, Alternative 1 would eliminate the "deemed to comply" option for model years 2022 through 2025 and increase the stringency of the California greenhouse gas emission standards for model years 2024 and 2025. Specifically it would increase the greenhouse gas standard stringency by approximately two percent in model year 2024 and four percent in model year 2025 compared to the existing LEV III greenhouse gas regulations. This alternative was selected to be consistent with the analysis by U.S. EPA, NHTSA, and CARB in the 2010 TAR.[103] Changing the stringency of the model year 2022 and 2023 standards was not considered in this alternative because CARB typically provides at least three years of lead time before more stringent emission standards take effect.

The current LEV III greenhouse gas emission standards are predicated on many existing and emerging technologies in vehicles that increase engine and transmission efficiency, reduce vehicle energy loads, improve auxiliary and accessory efficiency, and that could increasingly electrify vehicle subsystems with hybrid and electric drivetrains. These technologies are combined into various "technology packages" that are examples of what could be used by an automobile manufacturer to comply with emission standards. Compliance with this alternative would require increasingly advanced technology packages to meet the more stringent standards for model years 2024 and 2025.

This higher level of advanced technology deployment would increase compliance costs for the manufacturer relative to the baseline. These higher

[103] 2010 TAR.

costs are assumed to be passed on to consumers through an increase in the prices of new vehicles in California. More stringent standards would also provide additional benefits in the form of increased fuel savings to consumers and further decreases in greenhouse gas emissions and criteria pollutant emissions (from reduced production and distribution of gasoline).

Compliance with Alternative 1 would also require manufacturers to separately certify with CARB and demonstrate compliance to the California greenhouse gas standards for each model year, separate from, and in addition to, any certification with U.S. EPA to the federal greenhouse gas standards. Under the current requirements, manufacturers are already required to conduct all the necessary emission testing and submit the required documentation to demonstrate compliance. Further, manufacturers are already required to send a copy of all of the documentation to CARB along with additional data necessary to calculate what compliance would be in California. Under the alternative, the difference would be that the copy of data that is currently sent to CARB only after U.S. EPA has reviewed and approved it would need to be submitted to CARB at the same time it is sent to U.S. EPA. Accordingly, manufacturers would not incur any increased cost to conduct testing or prepare and submit documentation as a result of the alternative.

Separate certification to CARB would also entail routine meetings and discussions with CARB staff most notably with a single certification preview meeting conducted at the start of each model year and with routine questions and answers between CARB certification staff and the manufacturer's representatives during certification of individual models. However, as manufacturers already separately conduct certification with CARB for every vehicle model to demonstrate compliance with other vehicle regulations (e.g., criteria pollutant standards, evaporative emission standards, emission warranty compliance) including having a certification preview meeting each year and because they already prepare the same greenhouse gas related materials for certification with U.S. EPA, manufacturers are not expected to incur any quantifiable increase in certification expenses.

Reason for Rejecting Alternative 1

Alternative 1: Eliminate the "deemed to comply" option for model years 2022 through 2025 and increase the stringency of the standards for model years 2024 and 2025.

Based on the analysis presented in the SRIA Equivalent Document found in Appendix D, Alternative 1 is technically feasible and could provide additional greenhouse gas emission benefits at reasonable cost compared to the proposed amendments. However, this alternative was rejected because CARB prefers to maintain regulatory stability for the automotive industry for

the models years of the current program, while focusing on the development of new greenhouse gas emission standards for model year 2026 and beyond.

2. Alternative 2 – Eliminate "Deemed to Comply" and Weaken the Stringency of California Standards

As first described in the published SRIA Equivalent Document, Alternative 2 would eliminate the "deemed to comply" option for model years 2022 through 2025 and weaken the California greenhouse gas emission standards for those same model years by flat-lining the standards at model year 2021 levels. Given only the model years 2022 through 2025 were required to be considered for change by U.S. EPA's and CARB's midterm reviews, this alternative uses the maximum available reduction in stringency for these model years to explore compliance cost reductions while still maintaining the benefits of the model years 2017 through 2021 standards.

It is expected that automakers would comply with the relaxed standards by reducing the types and numbers of greenhouse gas-reducing technologies used on new vehicles compared to the baseline. Effectively, manufacturers would be able to stop adding new technologies beyond model year 2021. This would lower compliance costs for automakers relative to the baseline. It is assumed these cost savings from manufacturers would be reflected in lower prices of new vehicles in California. Relaxed greenhouse gas emission standards would also result in increased fuel costs for consumers and increases in greenhouse gas emissions and criteria pollutants (associated with an increase in fuel production) relative to the baseline. It is likely, however, that consumers would not realize these full benefits of reduced costs for vehicles. Given Alternative 2 assumes a weakened California standard but a U.S. EPA standard that remains unchanged, manufacturers likely would need to continue to deploy similar levels of technology on the national fleet, including California vehicles, to meet the more stringent U.S. EPA standards and end up over-complying with the weakened standards in California.

Under this alternative, manufacturers would need to separately certify with CARB. However, as noted in the discussion of Alternative 1, this is not expected to result in any meaningful increase in testing, reporting, or certification costs.

Reason for Rejecting Alternative 2

Alternative 2: Eliminate the "deemed to comply" option for model years 2022 through 2025 and flat-line the stringency of the standards at model year 2021 levels for these model years to reduce compliance costs.

As presented in the SRIA Equivalent Document found in Appendix D, this alternative was rejected because there would be a significant loss of environmental benefits if CARB decreases the stringency of the LEV III greenhouse gas regulation. This loss in greenhouse gas emission reductions would severely hamper progress towards the state's greenhouse gas targets for 2030 (Senate Bill 32 statute) and 2050 (Executive Order S-3-05) and the loss in criteria pollutant reductions would directionally hinder the state's required commitments to achieve compliance with national ambient air quality standards. Additionally, while new vehicle owners could initially see savings in the reduced purchase price of the vehicle, increased fueling costs for the operation of the vehicle over its life would significantly outweigh these initial savings resulting in a net increase in costs relative to the proposed amendments for new vehicle owners.

X. JUSTIFICATION FOR ADOPTION OF REGULATIONS DIFFERENT FROM FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS

California is the only state with the authority to initially adopt and enforce emission standards and other emissions-related requirements for new motor vehicles and new motor vehicle engines that differ from, and are more stringent than comparable federal emission standards and other emissions-related requirements. Section 209(b) of the Federal Clean Air Act [42 U.S.C. § 7543(b)] provides a special exception for California that allows it to request a waiver from the preemption of section 209(a), which the Administrator of U.S. EPA must grant unless he or she can make the findings specified in section 209(b)(1)(A) through (C).

CARB adopted the California LEV III regulations based in part on findings that those regulations were necessary and appropriate to assure that California receives the cleanest light- and medium-duty vehicles available; that the regulations would not cause California motor vehicle emission standards, in the aggregate, to be less protective of public health and welfare than applicable federal standards, and that separate California emission standards and test procedures are necessary to meet compelling and extraordinary conditions.

On June 27, 2012, CARB requested that U.S. EPA grant it a waiver for California's Advanced Clean Cars (ACC) program, which combines the control of criteria pollutants and greenhouse gas emissions into a single coordinated package of requirements for model years 2015 through 2025 passenger vehicles. The ACC program encompasses amendments to California's Low-Emission Vehicle regulation (LEV III Amendments), and expressly provides manufacturers the option to demonstrate compliance with California's 2017 through 2025 model year greenhouse gas emission standards by alternatively complying with corresponding U.S. EPA 2017 through 2025 model year greenhouse gas

emission standards with the "deemed to comply" provision.[104] The ACC program also encompasses amendments to California's Zero-Emission Vehicle program.

U.S. EPA granted CARB's waiver request on December 27, 2012.[105] In granting CARB's waiver request, U.S. EPA affirmed:

> After review of the information in this proceeding, EPA believes that those opposing the waiver have not met their burden of showing that compliance with California's GHG standards is infeasible, *even without the deemed to comply provision* [emphasis added], based upon the current and future availability of the described technologies in the lead-time provided and considering the cost of compliance.[106]

As mentioned above, although the current California and U.S. EPA light-duty vehicle greenhouse gas emission regulations are equivalent in stringency, U.S. EPA has stated that the U.S. EPA standards "are inappropriate and may need to be weakened."[107] The proposed amendments, whether viewed as emissions standards or alteration of an accompanying enforcement measure, are therefore necessary to preserve the emission benefits of the current California LEV III greenhouse gas regulation by safeguarding against the unwarranted relaxation of the standards and resulting loss of California emission reductions due to the linkage of the California regulation and U.S. EPA passenger vehicle greenhouse gas regulation.

The proposed amendments would eliminate the existing option for manufacturers to demonstrate compliance with California 2021 through 2025 model year greenhouse gas emission standards by alternatively complying with corresponding federal 2021 through 2025 model year greenhouse gas emission standards, if U.S. EPA changes the 2017 through 2025 Model Year National Greenhouse Gas Program subsequent to October 25, 2016. Because U.S. EPA has announced its intention to reduce the stringency of the federal greenhouse gas emission standards, it is clear that the proposed amendments would ensure that the California greenhouse gas emission standards for 2021 through 2025 model year vehicles would be more stringent than the corresponding U.S. EPA greenhouse gas emission standards.

[104] Cal. Code Regs., tit. 13, § 1961.3(c).
[105] 78 Fed.Reg. 2,112 (Jan. 9, 2013).
[106] 78 Fed.Reg. 2,112, 2,138 (Jan. 9, 2013).
[107] 83 Fed.Reg. 16,077 (April 13, 2018).

XI. PUBLIC PROCESS FOR DEVELOPMENT OF THE PROPOSED ACTION (PRE-REGULATORY INFORMATION)

Consistent with Government Code sections 11346, subdivision (b), and 11346.45, subdivision (a), on May 7, 2018, CARB issued a notice[108] requesting input by May 31, 2018, on potential alternatives to the proposed amendments.

The input received uniformly supported the continuation of a national program, with the inclusion of California, to reduce greenhouse gas emissions and improve fuel economy. Some of the responses, from industry stakeholders, asserted that California's regulations should not be changed and should continue to accept compliance with U.S. EPA standards even if they are changed. Most comments submitted expressed that the regulations, if they should be changed, should affirm that they would not accept compliance with weakened U.S. EPA standards. The majority of the comments submitted included letters with explanations supporting the proposals.[109] Overall, there were two comments submitted in opposition to the proposed amendments, 21 comments submitted in support of the California action, and one neutral comment that suggested a regulatory alternative to the proposed amendments (as of June 4, 2018).

Some commenters also suggested that CARB explore flexibilities that might allow for continued compliance with the federal standards, or reward national actions to promote cleaner vehicles. Although CARB is not proposing such changes in regulatory text at this time, these suggestions may be considered further as this process continues.

CARB has reviewed the comments, and has considered information provided during development of the regulation that is now being proposed for formal public comment.

[108] CARB 2018.
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XII. REFERENCES

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XIV. APPENDICES

Appendix A: Proposed Regulation Order

Appendix B: Proposed Amendments to the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles"

Appendix C: Rationale for Proposed Changes to Title 13, California Code of Regulations and Incorporated Test Procedures

Appendix D: Standardized Regulatory Impact Assessment (SRIA) Equivalent Document

Appendix E: Comments from the California Department of Finance on the SRIA Equivalent Document