



# **Public Hearing to Consider Advanced Clean Cars II Regulations**

## **Final Statement of Reasons for Rulemaking, Including Summary of Comments and Agency Response**

### **Appendix A Summary of Comments to the Overall Advanced Clean Cars II Regulations and Agency Responses**

*Public Hearing Date: August 25, 2022*

*Agenda Item No.: 22-10-1*

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## Summary of Comments to the Overall Advanced Clean Cars II Regulations and Agency Responses

As noted in the main body of the Final Statement of Reasons (FSOR), the California Air Resources Board (CARB) has summarized and responded to written and oral comments on the Advanced Clean Cars II (ACC II) regulations and the process by which they were adopted. These comment summaries and responses are contained in multiple appendices to the FSOR, sorted by subject matter. This appendix contains the summaries of and responses to comments related to the ACC II regulations overall, including the ACC II analyses, alternative regulatory structures, and legal authority.

The following notes about the comments and responses will help with understanding how the comments are structured and labeled:

- Each comment has a unique code, as identified in Tables 1-7 of the FSOR. Each code indicates the comment period or context of the submission, followed by a unique number for each comment submitted within that comment period or context. For example, comment "OP-1" indicates a comment received during the original (45-day) comment period ("OP" standing for "original period"), and 1 is the unique number identifying the specific comment. Certain lengthy or complex comments have been given additional code information identifying sections of the comment. For example, comment OP-155-1 would indicate a comment received during the original (45-day) comment period, unique comment identifier 155, and the first substantive portion of the comment. These additional sub-comment codes are shown in the copies of the comments included in the rulemaking file.
- Comments are grouped thematically by section and subsection. Repetitive comments are listed under the same comment number and responded to holistically. Each individual comment excerpt is preceded by "Comment:" and followed by its comment identification code, allowing readers to distinguish among repetitive individual comment excerpts that are bundled under the same comment number.
- Comments are excerpted verbatim unless otherwise noted. In some instances, comment excerpts are preceded by the statement, "Commenter says," with the comment excerpt in quotation marks. In other instances, the verbatim excerpt is presented without any preface or quotation marks. Comments that have been summarized, rather than quoted, are indicated by a preface such as "Commenter says that . . ." and are not followed by quotation marks.
- In verbatim comment excerpts, CARB has not corrected or noted errors in the original (for example, by adding "[sic]"). Comment excerpts' formatting may differ from the formatting of the original comment.
- Footnotes in comments generally have been omitted, though the footnote numbers may remain in the text of the comment excerpt.
- In general, CARB has noted where it made changes in response to the comment. Where it is not noted, no changes were made in response to the comment.

## A. General Comments on Advanced Clean Cars II

1. Comment: CARB received support or strong support for the ACC II proposal and its adoption. [T1-42, T1-58, OP-7, OP-179, OP-105, OP-124, OP-63, OP-99, OP-100, OP-109, OP-149, OP-172, 15-27, 15-32, T1-87, T1-73, B1-31, 15-10, 15b-4<sup>1</sup>, T2-25, T2-26, T2-27, T2-35, T2-48, T2-53, T2-56]

Comment: CR also appreciates the thoughtful approach that staff has taken in crafting stringent requirements that set an aggressive standard to reduce emissions at scale...The proposed Advanced Clean Cars II rules have the opportunity to accelerate marketplace change and bring innovative, cost-saving technology to consumers. These rules should spur a paradigm shift in transportation that will save consumers money, reduce air and climate pollution, and improve public health. CARB's "all of the above" approach in capturing emerging zero-emission vehicle technology has allowed the state greater flexibility in meeting deployment goals while also highlighting the importance of prioritizing greater investments in research and development funding to encourage rapid marketplace advancement. [OP-108]

Comment: Adopting the proposed Clean Cars II regulation will bring profound benefits to the state and beyond. [OP-149]

Comment: Adoption of an ambitious ACC II rule will provide regulatory certainty to support continued investments in the transition of transportation. [T1-19]

Comment: Therefore, more than ever, California—together with other states—must provide long-term certainty through its programs to protect public health and the environment. States have the obligation and authority to ensure continued progress occurs on reducing [greenhouse gas] GHG and other air pollutants. Providing long-term certainty to the industry, as this proposed rule does, will be important not only today, but in future environments where federal inaction on climate could occur again. [OP-99]

Comment: Thus, ambitious action to reduce emissions from the transportation sector will protect the health of the nearly 40 million residents of California today, and help prevent even more severe climate impacts from increasing in coming decades. Specifically, a rapid shift to ZEVs, ultimately ensuring 100 percent of new vehicles sold are [zero-emission vehicles] ZEVs by 2035, will reduce harmful pollution and save lives across the state.... But this action is particularly important because air pollution, and pollution from the transportation sector, does not impact all communities equally. Communities of color and low-income communities suffer disproportionately from harmful vehicle pollution, because these groups constitute a higher percentage of the

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<sup>1</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

population near our roads and highways. And these communities already face health disparities, including higher rates of chronic disease and premature death. [OP-142]

Agency Response: CARB appreciates support for the ACC II proposal. Including changes directed at the June 9, 2022, hearing, CARB adopted the final ACC II regulations at its August 25, 2022, hearing.

2. Comment: CARB received several comments noting support for clean or cleaner air, lower GHG emissions, increase climate action, or for the work that CARB does in cleaning the air. [OP-3, OP-23, OP-68, OP-76, OP-90, OP-129, OP-133, OP-165, T1-25, T1-47, T1-48, T1-69, B1-32]

Comment: CARB received several comments of support for cleaner car and or truck regulations and standards. [OP-90, OP-45, OP-128]

Comment: CARB received several comments asking CARB to protect the future of children, families, and/or communities. [OP-27, OP-90, T1-1, T1-2]

Comment: CARB received numerous calls to take bold action, to clean the air, to do the right thing, to lead, or to move quickly. [OP-90, OP-143, OP-99, T1-79, OP-23, OP-180, T2-26]

Comment: Have the courage to stand up to the fossil fuel and auto industries. [OP-90]

Comment: Please do not give in to automakers asking for relaxed standards. The EU is already moving in this direction. They will have to deal. [15-7]

Comment: There is a vicious cycle of harm created from the release of these collective pollutants, with a major source being passenger vehicles. In California, the state faces a variety of increasing health problems from GHG emissions and resulting climate change such (1) the alteration of seasonal patterns making hot days hotter, (2) increasing severity of droughts and other extreme events. If California's adoption of stricter-than-federal standards were needed in past decades, there is more reason than ever for the state to adopt new standards to meet these compelling and extraordinary conditions. [OP-99]

Agency Response: CARB appreciates the commenters' support and enthusiasm for cleaner air and lowering GHG emissions, and for standards that aim to reduce those emissions. CARB adopted the final ACC II regulations at its August 25, 2022, hearing. As adopted, the ACC II regulations will reduce by more than 50% greenhouse gas emission by 2040, and by nearly 40% oxides of nitrogen (NOx) emissions by 2040 from light duty vehicles.

3. Comment: CARB received comment of general support for the goals of the ACC II regulations. [T1-12, B1-5, T1-9, OP-127]

Agency Response: CARB appreciates support for the goals of the ACC II regulations. CARB adopted the final ACC II regulations at its August 25, 2022, hearing.

4. Comment: Enough already. You people have caused enough problems with this clean energy hoax. Stop! [OP-24].

Agency Response: This comment does not provide enough substance or information to adequately respond. The regulations do not directly pertain to “clean energy” although they do require that light-duty passenger cars and trucks have lower exhaust and evaporative emissions and be increasingly zero emission, and the proposal summarized the numerous public and private activities that are underway to reduce emissions from electricity generation, as described in the Staff Report: Initial Statement of Reasons (ISOR) section on complementary policies (Section III.6). Further, there is no “hoax” in these regulations; they are based firmly upon the law and the record and clean energy is real.

5. Comment: Commenter states to take stronger stands on helping to mitigate the damage we have already by not continuing to make the same mistakes going forward. [OP-90]

Agency Response: The commenter does not explain what “mistakes” have been made or by whom. To the extent the comment is directed at actions to address air pollution and climate change, CARB adopted the ACC II regulations to do so. On August 25, 2022, CARB adopted Resolution 22-12, which asserts “[n]o reasonable alternatives to the regulations considered to date, or that have otherwise been identified and brought to the attention of CARB, would be more effective at carrying out the purpose for which the regulations are proposed or would be as effective and less burdensome to affected entities than the proposed ACC II Regulations” and “[t]he significant public health and welfare benefits of the proposed regulations and the time needed by the regulated community to comply provide good cause for the regulations to become effective as expeditiously as possible”.

6. Comment: We support and recommend the adoption of CARB’s proposed modifications to the proposed ACCII regulation, posted on July 12, 2022, which sets increasingly stringent emissions standards for internal combustion engine (ICE) vehicles, requires an increasing number of ZEV sales to meet the state’s goal of 100% ZEV sales by 2035, and supports the state’s transportation equity goals. [15-10]

Comment: The Northeast States for Coordinated Air Use Management (NESCAUM) is writing to express strong support for the updates to the proposed Advanced Clean Cars II (ACC II) rulemaking and urges the California Air Resources Board to adopt the ACC II regulations. [15-12]

Comment: The proposed Advanced Clean Cars II rules have the opportunity to encourage getting clean, cost-saving technology into the hands of consumers. These rules should spur innovation in transportation that will offer consumers options that will save them money, reduce air pollution and greenhouse gas emissions, and improve public health, which is why it is imperative that the Board act swiftly in the passage of the ACC II rule. [15-21]

Comment: We support staff's 15-day modifications to the regulation and believe this flexibility will help electrify this difficult market segment more quickly. [T2-25]

Comment: Commenter appreciate the revisions made to the proposed rule through the 15-day notice and comment process. [T2-41]

Agency Response: CARB appreciates the support for the 15-day changes for the ACC II regulations. The final modifications to the ACC II regulations were approved by CARB at its August 25, 2022, hearing.

7. Comment: CARB must determine if additional ZEV requirements could increase consumer costs and potentially delay ZEV deployment, assess if new PHEV and [low-emission vehicle] LEV standards are appropriate, and evaluate how these factors may impact the emission benefits sought in ACC II. [OP-161-81, OP-161-35, incorporated by reference into comment OP-97]

Agency Response: This is commenters' summary of previous, pre-rulemaking comments. CARB evaluated consumer costs and concluded the adopted ACC II regulations is cost-effective and will achieve the maximum feasible emission reductions from light-duty passenger vehicles. See, e.g., agency response to FSOR Appendix C Comment A-3, Section C.1 of the ISOR, and Resolution 22-12. In total, the evidence considered shows no reason to delay implementation of the ACC II regulations.

## **Technological Feasibility and Supply Chain Considerations**

8. Comment: Although it is improving as more vehicle manufacturers commit to fuller [electric vehicle] EV menus, EV options available to the consumer, to date, have been slim. Once the consumer has more to choose from, sales numbers will increase accordingly....Our franchised dealers are committed to serving the arbiters of vehicle choice – our customers. It is our customers who will determine to what extent this transition to ZEVs will succeed. [OP-114]

Comment: The regulation as it stands has its environmental benefits, but it strips Californians of their choices and forces them into something they may not desire so therefore I would encourage a different approach to achieve the goal of this regulation. [OP-164]

Agency Response: In establishing the ACC II zero-emission vehicle (ZEV) proposal, staff evaluated current ZEV market conditions, including consumer choices and preferences, and considered expected additional ZEV models coming to the market by the 2026 model year. Today, ZEV and plug-in hybrid vehicle (PHEV) sales in California are about 16%, and there were 60 ZEV and PHEV models available for consumers to choose from by the end of 2021, including a variety of options at lower price points, in addition to an increasing variety of model sizes. From the review of automaker projections of models in the next few years, as well as public commitments automakers have made about pending ZEV models, staff are confident consumers will have sufficient choices and that the ACC II ZEV stringency and performance requirements are feasible.

9. Comment: The dramatic underperformance of hydrogen fuel cell vehicles over the past decade relative to CARB's initial projections illustrates why caution is warranted when projecting developments of technologies and significant changes to the automotive industry. Further illustrating this is CARB's first ZEV program in 1990, which originally mandated that 10 percent of new vehicle sales be ZEVs by 2003.<sup>6</sup> Like the projections on the development of hydrogen fuel cell vehicles in ACC I, CARB

projections in the early 1990s on ZEV development varied dramatically from actual consumer purchasing behavior. [OP-54]

Agency Response: The ZEV Regulation by design is intended to support various zero-emission technologies and does not dictate specific compliance responses by automakers. The fuel cell electric vehicle (FCEV) technology remains important for drivers who need frequent fast refueling and who do not have access to charging infrastructure. Updated analyses show FCEV sales continue increasing and fueling infrastructure is advancing the market and helping to address barriers to deployment. See CARB, *2022 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development* (ca.gov), September 2022, pp. xviii-xx, updating ISOR reference CARB 2021c, *2021 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development*, [https://ww2.arb.ca.gov/sites/default/files/2021-09/2021\\_AB-8\\_FINAL.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-09/2021_AB-8_FINAL.pdf).

Although sales of FCEVs have been slower than projected in the original ACC rulemaking scenarios, sales of battery electric vehicles (BEVs) have far surpassed staff projections.

Battery technology has accelerated faster than staff projected and is a critical reason staff project the ACC II regulation is feasible. The state of the ZEV market is fundamentally different than it was in the 1990s and 2000s, where automakers are investing and building high volume, mainstream vehicles as ZEVs.

10. Comment: CARB received several comments with general concerns about supply chain and raw materials constraints. [OP-124, OP-140, OP-16,]

Comment: Lastly, the mandate for electric-only vehicles will further increase the state's reliance on foreign countries and a destabilized supply chain structure. [OP-119]

Comment: Other challenges include procurement and cost of raw materials for electrical components, the ability to ramp up battery production, and the development of an ecosystem to manage end-of-life batteries from all these ZEVs. [OP-150]

Comment: it goes without saying we all want cleaner air but the force electric vehicles is not the way to do this. There is only so much lithium to mine from the earth and when it is gone it is gone. lithium is also needed in medical , glass / ceramics and an array of oleilds the other problem arises[sic] is when the replacement batteries cost more than a new car. if you own a car with a dead battery, you have no choice but to scrap it do to the cost involved. it should also be noted that mining the materials for these cars will tear the planet up more than drilling a hole for fossil fuels. all though well meaning this plan lacks ntellectual foresight and should be abandoned at all costs. [OP-91]

Comment: The carrying capacity of the planet's precious metals needed to be mined by forced slave and child labor cannot sustain America or even just California moving toward all EVs. [B1-23]

Comment: ...global supply chain disruptions, in particular a global semiconductor chip shortage, and limited access to the critical minerals that are needed for EV batteries



like lithium, cobalt and nickel, pose enormous challenges to automakers' transition to electrification. Supply chain disruptions and the effects on battery and vehicle costs must be considered when determining the goalposts for reaching 100 percent ZEV sales by 2035. [B1-20]

Comment: We are concerned that global shortages of key materials necessary to construct electric vehicles, such as lithium, may greatly impact the supply of zero-emission vehicles during the ACC II compliance period. [T1-17]

Comment: The policy neglects the huge challenge of building enough ZEVs to meet your requirements. Over the next 15 years, the mining and extraction system in the U.S. will not produce enough lithium for all the batteries needed. [T1-25]

Comment: ...there are concerning signs that the current semiconductor-driven shortage of new vehicles may be a prelude to a massive lithium-driven shortage of EVs. Climate change is a global problem, and governments throughout the world (most notably the European Union and China) are aggressively moving towards the electrification of their vehicle fleets. The amount of lithium and other key raw materials necessary to facilitate the global EV transition is extraordinary, and industry leaders and experts are raising concerns that the materials and capacity necessary to produce EV batteries will be in catastrophically short supply in the coming decade. In an April 2022 interview with the Wall Street Journal, RJ Scaringe (CEO of Rivian, a prominent EV manufacturer) noted that "90% to 95% of the [EV] supply chain does not exist. [...] Put very simply, all of the world's cell production combined represents well under 10% of what we will need in 10 years." Mr. Scaringe further noted that the current vehicle supply constraints related to semiconductor shortages are "a small appetizer to what [the industry is] about to feel on battery cells over the next two decades." As a result of these supply constraints, lithium prices have surged over 400% over the past year. Tesla CEO Elon Musk made a public appeal for more lithium mining in an April 2022 call with investors, noting that the lack of lithium is a "fundamental limiting factor" in EV production. Unfortunately, many experts are not predicting relief on lithium supplies soon. In a recent interview with Bloomberg, industry expert Joe Lowry noted that a major problem is that it "takes up to a decade to bring on a lithium project." This suggests that production may continue to lag demand for considerable time. [OP-54]

Comment: No one argues the benefit of cleaner air. But at what cost? The landscapes of a number of countries are being strip mined and deforested in the rush to obtain the minerals necessary to develop and build today's batteries. Our ocean bottoms do not seem to be immune from consideration for destruction in the rush for minerals. If nations and mining companies degrade our natural lands and beauty in the race for mineral conquests, thereby leading to erosion, groundwater contamination, and irreparable harm to our land and ocean ecosystems, is the total commitment to ZEVs then worth it? Clearly a reasonable balance must be sought to make sure we are not trading one source of pollution and environmental degradation for another. Further, national security concerns could be raised if the world's bad actors substantially possess and control the mineral components of vehicle batteries and battery manufacturing processes. [OP-114]

Comment: Importantly, the question here is not *only* whether a vehicle manufacturer has the technology (and, inherent in this question, the resources) to produce a single electric vehicle. Rather, examining the technological feasibility of electric vehicle mandates must include asking whether vehicle manufacturers have the technology and resources to rapidly shift to producing electric vehicles—a relatively new technology category that requires different resources than traditional vehicles—by the millions...[B]oth the federal government and the private sector have recognized that critical minerals are essential to the future of electric vehicles, and likewise, that unstable critical mineral supply chains could disrupt this future... The U.S. is disproportionately reliant on international supplies of critical minerals necessary for electric vehicle and electric battery production... For any one of these minerals, ACC II's 100% electrification mandate could put the United States into a situation resembling the oil embargoes of the 1970s, where foreign actors control majorities of the critical raw material supplies used in the manufacture of fuels, battery, and motor components designed to provide transportation mobility services for the U.S. consumer. [OP-161-3, incorporated by reference into comment OP-97]

Comment: CARB has not assessed the amount of mineral resources that would be required for this regulation...Nor has CARB developed the factual record needed to conclude that other mineral resources needed to meet ACC II are adequate...CARB must provide a basis for their significance argument, including but not limited to an estimate of the minerals required to manufacture the ZEVs mandated by this proposed regulation, the potential strain on global mineral resources, and impacts to the global supply chains for lithium, cobalt, nickel, and other critical minerals. The assessment should include sensitivity analysis to determine how costs and availability may be affected by mineral scarcity and global supply chain disruptions. [OP-161-28, incorporated by reference into comment OP-97]

Comment: Evaluate potential electric vehicle battery supply chain requirements, especially demand for critical mineral resources which would be necessary to support the proposed ZEV sales mandate [OP-161-84, incorporated by reference into comment OP-97]

Comment: Commenter states "In the past, numerous and robust contingencies were available to Californians, owing to the flexibilities and capabilities of the auto manufacturing, oil and gas extraction, refining, and renewable fuels industries, to ensure that Californians have always enjoyed security of access to personal mobility – i.e., dealer lots full of vehicles and gas stations with ample supplies of fuel. Now, CARB is closing the door on those industries, stripping them of their flexibilities and eliminating the contingencies that Californians have historically relied upon. Moreover, it is doing so in the midst of 'unprecedented stress on California's energy system', record inflation, extraordinary supply chain disruptions, global uncertainty due to the lingering pandemic and the war in Ukraine, and critical concerns about the availability, cost and foreign dependence of minerals needed for EV batteries. As we have learned from the energy crises caused by the war in Ukraine and the impacts to global climate efforts, CARB cannot responsibly move forward on the ACC II rulemaking without analyzing the risks and impacts of its own actions and establishing viable contingencies." [OP-141-2]

Comment: Driven by policies like those in California, automakers have committed to ending production of ICEVs. What if we cannot secure the minerals needed for EV batteries, and the automakers cannot supply the needed EVs? [OP-141-3]

Agency Response: These comments object that because ZEVs need certain critical materials, such as lithium, for their traction batteries and because there are constraints on quantities of these materials, the ZEV requirements of the ACC II regulations are not feasible and have unacceptable adverse social and environmental effects. Please refer to the Master Response 2 beginning on page 13 of the Response to Comments on the Draft Environmental Analysis, the discussions in the Final Environmental Analysis at pages 29-40 and Chapter 4.B.12, and Appendix G to the ISOR at pages 43-47 for descriptions of staff's assessment of battery precious metals, mining activities, and recovery and recycling actions beginning to occur at the behest of the federal government, California, and vehicle and battery manufacturers. Staff expect the current supply chain challenges will be resolved by the time ACC II begins in model year 2026. Staff observe a dramatic increase in the investments and construction for procuring critical materials, manufacturing of batteries and critical ZEV components, and recovery of materials from used batteries. Additionally, the federal Inflation Reduction Act incentivizes expanded domestic production of batteries, and the durability requirements help reduce the amount of raw materials needed.

11. Comment: Why does the EV industry avoid sharing their performance in extreme cold and heat conditions, outside the temperate climate that EV's experience in sunny California? With minimal sales in States with extreme weather conditions, are the EV's performing below the expectations of the buyers? [OP-8].

Agency Response: Manufacturers continue to conduct durability testing of their ZEV models in the same extreme weather environments that they test their conventional vehicle models in. Additionally, the SAE J1634 BEV range testing standard has an optional 5-cycle pathway which allows manufacturers to test in cold weather conditions to generate different range calculations than they would be able to on the more standard testing pathways. Some manufacturers have started to choose this pathway, because their cold weather performance is outperforming the standard reduction multiplier created with years of input testing vehicles of all types. ZEVs are also being deployed at very high market penetration percentages, particularly in countries like Norway, which sees extreme cold for large portions of the year. Staff also modeled cold weather packages on BEVs to account for colder areas of the state where those vehicles may reside and be used, details of which can be found in ISOR Appendix G.

12. Comment: CARB received comments of concern related to current ZEV models not being ideal for farming use due to their work cycle and the need for charging and maintenance. [T1-107, OP-129, OP-140, OP-146, OP-153, OP-165]

Comment: Address shortfalls in BEV performance that fail to satisfy end-uses currently met by internal combustion engines (ICEs). [OP-161-86, incorporated by reference into comment OP-97]

Comment: Commenter states that although electric vehicles certainly are an important part of the future, they are incapable of meeting all the needs people need to sustain our modern life styles. When CARB doesn't recognize this, they run the risk of undermining the effectiveness of this regulation. [T2-54]

Agency Response: The ACC II regulations take effect beginning in the 2026 model year. The record shows that automakers are capable of and preparing to produce vehicles to meet a wide range of use profiles in the near term (for example, see ISOR Appendix G). This includes new light-duty and medium-duty pickup trucks that are electrified with all-wheel drive capability, off-board power, and longer range with fast refueling capabilities. PHEVs and FCEVs are expected to be produced under the ACC II regulations and do not present the charging challenges presented in these comments and would be suitable for use in rural and agricultural settings. And many of the performance attributes of BEVs already meet or exceed that of conventional vehicles, including acceleration, cornering, and a quiet drive. See also response to comment B-17 and E-42 below.

13. Comment: CARB's ACC II ZEV mandate centers around achieving 100% zero emission vehicle (ZEV) or plug-in hybrid electric vehicle (PHEV) sales in California by model year 2035. This unprecedented mandate is not supported by a demonstration of its technological and economic feasibility. [OP-161-45, incorporated by reference into comment OP-97]

Comment: CARB must perform a complete and sufficient assessment of the technological feasibility of the ACC II ZEV mandates... [OP-161-39, incorporated by reference into comment OP-97]

Comment: As CARB considers the technological feasibility of its proposal, it should further explore whether vehicle manufacturers are likely to possess adequate resources to adapt to these stringent requirements, especially in light of increasing global supply chain issues and commodity price increases associated with battery demand. Currently, CARB plans to set interim requirements for the percentage of electric vehicle sales starting in 2026, with this requirement increasing by 8 percentage points per year for the first 5 years, and then 6 percentage points per year for the latter 5 years. This is an unprecedented rate of vehicle technology change that the nation and vehicle manufacturers have never experienced before. [OP-161-59, incorporated by reference into comment OP-97]

Comment: California's ACC II mandates risk arbitrarily exacerbating supply chain strains, and CARB does not adequately account for how the increasing adoption of electric vehicles will further affect the technological feasibility of its proposed mandates. [OP-161-4, incorporated by reference into comment OP-97]

Comment: While AGC of California supports actions that reduce greenhouse gas emissions making our communities an even safer place to live, we urge CARB to consider the feasibility of the Advanced Clean Cars II regulation. At this moment in time, there is not current technology to reliably initiate this regulation. [OP-103]

Comment: The proposal includes shortcomings and inconsistencies with the analysis regarding technical demonstrations, environmental assessment, cost effectiveness,

lack of alternative analysis, and legal concerns regarding phasing out an entire industry. [T1-10, pp: 107:24-108:4.]

Agency Response: Staff reviewed automaker-reported projections of ZEV production capabilities, as well as public statements by industry on battery manufacturing commitments and actions, as well as current consumer preferences and market challenges (see ISOR Sections III.A.3 to III.A.6). Staff are confident that sufficient volumes of ZEVs will be available for the California market by the time the program begins in 2026 model year and its analysis established that the ACC II regulations are feasible in the time available. And vehicle manufacturers themselves testified that the ACC II ZEV standards would be challenging but overall are achievable and did not object to their adoption. Notably, Ford Motor Company testified that it supported the ZEV standards, despite their aggressiveness. (Tr., Aug. 25, 2022, pp. 89:18-19, 90:2.) Mercedes-Benz testified its goal is for all its new vehicles to be ZEVs by model year 2030. (Tr., Aug. 25, 2022, p. 37:12-14.)

Staff addressed technology and cost feasibility, supply of necessary metals, and evaluated alternatives in the rulemaking analysis. See ISOR Appendix G for vehicle technology and cost assessments. Refer to the Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis regarding semi-precious metal availability. With regards to environmental impacts and consideration of alternatives, see the Response to Comments on the Draft Environmental Analysis, particularly Master Response 1 on page 6 related to grid impacts and infrastructure limitations, Master Response 3 on page 16 related to the consideration of low-carbon liquid fuel alternatives, and Master Response 4 on page 18 related to lifecycle emissions. And for comments regarding legal authority or concerns, see the responses to Legal Authority and Obligations comments below, particularly responses to comments C-1, C-2, C-6, C-14, C-15, C-16, C-18, C-19, and C-36. These comments do not further specify any technological and economic feasibility, alternatives, environmental, or legal shortcomings or deficiencies, and so no further response is required.

CARB did not propose or adopt a phase-out of “an entire industry,” and so to the extent the commenters are making or basing the comments on such a phase-out or ban, they wrongly characterize the regulations and are beyond the scope of this rulemaking. As CARB’s analysis showed in Section 5.3.1 of the Standardized Regulatory Impact Analysis (SRIA) (Appendix C of the ISOR), jobs associated with petroleum fuel production and delivery to consumers decline as gasoline demand declines in the fleet, but are not eliminated (see Table 59). The updated analysis described in Appendix F of the FSOR shows that output from the petroleum and coal products manufacturing industry declines by 13% (see Table VI-6). Meanwhile certain other industries will experience net growth and overall consumers will benefit from savings in total costs of vehicle ownership, as discussed in response to comment A-20 below, such that the ACC II regulations deliver overall net benefits to California. Finally, given the ACC II regulations only impact new vehicle sales, conventional vehicles are projected to remain in the fleet for many years. The ACC II regulations are not “phasing out an entire industry.”

14. Comment: Ensure that materials for EVs are responsibly-sourced through environmental and human rights due diligence assessments on supply chains [OP-158, OP-160].

Comment: In the past, dirty mining practices have done terrible damage to the health of adjacent communities and to ecological systems around the world. CARB must develop rules to assure that the materials needed to build EV's are responsibly sourced and that there are recycling programs that allow these materials to be successfully reused. [OP-68]

Comment: The mining for the batteries uses child labor and dectroys [sic] the land that it is mined from. [OP-25]

Comment: The carrying capacity of the planet's precious metals needed to be mined by forced slave and child labor cannot sustain America or even just California moving toward all EVs. [B1-23]

Comment: CARB has not adequately addressed increased potential for human rights and labor abuses resulting from the significant increase in demand for minerals necessary for large-scale forced electrification. [OP-141-20]

Agency Response: CARB evaluated impacts associated with mining for battery materials (see Chapter 4.B.12 of the Final Environmental Analysis and Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis). CARB's analysis concluded that ACC II is not anticipated to substantially affect the economic potential or supply of known mineral resources. While child labor and other human rights violations are abhorrent, regulations addressing these issues are outside of CARB's regulatory purview for this rulemaking to adopt vehicle emission standards, so the comments requesting requirements for obtaining and producing materials for electric vehicles are outside the scope of the rulemaking. However, California, the Biden Administration, industry, and others are developing mining standards.<sup>2</sup> CARB's environmental analysis acknowledged that current lithium-ion batteries have incorporated cobalt for greater energy density and life, but that this shift to increased cobalt raises human rights concerns and potential supply constraints. Due at least in part to human rights concerns, industry is rapidly moving to batteries with lower cobalt chemistries, and some manufacturers are requiring battery makers to use blockchain technology to make the mineral supply chain traceable to ensure that battery metals are sourced responsibly and do not rely on conflict minerals or forced child labor. (See Chapter 2.D.1 of the Final Environmental Analysis.) CARB also notes

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<sup>2</sup> "Lithium Valley Development," Governor's Budget Summary 2022-23, <https://ebudget.ca.gov/2022-23/pdf/BudgetSummary/FullBudgetSummary.pdf#page=94> (accessed October 6, 2022);

"Governor Newsom Joins President Biden to Uplift California's Vision for an Inclusive, Sustainable, Clean Energy Economy in Lithium Valley," Feb. 22, 2022, <https://www.gov.ca.gov/2022/02/22/governor-newsom-joins-president-biden-to-uplift-californias-vision-for-an-inclusive-sustainable-clean-energy-economy-in-lithium-valley/> (accessed October 6, 2022).

that the ACC II regulations are expected to reduce petroleum use and that oil extraction and processing creates serious equity impacts that may be alleviated by reduced gasoline consumption under the ACC II regulations (e.g., 71% of California's petroleum refineries are located near disadvantaged communities,<sup>3</sup> the highest of all sectors covered by CARB's Cap-and-Trade Program, and are five times more likely to be located near census tracts with a high percentage of people of color<sup>4</sup>; see also Chapter 4.B.3 of the Final Environmental Analysis).

15. Comment: There are [environmental justice] EJ and contamination issues with batteries especially that must be monitored and solved. This will require our best minds to avoid harming the environment or innocent peoples. [OP-76]

Comment: The useful life of those large EV batteries is limited, generally from 15 to 20 years, but none of the recycling plans are public. With no plan currently in place to recycle lithium products when they reach their end, the world could literally run out of these exotic minerals in a few short years. An estimated 11 million tons of spent lithium-ion batteries will flood our markets by 2025, without systems in place to handle them. When and how will the recycling and disposal of spent EV batteries be addressed by the automobile manufacturers, and made public? [OP-9]

Comment: To try to make Electric Vehicles the only option before that technology is perfected will lead to pollution problems when these batteries are no longer useful. [OP-16]

Agency Response: CARB evaluated impacts associated with increased disposal, reuse, and recycling of batteries (see Chapter 4.B.9 of the Final Environmental Analysis and Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis). Please also refer to the discussions in the Final EA at pages 32-39, in the ISOR at p. 86, and ISOR Appendix G, ACC II ZEV Technology Assessment, at pages 44-47, for descriptions of staff's assessment of recovery and recycling actions beginning to occur at the behest of the federal government, California, and vehicle and battery manufacturers. Staff observe a dramatic increase in efforts to recover materials from used batteries and avoid disposal impacts. The ACC II ZEV Regulation includes battery labeling requirements designed to support greater ZEV deployment and ultimately help secure the emissions reductions needed, which also should support proper and efficient disposal and recycling. See Chapter III.D.5 of the ISOR, and ISOR Appendix F-8, Purpose and Rationale, § 1962.6. Battery Labelling

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<sup>3</sup> Disadvantaged communities are the California communities most affected by many sources of pollution and where people are often especially vulnerable to pollution's effects. OEHHA, "SB 535 Disadvantaged Communities," <https://oehha.ca.gov/calenviroscreen/sb535> (accessed Oct. 3, 2022); see the response to comment C-24 for more information.

<sup>4</sup> OEHHA, "Impacts of Greenhouse Gas Emission Limits Within Disadvantaged Communities: Progress Toward Reducing Inequities," Feb. 2022, pp. 30-31, <https://oehha.ca.gov/media/downloads/environmental-justice/impactsofghgpoliciesreport020322.pdf> (accessed Oct. 7, 2022). This report found no link between implementation of the Cap and Trade program and increases in emissions at any facilities.

Requirements. However, regulatory requirements for battery disposal, reuse, and recycling are outside the scope of this rulemaking.

16. Comment: Commenter indicates he tried to buy a gas-powered medium-duty truck to replace an aging diesel truck, but there are none to be found. Commenter does not know how there will be enough medium-sized electric vehicles available when you cannot even buy a gas vehicle right now in the time that CARB has allotted. [T2-11]

Agency Response: CARB's analysis and the evidence in the record did not show that the ACC II regulations would change the overall number of vehicles produced. The record also does not show that the availability of a vehicle to the commenter to purchase right now is attributable to the regulations. Recent shortages have been attributed to global supply chain constraints on microchips. According to the National Automobile Dealers' Association, new light-duty vehicle sales for July 2022 remain down 8.9% from July 2021, when sales first started to be constrained by the microchip shortage.<sup>5</sup> Should similar supply disruptions occur in the future, the regulation provides flexibilities in the use of banked credits to facilitate compliance. The commenter may also be mistaken regarding ACC II regulations' applicability on the replacement of existing medium-duty, gasoline vehicles prior to 2035. ACC II regulations only require that all new light-duty vehicle sales be ZEV or PHEV by 2035, not medium-duty vehicles (MDV) like the truck the commenter described. Although manufacturers may opt to include MDVs as part of their compliance towards the ACC II ZEV regulation, medium-duty ZEV sales are only required under the Advanced Clean Trucks Regulation to be 55% ZEV of new Class 2 and 3b trucks by 2035.

17. Comment: A Shortage of New Electric Vehicles in California Could Push Californians to Purchase Older and Non-EVs from Out of State, Undermining the State's Environmental Goals and Harming Local Businesses. If the EV-supply concerns are realized, they could result in substantial interstate marketplace disruptions that could push consumers and wholesale dealers to purchase used vehicles from out of state. In its ACC II staff report, CARB recognizes how ZEV regulations can shift vehicle allocations within the United States when it discussed the need for environmental justice credits to encourage off-lease ZEVs to stay in California. It's easy to imagine, that if during the ACC II compliance period there are an insufficient number of EVs necessary to satisfy demand in California, used vehicle prices will disproportionately increase in California, which would draw additional used vehicles from out of state. These marketplace disruptions would undermine California's bold environmental goals and they would harm California consumers and local businesses. [OP-54]

Agency Response: The commenter posits that shortages of new electric vehicles in California will increase used vehicle prices and imports into California thereby undermining the environmental benefits of the ACC II regulations. CARB believes that such conditions are unlikely and is not required to analyze this type of hypothetical outcome. Nonetheless, in Appendix D of the ISOR, staff did evaluate a sensitivity case

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<sup>5</sup> P. Manzi, NADA Market Beat, July 2022, <https://www.nada.org/media/6095/download?inline?inline>.



where the combination of increased vehicle prices and ZEV hesitancy reduced the total volume of new vehicle sales which are then replaced by used conventional vehicles imported into California. The analysis found that even with this greater proportion of used vehicles in the fleet, even if they had come from outside California, emissions would be less than 10% higher than the proposed regulations, in part because the federal emission standards have been harmonized with California's LEV III criteria emission standards, and may continue to be harmonized if that trend continues regarding CARB's LEV IV standards. On net, the scenario analyzed would still produce more emission and health benefits than without any new regulations. Similar results would be expected for the scenario posed by the commenter. CARB also notes that the emissions from imported conventional vehicles would be limited by emission requirements for California Department of Motor Vehicles registration.<sup>6</sup>

As noted in Master Response 2 of the Response to Comments on the Draft Environmental Analysis and Chapter 4.B.12 of the Final Environmental Analysis, the record does not support significant ZEV supply concerns. Automakers are actively securing the necessary commodities to meet market demand for ZEVs (as they do for all commodities necessary for producing their products). Even in the event of an unforeseen event disrupting the new ZEV market, such a disruption would not be isolated to California. A number of states representing roughly an additional 30% of the U.S. new vehicle market have preliminary indicated adopting the ACC II regulations in accordance with section 177 of the federal Clean Air Act. The Biden administration signed an executive order for a national target of 50% zero emission vehicle sales share in 2030. (86 Fed. Reg. 43,583 (Aug. 10, 2021).) Thus, any supply shortages would affect a large portion of the national new vehicle market which would lessen the disproportionate burden on California and tend to inhibit the availability of used vehicles from other states to flow into California.

Additionally, the used vehicle market is not necessarily a localized market that depends on vehicles supplied solely from the State. It is already an interstate market. Used vehicles are sold through various channels, including auctions that are open to parties from any state, which helps to equilibrate used vehicle prices across the country and makes it less likely that used vehicle prices in California would be significantly higher than those in other states.

18. Comment: Number – another thing, vehicle owners will repair and maintain their old ICE vehicles instead of buying your brand new electric vehicles. Guys like me, mechanics, we will become rich by maintaining and repairing people's old vehicles, because they won't buy electric cars and electric trucks. So go ahead and make my day, make me a millionaire. Jesus. Dealers, you're going to crush the new car market, but dealers – used car dealers can bring cars in from other states and sell them here in California. Fifty states emission cars will be legal to sell in California. So instead of

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<sup>6</sup> Health & Saf. Code, §§ 43150-43156; see also Dept. of Motor Vehicles, "Vehicle From Out-Of-State Purchases – Can You Register It In California?," [Vehicle From Out of State Purchases - Can You Register It in California? - California DMV](#) (accessed Oct. 7, 2022).

buying electric cars, people will buy used cars, gasoline cars, brought in from other states. You ever thought of that, because that's going to happen. [T2-57]

Comment: What will certainty occur, however, is that instead of assuring the continued improvement of the fleet CARB will have created our own Havana, where higher emitting GHG cars are kept alive for decades to allow working families to continue to work and live, and more cost-efficient GHG technologies are stymied by CARB's top-down 2022 technology diktat. [15b-2-17<sup>7</sup>]

Comment: Commenter suggests ACC II will condemn working families to increased poverty and worsen health and educational outcomes [15b-2-15].

Agency Response: The analysis and record do not establish that the ACC II regulations will affect vehicle production volumes or the rates for retaining vehicles past their full useful lives, nor that they would worsen health or educational outcomes (and commenters do not explain or provide evidence to the contrary). Regarding the hypothetical scenario of increased used cars being brought into the State, see the response to the preceding comment A-17. The reference to Havana is unclear but presumably about the result of trade restrictions that precludes new vehicles sales from the United States to Cuba. Because sales are not expected to be reduced or constrained, it is not reasonable to predict that ZEVs will not be purchased and that existing vehicles will be indefinitely maintained.

## Infrastructure Considerations

19. Comment: ACC II is feasible– NRDC analysis has found that there is sufficient funding available to support the needed charging infrastructure over the next five years in California, but additional actions and funding will be needed to meet the 2030 and 2035 public and shared private light duty charging infrastructure needs. Further, research shows that ZEVs are able to be integrated onto the electric grid at nominal costs and can in fact put downward pressure on rates for all utility customers. [OP-99]

Comment: The analysis revealed that investments from the state, the federal government, Low Carbon Fuel Standard, and electric utilities are currently projected to deliver \$3.2 billion in support for charging infrastructure over the next five years in California. This amount could meet the state's public, workplace, and shared multi-unit dwelling charging needs over the next five years based on a conservative estimate, provided that the Legislature passes the Governor's ZEV investment proposal; the utilities implement their approved investments; federal funds are dispersed; and the Public Utilities Commission approves filings on Low Carbon Fuel Standard (LCFS), near-term priorities and Pacific Gas and Electric's new proposal.<sup>77,78</sup> Continued investments will likely be needed to meet the 2030 and 2035 public and shared private light duty charging infrastructure needs, including up to another \$1.4 billion in public

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<sup>7</sup> This comment and the one that follows were submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, these comments are beyond the scope of the comment period and no response is required. Nevertheless, they are responded to here.

investments needed between now and 2030, and up to \$6.3 billion between now and 2035, based on the most conservative case under the analysis. We note these amounts do not include consideration of potential funding needs for charging by fleets, single-family homes, or dedicated (assigned) parking in multi-unit dwellings. It is assumed under ACC II that much of these infrastructure categories will be borne by the EV driver and the private sector (including potential site-hosts). [OP-99]

Agency Response: Staff agree there are substantial public investments committed over the next few years to help address the ZEV fueling infrastructure needs. Within the ACC II rulemaking, in the total cost of ownership (TCO) analysis, staff assumed electric vehicle infrastructure investments borne by electric utilities will be passed through to electricity ratepayers in the form of increased electricity prices. Staff used the California Energy Commission (CEC) 2021 Integrated Energy Policy Report (IEPR) projections of future electricity rates in the TCO analysis. Even with these costs, the ACC II regulations provide net savings.

Significant private investments are also expected, as discussed in the ISOR (see ISOR section III.A.6., p. 24 et seq). State and federal funding is typically offered as a matching grant, meaning that private investment will supplement the public investments and roughly double the total expenditures on infrastructure. Note that these investment estimates do not include private investments from EVSE providers or automakers like Tesla who do not leverage public funds. Additionally, the recent federal Inflation Adjustment Act incentivizes further private investment in domestic clean energy manufacturing and supply chains.

20. Comment: CARB received comments noting there is currently insufficient electric vehicle infrastructure or an inadequate amount of planned electric vehicle infrastructure to serve drivers in light of the ACC II regulations. [15-24, OP-4, T1-94, OP-34, OP-114, OP-141-4, B1-39, OP-88, OP-64, OP-117, B2-2, 15b-5<sup>8</sup>, 15b-7<sup>9</sup>, T2-25, T2-30, T2-51, T2-53]

Comment: A PHEV is only cleaner if the hybrid part of the car is being used. The car becomes dirtier than a traditional ICE when the hybrid part of the car is being used. Some consumers may choose to not use the hybrid part of their vehicle at all, especially if they live somewhere without an established EV infrastructure or have trouble charging such as a mobility challenged person that does not have access to charging at their apartment or house. [OP-117]

Comment: First, residential electricity prices in California are almost double the national average and are predicted to continue to rise. This will affect the affordability

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<sup>8</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

<sup>9</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

of vehicle charging and could make electric vehicles impractical, even with rebates and expanded charging infrastructure. Notably, these same communities are also less likely to have rooftop solar installations, which can significantly reduce the cost of electricity for homeowners.

Low-income and disadvantaged communities spend a disproportionate amount of their income on essential utilities, including electricity. The [California Public Utilities Commission] CPUC's 2019 Annual Affordability Report indicates that "13 percent of households in the state are located in areas where low-income households pay more than 15 percent of their disposable income on electricity service." In addition, certain areas, including Los Angeles, Chico, parts of the San Joaquin Valley, and parts of the San Francisco Bay Area, spend significantly higher amounts, "indicating that low-income households in these areas spend a very large percentage of their non-disposable income on electricity."

ACC II will accelerate electrification of the transportation sector, requiring significant infrastructure buildout to both support increased electricity demand and to facilitate deployment of ZEVs. The CPUC estimates that meeting additional demand alone will require an investment of \$49 billion in resource buildout, impacting electricity rates. CEC Staff Analysis indicates that both commercial and residential electricity prices will continue to rise, reaching over \$8/gasoline gallon equivalent ("GGE") by 2026 for the residential sector and nearly \$7/GGE for the commercial sector. Comparatively, natural gas will remain around \$3/diesel gallon equivalent through 2030. In its Environmental and Social Justice Action Plan, the CPUC "acknowledges that increased rates place a large burden on ESJ communities," noting that "as California transitions to a cleaner grid, the risk of a smaller number of households, likely lower income households who cannot afford to upgrade their existing household appliances to energy efficient and/or all electric, becoming increasingly financially responsible for maintaining legacy infrastructure." [OP-122-12]

Comment: Second, CARB has failed to fully consider and mitigate the significantly limited access to charging stations for low-income communities, many of whom will need access to public charging stations, since they may not have space or the permission necessary to install an electric vehicle charger in their home or apartment. Without an adequate supply of public charging stations, rebates for low-income communities to purchase EVs will not be sufficient. [OP-122-14]

Comment: The commenter states "[T]he lack of sufficient charging equipment is significant both as it relates to public and home charging. Both CARB and the CEC acknowledge that sufficient charging infrastructure is needed to accommodate the ACC II ZEV targets. But CARB fails to consider that residents of low-income communities are more dependent on public charging infrastructure, which is more expensive and less convenient than home charging. A recent study indicates that home charging is often not an option for people living in multi-family housing, who are disproportionately low-income, because '[p]ublic charging can be 2-4 times more expensive than home charging.'

While CARB does acknowledge the need to expand public charging infrastructure into ESJ communities, it does not take into consideration the interim consequences of

uneven access before improvements are made. For example, CARB states that 'already, in disadvantaged communities in California, used electric vehicles are purchased at higher rates than new electric vehicles.' As a result, the proposed solution is to increase warranty, durability and affordability of new ZEVs beginning in model year 2026. However, CARB does not address the economic impacts to ESJ communities between now and when model year 2026 ZEVs are viable as 'used.'" [OP-161-56, incorporated by reference into comment OP-97]

Comment: While the absence of sufficient EV charging infrastructure in disadvantaged communities has been acknowledged by CARB, electricity supply and distribution constraints for electric chargers have been largely to entirely ignored. These challenges are even more acute in higher density communities of color, which have multiple cars and adult workers per household. A further ignored challenge is the assumption that working families have a secure location to charge a car for 6+ hours, or that households where a car is in near-constant use by multiple adults working multiple jobs and caring for multiple kids can afford to lose access to a car for almost an entire workshift. [15b-2-11<sup>10</sup>]

Agency Response: CARB did evaluate charging infrastructure and access and electricity price impacts as part of its environmental and feasibility analyses, and CARB expects there will be sufficient infrastructure and grid capacity to satisfy additional needs from ACC II. CARB's analysis also shows that even with higher electricity prices, ZEVs will still provide cost savings to the vehicle owner over conventional vehicles.

As ZEV sales increase, the market will be incentivized to respond by providing fast-charging infrastructure to serve vehicles outside the home, including those driven by residents of multi-unit dwellings. The State and federal government are also investing in zero-emission infrastructure, with a prioritization of investments in disadvantaged communities. See Section III.A.6 of the ISOR. In recent years, approximately \$710 million has been spent to install electric vehicle supply equipment (EVSE) in California with an additional \$2.65 billion-\$2.69 billion anticipated to be invested through various public investments. Of this amount, \$1.284 billion has only recently been committed in the federal Infrastructure Investment and Jobs Act and California's 2022-23 fiscal year budget. The Infrastructure Investment and Jobs Act in part provides funding the National Electric Vehicle Infrastructure Program to deploy electric vehicle charging infrastructure and establish an interconnected network; California will receive \$384 million over five years. The California Department of Transportation and California Energy Commission (CEC) have developed (and the Federal Highway Administration recently approved) the first draft plan for NEVI deployment in the State, both along busy interstates and rural State routes and with consideration for additional alternative

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<sup>10</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

fuel corridors given to rural and disadvantaged communities.<sup>11</sup> California Assembly Bill (AB) 211, statutes of 2022, chapter 574, section 36(b)(5), provided \$215 million to support light-duty vehicle charging infrastructure, in addition to \$14,250,000 in Assembly Bill 179, statutes 2022, chapter 249, section 64.

Public support also includes \$900 million in State funding to expand affordable and convenient ZEV infrastructure access in low-income neighborhoods, and additional investments are expected from the federal Infrastructure Investment and Jobs Act. The CEC Draft ZEV Infrastructure Plan (ZIP)<sup>12</sup> provides additional details on how State infrastructure programs will expand access to lower income and disadvantaged communities, including the CEC's investments. According to the 2021–2023 Investment Plan Update for the Clean Transportation Program, the CEC will seek to ensure that more than 50% of the funds from the Clean Transportation Program will benefit low-income and disadvantaged communities. Further, Electrify America has committed to spending at least 35% of their infrastructure investments in disadvantaged and low-income communities. Assembly Bill 2061, statutes of 2022, chapter 345, will require recordkeeping and reporting for charger uptime from facilities that receive public or ratepayer funding to ensure that charging stations can provide reliable services to drivers who do not have access to home charging. And the ACC II regulations will require that vehicles are equipped with charging cords capable of both Level 1 and Level 2 service, enabling drivers to access charging circuits even if they do not have the ability to purchase a Level 2 home charger.

Private funding and investment are anticipated to play an important role as well. State and federal funding is typically offered as a matching grant, meaning that private investment will supplement the public investments and roughly double the total expenditures on infrastructure. Note that these investment estimates do not include private investments from EVSE providers or automakers like Tesla who do not leverage public funds. Additionally, the recent federal Inflation Adjustment Act incentivizes further private investment in domestic clean energy manufacturing and supply chains.

The staff economic impact analysis accounted for electricity retail prices for commercial and residential service, relying on the Energy Commission's 2021 IEPR forecasts. These forecasts account for increasing electricity costs associated with electric utility investments for higher load demands, renewable supplies, and upgrades to transmission and distribution costs. Specific rates will be determined by the CPUC, as that agency manages proceedings and decisions with electric utilities that service the vast majority of Californians to approve rates accounting for necessary investments in distribution and supply equipment. As required by Public Utilities Code Section 739.1, electrical companies with 100,000 or more customer accounts in California offer a 30-35% discount on electricity to qualified, low-income households through the

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<sup>11</sup> Cal. Dept. of Transportation & Cal. Energy Com., California's Deployment Plan for the National Electric Vehicle Infrastructure Program (Aug. 2022), [California NEVI Deployment Plan](#) (as of Oct. 7, 2022).

<sup>12</sup> California Energy Commission. 2022. Draft Zero-Emission Vehicle Infrastructure Plan (ZIP). CEC 2022, First 15-Day Notice.

California Alternate Rates for Energy (CARE) Program.<sup>13</sup> The Family Electric Rate Assistance (FERA) Program also offers an 18% discount for households with incomes that slightly exceed the CARE allowances.<sup>14</sup>

For even further discussion of grid impacts and infrastructure assessment, refer to Master Response 1 on page 6 of the Response to Comments on the Draft Environmental Analysis.

As part of the economic analysis for the ACC II rulemaking, staff developed a TCO assessment and considered equity impacts. The BEV technology is projected to be the dominant strategy for compliance by automakers, and staff project TCO net cost savings for BEV owners, as described in Section VI.E of the staff ISOR, which will enable increased discretionary spending by families. The results show that BEV owners will save \$3,216 over ten years in the most conservative case evaluated (a 2026 model year BEV with higher electricity prices assuming no access to a home charger) and will realize savings within the first year of ownership. Ten-year savings are much larger, at \$8,835, with the lower cost 2035 model year BEV coupled with access to a home charger.

This TCO analysis accounts for a number of cost factors, including vehicle price, loan fees, sales taxes and registration fees, fuel costs, maintenance costs, and a home charger capital investment for some buyers (as noted above, even drivers without a home charger save money). Assumptions and methods for staff's TCO analysis related to normal maintenance and service within the vehicle's expected useful life are described in Section 3.2.5 of the SRIA, which can be found as Appendix C of the ISOR. Staff utilized maintenance assumptions from Argonne National Laboratory, as cited in the SRIA. BEV and PHEV batteries were not assumed to require replacement at the end of their useful life during the ten-year period of the TCO analysis, consistent with the new useful life and warranty requirements in section 1962.4(d) that apply to batteries and consistent with analyses for conventional vehicles that do not include speculative costs for equipment replacement after the vehicle's useful life, such as engine or transmission replacement. BEVs are assumed to have 40% lower maintenance costs than comparable conventional vehicles, a large contributing factor to the TCO cost savings results overall.

CARB did not directly apportion public refueling station capital equipment costs to each vehicle technology, however, refueling costs were applied in the TCO analysis. Those refueling costs charged to the customer by the operator of the EVSE are expected to capture the capital investments required to build out and maintain those public refueling stations. CARB did account for costs associated with purchasing and installing home level 2 EVSEs as detailed in Section 3.5 of the SRIA.

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<sup>13</sup> CPUC, California Alternative Rates for Energy (CARE), <https://www.cpuc.ca.gov/consumer-support/financial-assistance-savings-and-discounts/california-alternate-rates-for-energy> (accessed October 6, 2022).

<sup>14</sup> CPUC, Family Electric Rate Assistance Program (FERA), <https://www.cpuc.ca.gov/consumer-support/financial-assistance-savings-and-discounts/family-electric-rate-assistance-program> (accessed October 6, 2022).

In staff's TCO analysis, discretionary spending impacts on the vehicle owner are minimal for the BEV300 case evaluated. The analysis assumed the vehicle buyer would have a five-year loan for the purchase of the vehicle, enabling the purchase costs to be spread out over that multi-year time period. Even when accounting for higher finance costs with the larger loan, the annual savings in fuel offset the higher annual loan payments within the first year of ownership. All future year costs or savings have a discount rate of 10% applied to them.

Moreover, as detailed in ISOR Appendix G, ZEV costs should reduce over time and eventually reach parity with conventional internal combustion engines (ICEs) in most vehicle segments by model years 2031-34. Details of the incremental purchase cost projections for vehicle classes are shown in Section VIII of Appendix G of the ISOR, and in Attachment P to the Notice of Public Availability of Modified Text and Availability of Additional Documents and Information Proposed Advanced Clean Cars II Regulations, July 12, 2022, as amended by Errata and Comment Period Extension, July 13, 2022, (collectively, First 15-Day Notice). Table 30 of ISOR Appendix G shows the incremental cost of the BEV300 vehicles for the 2026 to 2035 model years, the period evaluated for new vehicle costs in the ACC II rulemaking. As shown, the BEV300 becomes less expensive than the comparable conventional vehicle in many of the vehicle classifications within the years of the regulation. This tipping point occurs in 2031 for small cars without all-wheel drive (AWD) and for medium SUVs with AWD, and in 2034 for small SUVs with AWD. As a result, after these tipping points, new vehicle buyers are saving money immediately at the point of purchase, in addition to saving money over the ten-year period of ownership, including on savings by reductions in energy expenditures. As described in Section 3.2.3.1 of the SRIA, the assumed retail price of gasoline starts at \$3.92 in 2026 and increases to \$4.34 in 2035; to the degree that future gasoline prices exceed these amounts, the total savings would be even greater than estimated in the SRIA

The scope of the analysis for the ACC II rulemaking is 2026 through 2035 for new technology costs given that is the period of the new requirements. Staff anticipate the current market supply disruptions will be resolved by then. Staff considered a wide range of external data sources in determining the cost projections used and relied up on the National Academies analysis partly because it acknowledged uncertainty in future material costs and did not leverage the most optimistic costs available. Staff expect manufacturing capacity to meet demand by 2026 and that the number of ZEV models will continue to expand in the market providing sufficient choice for consumers and more stable pricing.

Beyond the TCO analysis conducted for ACC II, State and federal vehicle purchase incentives are available now and are anticipated to remain in effect for a number of years to mitigate the impact of the purchase cost of a new or used ZEV. Incentives were not included in the CARB TCO analysis, which means the ten-year ownership savings will be larger than the estimates above if a consumer qualifies for vehicle purchase incentives.

Further, ACC II includes environmental justice value provisions for automakers to encourage actions that benefit lower income households. This includes encouraging automakers to keep used ZEVs to be resold in California to increase the pool of used



ZEVs in the state, sell new ZEVs at a discounted MSRP level, and place ZEVs in community car share programs at a discount. See response to comment A-32 below for further discussion on how the ACC II provisions were designed to support equitable access to ZEVs.

The impacts of the existing regulations, through model year 2025, are not within the scope of the ACC II regulations. CARB assessed the impacts of the existing regulations when it adopted them.

21. Comment: As someone who drove a fuel cell electric vehicle for 3 years, I know all too well about having more cars on the road than the hydrogen delivery system can handle. Many, many times having to wait in line for hydrogen and even having to park the car for 4 days because of the unavailability of hydrogen. [OP-32]

Agency Response: Staff is aware of the reliance on public hydrogen stations from FCEV drivers. State actions are occurring to increase station buildout with the support of CEC funding and private fuel industry investments. As noted in Section III.A.6.a.4 of the staff ISOR, CARB supports analysis through its AB 8 (Stats. 2013, ch. 401) annual assessments to support and advise the best placement of these state-funded stations. Updated analyses show FCEV sales continue increasing and fueling infrastructure is advancing the market and helping to address barriers to deployment. See CARB, [2022 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development \(ca.gov\)](#), September 2022, pp. xviii-xx, updating ISOR reference CARB 2021c, 2021 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development, [https://ww2.arb.ca.gov/sites/default/files/2021-09/2021\\_AB-8\\_FINAL.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-09/2021_AB-8_FINAL.pdf).

However, the ZEV regulation is not fully dependent on FCEVs and hydrogen stations. Other technologies, including BEVs, provide additional and complementary options for buyers to drive a ZEV that meets their needs and automakers to comply with the ZEV regulation.

22. Comment: Building sufficient chargers to support ACC II's ZEV targets will require substantial additional investments. The CEC's AB 2127 Report projects that nearly 1.2 million public and shared private chargers will be needed to support the roughly 8 million ZEVs anticipated by 2030. However, infrastructure buildout has already fallen behind to meet the 2025 target of 250,000 chargers [OP-122-15]

Agency Response: Refer to Section III.A.6 of the ISOR for a description of state and federal infrastructure programs and Master Response 1 on page 6 of the Response to Comments on the Draft Environmental Analysis. Additionally, the ACC II rulemaking will require that vehicles are equipped with charging cords capable of both Level 1 and Level 2 service, enabling drivers to access charging circuits even if they do not have the ability to purchase a Level 2 home charger.

Further, refer to Table III-1 in the ISOR for a projection of EV charging stations to support the ZEV and PHEV fleet projections in the ACC II rulemaking. ACC II projects approximately 5.7 million ZEVs and PHEVs on the road by 2030, not 8 million as was shown in one scenario from the CEC AB 2127 report.

## Electrical Grid Impacts

23. Comment: The second item I'd like to just clear the air on is the impact on the grid. Folks have raised question marks about the impact on the grid. CEC undertook an extensive study that found that even in 2030 if the charging from EV is managed right, the system impacts would be about one percent addition on the peak load. So that is good news with load management, with policies already in place to help manage that, we are ready to be absorb. [T2-28]

Agency Response: CARB agrees that the impact on the grid from electric vehicles is relatively small compared to the full grid capability, and is manageable with early investments for future loads, and with strategies to shift electric vehicle charging loads off-peak. Refer to the response to comment A-25 below for information on grid impacts from ZEVs. Further, see the ISOR Section III.6.a.3 for information on grid planning and investments in California, including studies of how electric vehicle loads are manageable.

24. Comment: The commenter states "The rapid electrification of the transportation sector will both substantially increase electricity demand in California and increase dependence on electricity services, amplifying the risk that the grid will be targeted for either physical or cyber-attacks. A 2021 Government Accountability Office Report found that '[t]he grid's distribution systems face significant cybersecurity risks—that is, threats, vulnerabilities, and impacts—and are increasingly vulnerable to cyberattacks.' According to the report, these risks 'are compounded for distribution systems because the sheer size and dispersed nature of the systems present a large attack surface.' As demand increases due to accelerated electrification, grid security will pose a greater challenge due to additional resource buildout. Further, the report found that increased use of networked consumer devices that are connected to the grid's distribution systems—including electric vehicles and charging stations—also potentially introduce vulnerabilities because 'distribution utilities have limited visibility and influence on the use and cybersecurity of these devices.' ACC II's proposed ZEV regulation will therefore introduce new vulnerabilities to the nation's distribution system by significantly increasing the use of consumer devices. [OP-161-65, incorporated by reference into comment OP-97]

Agency Response: Evaluating the impacts on the grid from potential physical and cybersecurity threats is outside the scope of the impacts analysis required by CARB's vehicle emission regulations. CARB is aware that electrical grid risks and cyberattack mitigation are monitored and addressed by the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Homeland Security (DHS).

25. Comment: CARB received numerous comments stating concerns or opposition to ACC II due to alleged inability of California's electric grid, or a general lack of sufficient electricity, to handle the number of ZEVs that will result from ACC II. [OP-161-24, incorporated by reference into comment OP-97, OP-141-4, OP-141-5, T1-94, OP-62, T1-107, T1-72, OP-31, OP-32, OP-33, OP-34, OP-97, B1-21, OP-4, OP-42, OP-16, OP-124, OP-117, OP-164, OP-147, B1-23, B2-8, B2-10, T2-30, T2-46]

Comment: CARB must consider grid reliability impacts from the electrification of the transportation sector. As part of its evaluation of potential economic impacts to the welfare of California residents and in-state businesses, CARB must assess grid reliability impacts stemming from ACC II's forced electrification of the transportation sector.

California already faces unresolved grid reliability issues that will be exacerbated by ACC II's ZEV targets and the resulting increases in electricity demand. During a heatwave in August 2020, nearly half a million Californians lost power. The California Independent System Operator's (CAISO) root cause analysis of these rotating outages identified three major causal factors, including: The climate change-induced extreme heat wave across the western United States resulted in demand for electricity exceeding existing electricity resource adequacy (RA) and planning targets; In transitioning to a reliable, clean, and affordable resource mix, resource planning targets have not kept pace to ensure sufficient resources that can be relied upon to meet demand in the early evening hours. This made balancing demand and supply more challenging during the extreme heat wave; Some practices in the day-ahead energy market exacerbated the supply challenges under highly stressed conditions.

Recent studies reflect that factors affecting grid reliability are predicted to increase in future years. For example, a recent report by the California Legislative Analyst's Office indicates that California is expected to experience higher average temperatures; more frequent, intense, and prolonged heatwaves; and a greater number of extreme heat days due to climate change. As these increasingly frequent extreme weather events increase demand for electricity, existing supply shortages will also worsen. According to CAISO's 2021 Summer Loads & Resources Assessment, 2021 faced "potential challenges in meeting demand during extreme heat waves ... [which] affect a substantial portion of the Western Interconnection and cause simultaneously high loads across the West ... reducing] the availability of imports into the ISO balancing authority area." As recently as July 30, 2021, Governor Gavin Newsom issued an emergency proclamation highlighting that California currently faces an energy supply shortage of up to 3,500 megawatts during the afternoon-evening net-peak period of high-power demand on days when there are extreme weather conditions.

ACC II and other CARB rulemakings will exacerbate supply challenges by significantly increasing demand for electricity in California. According to discussions during a Staff Workshop regarding the California Energy Commission's (CEC) 2022 Integrated Energy Policy Report Update, existing regulations are "very modest compared to what is on the near horizon and in the future"—increases in state electricity demand are already apparent, and the electrification of the transportation sector will increase demand by around 300,000 gigawatt-hours (GWh) statewide. In addition, CARB's SRIA predicts a 20.23% increase in output for electric power generation, transmission, and distribution by 2040.

While securing additional generation capacity will mitigate some of these supply challenges, overreliance on renewable generation may exacerbate existing shortages, particularly during early evening hours. The California Public Utility Commission's (CPUC) recently adopted Integrated Resource Plan for 2018-2020 demonstrates that substantial new resource capacity will be required to support accelerated

electrification. The CPUC's preferred portfolio for electricity generation heavily relies on substantial scale-up of renewable resources that already face reliability challenges.

By 2026, when ACC II goes into effect, the CPUC must plan for a new resource buildout of 28,154 MW, climbing to 43,131 MW by 2032.<sup>28</sup> Nearly half of this capacity depends on battery storage, for which feasibility has not been demonstrated, and the majority of the remaining capacity is supplied by utility-scale solar, which also involves significant feasibility and reliability concerns.<sup>29</sup> Battery storage at this scale would result in significant additional demand for critical minerals, increasing consumer costs for both electricity and electric vehicles. CARB has failed to adequately assess these reliability challenges, despite its clear legal duty to do so. [OP-161-1, incorporated by reference into comment OP-97]

Comment: California already faces unresolved grid reliability issues that will be exacerbated by ACC II's ZEV targets. Increases in state electricity demand are already apparent, and electrification of the transportation sector will increase demand by around 300,000 GWh statewide. By 2026, when ACC II would go into effect, California will need an additional 28,154 MW, climbing to 43,131 MW by 2032. Nearly half of this capacity depends on battery storage that has not been demonstrated, and the majority of the remaining capacity is supplied by utility-scale solar, which also presents significant feasibility concerns. It is entirely unreasonable to determine that a vehicle is technologically feasible solely because it can be built when it simultaneously cannot reliably operate because it does not have the power to do so. Creating a rapid increase in electricity demand before more renewable energy infrastructure is built could increase emissions from traditional energy generating sources and offset GHG reductions achieved by ZEVs, an unintended consequence CARB did not consider. [OP-161-5, incorporated by reference into comment OP-97].

Comment: The increased demand for electricity under CARB's proposed ACC II program will worsen existing instabilities in California's grid, compromising grid reliability in direct contravention of federal policy. During a heatwave in August 2020, nearly half a million Californians lost power. As recently as July 30, 2021, Governor Gavin Newsom issued an emergency proclamation highlighting that California currently faces an energy supply shortage of up to 3,500 megawatts during the afternoon-evening net-peak period of high-power demand on days when there are extreme weather conditions. ACC II will increase demand despite existing shortfalls, undermining federal requirements targeting increased grid reliability. [OP-161-66, incorporated by reference into comment OP-97]

Comment: Commenter is concerned that adding more electric vehicles will put more strain on the grid causing more blackouts and will result in citizens missing days at work which will impact the economy. Commenter asserts this will cause inflation to continue to increase and may result in even more fires than we currently see. [OP-20]

Comment: We already have rolling blackouts, how is our electrical grid going to handle all cars to be plugged in? What happens when you are in the freeway and an accident happens in the winter, you are stuck on the freeway and your electricity has run out? Do I want to be driving and stop in a dangerous area to sit and recharge my car at night? [OP-30]

Comment: Commenter says that forcing electric cars on the population will strain the already over-burdened electric grid and notes the State is already experiencing serious energy problems with rolling blackouts every summer. [OP-22]

Comment: Neither work electric grid infrastructure impacts or cumulative impacts on mineral resources necessary for the transition to Evs Evaluated. For these reasons, if the proposal were subjected to the type of ESG analysis applied to the private sector, this proposal would likely receive a failing score. [T2-1]

Agency Response: CARB understands the concerns commenters raise; there will need to be expanded electricity generation, transmission, and distribution over the next 13-18 years. However, CARB expects, supported by the record, that California's electric grid will be capable of meeting additional demand from ACC II. See Master Response 1 beginning on page 6 of the Response to Comments on the Draft Environmental Analysis for a description of staff's assessment of grid impacts. Several studies have shown no major technical challenges or risks have been identified that would prevent a growing electric vehicle fleet at the generation or transmission level, especially in the near-term (see page 7 of the Response to Comments on the Draft Environmental Analysis). Long-term state agency planning actions are already occurring to ensure the grid is prepared for electric vehicle loads. Increasing electric loads from BEVs can be managed with charging off-peak and with demand response signals to reduce load during peak periods. Further, BEVs are expected to eventually provide grid services by taking advantage of the onboard battery storage, notably by providing backup power to homes and community buildings at times of electric grid power outages, or by providing two-way power flow to the grid allowing BEVs to become power providers to utilities.

CARB also notes that despite a record-setting heat wave in early September 2022, which also set new records for electrical demand, the California Independent System Operator did not require rolling blackouts to maintain the electrical system. See, e.g., J. Cohen, *California's electricity demand breaks all-time record during severe heat wave*, Nation, Sept. 9, 2022. As described in the Response to Comments, significant planning and investments are underway to ensure an adequate energy supply and charging infrastructure to accommodate the ACC II regulations. These efforts have been bolstered by recent legislation, such as Assembly Bill 2700 (Stats. 200, ch. 354), that require the state's public and private electrical to develop plans to meet the need for ZEVs. Because of these actions, the ACC II regulations are not expected to render the State's electrical system unreliable.

Electric vehicle demand response load management strategies, along with vehicle grid services, will minimize the risk to grid blackouts from vehicle loads, and minimize the risk of lost labor time and wages. It is not clear how planned outages or missed workdays, if they occur, will cause wildfires or macroeconomic inflation. ZEVs, like conventional vehicles, may occasionally have to be refueled at night and away from home or work; in the NEVI solicitation, for instance, there is a requirement for adequate lighting at charging stations, but related safety risks are not new or unique to ZEVs. CARB also notes that fuel risks from blackouts or being stranded on the freeway also exist similarly for conventional vehicles and are not new or unique to ZEVs.

See also Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis for semi-precious metal mining and sourcing.

26. Comment: There have been increasing number of PSPS events in California over the last five years, due in large part to an aging electrical transmission and distribution infrastructure that utility companies in California have neglected to maintain in order to reduce their costs and increase profits.<sup>130</sup> In 2019, PG&E explained to the California Public Utilities Commission (CPUC) that it would take 10 years to decrease PSPS event severity significantly, and this does not include all the additional upgrades that will now be needed as a result of the requirements in the proposed ACC II regulation. The proposed ZEV strategy may leave California particularly vulnerable to PSPS events, which would eliminate the ability to recharge ZEVs. CARB claims that vehicle-to-grid (V2G) technology would help solve PSPS event issues, but this is assuming that a consumer would consent to feeding their electricity back into their house without knowledge of when the power would be restored. Electrical grid upgrades are needed to prevent PSPS events and increase the stability and reliability of the electric vehicle charging infrastructure. This is an issue unique to electricity as a fuel and must be analyzed. Meanwhile, the Renewable Portfolio Standard (RPS) mandates increased reliance on renewable power sources such as solar and wind, which has already posed challenges to the reliability of the California electrical grid. CARB must consider the impacts of rolling blackouts, higher utility costs, destabilization of industrial operations, and other foreseeable consequences of shifting significant additional power demand onto the grid. [OP-161-25, incorporated by reference into comment OP-97]

Comment: The State's energy agencies just issued a warning our electrical grid lacks sufficient capacity to keep the light on this summer. El Dorado County already is victim to capricious "PSPS" events, and this Plan will only exacerbate our region's blackouts and bring more suffering to residents. Also, we are not close to having the infrastructure necessary to support an all electric future especially when PG&E has failed to upcome infrastructure over decades. Its simply not realistic to think rural areas have the ability to make this transition in such a short time without massive state investment in hardening and upgrading the grid. [OP-123].

Comment: Commenter asks as more demand goes on the grid with EV use, how are we going to be able to make this work alongside PSPS and brownouts? [T2-3]

Agency Response: See the agency response to comment A-25 above. As explained in Master Response 1 of the Response to Comments on the Draft Environmental Analysis, PSPS events are anticipated to diminish in frequency and duration as the grid is hardened and capacity expanded.

CARB considered forecasts of electricity supply and costs in its analysis. The evidence in the record does not show that the demand for electricity from the ACC II regulations will significantly increase retail electricity prices, which are subject to regulatory controls. In particular, see Master Response 1 at pages 6-9 of the Response to Comments on the Draft Environmental Analysis; Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations (ACC II regulations), pp. 34-35, Fig. 4. CARB also evaluated upstream emission

impacts from greater amounts of ZEVs, including BEVs and FCEVs. See Chapter 4.B.3 of the Final Environmental Analysis for air quality impacts analysis.

27. Comment: Urge CARB to consider upgrading the electrical grid so that energy can reliably get to consumers that would make this regulation obtainable. Additionally, to consider equity needs in the design of the Advanced Clean Cars II regulation for prioritizing grid upgrades. [OP-103]

Comment: Can utilities and government guarantee that all residential, commercial, and industrial electric needs will be met affordably in a move to a total renewable-powered grid? Recent events in a number of states, including California, demonstrated the need for grid reliability, especially when certain electricity generation types cannot operate. Further, on-going NIMBY movements in Massachusetts and our New England neighbors have obstructed the ability to construct power lines coming into our state from Hydro Quebec and extended the fight for the wind farms off of Cape Cod into its third decade. Governments across the country, including Massachusetts, have set renewables standards for utilities' portfolios that are heavily subsidized by taxpayer dollars as well as by ratepayers. These portfolio standards are useless if we ultimately cannot deliver the power from these sources to electricity customers. [OP-114]

Agency Response: See Master Response 1 beginning on page 6 of the Response to Comments on the Draft Environmental Analysis for a discussion of State actions on upgrading and expanding the grid, in part to ensure adequate electrical supply in the coming years. These grid supply and resiliency measures are outside the scope of ACC II but do provide assurances that the State will be prepared for the increased number of ZEVs.

28. Comment: Commenter states "The California legislature has made clear that wildfire resilience is a priority for the state. Despite this clear legislative priority, CARB's proposed ACC II program will undermine wildfire resilience by forcing electrification of the transportation sector through its ZEV sales mandate, which will necessarily require significant build-out of electricity infrastructure, exacerbating existing wildfire risks and worsening wildfire impacts. These impacts will disproportionately affect low-income and disadvantaged communities..."

Electric utility infrastructure poses a significant wildfire ignition risk that CARB has failed to assess, and that ACC II will exacerbate. The December 2020 *Utility Wildfire Mitigation Strategy and Roadmap* emphasized that climate change will amplify utility wildfire risks by increasing vegetation contact through invasive species and tree mortality and increasing the size, scope, and frequency of wildfires, meaning that utilities will 'operate in more high-risk areas going forward.' Utilities are already operating in areas facing extreme or elevated wildfire risk in both Northern and Southern California, and these risks "will almost certainly increase" in the future... Apart from ignition risks, overreliance on electrification, as required by ACC II, can amplify wildfire risks to electrical transmission and distribution assets throughout the state...

Moreover, CARB overlooks the potential hazards faced by communities with an urgent need to evacuate from fires who may be stranded if they cannot charge their electric vehicles. CARB's analysis is entirely one-sided, assessing highly attenuated benefits while ignoring demonstrable costs based on extensive analyses by other California agencies.

Low-income communities are disproportionately burdened by wildfire impacts. According to a recent study analyzing wildfire impacts from 2010 to 2020, rural communities 'sustained three times more wildfire on average'—these communities exhibited significant environmental justice indicators, including 'higher rates of poverty, unemployment, and vacant housing, as well as higher proportions of low-income residents and residents without college degrees.'

Likewise, environmental justice communities are most impacted by de-energization events— according to the CPUC's report, '[t]hese events have had massive implications for [environmental and social justice (ESJ)] communities, particularly low-income people in rural, high fire threat areas including people with access and functional needs.' The CPUC's 2022 Environmental and Social Justice Action Plan indicates that 'electric utilities have used de-energization strategies more frequently to prevent ignition of wildfires by electric utility infrastructure.' Among the three largest utilities in California, data shows an average of 14 outages per year, impacting more than a million customers. CARB must account for the impact of rapid electrification on wildfire risk and consider the communities that will bear them. [OP-161-6, incorporated by reference into comment OP-97]

Comment: In view of the devastating wildfires in recent years that have been ignited due to failures of strained and poorly maintained electrical infrastructure, CARB must evaluate how the increased demand for electricity resulting from the proposed rule will increase the risk of wildfires, and CARB must further evaluate the potential impacts more frequent wildfires will have on public health and the environment. Wildfire smoke substantially contributes to PM2.5 emission. A recent study by researchers from Stanford found that "the contribution of wildfire smoke to PM2.5 concentrations in the US has grown substantially since the mid-2000s, and in recent years has accounted for up to half of the overall PM2.5 exposure in western regions."<sup>58</sup> Exposure to wildfire smoke can contribute to "a range of negative health consequence[s]," and increased emissions from wildfires can "erode gains from efforts aimed at reducing PM2.5 from other pollution sources." ACC II worsens existing wildfire risks to the additional detriment of air quality and public health, undermining not only clear legislative priorities but also CARB's responsibility to "coordinate, encourage, and review the efforts of all levels of government as they affect air quality." As the agency charged with overseeing attainment for state criteria pollutant standards, CARB cannot overlook these impacts and the significant risk that increased wildfires will exacerbate existing nonattainment issues. [OP-141-10]

Comment: Asking Californians to be dependent on an energy source that has proved itself unreliable is unfair to the citizens affected by these wildfires. How are everyday citizens supposed to charge their Evs when the power lines are down due to wildfires that the same utility has cause be neglect of their equipment? [OP-117]



Comment: As recently as the winter of 2020-2021 in my area we had 3 major outages due to risk of fire. Two of these came without warning. Now while I already had solar on my house because SDG&E shut down power it didn't do me any good in running my house or charging my car. No I would have to shell out a lot of money to have my own battery bank to be able to sustain my car during this time. The power grid is too dependant on external power and thus will be at risk to shut down due to weather events in the foreseeable future. [OP-4]

Comment: Power shutoffs during times of emergencies, forest fires, and other catastrophic disasters could mean that Californians would not have access to charge their electric vehicles to escape and evacuate from areas of disaster. Low income communities, many situated here in the San Joaquin Valley could be impacted disproportionately by these changes. [OP-140]

Agency Response: CARB analyzed the associated impacts on the electric grid from ACC II as required by law. Refer to the response to comment A-25 above. CARB also evaluated wildfire risk from increased grid infrastructure in its Environmental Analysis and determined ACC II will not directly result in increased instances of wildfire. See sections 4.B.20 and 5.D.20 of the Final Environmental Analysis and the responses to comments OP-161-6 and OP-141-10 in the Response to Comments on the Draft Environmental Analysis (pages 78-80 and 63-64, respectively). These demand response load management strategies, along with vehicle grid services, will minimize any risks to grid blackouts from vehicle loads. CARB further notes that any vehicle, regardless of fuel, must be fueled to be used, whether for evacuation or any other use. Refueling risks from emergency power losses exist similarly for conventional vehicles (e.g., conventional vehicles may also run out or be out of liquid fuel at the moment of an emergency, and liquid fuel refueling stations require electricity to operate). These considerations are not new or unique to ZEVs. The record before CARB does not show that the ACC II regulations increase this risk.

29. Comment: Please make sure that the electric grid can support this level of electrification. Places like Oregon are or will be requiring all electric homes. I am concerned that the electricity and the resources like wind, solar and batteries are produced, used and retired in a very low carbon, low pollution, socially acceptable way. Plugging in to a coal powered grid is just transferring the pollution away from our large cities without reducing CO2 levels. [OP-90]

Agency Response: CARB adopted the ACC II regulations to apply in California and assessed the impacts of the regulations to California's electrical system. Refer to the response to comment A-25 above.

States that choose to adopt the ACC II regulations may evaluate the impacts of doing so in their own states, including impacts to their electrical systems and expected emissions. CARB notes that in 2021, coal provided only about 3% of California's electricity. California Energy Commission, [2021 Total System Electric Generation \(ca.gov\)](https://www.energy.ca.gov/2021/total-system-electric-generation).

30. Comment: Additionally, the ACC II increases our concerns surrounding California's food security by allowing – by asking farmers to rely on a grid that is prone to

blackouts, public safety, power shutoffs, and power outages. California Farm Bureau asks for you to not leave rural California in the dark and to take a closer review of the effects on rural utility available and capacity. [T2-51]

Agency Response: Refer to the response to comment A-25 above. Because the record does not show a likelihood of significant grid reliability issues, CARB did not further review rural utility availability and capacity. CARB will monitor utility Integrated Resource Planning submittals and provide feedback when they do not adequately take into account growth in electrical demand in rural areas due to CARB's ZEV regulations to make sure that utilities are planning appropriately for load growth throughout the State including in rural areas. Additionally, CARB will continue to monitor circumstances regarding implementation of the ACC II regulations and will modify the requirements as necessary. Electric vehicle loads can be shifted to off-peak periods to reduce day-to-day impacts. Further, electric vehicles will be an asset for grid support, providing backup power capability for homes and community buildings when the power is out.

31. Comment: With increasing reliance on solar and wind generation, California also faces reliability hazards due to power inverters that serve solar and wind farms not being able to "ride-through" short-term disturbances, as occurred in California on four separate occasions between June and August 2021.<sup>26</sup> For individuals and communities that lack back-up power resources, a loss of electricity in an all-electric-vehicle world means a loss of personal mobility and an inability to get to and from work or school, secure food or obtain medical attention. [OP-122-2]

Agency Response: Refer to the response to comment A-25 above and ISOR Section III.A.6 on complementary policies, including a description of emerging vehicle-to-grid integration (VGI). Some BEVs already on the market today offer backup power capability in the event of a building losing power. This is a function not available with conventional vehicles. When local electricity services are temporarily out, gasoline stations are not able to operate either. A BEV with backup power capability can power a building, and occasionally drive to another community with power to recharge depending on how long the power outage occurs.

## Equity Impacts and Considerations

32. Comment: CARB received comments asking the Board to increase equity, issue a more equitable proposal, support for strong equity provisions, or to strengthen equity or provisions that support equity. [T1-1, T1-26, T1-35, T1-46, T1-52, T1-63, OP-110, T1-40, T1-67, T1-71, T1-89, OP-143, OP-85, T1-87, OP-68, T1-3, OP-38, OP-39, OP-40, OP-99, OP-83, OP-136, OP-156, OP-138, OP-151, B1-7, B1-34, T1-50, T1-53, T1-77, T1-85, OP-61, OP-169, OP-125, OP-175, OP-178, OP-48, OP-70, OP-35, OP-36, OP-43, OP-70, OP-47, OP-144, T2-27, OP-88, T2-5]]

Comment: CARB received several comments that ACC II must center equity to maximize benefits or zero emission vehicle deliveries to disadvantaged communities, or that there must be more equitable or affordable access to electric vehicles. [OP-136, OP-156, OP-166, OP-35, OP-36, OP-43, OP-69, OP-47, OP-116, OP-144, OP-100, T2-20, T2-47]

Comment: ARB should utilize this vital opportunity to ensure that the ZEV requirements, as a part of the ACC II program, are delivering emission reductions to those communities most historically overburdened with transportation emissions, and where the public health needs are among the greatest. NRDC shares the objectives of our equity partners to have a strong proposal that increases the emissions and public health benefits of the ZEV program overall, results in more vehicles being placed in pollution-burdened communities or regions than would otherwise occur, and that maximizes participation by automakers in these programs. Increased participation in or expansion of these equity-centered programs – as driven by the provisions in the ZEV program – could increase overall public health benefits. [OP-99]

Comment: ACC II should also promote the creation of family-supporting, high-road jobs and ensure that low-income and communities of color have greater and equitable access to zero emission vehicles and their associated benefits. [OP-180]

Comment: Furthermore, we urge ARB to consider additional requirements to encourage ZEV sales and reduce tailpipe pollution in low-income communities and communities of color who have suffered from air pollution for too long. [OP-131, OP-132]

Comment: As conservation, environmental justice, community, health, faith, and civic organizations representing millions of Californians, we call on you to take more aggressive action to clean up the California passenger-vehicle fleet. The rule should ensure an equitable transition to electric vehicles while promoting clean, public mobility options in line with zero-emission transportation. CARB's current proposal for the acc II regulation, however, is not nearly strong enough to push California to meet its climate targets as mandated by SB 32 or to ensure equitable access to electric vehicles. [OP-160]

Comment: The current ACC II proposal is not strong enough to fully achieve these opportunities by rapidly and equitably transforming the passenger vehicle market to zero-emissions. CARB must go further to develop an ACC II rule that prioritizes equitable outcomes that will support and create hundreds of

thousands of good paying jobs, keep California competitive with the growing global ZEV marketplace, and dramatically drive down health costs by billions of dollars, improve access and affordability for low-income households, all while significantly reducing and ultimately eliminating tailpipe pollution. [OP-144]

Comment: The proposed rules fall short of meeting California's climate and environmental justice goals and leave under-resourced communities without strong policy considerations that would deliver access to cleaner air and more affordable, pollution-free transportation options. The Air Resources Board (CARB) must go further to develop regulations that prioritize equitable outcomes that will support and create hundreds of thousands of good paying jobs, keep California competitive with the growing global ZEV marketplace, and dramatically drive down health costs by billions of dollars, improve access and affordability for low-income households, all while significantly reducing and ultimately eliminating tailpipe pollution. [OP-136, OP-156]

Comment: However, the current proposal does not currently achieve the environmental, health, economic and equity outcomes that it should. The Air Resources Board (CARB) must go further to develop an ACC II rule that prioritizes equitable outcomes that will support and create hundreds of thousands of good paying jobs, keep California competitive with the growing global ZEV marketplace, dramatically drive down health costs by billions of dollars, and improve access and affordability for low-income households, all while significantly reducing and ultimately eliminating tailpipe pollution. [OP-166]

Agency Response: CARB assessed these comments and agrees with these commenters that the ACC II regulation does not fully achieve the objectives of equitably transitioning the light-duty sector to zero emissions. Ensuring vehicle emissions are reduced and eliminated is but one part of an equitable transportation system. As CARB indicated in the ISOR (p. 24), “California’s ZEV regulation is one piece of the overarching strategy[,]” and “transportation equity extend[s] beyond cars to embrace policies and tools that reduce the need for personal vehicles and extend to walkability and transit as well.”

Within the scope of CARB’s authority and legislative direction to address the serious problem of air pollution in California, CARB balanced multiple goals, equity being one of them, and adopted regulations that achieve the maximum feasible GHG and criteria emissions reductions and provide economic benefits to the State of California.

Throughout the ACC II rulemaking, staff considered the impacts the regulations would have on low-income communities and individuals and disadvantaged communities, settling on a multi-faceted approach, which CARB adopted. Additionally, in developing these regulations, staff informed and consulted communities about the future of zero-emission transportation and what is being done to make ZEV technologies more accessible. For example, staff conducted an online transportation equity community listening session and participated in existing local community and environmental justice coalition meetings to discuss the ACC II rulemaking. In developing the regulatory proposals and analysis, staff met with more than 20 national, state, and local advocacy organizations to learn more about the recommendations these groups may have regarding staff’s proposals and how zero-emission transportation could be made more equitable. CARB also facilitated broad participation from communities through means such as remote commenting on workshops and at Board hearings. The adopted regulations draw on these recommendations and staff’s own analysis.

As discussed in the ISOR beginning on page 9, staff’s approach to advancing environmental justice in these regulations are multi-faceted and sit within a larger set of actions – from incentive programs to other regulatory measures – intended to protect priority populations. The significant pollution reductions from the regulations as a whole, when accounting for cleaner conventional vehicles as well as the increasing volume of ZEVs, will reduce exposure to vehicle pollution in communities throughout California, including in low-income and disadvantaged communities that are often disproportionately exposed to vehicular pollution. The ACC II regulations may decrease the exposure to air pollution of those who live and work near roadways as well as fuel distribution facilities. This is especially important as these individuals are

likely at higher risks of developing cardiovascular and respiratory issues because of particulate matter (PM) emissions, compared to those who live farther away from roadways and fuel distribution facilities. Although CARB cannot quantify the potential effect on near-source exposures, the ACC II regulations are expected to provide significant health benefits for these individuals. Further, long-term studies have shown that prior LEV standards reduced the degradation with age of conventional vehicle emission control systems. This reduces the disproportionate impacts of emissions between newer and used vehicles and the households that own them such that used vehicles more commonly owned by lower-income households in environmental justice communities have become increasingly cleaner relative to new vehicles.

In addition to cleaning up the light-duty fleet, staff's initial proposal also included targeted measures aimed to increase equity. The ZEV assurance measures ensure that emissions benefits are realized and long-lasting, while supporting more reliable ZEVs in the used vehicle market. Durable and better performing used ZEVs can help increase access to clean vehicle technologies for communities that may not be buying new vehicles, but which do need reliable household mobility options. Lastly, the ISOR proposal also included provisions to encourage manufacturers to take actions that improve access to ZEVs for disadvantaged, low-income, and other frontline communities, including by investing in community car share programs, producing affordable ZEVs, and delivering used vehicles to dealers that participate in CARB's complementary equity incentive programs.

The used car market can be a powerful tool in ensuring ZEV access at all income levels. Already, in disadvantaged communities in California, used ZEVs are purchased at higher rates than new electric vehicles. On average, used ZEVs cost 43-72% less than new ones. This makes the used market important in achieving California's carbon reduction goals, and a critical place to ensure ZEVs are thriving. The increasing ZEV requirements of the ZEV Regulation will increase the population of used ZEVs, which will make ZEV ownership more attainable for lower-income households.

However, CARB concurred with these commenters and, in the first Board Hearing, directed staff to issue changes to staff's initial proposal to better encourage manufacturers' generation of environmental justice values to promote more direct action in disadvantaged communities and support ZEV adoption among lower-income drivers. Included in its First 15-Day Notice, staff linked manufacturers' ability to use the full cumulative converted ZEV and PHEV value allowance to their use of environmental justice values. Additionally, staff included enhancements to the environmental justice values by allowing early generation of certain values (based on discounts provided to community-based clean mobility programs starting as early as model year 2024) and included an additional value for manufacturers to place off-lease ZEVs and PHEVs with participants in CARB's low-income financial assistance programs. See response to comment D-6 in Appendix C of the FSOR for more discussion on these 15-day amendments related to the environmental justice values.

Finally, CARB is aware that, beyond the ACC II regulations, more must be done to ensure environmental justice communities benefit equitably from the transition to 100% zero-emission new vehicle sales, and Resolution 22-12 directed staff to work to expand access to ZEVs (p. 20). In addition to the ACC II regulations, statewide actions

can include significant increases in funding for targeted incentives and infrastructure development, as well as more directed equity actions from private industry. As CARB and State actors consider ways to protect public health, the lens for transportation equity extends beyond cars to embrace policies and tools that reduce the need for personal vehicles, such as walkable communities, active transportation, and public transit as well.

33. Comment: In addition to CARB staff and other subject matter experts, CARB should listen to California citizen experts to provide generational equity. [T1-84]

Agency Response: CARB staff engaged in an extensive public process in developing the ACC II regulations. Staff sought input from stakeholders through various outreach and engagement events, including public workshops, stakeholder working groups, providing AB 52 notices to tribes, informal meetings and phone calls, and a community listening session. The community listening session helped inform community members about what the State is doing to increase equitable access to clean transportation through the ACC II regulations and other programs, and helped inform the State through listening to community questions, thoughts, experiences, and suggestions. CARB looks forward to continued engagement with stakeholders.

34. Comment: Although Executive Order N-79-20 ("EO"), Governor Newsom's mandate to transition to a statewide ZEV fleet and away from fossil fuels, calls for certain agencies to 'identify' actions and investment strategies to improve public transportation options to ensure clean transportation solutions are accessible to all Californians, it does not (and legally, cannot) provide the tremendous amount of funds necessary to fully mitigate the harmful economic impacts the Proposed Regulation will have. Ordering the phase-out of traditional vehicles without ensuring that these affordable alternative transportation options and critical supporting funds are already in place puts the cart before the horse. [OP-141-24]

Comment: As multiple sources of authority mandate, CARB must do more to consider and mitigate the impacts its proposed regulations will have on low-income communities. While CARB does provide some mitigation measures intended to benefit these communities, the agency indicates that in order for these communities to not be harmed by the transportation transition, "statewide actions need to include significant increases in funding for targeted incentives and infrastructure development, as well as more directed equity actions from private industry."

However, it is far from clear that the Legislature will enact the permanent sources of funding needed to create a just transition for low-income communities. More specifically with regard to increased public transportation infrastructure, the exact costs and timelines of when this infrastructure will be constructed is also uncertain, as is the effectiveness of these investments in fixed route public transit and multi-modal (pedestrian and bike path) options given that even pre-COVID, and even with the infusion of many billions of dollars in public transit, public transit ridership was steadily declining - with the steepest ridership declines in Southern California for example attributable to lower income commuters from our communities. The reasons for lost ridership are well understood, although remain unacknowledged by CARB and its public transit allies. For example, commute durations expand dramatically for the vast

majority of jobs that are not located in central core areas like downtown Los Angeles and San Francisco, and workers who must endure long bus commutes instead of far shorter car commutes mean time stolen from their families and other critical needs. Reliable service, especially for multi-transfer bus commuters, is also notoriously terrible as even Sacramento's own transit agency testified to CARB when explaining that its internship program for enthusiastic low-income minority youths was resulting in high levels of absenteeism and tardies based on bus dependency - problems that were fixed when employee carpools were established to pick up these young people so they could get to work on time. California's essential workers and other workforce members must be able to get to work on time, every day, or risk losing not just a paycheck but also their job and their housing.

Thus, until such additional funding measures have been enacted, and the actual effectiveness of public transportation systems as equitable transit solutions using metrics that measure commute durations and on-time arrivals has been verified with at least one pilot program in every region of the state, this new ACT II vehicular mandate that will drive further transportation cost increases and erode critical transportation mobility with exceptionally harsh, and racist, impacts to our low income hard-working families. As explained in more detail below, these impacts include higher electricity prices, lack of accessible charging stations, lack of available gas stations for families who cannot afford to transition vehicles, and increased fuel costs due to imports. [OP-121, OP-122-9, OP-122-10, OP-122-11]

Comment: Before CARB finalizes ACC II, the state must have comprehensive measures in place to protect low-income communities from carrying the primary burdens of climate change measures. Otherwise, at the expense of low-income communities, the ultimate beneficiaries of ACC II will be out-of-state power providers and the electric utilities themselves. To reduce the disparate impacts of costs on those who can least afford it, the rule must not unfairly advantage technologies, which are realistically accessible only for wealthier and more urban populations, at the expense of rural and lower-income consumers, who must subsidize those costs in the form of higher prices paid to fuel their vehicles and longer commutes. [OP-122-13]

Comment: The ACC II rule does just that [causes disproportionate harm to racial minorities], and must be withdrawn pending the previously-promised, and now ignored, "just transition" to reducing reliance on fossil fuels. [15b-2-14<sup>15</sup>]

Agency Response: The commenters assert that CARB inadequately considered and addressed potential impacts of the ACC II regulations on low-income communities, citing ongoing inequities in public transit and infrastructure. Commenters recommend that CARB refrain from adopting the ACC II regulations until other elements of an equitable transition to a zero-emission transportation system have been achieved.

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<sup>15</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

CARB notes that comments about regulations and State actions to improve public transit are outside the scope of this proposal to adopt regulations to reduce emissions from light- and medium-duty motor vehicles. CARB also disagrees that it inadequately considered and addressed potential impacts of the regulations on low-income communities, or that the status of public transit systems and funding provide adequate reasons to decline to dramatically reduce harmful emissions from vehicles through the requirements of the ACC II regulations. See, for instance, the response to comments E-31 and E-40 below, and responses to comments D-10 and D-11 in Appendix C of the FSOR.

CARB disagrees with the commenters that potential impacts of the ACC II regulations on low-income communities indicate that CARB should postpone adoption of the ACC II regulations until funding and infrastructure sufficient for a broader and undefined transition to a zero-emission transportation system are in place. Ensuring vehicle emissions are reduced and eliminated is part of an equitable transportation system. The ACC II regulations include several provisions to increase deployment of clean transportation technology to disproportionately impacted and low-income communities, many of which are predominantly communities of color. As CARB indicated in the ISOR, on the page quoted by one commenter (p. 24), "California's ZEV regulation is one piece of the overarching strategy[.]" and "transportation equity extend[s] beyond cars to embrace policies and tools that reduce the need for personal vehicles and extend to walkability and transit as well." Besides the ACC II regulations, support is being provided through State and federal investments in zero-emission infrastructure, with a prioritization of investments in disadvantaged communities. See the response to comment A-20 above. CARB also notes that State and federal vehicle purchase incentives are available now and are anticipated to remain in effect for a number of years to mitigate the impact of the purchase cost of a new or used ZEV. See, e.g., Assembly Bill 179 (Stats. 2022, ch. 249), which provides \$14,250,000 in support of ZEVs. CARB has determined that it would not be appropriate or beneficial to postpone this important but limited piece of the overall strategy until other pieces are fully in place. Moreover, the ACC II regulations are necessary to fulfill CARB's legal obligations to reduce vehicle emissions, which cannot be postponed as the commenter desires.

CARB evaluated vehicle ownership cases in the TCO analysis where a BEV owner could not install a home charger. In those cases, the vehicle owner still sees cost savings soon after purchasing the vehicle, accounting for higher public charging electricity prices. See the response to comment A-20 above.

35. Comment: Bureaucratic mismanagement and racial blindness (or bias) in the "cash for clunkers" program in Southern California caused the initial program rollout to simply strip affordable used cars from poor working families; the ACC II Rule follows this precisely racist pathway in mandating the phase-out the source of the state's affordable used car supply. [15b-2-4].

Agency Response: This comment was submitted during the Second Notice of Public Availability of Additional Documents Proposed Advanced Clean Cars II Regulations, August 8, 2022 (Second 15-Day Notice), the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond



the scope of the comment period and no response is required. Nevertheless, the ACC II regulations do not mandate the phase-out of the source of the State's affordable used car supply. The ACC II rulemaking applies to automakers and new vehicles, not used vehicles commonly purchased by lower-income drivers. Further, conventional vehicles may still be sold in California through 2034, past the date when BEVs are projected to become cheaper to buy than conventional vehicles. See also responses to comments A-32 and A-34 above.

The comment regarding "cash for clunkers" is outside the scope of this rulemaking. Nonetheless, CARB strongly disagrees with the commenter's characterization of the activities and management of such programs, including in Southern California. Especially in light of rising gas prices in California, CARB's light-duty vehicle purchase incentives play an important role in equitably increasing ZEV accessibility and affordability. The state has made significant investments in low-income and disadvantaged communities through equity-focused projects, such as Clean Cars 4 All, Financing Assistance programs, and increased Clean Vehicle Rebate Project (CVRP) rebates for lower-income applicants, by providing vehicle purchase incentives to those that need them the most. In addition, CARB's equity focused programs also pair vehicle incentives with funding for charging or mass transit options, which further benefit low-income Californians. All of CARB's incentive programs are voluntary and provide low-income individuals with an opportunity to purchase a newer, cleaner, more reliable vehicle.

## B. Alternative Regulatory Structures

### Alternatives

1. Comment: I strongly encourage a shift on how we are approaching this move to the elimination of tail pipe emissions. California's don't need more mandates and regulation; we need encouragement and incentive. To truly solve this problem, it needs to be the choice of the consumer to purchase in a manner that will achieve the goal of this proposed regulation. The two biggest factors in this decision are financial and uncertainty. When choices/competition is eliminated, price goes up. [OP-16]

Comment: Commenter respectfully request that you do not approve the ACC II and instead continue to allow for a market-driven response to meet California's air quality standards. [15-5].

Agency Response: To protect public health in California given the significant challenges of climate change and ground level ozone, it is necessary to put strong ZEV requirements in place in California to achieve the maximum emission reductions possible with both GHG and criteria emissions. (See CARB ISOR, § II.A., pp. 3-9.) The U.S. Environmental Protection Agency (EPA) has also approved CARB's existing LEV and ZEV regulations into California's State Implementation Plan under the Clean Air Act, agreeing that those regulations are necessary and appropriate to meet the national ambient air quality standards (NAAQS), including the 75 parts per billion ozone standard. Because California is also now planning to meet the more stringent 70 parts per billion ozone standard, more stringent LEV and ZEV standards are

necessary and appropriate for securing needed emission reductions. Further, strong ZEV requirements provide more clarity for numerous stakeholders on which vehicle technologies are likely to enter the market. Fueling infrastructure, grid and hydrogen supply expansions, and vehicle supply chain (component manufacturing) changes all rely on long-term investments. The clarity from strong ZEV requirements helps inform decisions to invest in and develop clean energy technology, which are important to support given the required pace of change necessary to protect public health.

Staff do not believe vehicle market choices and competition will decline. In fact, the number of ZEV models offered to consumers is growing rapidly and all major automakers are aggressively investing in the technology. Further, staff project that BEV prices will fall below conventional vehicles soon after 2030, making the consumer choice to buy the vehicle that much easier. In addition to the ACC II ZEV requirements, California and the federal government have put in place strong financial incentives for both vehicles and ZEV fueling infrastructure to mitigate the costs of the requirements. See the discussion above in the response to comment A-20.

2. Comment: We... request that CARB consider a 2030 alternative to the proposed ACC II rule package, and undertake an additional rulemaking to develop a strategy based on the authority contained in CAA sections 108(f) and 209(d) to gradually limit the operation of ICEVs until they would be prohibited from operating during ozone season in these extreme nonattainment areas after 2035.

The ACC II rule must be adequate to achieve the NO<sub>x</sub> reductions needed for an ozone [State Implementation Plan] SIP control strategy that will provide for attainment of the NAAQS in California's "extreme" ozone nonattainment areas by the CAA's 2037 deadline. The currently proposed ACC II is not adequate to provide for attainment.

An accelerated ACC strategy that will require all new LD vehicles to be zero emission beginning in 2030, when combined with a TCM strategy designed to gradually phase out the operation of ICEVs during ozone season, can provide for attainment in South Coast by 2037 if paired with a similar program for HD vehicles and EPA expected standards for ships, locomotives and aircraft engines.

Accordingly, ECA requests that CARB – 1) revise the proposed ACC II rule to advance the full compliance deadline from 2035 to 2030, and 2) open a new rulemaking to adopt a TCM for the ozone SIP that gradually expands the zone where ICEVs are not allowed to operate during ozone season, beginning with the port drayage rule now under development, adding a rule barring ICEV access to commercial airports beginning in 2026, expanding the zone to exclude ICEVs from major commercial centers by 2030, and ultimately barring the operation of ICEVs within extreme ozone nonattainment areas after 2035. [B1-13, T2-52]

Agency Response: Implementing a control measure on existing vehicles on the road is outside the scope of the ACC II rulemaking. The ACC II staff proposal for increased stringency on both new conventional vehicle criteria emission requirements and the ZEV regulation provide substantial NO<sub>x</sub> reductions that will contribute to ozone reductions in the nonattainment areas, resulting in a projected 25% reduction of NO<sub>x</sub> emissions from the light duty fleet in 2037. The CARB SIP development process, not

the ACC II rulemaking, helps prioritize what measures are necessary for attainment of federal ozone requirements.

As part of the ACC II rulemaking, staff did evaluate alternatives to the ZEV regulation proposed stringency. The SRIA analysis evaluated a scenario for achieving 100% ZEV and PHEV sales by 2032 instead of 2035, but was rejected given it was determined to be not feasible. Refer to the staff ISOR Appendix C-1, which includes the original SRIA report, for details as well as the response to comment A-3 in FSOR Appendix C.

3. Comment: ARB should redesign or add a compliance option to ACC II to leave space for future low-carbon fuels and combustion technology and avoid technology mandates. This could take the form of a carbon performance standard that includes the full life cycle carbon emissions of both the consumed energy (fuel) and vehicle. Proposed Section 1962.4(e ) should be eliminated and replaced with a performance standard, or at a minimum, amended with an additional option where LDV manufacturers can satisfy part or all of their annual ZEV sales requirement with combustion vehicles using liquid (or gaseous) fuel with low carbon intensity. [OP-97]

Comment: We urge CARB not to constrain its vision of a zero-emissions veh -- zero-emissions future, but instead focus on setting targets and allowing more low and zero carbon options that are added to EVs to maximize emission reductions in the immediate and longer term, while improving equity in transportation choices. [T1-59]

Comment: Commenter states it is important that CARB staff get this right and that needs to include low-NOx, carbon-negative biofuels as part of California's vehicular future. Allowing biofuels reduces the pressure on infrastructure buildup and encourages both consumers to adopt near-zero technologies of their choice as well as allows flexibility of 177 states that may not have the same infrastructure resources as California does. [T2-54].

Comment: CARB must include lower-carbon alternative fuel and engine technologies. [OP-161-90<sup>16</sup> incorporated by reference into comment OP-97]

Agency Response: These comments request CARB consider standards that rely on continued use of biofuels. The Draft Environmental Analysis considered a Low-Carbon Fuel Technology in lieu of ZEV Requirements Alternative (Low-Carbon Fuel Alternative), as described on pages 182 through 183, but ultimately rejected this alternative because it would fail to meet most of the basic project objectives, did not avoid a significant environmental impact, and was deemed infeasible. Refer to Master Response 3 on page 16 of the Response to Comments on the Draft Environmental Analysis.

Staff acknowledge the GHG reduction benefit of liquid biofuels used with conventional vehicles assuming the biofuel production pathway has a low carbon

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<sup>16</sup> CARB notes this statement is a citation to comments provided on draft regulatory text before the ACC II regulations were proposed. The commenter does not explain how this citation is a comment on the regulations as proposed or the process by which they were adopted. They are outside the scope of this rulemaking.

intensity. However, light-duty BEVs and FCEVs, when using grid electricity in California or renewably generated fuel, provide larger GHG reductions,<sup>17</sup> and liquid fuel strategies would not reduce vehicle NOx or air toxic emissions, as needed to meet the national ambient air quality standards, and therefore fail to meet a number of the basic project objectives identified in the ISOR, § II, p. 3, et seq. Indeed, a low-carbon fuels pathway does not secure the maximum feasible GHG and criteria emissions reductions from light-duty vehicles. Additionally, there are large supply restrictions in scaling up biofuel production, given limits to low-carbon biomass availability and commercialized low-carbon fuel production, at the scale needed for the California market if the ACC II regulations were not adopted. Given these limitations, biofuel supplies should be focused on other mobile sectors that are harder to reduce emissions to zero in order for California to achieve carbon neutrality by 2045.

Moreover, a regulation for emission standards that relied on compliance from flex fuels or biofuels would require verification that drivers are using biofuels as compared to gasoline. This would need a complex data collection process between vehicle owners and the automakers, followed by reporting to CARB, and measures to remedy the effects of actions by vehicle owners that elected not to use biofuels. Automakers would not likely have sufficient assurance drivers would choose biofuels at the pump in order to plan for their annual compliance with the vehicle regulations, creating risks of large unplanned credit deficits or non-compliance. Additionally, developing this type of regulation would implicate the California LEV GHG regulation, changes to which are beyond the scope of the ACC II rulemaking.

CARB also did consider lifecycle emissions as part of its analysis. See Master Response 4 on page 18 of the Response to Comments on the Draft Environmental Analysis.

Lastly, CARB notes that the regulations allow continued sale of new conventional gasoline vehicles through model year 2034 and allow sale of PHEVs after at portions that maximize emission reductions from increasing percentages of ZEVs. The regulations also include incentives to increase equitable access to ZEVs in disproportionately impacted and low-income communities (see response to comment A-32 above). And, as CARB does not set regulations in other states, its analysis did not include an infrastructure assessment outside of California.

4. Comment: Commenter opposes the proposal and recommends it be inclusive of vehicles using clean fossil fuels and not only ZEVs [OP-75, OP-174].

Agency Response: ACC II is agnostic as to how a vehicle meets the applicable requirements for ZEVs. The ACC II regulations include provisions for vehicles using liquid fuels (the LEV regulations). See preceding response (B-3).

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<sup>17</sup> Regarding emissions from electricity production to power ZEVs, CARB considered these, including the requirements to reduce carbon emissions from this sector. See Master Response 4 of the Response to Comments on the Draft Environmental Analysis, pp. 20-21; Senate Bill 1020 (Stats. 2022, ch. 361), Clean Energy, Jobs, and Affordability Act of 2022 [eligible renewable energy resources and zero-carbon resources supply 90% of all retail sales of electricity to California end-use customers by December 31, 2035].

5. Comment: Commenter opposes the proposal and asks the board to adopt a holistic vehicle/fuel emissions performance standard in line with CARB's historic practice [OP-97].

Agency Response: The ACC II regulations are almost entirely, and in their essential terms, technology-neutral performance standards. They establish emission standards and related requirements to ensure new vehicles reliably and consistently meet those standards in a verifiable manner, which manufacturers certify they meet, as well as requirements to ensure that shortcomings may be remedied. Though these requirements are tailored to the known technologies that are currently employed and impose requirements to ensure emissions are reduced as intended when those known technologies are applied, and CARB considered those technologies to ensure they were feasible in the time provided, the regulations do not preclude the use of new technologies to meet the performance-based emission standards. The ACC II regulations allow vehicle manufacturers to use any means of meeting those standards so long as the related requirements are met. The ACC II regulations do not give an advantage to any particular technologies. Manufacturers determine the means to comply and presumably do so with the most cost-effective means available.

To the extent the ACC II regulations or any aspects of them are prescriptive, CARB has met the requirements for adopting such standards. Their application is limited to specific classes of vehicles and their inherent attributes, which is necessary to accurately confirm compliance with the requirements to ensure that motor vehicle emissions are permanently reduced. (Reso. 22-12, p. 17.) It is also necessary in instances to ensure user safety, such as the requirements for electrical connections. These requirements are required given the necessity to put strong ZEV requirements in place in California to achieve the maximum emission reductions possible of both GHG and criteria emissions. See response to comment B-1.

CARB is separately reducing emissions from fuel production as acknowledged elsewhere in the comment.<sup>18</sup> Commenter does not explain how their envisioned "vehicle/fuel emissions performance standard" would differ from CARB's current regulatory approach and practices, nor how CARB's approach in ACC II differs from its "historic practices." Indeed, ACC II is a continuation and expansion of ACC, which itself grew from previous LEV, GHG, and ZEV emissions performance standards, none

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<sup>18</sup> For instance, CARB's Low Carbon Fuel Standard (LCFS) decreases the carbon intensity of California's transportation fuel pool and provides an increasing range of low-carbon and renewable alternatives. The standards are expressed in terms of the carbon intensity of gasoline and diesel fuel (and their respective substitutes), and includes a lifecycle GHG assessment of each fuel including direct emissions from production, transportation, and use as well as other effects on GHG emissions like from changes in land use for biofuels. The program establishes declining annual carbon intensity benchmarks, with fuels below the benchmark generating credits and fuels above the benchmark generating deficits; a deficient generator must meet the compliance obligation by otherwise generating or acquiring credits to at least offset its deficit. See Cal. Code Regs., tit. 17, §§ 95480-95503.

of those included fuel standards. In CARB's view, the ACC II Regulation is very much in line with CARB's regulatory practices.

6. Comment: WSPA contracted with Ramboll to produce the type of technology neutral study of LDVs that analyzes the full life cycle GHG emissions of each technology/fuel ("Ramboll LDA Study") for the statewide light duty automobile fleet. This study (included in Attachment D) conclusively shows that performance standards could be an alternative to a ZEV mandate.

The Ramboll LDA Study shows that a gradual transition to low-CI gasoline (represented by the purple line in Figure B-1) with current vehicle technologies could achieve similar life cycle GHG emissions as the current ACC II proposal (represented by the pink shaded region in Figure B1). The reason for this is that GHG emissions associated with zero emission vehicles are not zero. The GHG emissions for the "vehicle cycle" for BEVs is significantly higher than other vehicle technology types (see Comment B.3 for additional details).

CARB must consider alternatives such as low-CI fuels because there is not a one-size-fits-all solution to reducing transportation sector GHG emissions, and it allows for more flexibility in the transition towards lowering transportation GHG emissions in the short and long-term. Other technologies also realize similar or lower emissions on a life cycle basis compared to the ACC II proposal. These include hybrid electric vehicles (HEVs) coupled with low-CI fuel (represented by blue solid line in Figure B-1), plug-in electric hybrid vehicles (PHEVs) coupled with low-CI fuels (represented by the blue dotted line in Figure B-1), and a combination of HEVs, PHEVs, and BEVs with low-CI fuels (represented by the green solid and dotted lines). These alternative pathways would also not require the wholesale transformation of electric energy production and distribution infrastructure on an unprecedented short time scale, but they would allow battery, hydrogen, and low-carbon intensity gaseous and liquid fueled vehicles to compete to achieve the State's GHG targets for light-duty transportation in the quickest and most cost-effective manner. [OP-161-69 incorporated by reference into comment OP-97]

Comment: CARB could craft a regulation based on a GHG-reducing performance standard such as the LCFS instead of a ZEV sales mandate, which would be more consistent with traditional regulations that rely upon innovation within existing marketplaces. The Ramboll LDA Study shows that such an approach could dramatically reduce GHG emissions without the systemic cost and delay risks associated with the current ZEV-centric strategy that include, but are not limited to, electric generation/infrastructure development, zero emission technology readiness/feasibility, and cost. [OP-161-70, incorporated by reference into comment OP-97]

Comment: CARB must evaluate lower-CI vehicle/fuel systems, similar to the evaluation for the BEV/electrical grid system. Such an evaluation would show that there are additional cost effective options, which build on the Low Carbon Fuel Standard (LCFS) and other successful programs, for reducing GHG emissions. [OP-161-80, incorporated by reference into comment OP-97]

Comment: While increased electric vehicle adoption will be part of the energy mix to achieve California's GHG goals, it is impossible for this strategy alone to solve the issue of transportation emissions, especially in the short-term. Electric vehicles are simply too expensive for the majority of American families, and significant portions of California's population will rely on vehicles utilizing gasoline and diesel fuel for decades to come. A recent report by the Rhodium Group projects that, nationwide, where more than half of light-duty sales are electric by 2030 and nearly 90% are electric by 2035, 34% of transportation sector GHG emissions will still remain in 2050. The report concludes that 'low-GHG liquid fuels are needed to fill the remaining gap and achieve net-zero emissions in the transportation sector by mid-century.'

Low-carbon fuels like renewable diesel, ethanol and renewable gasoline are compatible with existing vehicle infrastructure. Such fuels are a commonsense solution to immediately reduce transportation GHG emissions without waiting for the time and expenses it will take to build out EV infrastructure. Additionally, unlike with electric vehicles, vehicle owners that use drop-in fuels such as renewable diesel or low carbon intensity gasoline do not have to face the high up-front cost to replace their current vehicles or the costs associated with locating and installing electric vehicle charging infrastructure. [OP-161-11, incorporated by reference into comment OP-97]

Comment: CARB has not considered any alternatives that minimize the number of stranded liquid fuel infrastructure assets or addressed the economic impact of these stranded assets that will result by the adoption of the ACC II proposal. If this regulation were to consider a technology-neutral approach, there could be potential for existing liquid fuels infrastructure to be converted from carrying fossil fuels to renewable fuels. This has already been demonstrated by the conversion of some refineries to renewable fuel facilities. There are over 14 refineries currently located in California and the total input capacity is more than 1.7 million barrels per day. The liquid fuel network in California is already extensive and fully built out to scale. Hence using this existing network for the production and distribution of renewable fuels presents a lower risk scenario compared to an unprecedented rate of electrical grid infrastructure development on which the implementation of the current ACC II proposal would require. [OP-141-26]

Agency Response: See response to comment B-3 above regarding CARB's consideration and rejection of a low-carbon fuels alternative. CARB also considered lifecycle emissions. Despite higher emissions from vehicle manufacturing, BEVs on average have much lower lifecycle GHG emissions than comparable gasoline vehicles, as manufacturing emissions are quickly offset by reduced emissions from operation; the same is true of FCEVs using renewably generated fuel (e.g., solar-generated hydrogen). For additional information on how staff considered lifecycle emissions, refer to Master Response 4 on page 18 of the Response to Comments on the Draft Environmental Analysis. And see the previous response (to comment B-5) regarding ACC II's technology neutrality.

Additionally, staff believe several input assumptions for the Ramboll study are overly conservative relative to battery manufacturing emissions. The Ramboll study assumes BEV owners will need to replace their battery pack once in the lifetime of the vehicle, specifically at age 9 of the vehicle immediately following the required warranty period

of the vehicle. Even if some batteries or portions of battery packs prematurely fail, the majority of BEVs are not expected to require a full battery replacement within their designed lifespans. The warranty and durability requirements in the ACC II regulations are designed to minimize the occurrence of premature failure and remedy them if they occur. Further, the Ramboll study assumed that none of the batteries are recycled, which implies batteries manufactured for BEVs and PHEVs have no recycled material content. As noted in the Response to Comments on the Draft Environmental Analysis, staff observe a growing number of companies establishing lithium-ion battery recycling operations in North America and elsewhere. Although the pace of growth for the recycling industry will lag behind new material manufacturing, it does represent a proportion of materials used in battery manufacturing, and likely will grow over time. And the ACC II battery labeling requirement will support these recycling efforts, as discussed in Chapter III.D.5 of the ISOR and ISOR Appendix F-8, Purpose and Rationale, § 1962.6. Battery Labelling Requirements.

Both of these input assumptions in the Ramboll study influence the outcome of its model related to “vehicle cycle” emissions (Figure 3-5 in Attachment D of the WSPA comment letter). Those results show that the emissions associated with battery materials is approximately 40% of the “vehicle cycle” emission factor for BEVs, which is a large reason the emissions are purportedly higher than for conventional vehicles. Additionally, the Ramboll study inaccurately used much lower and static vehicle efficiencies for BEVs compared to those developed for the ZEV Cost Workbook (as described in Section IV.A. of ISOR Appendix G), which reflect reasonable improvements over time to better estimate BEVs in the 2026 model year and beyond. CARB staff’s BEV efficiency values are unique for each vehicle classification and can vary by year based on technology improvement projections. Energy efficiency of BEVs is increasing and several vehicle models that have been in the market for more than one or two model years have seen year-over-year energy efficiency increases since they were first introduced (see CARB, ISOR, App. G, ACC II ZEV Technology Assessment, § III.D., Energy Efficiency Improvements). The fixed BEV lower vehicle efficiency assumption in the Ramboll study increases the electricity demand and associated emissions from these vehicles.

Regarding fuels, although current E85 fuel prices may provide savings to drivers compared to gasoline, it is not necessarily a larger savings compared to what BEV drivers experience; a full total cost of ownership (TCO) analysis would be needed comparing BEVs to flex-fueled conventional vehicles. The TCO analysis staff conducted, as described in Section VI.E of the ISOR, shows that BEV owners will save \$3,216 over ten years in the most conservative case evaluated (a 2026MY BEV with higher electricity prices assuming no access to a home charger) compared to a conventional vehicle using gasoline, and will realize savings within the first year of ownership. Ten-year savings are much larger, at \$8,835, with the lower cost 2035MY BEV coupled with access to a home charger. These savings will offset the costs of installing chargers if desired. (See Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations. p. 31.) The ACC II regulation does not require vehicles to be replaced.



CARB is coordinating with the U.S. EPA as it considers potential federal GHG performance-based emission standards. CARB did not propose increased stringency to the California GHG vehicle standards, and any changes to the LCFS are outside the scope of vehicle regulation rulemakings. As the commenter acknowledges, the GHG emissions from fuel production are addressed through LCFS. Two fundamental objectives of this rulemaking were to achieve the maximum GHG and criteria emission reductions possible from passenger vehicles, considering, among other things, cost and feasibility. As the record demonstrates, the adopted LEV and ZEV requirements achieve those goals; a low-GHG fuel standard would not produce the needed reductions in criteria pollutants or air toxics.

Further, strong ZEV requirements provide more clarity for numerous stakeholders on which vehicle technologies are likely to enter the market. Fueling infrastructure, grid and hydrogen supply expansions, and vehicle supply chain (component manufacturing) changes all rely on long-term investments. The clarity from strong ZEV requirements helps inform decisions to invest in and develop clean energy technology, which are important to support given the required pace of change necessary to protect public health.

7. Comment: Evaluate multiple vehicle/fuel technology scenarios instead of focusing on an electric vehicle (EV) centric approach to reducing NOx and Greenhouse Gas (GHG) emissions from light-duty and medium-duty vehicles (LD/MDVs) [OP-161-84, incorporated by reference into comment OP-97]

Agency Response: Refer to the response to comment B-3 above. CARB also disagrees with commenter's characterization of ACC II as "an electric vehicle (EV) centric approach"; ACC II is technology neutral. Though these requirements are tailored to the known technologies that are currently employed, they do not necessarily preclude the use of new technologies to meet the performance-based emission standards.

Additionally, the LEV provisions of ACC II focus on NOx emission reductions from conventional vehicles with the use of performance standards and vehicle test requirements.

8. Comment: CARB should justify that a bifurcated criteria air pollutant emission standard for ZEVs and non-ZEVs will be a cost-effective pathway to achieve emission reductions. [OP-161-85, incorporated by reference into comment OP-97]

Agency Response: Staff considered the commenter's concern regarding the cost-effectiveness of bifurcating emission standards for non-ZEVs and ZEVs, which pertains to the proposed removal of ZEVs from the new LEV IV criteria emission standards. Staff concluded that the removal of ZEVs from LEV IV criteria emission standards is cost-effective because the cost impact is zero relative to existing LEV III regulations.

First, the non-methane organic gas (NMOG)+NOx fleet average is the only requirement where ZEVs are included in the current LEV III regulations for criteria emissions. For LEV IV, ZEVs are being removed from the NMOG+NOx fleet average and non-ZEVs will have to meet the NMOG+NOx fleet average requirements on their own. The ACC II rulemaking did not make any changes to the GHG fleet average requirements, where ZEVs can continue to be utilized for compliance.

Second, the new LEV IV rules did not change the stringency of the NMOG+NO<sub>x</sub> fleet average requirement compared to existing LEV III rules. The LEV IV NMOG+NO<sub>x</sub> fleet average is 0.030 g/mile in 2026 and beyond, which is exactly the same value as the existing LEV III NMOG+NO<sub>x</sub> fleet average in 2025. Third, the prior LEV III rulemaking already included the costs of converting all combustion vehicles in the light-duty fleet from LEV and ULEV emission levels down to SULEV30 emission levels by 2025.

Therefore, the fleet average requirements in the new LEV IV regulations, which remove ZEVs from the NMOG+NO<sub>x</sub> fleet average and require non-ZEVs to comply on their own, are considered cost-effective because they do not bear any additional cost beyond the costs already considered in the previous LEV III rulemaking.

9. Comment: Commenter states “CARB must consider life cycle emissions from Zero Emission Vehicles in evaluating the ACC II program. Along with impacts to the state’s economy from proposed regulations, CARB is required to consider any less costly but equally effective alternatives. The ISOR and associated rulemaking document do not satisfy this obligation because nowhere does CARB compare the life cycle emissions analysis of ZEVs and highly efficient low emission vehicles, which impose significantly fewer infrastructure expenses while achieving equivalent or greater GHG emissions reductions on a faster timeline.

As noted by the National Bureau of Economic Research, ‘...despite being treated by regulators as ‘zero emission vehicles’, electric vehicles are not necessarily emissions free.’ Battery production, transport, and disposal or recycling present emissions and waste impacts as well as national security concerns. Furthermore, as the Ramboll LDA Study observes, ‘it is likely that the vast majority of batteries produced in the future would require virgin material given the significant increase in demand under a mass vehicle electrification scenario.’

Low-carbon fuels like renewable diesel, ethanol and renewable gasoline should be evaluated as an alternative because they are compatible with existing vehicle infrastructure, from light- to heavy-duty long-haul vehicles right now. By contrast, electric vehicles require transformation of energy production and distribution infrastructure—which will take significant time even in the most optimistic scenarios. This makes low-carbon fuels a commonsense solution to reduce transportation GHG emissions near-term, allowing battery, hydrogen, and low-carbon intensity gaseous and liquid fueled vehicles to compete to achieve the State’s GHG targets in the quickest and most cost-effective manner. For example, a scenario that phases in low-carbon intensity gasoline as a drop-in fuel for ICEVs over a two-decade period could reduce GHG emissions the same or more than the proposed ZEV-only mandate, when viewed on a life cycle basis. Other scenarios involving hybrid electric vehicles and PHEVs could be equally effective in providing GHG reductions when coupled with a phase in of low-carbon intensity gasoline.

Additionally, unlike with electric vehicles, vehicle owners that use drop-in fuels such as renewable diesel achieve emission reductions but do not have to face the high up-front cost to replace their current vehicles or the costs associated with locating and installing electric vehicle charging infrastructure.

Accounting for life cycle emissions and short-term emissions reductions is necessary for CARB to fulfill its legal duty to conduct a reasonable assessment of the effectiveness of alternatives and the significant impacts to the state's economy of all scenarios. From this perspective, including highly efficient low emission vehicles in the ACC II program is both less costly and equally effective in meeting CARB's regulatory goals, and CARB's failure to consider this alternative violates [California Health & Safety Code] HSC § 57005." [OP-161-2, incorporated by reference into comment OP-97]

Comment: In taking its cue for this rule from the Governor's directive to transition to electric vehicles, and by inaccurately deeming vehicles other than ICEV to be "Zero Emission Vehicles," CARB fails to meet its duty to fairly and accurately consider benefits of the regulation and less costly but equally effective alternatives. CARB's analysis arbitrarily overlooks the lifecycle impacts associated with electric vehicles, including the significant emissions, social, and national security impacts associated with battery production.

Moreover, CARB also fails to consider whether emissions reductions from fuels used for ICE vehicles may be achieved in a shorter time frame and at a lower cost than would be required to force electrification of the light-duty fleet. Significantly, the life cycle GHG emissions associated with light- and heavy-duty vehicles [HDV] that run on renewable diesel can be lower than the life cycle GHG emissions emitted by EVs. GREET analysis conducted by Southwest Research Institute<sup>35</sup> has indicated that GHG emissions from a light-duty vehicle that runs on renewable diesel with a carbon intensity of 25 g/Mj resulted in 25% lower life cycle GHG emissions when compared to an EV, as illustrated below and set forth in detail in Attachment A to these comments.

[Image omitted]

Additionally, there are emerging innovative approaches and new technologies to enable new modes of carbon reduction from fuels used in ICEV, such as carbon sequestration and on-board CO<sub>2</sub> capture. It is unreasonable for CARB to foreclose any opportunity for such technologies to provide an alternative to the mandates proposed in the ACC II rule.

In order for CARB to conduct a reasonable assessment of significant economic impacts and to consider less costly and equally effective alternatives, as required by the Health and Safety Code, CARB cannot arbitrarily overlook lifecycle emissions impacts from ZEV while also overlooking opportunities for emission reductions involving ICEV fuels. CARB needs to fairly present the true carbon footprint and costs associated with electrification. CARB also should provide for highly efficient low emission vehicles and account for low-carbon fuels in the ACC II program. To do so would be cost-effective and equally, if not more, effective in meeting CARB's regulatory goals. [OP-141-6]

Agency Response: Contrary to commenters' assertions, CARB did consider lifecycle emissions (see Master Response 4 in the Response to Comments on the Draft Environmental Analysis) and did evaluate low-carbon fuels as an alternative but rejected it (see the response to comment B-3 above). CARB also notes that ACC II

does not compel vehicle owners to replace their current vehicles and so does not impose such an up-front cost as commenter asserts.

Commenter is also incorrect regarding what constitutes a ZEV and how manufacturers may meet the ZEV requirements. CARB did not deem all vehicles other than conventional vehicles to be ZEVs; rather, CARB defined the standard for a ZEV, for purposes of ACC II, to be "passenger cars and light-duty trucks that produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) or greenhouse gas, excluding emissions from air conditioning systems, under any possible operational modes or conditions." (Title 13, California Code of Regulations (CCR), § 1962.4(b).) Certain medium-duty vehicles may also qualify.) And because ACC II is technology neutral and agnostic as to how manufacturers meet the ZEV requirements (see the response to comment B-5 above), CARB has not necessarily foreclosed new zero-emission technologies, contrary to commenter's assertion.

10. Comment: Commenter states that the State can achieve its goals without the motor vehicle emission standards proposed in the regulation by instead reducing VMT by 25% from a 2014 baseline by 2030 and 50% by 2040, implementing "a renewable fuel standard for liquid motor vehicle fuels of 25% content closed loop renewable fuels by 2030 and 50% content closed loop renewable fuels by 2040," and reducing shipping activity at the Ports of LA and Long Beach by 75% from a 2019 baseline by 2030 [OP-66].

Agency Response: CARB disagrees. CARB did consider a low-carbon fuels alternative but rejected it because in part it would not achieve the needed NOx emission reductions and was deemed infeasible due to supply constraints. See Master Response 3 in Responses to Comments on the Draft Environmental Analysis. CARB did not propose measures to control VMT or shipping activity, and so such comments are beyond the scope of this rulemaking. In any event, such measures would not achieve the goals of the ACC II regulations, namely achieving maximum emissions reductions from light-duty passenger vehicles.

11. Comment: It is CARB's responsibility to provide analyses on alternatives to the draft regulatory proposal that include emissions and cost benefits analyses, whether or not stakeholders provide analyzed alternatives. [OP-161-82, incorporated by reference into comment OP-97]

Agency Response: This is commenter's summary of previous, pre-rulemaking comments. CARB has met its statutory responsibilities regarding alternatives analysis during this rulemaking. See Chapter XI of the ISOR, Chapter 6 of the SRIA (Appendix C-1 to the ISOR), and Chapter 7 of the Final Environmental Analysis.

12. Comment: Alternatives to the proposed regulation were submitted to CARB in a timely manner. Those alternatives, if implemented, would achieve reductions in atmospheric "pollutants" far greater than the reductions achievable by the proposed regulation. If the proposed alternatives were implemented in lieu of the proposed ACC II regulation, the reduction in atmospheric "pollutants" would be so great that the entire California EPA motor vehicle emission waiver system would no longer be required. CARB staff is required by CEQA to analyze all environmentally

superior alternatives submitted for the proposed ACC II regulation, and CARB staff is required to compare the environmental benefits of the proposed alternatives to the environmental benefits of the proposed regulation. It would be unlawful for EPA to grant a waiver to California for the ACC II regulation if the state failed to analyze environmentally superior alternatives to the proposed regulation, or the state prepared a misleading/fraudulent analysis. [B2-3]

Agency Response: CARB has both the authority and the obligation to promulgate vehicle emission standards to reduce harmful air pollution in order to meet State and federal mandates and to protect public health and the environment. As explained in the Master Response 3 in the Response to Comments on the Draft Environmental Analysis, CARB analyzed but rejected several alternative vehicle emission standards, as required by California Environmental Quality Act (CEQA) and declined to consider in detail other alternatives for a variety of reasons. As to the commenter's claim that CARB's analysis is insufficient to support a Clean Air Act preemption waiver from U.S. EPA, CARB disagrees. Neither the text nor the intent of the waiver provision requires CARB to consider particular alternatives, let alone alternatives that are not vehicle emission standards, in order to obtain a waiver. Instead, as U.S. EPA and the courts have stated, the waiver provision affords California substantial discretion to design a vehicle emission program that suits the State's needs. Finally, there is nothing fraudulent or misleading about analyzing the proposed standards, along with a set of specific alternative vehicle emission standards, and that is what CARB did here.

## Technology Neutrality

13. Comment: Commenter states that ACC II is not allowing other technologies such as ICE hydrogen vehicles fitted with NOx controls. [T1-56]

Comment: During the ACC II workshops, CARB staff repeatedly stated that a number of years ago, CARB did some preliminary research on hydrogen (H<sub>2</sub>) internal combustion engine (ICE) and that there wasn't a lot of public interest. Just because there wasn't a lot of interest then doesn't mean that interest in the technology couldn't be revised sometime in the future. CARB's responsibilities should be to regulate criteria pollutants and greenhouse gasses, not dictate to the industry how to achieve those requirements. ...CARB should dictate emission levels and allow the industry the freedom to meet those standards however the free-market dictates...CARB's proposed regulations are not technology-neutral if they inhibit or give an advantage over others irregardless of how few or many emissions are created. [OP-117]

Agency Response: Hydrogen fueled combustion engine vehicles would not reduce NOx emissions nor GHG emissions at the pace required to meet emission reduction targets. Refer to the response to comment B-3 above. Hydrogen fueled ICE vehicle technology, even when coupled with on-board NOx emission controls, would not reduce NOx emissions at the same scale as ZEVs and therefore fail to meet a number of the basic project objectives. Staff acknowledge the GHG reduction benefit of hydrogen fuel used with combustion engines. However, light-duty BEVs and FCEVs, when using grid electricity in California or renewably generated fuel, provide larger

GHG reductions. Refer to Master Response 4 on page 18 of the Response to Comments on the Draft Environmental Analysis.

14. Comment: CARB has not fully or adequately evaluated or analyzed a technology neutral performance-based standard that would allow low-carbon fuel and engine technologies to compete with ZEVs in their alternative analyses presented in the Environmental Assessment (EA) and the Standardized Regulatory Impact Assessment (SRIA) for the proposed ACC II. See Comment A.6 in Attachment A and Comments B.1 and B.2 in Attachment B for further details. [OP-161-41, incorporated by reference into comment OP-97]

Comment: CARB must set a technology neutral performance-based standard...This performance standard must consider the life cycle emissions of vehicles and fuels to ensure that sufficient greenhouse gas (GHG) emissions reductions are achieved by this sector. [OP-161-37, incorporated by reference into comment OP-97]

Comment: To provide some of this analysis, WSPA contracted with Ramboll to produce a technology neutral study of Light Duty Automobiles (LDA) to analyze the full life cycle GHG emissions of a broad range of alternative technologies and fuels ("Ramboll LDA Study"). This study attached as Attachment C conclusively shows that performance standards could be an alternative to a ZEV mandate (See Comment B.2 in Attachment B for further details).

The Ramboll LDA Study shows that a gradual transition to low carbon intensity (CI) gasoline with current vehicle technologies (represented by the purple line in Figure 1) could achieve similar life cycle GHG emissions as the current ACC II proposal (represented by the pink shaded region in Figure 1). Importantly, GHG emissions associated with zero emission vehicles are not zero. In fact, the GHG emissions from producing battery electric vehicles (BEVs) (the "vehicle cycle") is significantly higher than other vehicle technology types (see Comment 3 for additional details). The failure to analyze these real world GHG emissions is significant and distorts the claimed benefits attributed to these vehicles.

Other technologies also achieve similar or lower emissions on a life cycle basis compared to the ACC II proposal. These include hybrid electric vehicles (HEVs) coupled with low-CI fuel (represented by the blue solid line), plug-in electric hybrid vehicles (PHEVs) coupled with low-CI fuels (represented by the blue dotted line), and a combination of HEVs, PHEVs, and BEVs with low-CI fuels (represented by the green dotted line). [OP-161-37, incorporated by reference into comment OP-97]

Comment: It [CARB] also failed to analyze the full life cycle impacts of ZEVs, which precludes a true technology neutral comparison and overestimated ACC II GHG reductions...." [OP-161-68, incorporated by reference into comment OP-97]

Comment: CARB's cursory conclusion that ACC II "would still be preferred over other performance-based alternatives" overlooks important near-term emissions reductions achievable through low carbon fuels and other technologies. CARB asserts that "[l]ess prescriptive measures would allow, by omission, additional flexibilities on technology, valuation, fleet mixing, and assurance measures that would likely not achieve the same magnitude of emissions reductions or support for the ZEV market." However, CARB

has not adequately analyzed the achievable emissions reductions stemming from such performance standards. [OP-161-60, incorporated by reference into comment OP-97]

Comment: The Ramboll study, attached to our letter demonstrates that performance-based standards transitioning to lower emission liquid fuels could achieve similar life cycle emissions reductions at a faster rate without rebuilding the entire transportation system. We are concerned with California becoming over reliant on just one system, electricity, as the grid is expected to struggle through another summer. The proposal falls short of performing the analysis necessary. [T1-10, pp. 108:8-17.]

Comment: Commenter states the proposal is not an emissions standard, but rather a technology mandate. As the Ramboll LCA study shows, CARB failed to adequately account for the full life cycle emissions resulting from the EV mandate and failed to adequately account for the full life cycle of emission resulting from the EV mandate and did not consider other less costly more viable alternatives. [T2-1]

Agency Response: ACC II is a technology-neutral performance standard, and CARB did consider, but rejected, a low-carbon fuels alternative. See the responses to comments B-3 and B-5 above. CARB also analyzed lifecycle emissions. See Master Response 4 of the Response to Comments on the Draft Environmental Analysis. See also responses to comments C-35 and C-36 below.

The electric grid provides necessary power to operate not just BEVs, but also gasoline stations and fuel refineries. Supply risks from the grid are being managed by multiple state agencies in California, as described in Master Response 1 on page 6 of the Response to Comments on the Draft Environmental Analysis.

Lastly, CARB did not propose or adopt a regulation that would rebuild the transportation system. To the extent the commenter is making or basing its comments on such a rebuilding, the comment is outside the scope of this rulemaking.

15. Comment: Commenter says CARB is dictating zero-emission electric transportation technologies and not allowing other technologies that may come available in the future. [T1-56, OP-97]

Comment: Commenter states that ACC II stands to stymie future technological innovations and CARB should remain technology-neutral for its zero-emission standards [T1-56, OP-97].

Comment: What about Nitrogen-fueled cars? [OP-128]

Comment: Another example of why it is detrimental for CARB to dictate to the automotive industry what technologies the industry is allowed to develop is internal combustion propane and natural gas-powered vehicles. Without using modern automotive emission reduction technologies, propane and natural gas internal combustion engines are already as clean as modern gasoline-powered internal combustion engines. If modern emission reduction technologies were applied to propane and natural gas-powered vehicles, they would likely be cleaner than electric vehicles when considering complete life-cycle emissions. Just because emissions control technology usage on propane-fueled ICEs has not yet been fully explored or vetted, does not mean that CARB should eliminate the automotive industry's ability to

develop cleaner technologies. Especially considering that propane and natural gas already have developed infrastructures while EV and FC infrastructures still needs to be developed and built. [OP-117]

Comment: Commenter states to set a technology neutral performance standard rather than a technology mandate based on a series of hypotheticals as currently proposed in the ACC II Regulation. [T2-46]

Comment: Commenter would like to echo the concerns of MECA as well as SEMA, and that all near-zero technologies need to have a place in the movement to reduce California vehicular emissions. Just a month ago the Washington Post published an article about how Volkswagen has recently invented a new carbon negative fuel. So CARB's technology bias is banning technologies that haven't even been invented yet. Commenter respectfully requests that the Board reject the ACC II Regulation until the rule can address the technology biases that threaten to undermine the effectiveness of the regulation. [T2-54]

Agency Response: CARB did not propose or adopt a technology mandate or electric vehicle mandate, and so to the extent the commenters are making or basing their comments on such proposed system exchange, transformation, or ban, the comments are beyond the scope of this rulemaking. CARB proposed and adopted emission standards on new vehicles to which the rule applies such that, by 2035, any new vehicle sold within the State must have zero emissions or meet the requirements for a plug-in hybrid electric vehicle (anticipated to contain an ICE). If future technologies emerge that ensure there are no on-board emissions, it is possible they could be used for compliance.

16. Comment: The ACC II rule should be rejected, and a technology-neutral fleet efficiency rule should be developed to reduce GHG - the model used so successfully to reduce smog and other vehicular emissions. [15b-2-27]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, refer to the response to comment B-5 above. The ACC II regulations build on the existing performance-based requirements to transition to ZEVs for almost all new car and light truck sales in California by 2035 while further cleaning up any internal combustion-powered passenger vehicles that will continue to be offered for sale. As such, CARB did not reject ACC II.

17. Comment: The commenter states "The Associations believe that Californians should have the freedom to choose the type of vehicle technology that best fits their personal needs based on purpose, affordability, availability, and lifestyle choices. Battery electric vehicles (BEV) currently are and will likely continue to make up a growing portion of the Light Duty Vehicle (LDV) fleet in California. However, the Associations have significant concerns regarding the ISOR and the current ACC II proposal." [OP-161-32, incorporated by reference into comment OP-97]



Comment: We believe that Californians should be able to choose a vehicle technology, including electric vehicles, that best fits their needs based on availability, affordability, and personal necessity. [T2-1]

Comment: CARB's ban on all internal combustion engines is especially concerning for California citizens whose lifestyles may not integrate well with a 100% ZEV requirement such as people that live in urban environments or have special requirements such as towing. [OP-117]

Comment: CARB should dictate emissions levels and allow the industry the freedom to meet those standards however the free-market dictates and vehicle emissions should be evaluated using a full life-cycle emissions analysis. [OP-117]

Comment: Commenter believes that Californians should not be directed towards a specific technology, but rather be allowed to choose the type of vehicle technology that best serves them, acknowledging that any future internal combustion engine vehicles sold in California will meet the most stringent emission standards in the country. [T2-46].

Comment: We believe that California should be able to choose a vehicle technology, including electric vehicles, that best fits their needs, based on availability, affordability, personal necessity... We would instead recommend a technology-neutral performance-based approach that allows for innovation and reduces emissions in the transportation sector. This includes fairly accounting for life-cycle emissions for both traditional vehicles and electrical vehicles. [T1-10, pp. 107:19-23, 108:4-8]

Agency Response: See responses to comments B-5 and B-1 above; CARB did not propose or adopt a ban of internal combustion engines. CARB proposed and adopted emission standards on new vehicles to which the rule applies such that, by model year 2035, any new vehicle sold within the State must have zero emissions or meet the standards requirements for a plug-in hybrid electric vehicle (anticipated to contain an ICE). Up to model year 2035, consumers may choose to buy new clean conventional vehicles, and after 2035 within the ZEV requirements, many consumers will be able to choose to buy a plug-in hybrid electric vehicle that has multiple fueling sources to serve a wide range of lifestyle choices, including towing requirements. Further, staff project that BEVs will be more affordable than conventional vehicles when considering TCO and believe the technology is well suited for urban environments.

Current market choices for consumers show a wide variety of ZEV models, with many more planned in the next few years. This includes SUVs of varying sizes that are BEVs, a van that is a PHEV, and a number of BEV pickup trucks entering the market this year. And staff did determine towing is feasible on ZEVs and PHEVs and included technology packages and associated costs in the total economic analysis for a small portion of the fleet (larger battery packs to enable towing capability).

CARB did account for lifecycle emissions. See Master Response 4 of the Response to Comments on the Draft Environmental Analysis.

## Flex Fuels and Liquid Biofuels

18. Comment: CR appreciates the attention that CARB has displayed in encouraging alternative fuel manufacturers to reduce the climate intensity of their fuel production, and we encourage CARB to continue this dialogue, as it is crucial that we continue to consider the upstream emissions associated with the fuel we use in our transportation options. [OP-108]

Agency Response: CARB appreciates the support. Although ACC II is not the regulation that establishes carbon intensity for transportation fuels, the ACC II emissions impact analysis, described in the ISOR Appendix D, accounts for the projected carbon intensity of varying fuels in future years based on existing transportation fuel and electric grid policies.

19. Comment: It is critical that California complete its evaluation of E15, so that it can be made available to California drivers to further help the state achieve its carbon neutrality goals. Additionally, greater use of E85 will promote even further reductions in greenhouse gas and air toxic emissions, as well as lower consumer costs. The Board should strongly encourage, incentivize, and even require the production and use of flex fueled vehicles in conjunction with higher bioethanol blends for the remaining ICE fleet, as well as invest in infrastructure for expanded access to higher bioethanol blends. [T1-91].

Agency Response: Staff acknowledge the GHG reduction benefit of liquid biofuels used with conventional vehicles assuming the biofuel production pathway has a low carbon intensity. However, light-duty BEVs and FCEVs, when using grid electricity in California or renewably generated fuel, provide larger GHG reductions, and liquid biofuel strategies would not reduce air toxic emissions or vehicle NOx to the degree needed to meet the national ambient air quality standards, as ZEVs would. Refer to Master Responses 3 and 4 on pages 16 and 18 of the Response to Comments on the Draft Environmental Analysis. Because biofuels did not meet the project objectives and because CARB did not propose any fuel use standard, CARB did not adopt any encouragement, incentivization, or requirement for the production or use of biofuels or flex-fueled vehicles.

Although not related to the ACC II rulemaking, CARB has released results from the Multimedia Evaluation of E15 in California. This information can be found at this website: <https://ww2.arb.ca.gov/resources/documents/comparison-exhaust-emissions-between-e10-carfg-and-splash-blended-e15>.

20. Comment: Commenter strongly encourages investment in infrastructure to expand access to higher bioethanol blends [T1-91].

Agency Response: State public infrastructure investments are focused primarily on EVSE and hydrogen infrastructure, as noted in the staff ISOR Section III.A.6.1. Investment decisions are managed by the California Energy Commission and are outside the scope of the ACC II rulemaking.

21. Comment: Commenter states that a flex fuel requirement for conventional vehicles represents a strong and positive equity opportunity for the program while supporting aggressive electrification. [T1-55, B1-11]

Agency Response: Although current E85 fuel prices may provide savings to drivers compared to gasoline, it is not necessarily a larger savings compared to what BEV drivers experience; a full TCO analysis would be needed comparing BEVs to flex-fueled conventional vehicles for certainty but was not necessary here because a flex fuel vehicle requirement was deemed infeasible and would not provide the needed NOx reductions.

Refer to the response to comment A-20 above for a discussion of the TCO analysis CARB conducted. Refer to the response to comment B-3 above for a discussion on the challenges with implementing a rule that would track ethanol use in flex-fueled vehicles.

22. Comment: Commenter fully supports California's 2045 carbon neutrality goal and the intent of the ACC II regulation but believes it does not go far enough and needs to be strengthened, particularly in addressing near-term opportunities for renewable liquid fuels to further cut greenhouse gas and criteria pollutant emissions [T1-55].

Comment: NCGA believes CARB can secure greater GHG and air pollutant emission cuts by replacing more gasoline with clean, low carbon fuel, both in legacy vehicles and in new vehicles. Within ACC II, we see additional opportunities CARB can take to further reduce greenhouse gas (GHG) emissions from new vehicles by using higher ethanol blends in hybrid vehicles and internal combustion (IC) vehicles. [B1-11]

Comment: Commenter believes renewable-fuel ICE vehicles can play a role in attaining net-zero emissions [OP-174].

Comment: Commenter requests that the ACC II proposal be amended to add a component that all new ICE vehicle sales from 2026 forward be flex fuel capable to ensure a large number of ICE engines remaining on the road can be powered by low-to zero-carbon renewable fuels that are as clean as possible [OP-152, T1-55, B1-11].

Comment: CARB received several comments asserting greater emission cuts could be gained by replacing more gasoline with low carbon fuel [T1-91].

Comment: California is well-positioned to require all PHEVs be FFVs, as well as require any combustion vehicles sold from 2026 on to be an FFV. California drivers are buying this alternative fuel at nearly 300 locations with E85 use growing to 62 million gallons last year, a 55 percent increase. [T1-59]

Comment: **1. ACC II must secure all immediate cost-effective emissions reductions from California's vehicle fleet.** According to the proposal, mobile sources are the greatest contributor to criteria pollutants and greenhouse gas emissions in California, accounting for about 80 percent of ozone precursor emissions and approximately 50 percent of statewide greenhouse gas emissions. As also noted in the proposal, emissions reductions that will be achieved through the ACC II rule are critical to reaching carbon neutrality and California's State Implementation Plan goals for air quality. As an alternative to petroleum, advanced biofuels can deliver significant and

immediate greenhouse gas and air quality benefits. ... **2. Higher biofuel blends provide immediate air quality and public health benefits in California.** Recent analyses from leading national experts demonstrate air quality and public health benefits from higher biofuel blends, particularly in disadvantaged communities.... The air quality benefits demonstrated in these studies show that biofuel can play a key role in helping CARB meet state climate goals and achieve federal and state air quality standards. CARB must ensure that the ACC II rulemaking captures the substantial climate, air quality, and economic benefits that biofuels can provide in California...To meet and maintain climate and air quality goals in the future, it is imperative that CARB start planning now for achieving the maximum amount of emission reductions from existing cars and trucks by developing rules that will equip them to run on increasingly clean liquid fuels like advanced biofuel and renewable gasoline that can displace fossil fuel. Technologies like renewable gasoline and advanced biofuel with carbon capture and sequestration – both of which POET is actively exploring – can deliver zero- and negative-carbon intensity solutions in the transportation sector. In addition to electrification, CARB should ensure that the ACC II rules consider, support, and take advantage of these technologies as all approaches to decarbonizing transportation will be needed to meet the state’s climate and air quality goals. [OP-104].

Agency Response: Staff acknowledge the GHG reduction benefit of liquid biofuels used with conventional vehicles assuming the biofuel production pathway has a low carbon intensity. However, light-duty BEVs and FCEVs, when using grid electricity in California or renewably generated fuel, provide larger GHG reductions, and liquid biofuel strategies would not reduce air toxic emissions or vehicle NOx to the degree needed to meet the national ambient air quality standards, as ZEVs would. Accordingly, CARB found that the ACC II regulations are needed to meet the NAAQS for the criteria air pollutants which the U.S. EPA has found, under the Clean Air Act, to harm public health, and thus must be part of California’s SIP. (CARB, Reso. 22-12, pp, 12-13.) Additionally, an automaker regulation that relied on compliance from biofuels would require complex data collection processes and verification. Refer to the response to comment B-3 above regarding low-carbon fuel alternatives and Master Response 3 on page 16 of the Response to Comments on the Draft Environmental Analysis for a description of staff evaluation of liquid fuel alternatives.

Although current E85 fuel prices may provide savings to drivers compared to gasoline, it is not necessarily a larger savings compared to what BEV drivers experience; a full TCO analysis would be needed comparing BEVs to flex-fueled conventional vehicles for certainty but was not necessary here because a flex fuel vehicle requirement was deemed infeasible and would not provide the needed NOx reductions. Refer to the response to comment A-20 above for a discussion of the TCO analysis CARB conducted.

Separate CARB policies, including the Low Carbon Fuel Standard (LCFS), encourage the investment and development of advanced biofuels and the supply and delivery investments required to bring the fuels to market.

23. Comment: Commenter claims CARB staff has engaged in an unlawful campaign to illegally thwart the use of liquid renewable fuels as a technology that can be used to

reduce greenhouse gas emissions. Commenter will provide all written comments related to the ACC II regulation to the U.S. Court of Appeals, D.C. Circuit, and commenter will point out all false and/or misleading statements to that court. [T1-64].

Comment: By its very design, ACC II exists to effectively eliminate the use of internal combustion engines and, therefore, the liquid fuels that power them, including both fossil fuels and renewable fuels such as ethanol. [OP-145-6]

Agency Response: CARB disagrees with the commenters' allegations. ACC II is technology neutral and does not prohibit the use of any particular type of fuel or engine. Moreover, separate CARB programs, like LCFS, encourage the investment and development of advanced biofuels, including supply and delivery investments required to bring those fuels to market. Commenter provided no further explanation or evidence regarding the alleged "campaign", and the comments about submitting information for judicial review are necessarily in reference to potential litigation which will be responded to in the appropriate forum, and thus no further response is necessary to this conclusory statement.

24. Comment: CARB does not consider how the negative economic impact this Proposed Regulation will have on the renewable fuels industry could result in the abandonment of further technological advancements in fuels that already outperform ZEVs from a GHG emission and cost perspective. [OP-141-38]

Agency Response: Refer to the response to comment B-3 above for a description of low-carbon liquid fuel alternatives considered but rejected because of, in part, lower environmental benefits compared to ZEVs and biomass supply risks. Additionally, advanced biofuels will still have a market opportunity with passenger vehicles given there will continue to be billions of gallons gasoline consumed by the conventional vehicles in the fleet for several decades. Staff are aware most advanced biofuels being commercialized today are for the diesel and aviation fuel markets.

Although current E85 fuel prices may provide savings to drivers compared to gasoline, it is not necessarily a larger savings compared to what BEV drivers experience; a full TCO analysis would be needed comparing BEVs to flex-fueled conventional vehicles. Refer to the response to comment A-20 for a discussion of the TCO analysis CARB conducted.

25. Comment: Commenter says "it is imperative to consider the vital role that environmentally sustainable fuel options such as bioethanol will play in reducing greenhouse gas emissions and cutting consumer costs from the current and future California vehicle fleet," and that use of bioethanol reduces GHG and toxic emissions. Furthermore, commenter says it is critical that CARB and the multi-media working group complete its evaluation of E15, a blend consisting of 15 percent bioethanol, and "encourage[s] CARB to push for policies that continue to strongly encourage and incentivize the production and use of flex-fuel vehicles, as well as continued investment in infrastructure for expanded access to E85 in the state." Commenter also cites the GHG reduction benefits of "combining a high-octane fuel -- specifically a midlevel ethanol blend in the E20 to E30 range in conjunction with a high compression ratio engine." Finally, commenter describes the emission reduction benefits of using

bioethanol in conjunction with a fuel cell, saying this would require less infrastructure change and investment. [OP-137]

Agency Response: Refer to the response to comment B-3 above for a description of low-carbon liquid fuel alternatives considered but rejected.

Although current E85 fuel prices may provide savings to drivers compared to gasoline, it is not necessarily a larger savings compared to what BEV drivers experience; a full TCO analysis would be needed comparing BEVs to flex-fueled conventional vehicles for certainty but was not necessary here because a flex fuel vehicle requirement was deemed infeasible and would not provide the needed NOx reductions. Refer to the response to comment A-20 above for a discussion of the TCO analysis CARB conducted.

State public infrastructure investments are focused primarily on EVSE and hydrogen infrastructure, as noted in the staff ISOR Section III.A.6.1. Investment decisions are managed by the California Energy Commission and are outside the scope of the ACC II rulemaking. Staff are not aware of any investments, public or private, to bring mid-level ethanol blend (E20 to E30) to the market. Regarding hydrogen production for FCEVs, staff are aware a wide range of fuel feedstocks are possible, including biomass to hydrogen. Encouraging those investments are outside the scope of the ACC II rulemaking.

Although not related to the ACC II rulemaking, CARB has released results from the Multimedia Evaluation of E15 in California. This information can be found at this website: <https://ww2.arb.ca.gov/resources/documents/comparison-exhaust-emissions-between-e10-carfg-and-splash-blended-e15>.

## C. Legal Authority and Obligations

### Federal Law

1. Comment: The commenter states "ACC II is expressly preempted by the Energy Policy Conservation Act. CARB lacks authority to adopt or enforce any regulation 'related to' fuel-economy standards under the Energy and Policy Conservation Act (EPCA). While the Clean Air Act grants California certain leeway to address localized pollution, EPCA's broad preemption provision prevents CARB from adopting such regulations when they are "related to" fuel economy, regardless of any accompanying localized pollution benefits. This provision is self-executing, meaning that no agency action is necessary for it to be effective—the lack of a National Highway Traffic Safety Administration (NHTSA) regulation expressly preempting CARB's program does not affect EPCA's preemptive effect. This provision also contains no waiver.

ACC II is clearly related to fuel-economy standards. Courts have found that state regulations 'relate to' federal matters when they have a 'connection with' or contain a 'reference to' these matters. CARB's SRIA specifically discusses the fuel savings that would result from this rulemaking. CARB cannot avoid EPCA's preemptive effect by characterizing this rule as an environmental regulation despite its clear implications for fuel economy." [OP-161-63, incorporated by reference into comment OP-97]

Agency Response: CARB disagrees with the assertion that the standards are preempted by EPCA. As the two courts to decide the issue have found, vehicle emissions standards for which California obtains a waiver under Section 209 of the Clean Air Act are not related to fuel economy standards within the meaning of EPCA's preemption provision. (*Green Mountain Chrysler Plymouth Dodge Jeep v. Crombie*, 508 F. Supp. 2d 295 (D. Vt. 2007); *Central Valley Chrysler-Jeep, Inc. v. Goldstene*, 529 F. Supp. 2d 1151 (E.D. Cal. 2007).) Rather, as those courts held (and NHTSA has recognized, 86 Fed. Reg. 74,236 (Dec. 29, 2021)), Congress designed EPCA to account for—and not preempt—those state emissions standards.

Moreover, since enacting EPCA, Congress has repeatedly embraced California's authority to set emission standards, regardless of their effect on fuel economy. (See, e.g., Pub. L. No. 95-95, §§ 129(b), 207 (1977) (allowing other states to adopt California's standards and increasing deference to California's waiver applications); Pub. L. No. 110-140, § 141 (2007) (requiring federal procurement requirements be calculated by reference to California's greenhouse gas standards).) Congress even specifically embraced California's zero-emission vehicle standards in the 1990 Clean Air Act Amendments and again in the recently enacted Inflation Reduction Act. (Pub. L. 105-549, § 246 (1990) (directing the U.S. EPA to incorporate California's zero-emission-vehicle standards into crediting provision for certain private fleets); Pub. L. 117-169, § 60105(g) (2022) (authorizing grants to support states' adoption and implementation of California's zero-emission-vehicle standards).) This continued support for California's standards cannot be reconciled with the notion that the standards are preempted by EPCA.

Regardless of whether California obtains a waiver for ACC II, the regulation is not preempted by EPCA because it does not relate to fuel economy standards. The commenter appears to assert that the regulation is "clearly related to fuel-economy standards" solely because it would result in fuel savings. But that is true of many state and local vehicle laws, and their fuel savings alone do not trigger EPCA's preemption provision.

2. Comment: Commenter states "ACC II is preempted by the Federal Statutory Mandates of EPCA, the CAA, and the EISA. CARB lacks authority to approve the proposed ACC II rule because it is inconsistent with, and is preempted by, the statutory mandates of federal legislation including the Energy Policy and Conservation Act ('EPCA'), the CAA, and the Energy Independence and Security Act ('EISA'), including the Renewable Fuel Standard ('RFS')."

As an initial matter, Congress has authorized the Department of Transportation and NHTSA to establish fuel economy standards under EPCA. These average standards are known as 'corporate average fuel economy' or 'CAFÉ' standards. The CAFE standard is 'a performance standard specifying a minimum level of average fuel economy applicable to a manufacturer in a model year.' Under EPCA, 'When an average fuel economy standard prescribed under this chapter is in effect, a State or a political subdivision of a State may not adopt or enforce a law or regulation related to fuel economy standards or average fuel economy standards for automobiles covered by an average fuel economy standard.' Through ACC II, however, CARB seeks to do precisely that by virtue of its 100% EV and PHEV mandate. More specifically, the

motor vehicle emissions standards underlying this mandate are 'related to' fuel economy standards because regulating fuel economy controls the amount of motor vehicle emissions and, in turn, regulating motor vehicle emissions controls fuel economy.<sup>67</sup> Indeed, the GHG emissions targeted by ACC II relate directly to combustion or the actual consumption of fuel, the rate of which is determinative of a vehicle's fuel economy. Accordingly, ACC II is indeed related to fuel economy standards and, therefore, expressly preempted by EPCA.

Moreover, any authority that CARB might otherwise claim with regard to ACC II's regulation of GHG emissions necessarily stems from the CAA, under which EPA is authorized by Congress to regulate motor vehicle emissions. Similar to EPCA, however, the CAA generally preempts state adoption or enforcement of 'any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to [the CAA].' The only exception to this prohibition is if EPA grants a preemption waiver to impose standards more stringent than those imposed by the CAA, following notice and opportunity for public hearing and provided certain criteria are met. For the reasons stated above, however, the ACC II program does not meet the criteria for a preemption waiver under the CAA and is, therefore, preempted by the CAA, as well as EPCA.

Further, because the proposed ACC II rule would decrease and ultimately eliminate the volume of renewable fuel used for transportation, it frustrates Federal mandates under the Renewable Fuel Standard. Congress created the RFS to 'move the United States toward greater energy independence and to reduce greenhouse gas emissions.' Congress intended the program 'to be a 'market forcing policy' that would create 'demand pressure to increase consumption' of renewable fuel.<sup>1</sup> Because Congress directed EPA to comply with the RFS, EPA cannot—either on its own or by virtue of a Section 209 waiver of the ACC II Program—promote the substantial or exclusive use of a technology (electrification) that will frustrate its goals. By extension, CARB cannot do what EPA cannot do on its own, yet that is precisely what ACC II would do by decreasing or eliminating consumption of renewable fuel and arbitrarily promoting a replacement technology to achieve the very same objectives. Therefore, ACC II's mandate of electrification at the expense of renewable fuels both decreases volumes of renewable fuels in transportation and creates even greater energy security risks through dependence on minerals sourced almost entirely outside the United States. Thus, ACC II frustrates the goals of EISA and the RFS, and goes beyond the authority of CARB.

Finally, the proposed ACC II rule may violate other Constitutional provisions. These include, but likely are not limited to, the dormant Commerce Clause, which prohibits state regulations that improperly discriminate against out-of-state commercial interests or that unduly burden interstate commerce as well as the dormant foreign affairs preemption doctrine under the Supremacy Clause, which preempts state laws that intrude on the exclusive federal power to conduct foreign affairs. Because the proposed ACC II rule is unprecedented in its scope and reach, CARB should pause further rule development pending legal review to confirm that its actions are authorized under state law and that they are not preempted or precluded as a matter of Federal law. [OP-141-40]



Comment: Commenter states "ACC II conflicts with important federal statutory objectives.

A critical failing of ACC II is that in its haste to phase-out oil and gas production and refinery industries it does not consider the impact to the remainder of our energy system, including on biofuels (which will be sharply curtailed) and electricity supply (which will be overburdened). A critical failing of ACC II is that in its haste to phase-out oil and gas production and refinery industries, CARB did not consider the impact to the remainder of our energy system, as well as other essential products such as jet fuel, asphalt, petrochemicals, and lubricants. This willful blindness places ACC II on a collision course with multiple Congressionally mandated programs expressly designed to have the opposite impact— biofuels (increased and increasing) and electric supply (reliable). Because ACC II undermines and conflicts with the fulfillment of these Congressional objectives, it is necessarily preempted.

It is a 'well-established principle that the Supremacy Clause, U.S. Const., Art. VI, cl. 2, invalidates state laws,' like ACC II, 'that interfere with, or are contrary to federal law.' Even where Congress has not completely displaced state regulation in a specific area, state law is nullified to the extent that it actually conflicts with federal law. Such conflicts arise 'when compliance with both state and federal law is impossible' and 'when the state law 'stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.' The ACC II program fails on both accounts.

First, Congress' intention to increase production, distribution, and use of biofuels is expressed in no less than three statutes, which do everything from mandating biofuel blending in liquid fuel to incentivizing its production through loans and loan guarantees. Specifically, the ACC II Program conflicts with these federal objectives and deprives federal funding programs of value by mandating complete electrification of the transportation sector. These programs set aside significant funding for the development and use of liquid fuels for transportation, with the expectation that these fuels will continue to play an important role in meeting transportation energy demand for many years.

[Table omitted]

By contrast, ACC II would eliminate any role for these alternative fuels in California by requiring 100% ZEVs and PHEVs by 2035, removing a substantial portion of the demand for these fuels and depriving federal investments of significant value. This deprivation is made worse by the potential—indeed California's expectation—that other states may adopt California's engine and motor vehicle emission standards under Section 177 of the Clean Air Act, 42 U.S.C. § 7507 and the potential that manufacturers are unlikely to produce two separate fleets (177 states vs. the rest of the country).

Further, ACC II expressly contradicts EPCA's requirement that any burdens stemming from energy-use restrictions be reasonably distributed across all industry sectors, instead placing the entirety of the burden of these restrictions on the oil and gas production and refinery sector of California's economy.

Second, federal policy explicitly supports ‘the modernization of the Nation’s electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth.’ 42 U.S.C. § 17381. The ACC II program conflicts with this policy by introducing material security and reliability risks to California’s electricity grid.” [OP-161-64, pp. A-21 – A-23., incorporated by reference into comment OP-97]

Comment: Because CARB’s proposed ACC II program conflicts with and presents an obstacle to clearly-stated federal objectives, CARB lacks the authority to promulgate these regulations—and indeed is preempted from doing so. [OP-161-64, incorporated by reference into comment OP-97]

Comment: ACC II would erect a major obstacle to this program [the federal Renewable Fuel Standard] because (1) it would decrease the demand for and price of renewable fuels and feedstocks, thus threatening the viability of renewable fuels producers, and (2) it would reduce the availability of RINs, which will make it more difficult for obligated parties to comply with their annual requirements. [OP-145-7]

Comment: This reduction will result in significant disruption of the RIN market as well. The 2019 California fuel market accounted for 3.0 billion RINs, and the Section 177 states together accounted for another 4.7 billion RINs. [OP-145-8]

Comment: Similar disruptions will arise with respect to biodiesel and renewable diesel. [OP-145-9]

Agency Response: CARB disagrees with these comments. The comments focus primarily on the Renewable Fuel Standard (RFS) program created by the Energy Independence and Security Act of 2007 (EISA), arguing that ACC II is preempted by that program. The premise of this claim is that RFS was designed solely to increase biofuel production and, from there, the comment argues that ACC II conflicts because it will reduce the production and use of all liquid transportation fuels, including biofuels. But this premise is an erroneous oversimplification of the design and objectives of the RFS program. In reality, even if ACC II might reduce the amount of renewable fuels consumed by motor vehicles sold for use in California because it reduces the total amount of liquid fuels such vehicles require, that creates no impossibility or obstacle for the RFS or its underlying objectives.

For one thing, Congress’s objective for that program was to reduce greenhouse gas emissions from motor vehicles, and ACC II advances that very same objective. For another, Congress designed the RFS program so that its obligations—the amount of renewable fuel that must be sold—are “expressed in terms of a volume *percentage* of transportation fuel sold or introduced into commerce in the United States.” (42 U.S.C. § 7545(o)(3)(B) (emphasis added).) In other words, Congress designed the RFS renewable fuel volume obligations to adjust based on changes in the total amount of transportation fuel sold in the United States, and, thus, the RFS program responds automatically to any state program that, like ACC II, might reduce the total transportation fuel volume. And, because there are multiple types of biofuels that can be produced from biomass feedstocks, as the demand for gasoline in the light-duty sector declines in California, biofuel resources and production can be shifted to supply

diesel and aviation fuel replacements in other transportation fuel sectors, like heavy duty truck, off-road, or aviation—enabling a shift in the RIN market, not an elimination of it.<sup>19</sup> This means that it will not be impossible to comply with RFS, even if ACC II impacts the total volume of transportation fuels sold, because the percentage-based RFS volumes can and will be adjusted for such impacts. Likewise, the percentage-based volume obligations demonstrate that Congress well understood that total fuel volumes might change over time and, thus, such changes create no obstacle to the RFS program’s requirements or its objectives. Put simply, there is no impossibility or obstacle because Congress designed its RFS program to respond to and account for changes in total transportation fuel volumes.

Congress did establish baseline volumes for most renewable fuels, but, notably, it did so only through 2022. (*Id.* § 7545(o)(3)(B)(i)(I)-(III).) As a consequence, U.S. EPA will be establishing relevant obligations under the RFS based on percentages (as Congress instructed) and on EPA’s analysis of a number of factors, including renewable fuels’ impact “on air quality [and] climate change” and “the expected annual rate of future commercial production of renewable fuels.” (*Id.* § 7545(o)(3)(B)(ii).) U.S. EPA will begin doing this long before ACC II’s first model year and any impact on total transportation fuel volumes. In any event, ethanol is expected to continue as a blendstock in retail gasoline, with increasingly lower carbon intensity under CARB’s LCFS, though at declining volumes as gasoline fuel demand declines in the passenger vehicle fleet. CARB expects biofuels and renewable liquid fuels to be used in heavier mobile sectors, including on-road heavy duty trucks, aviation, rail, and ocean-going vessels. Refer to Master Response 3 on page 16 of the Response to Comments on the Draft Environmental Analysis.

Finally, the comments seem to assume that Congress intended to prioritize increased renewable fuel production above objectives expressed elsewhere and to implicitly preempt programs like the ACC II regulations, despite their longstanding history. But the statute says quite the opposite. Congress expressly indicated that EISA did not alter existing environmental laws, which would include the provision of the Clean Air Act that provides for California to continue adopting and enforcing a separate motor vehicle emission reduction program: “[N]othing in this Act ... supersedes [or] limits the authority provided ... by any provision of law (including a regulation), including any energy or environmental law or regulation.” (*Id.* § 17002.) California’s regulations to limit air pollution from motor vehicles and regulate motor vehicle fuels have been in place for years, and Congress is aware of that. Put simply, Congress chose not to alter existing environmental protection authorities, including California’s. This underscores the absence of any conflict preemption between vehicle emission standards Congress

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<sup>19</sup> In fact, as described in Master Response 3 of the Response to Comments on the Draft Environmental Analysis, advanced biofuel development is already being focused on other sectors.

expressly authorized (e.g., California's standards) and EISA's goals and programs (including RFS).<sup>20</sup>

ACC II is likewise not preempted by any of the other federal statutes referenced in these comments. The comments assert that compliance with ACC II and an array of other federal statutes would be impossible but never identify any obligation created by federal law with which ACC II creates such impossibility. In fact, many of the federal statutory provisions identified impose no obligations on anyone and thus cannot be the basis of any impossibility claim. (E.g., 42 U.S.C. § 16501(c) (establishing criteria under which Secretary of Energy "may provide a loan guarantee" for construction of certain ethanol plants); 42 U.S.C. § 17381 (statement of policy).) Others (which also impose no obligations on private parties) appear to have expired. (E.g., 42 U.S.C. § 16502(d) (describing appropriations for "fiscal years 2005 through 2009"); *id.* § 16071 (establishing grants for pilot projects to be selected no later than mid-2006 and to run for no more than five years).)

The comments also assert that ACC II "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress" but similarly identify no purpose or objective for which such an obstacle is created. In fact, ACC II is entirely consistent with Congress's objectives as expressed in the identified statutes. The Energy Policy and Conservation Act and EISA both expressly encourage, and in some provisions even require, the increased deployment of alternative fueled vehicles which include electric vehicles. For example, one of the provisions identified in the comments, 42 U.S.C. § 6374, requires the federal government to maximize its acquisition, for federal fleets, of alternative fueled vehicles which are defined as those that run on alternative fuels, including "electricity," (*id.* § 6374(g)). (See also 49 U.S.C. § 32905 ("Manufacturing incentives for alternative fuel automobiles").) Likewise, 42 U.S.C. § 17381 (with which the comments also claim ACC II conflicts), supports the "[d]eployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles." (The absence of any conflict with Congress's goals for electric grid modernization is only underscored by the commenters' failure to substantiate their claim that ACC II will introduce "material security and reliability risks to California's electricity grid." Potential cybersecurity threats are speculative and requirements for addressing them are outside the scope of the ACC II regulations that establish emission standards for motor vehicles. CARB is aware that electrical grid risks and cyberattack mitigation are monitored and addressed by the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Homeland Security (DHS).

The comments also point to inapplicable provisions. For example, they assert that 42 U.S.C. § 6391(b) governs the distribution of purported burdens here by the ACC II

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<sup>20</sup> See also *Rocky Mountain Farmers Union v. Corey* (E.D. Cal. 2017) 258 F.Supp.3d 1134, 1149-1151 ("Simply put, both the CAA's and the EISA's savings clauses evince Congress's express intent not to preempt state legislation aimed at improving a state's air quality. See *RMFU*, 730 F.3d at 1097 ('Congress has expressly empowered California to take a leadership role as to air quality').").

regulations. But that provision, by its own terms, is only applicable to highly specific *federal restrictions on energy use*, none of which are implicated by increased sales of ZEVs, let alone by this State regulation.

The comments imply conflicts with the dormant Commerce Clause and the dormant foreign affairs doctrine. However, the commenter does not explain how these doctrines could bar (or even apply to) ACC II, but rather just notes they may. CARB disagrees, noting that ACC II controls only commerce occurring in California, regulates automakers evenhandedly without regard to their location, addresses traditional state responsibilities (namely the reduction of harmful air pollution and the products sold in the State), does not intrude on any foreign affairs powers, and is consistent with and countenanced by federal law; see response to comment C-6 below.

For the comment regarding preemption by the Clean Air Act, see responses to comments C-7, C-9, and C-10 below. CARB also notes that its authority to reduce and eliminate harmful emissions from motor vehicles does not “stem[] from the CAA” as the commenter contends. CARB’s authority is organic and inherent in California’s authority to protect the health and welfare of its residents as directed by its people through its legislature. The federal CAA recognizes and preserves that authority in Section 209.

In sum, the comments identify no provision of federal law that preempts ACC II.

3. Comment: ACC II’s de facto 100% electric car mandate is unlawful because it preempted by the federal CAFE law and because it is inconsistent with the renewable fuels requirements of the Energy Independence and Security Act of 2007. [OP-145-1]

Agency Response: CARB did not propose or adopt an electric vehicle mandate, and so to the extent commenter is making or basing its comments on such a mandate, the comments are beyond the scope of this rulemaking. See preceding responses to comments C-1 and C-2.

4. Comment: The effect of this program is to force automobile manufacturers to meet fleet-average fuel economy standards with a costlier fuel-efficiency technology, restricting manufacturer compliance choices and undermining CAFE’s flexible performance standards. This is illegal under CAFE.’s plain text and through the principles of implied preemption.

Under CAFE, automobile manufacturers may meet the standards using conventional fuel-efficiency technologies or using a variety of alternative fuel technologies.<sup>30</sup> CAFE pursues an all-of-the-above strategy for alternative fuels, where all liquid and gaseous alternative fuels have the same fuel economy credit multiplier (1/0.15) (as does electricity under the Department of Energy’s regulations).<sup>31</sup> This allows automobile manufacturers a choice between improving conventional automobile fuel economy or being rewarded with artificially high fuel economy for producing a variety of alternative fuel technologies, including automobiles capable of operating on alternative liquid and natural gas fuels, not just electricity or hydrogen.

The proposed 100% electric automobile quota destroys that statutory choice, mandating the production and sale of electric automobiles, when Congress has decided to encourage a range of options.... [OP-145-5; OP-145-3]

Comment: ... CARB should not proceed with ACC II, but should instead look for lawful and technology-neutral pathways to improve environmental quality. [OP-145-10]

Agency response: CARB did not propose or adopt an electric vehicle mandate, and so to the extent commenter is making or basing its comments on such a mandate, the comments are beyond the scope of this rulemaking.

The commenter asserts that the ACC II regulations are preempted by federal fuel efficiency standards. For the reasons explained in the response to comment C-1, the ACC II regulations are not preempted by federal fuel economy standards. CARB also disagrees with the commenter's characterization that ACC II will force compliance with federal fuel economy standards via more expensive pathways. Because ACC II is technology neutral, manufacturers will still retain the flexibility to pursue their choice of vehicle technologies, provided they meet the applicable emissions and performance requirements of ACC II. See also response to comment C-6 below. And, as noted above in response to comment C-2, ACC II does not frustrate or impede compliance with or objectives of federal programs or statutes. Indeed, ACC II and the CAFE standards apply independently, the former on model year 2026 and subsequent new vehicles sold in California and the latter on nationwide fleets. Grafting ZEV costs for ACC II onto CAFE compliance is therefore inappropriate and misleading. In any event, CARB has determined ACC II to be cost-effective, with the record demonstrating ZEV owners will likely see cost savings compared to conventional gasoline vehicles.

5. Comment: ACC II's radical curtailment of the transportation mobility for working families and communities of color for any reason, including climate, suffers from the same foundational Constitutional flaw identified by the Supreme Court in *West Virginia v. EPA*, 142 S. Ct. 2578 (June 30, 2022): CARB is an administrative agency charged with implementing the law, not with inventing it. [15b-2-20]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, CARB does have broad authority delegated to it by the California Legislature and is charged with, among other things, regulating (i.e., developing and establishing rules with the force of law and implementing and enforcing those rules) emissions from motor vehicles. Establishing standards for zero-emission vehicles and reducing emissions from conventional vehicles is squarely within CARB's authority granted by the Legislature. The ACC II regulations are the latest iteration of requirements in California to protect public health and the environment from vehicle pollution that have continuously improved, commensurate with technological developments in pollution control technology, for more than 70 years. California's actions predate federal action on this problem, and, in that time, Congress has repeatedly ratified and benefited from California's program. The California Legislature has also directed CARB to continue these programs, and governors have

requested CARB to expand these programs or otherwise exercise its authority over motor vehicle emissions (e.g., Executive Order N-79-20). Moreover, the application of this authority in the manner adopted here has been endorsed and supported by the Legislature, as shown by the significant funding appropriated to support ZEVs. See the response to comment A-20 above, response to comment C-14 below, and response to comment C-32 below.

6. Comment: Commenter states that the proposed motor vehicle emission standards in this regulation will impact the types of motor vehicles sold in other states by the fact that motor vehicle manufacturers will, due to economics, be forced to design and build all their vehicles to meet the state's emission standard [OP-66].

Agency Response: The commenter did not explain how or why vehicle manufacturers would be "forced" to comply with California's ACC II regulations in states where the regulations do not apply. Accordingly, CARB responds by observing that the ACC II regulations govern only those vehicles sold for use in California (although other states may choose to adopt the regulations pursuant to authority provided by Congress in the Clean Air Act, that is not compelled by California). The regulations do not prohibit or otherwise prevent vehicle manufacturers from continuing to sell conventional vehicles in other states when they may no longer do so in California or from selling higher percentages of conventional vehicles in other states than permitted in California (or any states that have chosen to adopt the ACC II regulations). No additional response is warranted, given the conclusory nature of the comment.

7. Comment: Commenter states that the EPA requires the state must demonstrate a "need" for the EPA emission waiver this proposed regulation is operating under [OP-13].

Comment: Commenter states that the state's EPA waiver requires the state to demonstrate the emission reductions in the proposed regulation are "needed" to meet federal air quality standards [OP-13].

Comment: Commenter states that the state's EPA waiver requires the state demonstrate that it has exhausted all emission reduction alternatives available to the state before the state implements the motor vehicle emission and fuel economy standards found in the proposed regulation [OP-13].

Comment: Commenter states that the state does not "need" the motor vehicle emission and fuel economy standards found in the proposed regulation to achieve its federal air quality standard goals [OP-13].

Comment: Commenter states "ACC II exceeds the scope of CARB's Authority because the CARB cannot demonstrate that it would qualify for a Clean Air Act preemption waiver. ACC II is ultra vires because CARB has not crafted the regulation such that it is eligible for a waiver under § 209 of the federal Clean Air Act.

ACC II cannot satisfy at least two of these criteria....First, ACC II is not consistent with Section 7521(a) of the Clean Air Act. While EPA has described its review under this criterion as narrow, EPA has previously stated that the determination is based on whether 'California's standards are technologically infeasible.' [MEMA I, 627 F.2d at

1126]. In prior evaluations, EPA relied on CARB demonstrations that ‘the necessary technologies presently exist to meet the established standards,’ but that is not the case here. ACC II requires 100% ZEV sales by 2035—an absolute ban on internal combustion engine vehicles as an alternative even if insufficient ZEV are available. Given this total removal of alternatives from the market, it is not enough for CARB to demonstrate that vehicle manufacturers have the technology (and, inherent in this question, the resources) to produce a single electric vehicle. Rather, examining the technological feasibility of ACC II standards must include asking whether vehicle manufacturers have the technology and resources to rapidly shift to producing only electric vehicles—a relatively new technology category that requires different resources than traditional vehicles—by the millions, as well as whether there is a reliable supply of electricity to charge them. For the reasons detailed above—including insufficient global supply of lithium and other rare earth minerals that already are hampering electric vehicle deliveries and insufficient electricity supply—the answer is no.

Second, the California waiver from federal preemption is an exception that was intended by Congress to give added flexibility in addressing unique conventional pollution issues in limited areas of California. It was not contemplated by Congress that this exemption would be used decades later to allow CARB to ban the use of the ICEV for California and elsewhere in states that adopt the rule. The proposed ACC II rule would force a significant portion of the domestic transportation sector to be dependent on electric vehicle batteries. The widespread economic implications, policy consequences for energy independence, and geopolitical risks are simply too significant to be approved by a state executive agency under an exception to federal preemption that was never contemplated for this purpose.

The legal standard for determining whether California suffers from ‘compelling and extraordinary conditions’ is currently being litigated. Even if the court finds that compelling and extraordinary conditions justify allowing California to set GHG standards and a ZEV sales mandate for California, it is unclear how CARB can justify proposed measures in ACC II to allow the ‘pooling’ of out-of-state sales (sales in states that have adopted California’s standards, referred to as Section 177 states) to demonstrate compliance with the California sales requirements. Allowing manufacturers to sell qualifying vehicles in other Section 177 states as far away as New York, and allowing those credits to demonstrate compliance with California’s standards, does not assist California in addressing its ‘compelling and extraordinary conditions.’ Put in Section 209 terms: California does not need an emission reduction in New York to meet a compelling and extraordinary condition in California. By designing its program to allow its own requirements to be met by measures taken in other states anywhere in the United States, CARB tacitly acknowledges that it does not need the proposed ZEV mandate to meet compelling and extraordinary conditions in California.

The fact that CARB appears to consider the sales of qualifying vehicles in Section 177 States as a basis for California’s own rulemaking shows that this rulemaking is more about a broad policy objective to eliminate the use of ICEV and liquid fuels, regardless of their carbon contribution, than about addressing compelling and extraordinary



circumstances in California. Given the sweeping national implications of forced electrification of a substantial portion of the United States' light-duty vehicle fleet, California is and should be federally preempted from unilateral action. Further, setting federal GHG tailpipe emission standards in a manner that would force electrification is beyond even the U.S. Environmental Protection Agency's statutory authority. Forced electrification of a significant share of the U.S. light-duty transportation fleet is a major question with tremendous potential economic, environmental, and social consequences that is properly placed with the United States Congress." [OP-141-39]

Agency Response: CARB did not propose or adopt an electric vehicle mandate or a ban on all ICE vehicles, and so to the extent commenter is making or basing its comments on such a mandate or ban, the comments are beyond the scope of this rulemaking. Commenter also does not explain how or why ACC II would "force electrification".

CARB disagrees with the comments because California does in fact "need" ACC II within the meaning of Section 209(b)(1)(B) of the Clean Air Act. As a threshold point, the comments are framed as a view on California's "need" for the specific ACC II regulations, whereas, under U.S. EPA's long-standing, traditional interpretation, the question is whether California needs a separate motor vehicle program as a whole. The comments do not dispute that California has such a need, and that is all that is required. Moreover, even applying the interpretation the comment appears to adopt, California does need the specific ACC II regulations in order to protect public health by attaining federal and State standards for ozone and particulate matter pollution, to address pollution burdens of environmental justice communities (especially those located near major roadways), and to mitigate the increasingly severe climate crisis. As explained in detail in the ISOR at pp. 5-10, 134-137, and 145-147, and the FSOR Appendix F, the ACC II regulations contribute critically to these goals and thus are needed for purposes of obtaining a waiver under Section 209(b)(1)(B). With regard to the pooling provision specifically, see response to comment C-12 below.

Nothing requires CARB to reserve vehicle emissions standards as a last alternative to other means of reducing air pollution. The Clean Air Act gives states wide discretion to determine the means of achieving the NAAQS. The Clean Air Act is a broad remedial statute designed to anticipate and address new problems.<sup>21</sup> Federal and State law require that California attain the NAAQS as expeditiously as feasible and the California Legislature has directed CARB to achieve the maximum feasible reduction of emissions from motor vehicles for a variety of reasons, including but not limited to attaining the NAAQS. Other means of reducing air pollution beyond vehicle emission

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<sup>21</sup> *E.g.*, *Massachusetts v. E.P.A.* (2007) 549 U.S. 497, 532 ("The broad language of § 202(a)(1) reflects an intentional effort to confer the flexibility necessary to forestall [statutory] obsolescence."), citing *Pennsylvania Dept. of Corrections v. Yeskey* (1998) 524 U.S. 206, 212 ("[T]he fact that a statute can be applied in situations not expressly anticipated by Congress does not demonstrate ambiguity. It demonstrates breadth"; (internal quotation marks omitted)); *Whitman v. American Trucking Associations* (2001) 531 U.S. 457.

standards are outside the scope of the proposal, and CARB is undertaking a variety of programs to do so.

Lastly, CARB conducted robust analysis of the technological feasibility of the ACC II regulations, including manufacturers' ability to comply using existing technologies and those that are expected to be developed in the time provided. Commenter does not raise or elaborate further on any deficiencies with CARB's analysis. See also Master Responses 1 and 2 in the Response to Comments on the Draft Environmental Analysis regarding, respectively, electrical grid capacity and semi-precious metal availability.

8. Comment: The Clean Air Act (and California's equivalent) does not authorize an agency to ban the affordable, reliable, and ever more efficient transportation mode that almost all Californians rely on, and that working families earning lower wages and living in or near poverty - the highest proportion of whom are members of communities of color, depend on. [15b-2-18]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Even so, CARB notes it did not propose or adopt a ban of a transportation mode, and so to the extent the commenter is making or basing its comments on such a ban, the comment is beyond the scope of this rulemaking. CARB proposed and adopted emission standards on new vehicles to which the rule applies such that, by model year 2035, any new vehicle sold within the State must have zero emissions or meet the requirements for a plug-in hybrid electric vehicle (anticipated to contain an ICE). Furthermore, California law gives CARB broad authority to regulate emissions from motor vehicles (see response to comment C-14, below), and the federal Clean Air Act provides a pathway for California to secure a waiver of federal preemption for its emission standards on new motor vehicles (42 U.S.C. § 7543(b)). CARB's authority to reduce and eliminate harmful emissions from motor vehicles does not stem from the federal CAA, and the federal CAA recognizes and preserves that authority in Section 209.

9. Comment: ACC II's electric car mandate violates both CAFE and the RFS. By definition, an unlawful and thus unenforceable standard cannot be "at least as protective of public health and welfare as applicable Federal standards." Thus, any decision to finalize the ACC II rule's electric car mandate would be arbitrary and capricious. [OP-145-4]

Agency Response: CARB disagrees that ACC II violates or is preempted by CAFE and the RFS; see the responses to comments C-1 and C-2 above. CARB also disagrees with the commenter's circular argument that ACC II cannot meet the criteria for a Clean Air Act section 209 waiver because CARB's determination that ACC II "will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards" is rendered inherently arbitrary and capricious by the alleged preemption or violation. See also the response to comment C-10 below. The ACC II rules are not preempted or in conflict with federal law for the reasons explained in the responses to comments C-1 and C-2; they therefore also are not unlawful or unenforceable. They will not cause California motor vehicle emission standards, in the

aggregate, to be less protective of public health and welfare than applicable federal standards, as CARB determined in Resolution 22-12.

10. Comment: Several comments assert that CARB may not adopt vehicle emission standards that are more stringent than federal standards, or that CARB has not met the purported conditions for doing so:

Comment: The motor vehicle emission standards proposed in the ACC II regulation are stricter than federal EPA standards [OP-66].

Comment: The state is using its EPA waiver to authorize the implementation of motor vehicle emission standards that are stricter than U.S EPA standards [OP-66].

Comment: Before the state can implement motor vehicle emission standards that are stricter than U.S EPA standards, the state must show that it has exhausted all other emission reduction options available to the state that can be used to meet the state's goals to reduce atmospheric concentrations of NOX, CO, ROG, ozone, and CO2 [OP-66].

Comment: Commenter states that the state has not exhausted all its options to reduce atmospheric concentrations of the afore-mentioned gases [OP-66].

Comment: Commenter states that the state is required to exhaust all the emission reduction options available to the state before implementing motor vehicle emission standards that are stricter than U.S EPA standards. The reason for this is to prevent other states from being unnecessarily impacted by motor vehicle designs that are influenced by the State of California's motor vehicle emission standards [OP-66].

Agency Response: The commenter identified no legal or other authority for these contentions, and CARB is not aware of any authority that supports them. To the contrary, Congress expressly contemplated that California's vehicle emission standards might be more stringent than those of U.S. EPA, e.g., 42 U.S.C. § 7543(b)(2), and did not require that California show it had exhausted all other emission reduction options before U.S. EPA would be required to grant a preemption waiver for California's standards, 42 U.S.C. § 7543(b)(1)(A)-(C).<sup>22</sup> In addition, CARB notes that California requires significant reductions in emissions from multiple sectors and will continue to do so but cannot achieve its air quality and climate goals without dramatic reductions from the transportation sector—reductions of the kind that can only be achieved by

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<sup>22</sup> And see, e.g., Dotson, *State Authority to Regulate Mobile Source Greenhouse Gas Emissions, Part 2: A Legislative and Statutory History Assessment* (2020) 32 Geo. Envtl. L.Rev. 625; Dotson, *State Authority to Regulate Mobile Source Greenhouse Gas Emissions, Part 1: History and Current Challenge* (2019) 49 Envtl. L. Rep. News & Analysis 11037; Carlson, *Iterative Federalism and Climate Change* (2009) 103 Nw. U. L.Rev. 1097, for discussions on the history of California's waiver of preemption under the Clean Air Act.

shifting to zero-emission vehicles.<sup>23</sup> If the ACC II regulations did not require all light-duty vehicles to be 100% ZEVs and PHEVs, criteria emissions would not be reduced to the same degree and would further frustrate attainment of the NAAQS and meeting California's requirements to reduce GHG emissions. (See ISOR, pp. 134-135; Emission Inventory Methods and Results for the Proposed Amendments, ISOR, App. D, pp. 13-17.)

## Substantive State Law Requirements

### General

11. Comment: The proposed sales mandate conflicts with the purpose and scope of the statutes that authorize the mobile source regulations and govern the rulemaking process. [OP-161-35, incorporated by reference into comment OP-97]

Agency Response: This comment fails to specify what authority the commenter is discussing and, as such, lacks specificity and is beyond the scope of the ACC II regulations, so no response is required. To the extent the commenter is saying the requirements in the ACC II regulations conflict with the purpose and scope of the authorizing statutes identified in this particular rulemaking record, CARB disagrees; the ACC II regulations are the latest iteration in a long history of exercising authority to regulate emissions from passenger cars and trucks, expanding the existing requirements to transition to ZEVs for almost all new car and light truck sales in California by 2035 while further cleaning up any internal combustion-powered passenger vehicles that will continue to be offered for sale. This comment does not provide any elaboration on the alleged conflicts with statutes governing mobile source emissions regulations and the rulemaking process, and so no further response is required. Nevertheless, see responses to comments C-14, C-18, C-19, C-23, C-29, and C-35 below, the response to comment H-9 in FSOR Appendix C, and Master Response 4 of the Response to Comments on the Draft Environmental Analysis.

12. Comment: As with economic impacts and technological feasibility, CARB is required to evaluate its proposed regulations for consistency with state air quality standards and GHG emission reduction goals. CARB must take expeditious action to address both ambient air quality standards and short-lived climate pollutants *in California*—here, CARB has failed to comply with this mandate by allowing out-of-state emissions reductions to fulfill state compliance obligations.

[Commenter specifically cites and quotes Health and Safety Code sections 39602.5(a), 43000.5(d), 43013(2)(h), 43018(a), 38560, and 39730.5.]

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<sup>23</sup> See CARB, Draft Scoping Plan Documents, <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents> (accessed October 7, 2022); CARB, 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy), <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>; <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy> (accessed October 7, 2022).

California has not attained national air quality standards statewide. According to EPA's Green Book database, 19 areas in California are currently out of attainment for one or more criteria pollutants.<sup>40</sup> Of these nonattainment areas, currently eight are listed as "serious" and two are listed as "extreme" for at least one standard, the two highest possible listings.<sup>41</sup> The California legislature has determined that securing attainment in all areas of the state requires CARB to take steps to achieve "substantial reductions in new vehicle emissions and substantial improvements in the durability of vehicle emissions systems."<sup>42</sup>

In addition, the California legislature has set ambitious targets for GHG emissions reductions in the state. Under SB-32, CARB must "ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030."<sup>43</sup> Further, under SB1383, CARB must also address short-lived climate pollutants, achieving "a reduction in methane by 40%, hydrofluorocarbon gases by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030."<sup>44</sup> In meeting these targets, CARB is required to maximize emissions reductions and achieve these targets as soon as possible.<sup>45</sup>

CARB's ACC II Program undermines achievement of these California-centric emissions reduction goals by allowing vehicle manufacturers to comply with in-state ZEV sales mandates by pooling ZEV and PHEV values from different states. CARB's proposal requires manufacturers to meet an increasing percentage of new vehicle sales in California as ZEVs and PHEVs, where compliance is measured by assigning vehicle "values" for each vehicle produced that meets certain minimum technical requirements.<sup>46</sup> However, the proposal also includes a purported "flexibility" mechanism, "allowing all manufacturers to transfer or 'pool' excess ZEVs and PHEVs earned in California or individual Section 177 States to meet a shortfall in any given model year (or a deficit carried forward from a previous model year) elsewhere."<sup>47</sup> Manufacturers can meet up to 25% of their annual compliance obligations in model year 2026 by relying on pooling, with this percentage declining by 5% for subsequent model years.<sup>48</sup> In the ISOR, CARB explains that "allowing manufacturers to use pooled ZEV and PHEV values would help them manage year to year fluctuations in annual vehicle volumes especially across different states and still allow for full compliance," emphasizing that, under this approach, "market demand for ZEVs will increase and costs will tend to decline faster than they otherwise would."<sup>49</sup>

However, CARB's proposed pooling approach is utterly inconsistent with its obligations to maximize in-state emissions reductions and undermines the purported efficacy of its ZEV regulations. CARB has repeatedly emphasized that its ZEV sales mandate is essential for meeting in-state emissions reductions goals— "Transitioning to zero-emission technology for every on- and off-road mobile sector is essential for meeting near- and long-term emission reduction goals mandated by statute, with regard to both ambient air quality and climate requirements."<sup>50</sup> The pooling program sacrifices in-state emissions reductions from ZEV sales and interferes with state attainment goals by allowing manufacturers to meet a substantial portion of their compliance obligations out of state.<sup>51</sup> Many of the Section 177 states where pooling would be available are located across the country, where increased ZEV sales would have no impact on California's air quality.<sup>52</sup> Out of state sales do nothing to further

California ambient air quality standards or short- lived climate pollutant reduction strategies. [OP-122-4]

Agency Response: Commenter specifically takes issue with the pooling provision of section 1962.4(g) and asserts that this provision obstructs CARB from complying with its statutory mandates to expeditiously reduce criteria and short-lived climate pollutant emissions within the State. CARB disagrees. See the response to comment OP-121-4 beginning on page 49 of the Responses to Comments on the Draft Environmental Analysis as well as the response to comment B-27 in FSOR Appendix C. As explained in those responses, the compliance flexibility in the early years of ACC II provided by the pooling provision supports maximizing feasible emissions reductions from ACC II in the State. Pooling, as adopted in the ACC II ZEV regulation, allows manufacturers to manage year to year fluctuations in annual vehicle volumes, especially across different states, in the early years of ACC II and still allow for full compliance, while maintaining the overall stringency of the regulation. Importantly, and as commenter acknowledges, the pooling provision is only an option for excess values in one state if a manufacturer faces a shortfall in its annual ZEV requirement in another state, and even so the use of pooled values to make up such a shortfall is limited, declines year over year, and will be phased out by model year 2031. In order for a manufacturer to take advantage of this flexibility, it must over-comply elsewhere; this is most likely to be in states that have large market potential, like California. Thus, this flexibility helps reduce compliance burdens, ZEV market development, and ultimately improve access. Indeed, based on manufacturers' feedback and CARB's analysis, the ACC II regulations as a whole will maximize feasible, permanent emissions reductions in the State from light-duty passenger vehicles (see, e.g., FSOR Appendix F, Chapter VI of the ISOR, and Resolution 22-12). Commenter has presented nothing to the contrary beyond an unsubstantiated hypothetical (i.e., that manufacturers will significantly under-comply with annual ZEV requirements in California and over-comply in other states that may adopt ACC II).

13. Comment: The California Environmental Quality Act ("CEQA") (Pub. Res. Code § 21000 et seq.) which requires an assessment of ALL reasonably foreseeable direct, indirect and cumulative environmental impacts of the regulation. Based on the trajectory of vehicular tailpipe emission reductions achieved by 2016 as shown in the Figure (above), and ongoing continued fleet-level vehicular efficiencies from petroleum, hydrogen, and EV vehicles, and the extremely perverse and racist CARB metric of assuming that people and jobs that leave California result in GHG "reductions" that address climate change instead of what actually happens (increased global GHG from higher per capita states and countries), CARB's CEQA compliance failures are staggering in scope. Construction-phase impacts of massive EV charging infrastructure installations, as well as substation and distribution equipment improvements required to bring far more power into each home, and transmission and generation expansions at an even larger scale, are obvious and clear consequences of ACC II implementation that are ignored. The comments filed by The 200 on the Draft 2022 Scoping Plan, which include detailed CEQA comments and the CEQA violations described in the 2017 Scoping Plan lawsuit, are hereby incorporated into this ACC II comment letter. (It should be noted that all such comments, inclusive of The 200's lawsuits, are already in the possession of CARB and all comments inclusive of copies of

the lawsuits are included on the CARB 2022 Scoping Plan website, so full re-transmittal of this content in this ACC II comment letter is not warranted.) [15b-2-24]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, see responses S-15-2-2, S-15-2-3, S-15-2-4, and S-15-2-5 in the Response to Comments on the Draft Environmental Analysis. Further, CARB disputes utilizing any metrics that assume migration out of California results in GHG reductions. The calculation methodology for implementing the Sustainable Communities and Climate Protection Act (Senate Bill 375, statutes of 2008, chapter 728) incorporates both VMT and vehicle technologies on a *per capita* basis, which therefore rewards regional growth so long as additional homes or people are accommodated in a way that is lower-emitting than the region's current average. Commenter purports to incorporate comments filed on the Draft 2022 Scoping Plan, without submitting them to the ACC II docket. Commenter did not explain how any of the content purportedly incorporated by reference relate to the ACC II regulations or the process by which they were adopted. It is unclear how these materials are comments on the ACC II regulations. Because CARB would have to speculate, it is not responding further.

#### *Lack of authority*

14. Comment: CARB lacks authority to promulgate sweeping regulations that would exchange our existing transportation system for another, with unintended and far-reaching consequences across a broad range of environmental, economic, and social issues. First and foremost, the ACC II Program is preempted by federal law and is impermissible under the California Constitution. Even if allowed, legislative delegation has its limits— if CARB wishes to push past these limits, it must return to the legislature for additional authorizations. Further, even if the legislature delegated transformative regulatory authority to CARB (which it did not), CARB has failed to meet the express statutory requirements for exercising such authority. Indeed, if CARB evaluated all the economic, technical, and environmental impacts required by statute, CARB could not reasonably finalize the ACC II Program. [OP-161-47, incorporated by reference into comment OP-97]

Comment: [I]f climate change requires that the state ignore civil rights, federal and state clean air, fair housing, transportation and consumer protection mandates, and ignore the administrative law checks and balances that require a thorough environmental and economic assessment of regulatory proposals—then this is a conclusion that may only be implemented by the Legislature, to the extent it can do so consistent with the California and federal Constitutions. [OP-122-8]

Comment: Commenter states it's unlawful to ban ICE technology in this state, because ICE technology is necessary to power our vehicles using renewable liquid fuels. The very first speaker you had, the lady said that this isn't an emissions standard, it's a technology ban. You are banning a technology in favor of your preferred technology. That's illegal. It's absolutely illegal and I don't think it's going to fly. [T2-55]

Agency Response: CARB did not propose and has not adopted regulations that would exchange one transportation system with another, transform the State's transportation system, or ban all conventional vehicles, and so to the extent the commenters are making or basing their comments on such proposed system exchange, transformation, or ban, the comments are incorrect and beyond the scope of this rulemaking.

CARB disagrees that the ACC II regulations are preempted by federal law, is impermissible under the State Constitution or otherwise illegal, or is in conflict with any fair housing, transportation, or consumer protection mandates. Since these comments do not provide any explanation regarding these assertions and lack specificity, no further response is necessary. Nevertheless, see responses to comments C-1 through C-10 above regarding federal preemption, C-11 and C-12 further regarding substantive State law requirements, C-15 below regarding due process and liberty interests, C-16 and C-17 regarding regulatory takings, and C-25 regarding civil rights.

The ACC II regulations are a valid exercise of authority given to CARB. The California Legislature has directed CARB to "systematically attack the serious problem caused by motor vehicles, which is the major source of air pollution in many areas of the state." (Health & Saf. Code, § 39003.) Air pollution presents multiple threats to public health and welfare, and CARB is mandated to meet those threats in many ways. For instance, CARB is responsible for controlling emissions from vehicles (e.g., *id.*, §§ 39002, 39667, 43018, 43101), for preparing the state implementation plan required by the federal Clean Air Act (*id.*, § 39602), and regulating sources, including motor vehicles, of the greenhouse gases that are causing global warming (*id.*, §§ 38510, 38560, 38562). Indeed, the Legislature directed CARB "to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of the state [ambient air quality] standards at the earliest practicable date" and to "achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit." (*id.*, §§ 43018, subd. (a), 38562, subd. (a).) And the Legislature granted CARB broad authority to act and adopt standards and regulations as needed for proper execution of its duties and obligations. (E.g., *id.*, §§ 39600, 39601; see also, e.g., *id.*, §§ 38562, 39602.5, 43013; *Engine Manufacturers Ass'n v. State Air Resources Board* (2014) 231 Cal.App.4th 1022, 1037 ("Read together, these statutes [Health & Saf. Code, §§ 39003, 39601, 43000, 43000.5, 43013, 43018] grant CARB broad authority to adopt regulations . . . designed to reduce air pollution caused by motor vehicles as expeditiously as possible . . . .").)

The ACC II regulations are the latest iteration in a long history of exercising this authority to regulate emissions from passenger cars and trucks, dating back to the 1960s. Notably, in 1990 CARB adopted an ambitious program to significantly reduce the environmental impact of light-duty vehicles through the introduction of the Low-Emission Vehicle (LEV) regulations. Those regulations, referred to as the "LEV I" regulations, included three primary elements: (1) tiers of exhaust emission standards for increasingly stringent categories of low-emission vehicles, (2) a mechanism requiring each manufacturer to phase in a progressively cleaner mix of vehicles from year to year with the option of credit trading, and (3) a requirement that a specified



percentage of passenger cars and light-duty trucks be ZEVs. In 2012, CARB combined LEV regulations for controlling smog-causing pollutants and greenhouse gas emissions with ZEV regulations requiring the manufacture of ZEVs into what is now referred to as the Advanced Clean Cars (ACC) program for model years 2015 and beyond. The ACC II regulations expand the existing requirements to transition to ZEVs for almost all new car and light truck sales in California by 2035 while further cleaning up any internal combustion-powered passenger vehicles that will continue to be offered for sale. Doing so is critical to meeting California's public health and climate goals and meeting State and federal air quality standards, particularly because mobile sources are the greatest contributor to emissions of criteria pollutants and GHGs in California.

CARB further disagrees with the commenters that CARB did not evaluate all the economic, technical, and environmental impacts required by statute. CARB conducted robust economic, technical, and environmental analyses in accordance with its obligations in the Administrative Procedure Act (APA), CEQA, and the Health and Safety Code, and CARB's adoption of ACC II is amply supported by substantial evidence in the record. Since this comment does not elaborate on any alleged deficiencies, no further response is required. Nevertheless, see responses to comments C-18, C-19, C-23, C-32, and C-35 below.

#### *Due process/liberty interests*

15. Comment: Commenter states, "CARB's ACC II Program centers around achieving 100% ZEV or PHEV sales in California by model year 2035. This target necessitates the complete electrification of the transportation sector, forcing the phase-out of oil and gas production and refinery industries. CARB's attempt to unilaterally ban entire industries exceeds its delegated authority under California's Constitution.

The California Supreme Court has held that '[t]he constitutional guaranties of liberty include the privilege of every citizen to freely select those tradesmen [he desires to patronize].' ACC II will intrude on this liberty interest by stripping Californians' current right to choose ICEVs when it bans new ICEV sales and effectively banning infrastructure to support these vehicles by forcing the phase-out of related industries in California. Under the California Constitution, legislation that impacts a protected liberty interest must not 'be 'unreasonable, arbitrary or capricious' but... have 'a real and substantial relation to the object sought to be attained.'

ACC II's exclusive selection of ZEVs is neither reasonable nor rationally related to California's goal to limit GHG emissions from vehicles. Low-carbon fuels and highly efficient ICEVs can achieve the same GHG emissions reductions as ZEVs and on a shorter timeline. Low-carbon fuels like renewable diesel, ethanol, and renewable gasoline are compatible with existing vehicle infrastructure, from light- to heavy-duty long-haul vehicles. These fuels can *immediately* reduce transportation GHG emissions and are not dependent on an electric vehicle infrastructure. Further, when viewed from a life cycle perspective, these fuels achieve similar or greater emissions reductions and do not impair liberty interests because Californians will retain their current options to choose between ICEVs and electric vehicles. As noted above, GHG emissions from a light-duty vehicle that runs on soybean-based renewable diesel has

25% fewer life cycle GHG emissions when compared to an EV, and this percentage is even greater for a vehicle that runs on waste-oil-based renewable diesel.

Because eliminating an entire sector of industry is not rationally related to California's interest in limiting GHG emissions, ACC II impermissibly interferes with liberty interests protected under the California Constitution." [OP-161-46, incorporated by reference into comment OP-97]

Comment: Commenter states, "CARB's ACC II Program centers around achieving 100% ZEV or PHEV sales in California by model year 2035. This target necessitates the complete electrification of the transportation sector, forcing the phase-out of oil and gas production, refining, and most renewable fuel production. Attempting to unilaterally ban entire industries would exceed CARB's authority under California's Constitution and violates due process.

In proposing ACC II, CARB would render obsolete all businesses that operate in support of the internal combustion engine. CARB's stated policy goal is the elimination of fossil fuels and renewable transportation fuels. While CARB is not directly banning automotive supply, service, and support businesses, its ACC II proposal would have the same effect on these businesses as well. Ultimately ACC II would eliminate an entire industrial sector by displacing demand for oil production, petroleum pipelines and terminals, refineries, ethanol plants, renewable fuels production facilities, tanker trucks, oil change shops, and fuel service stations. Such a taking interferes with liberty interests protected under the California Constitution.

The California Supreme Court has held that 'the constitutional guaranties of liberty include the privilege of every citizen to select those tradesmen he desires to patronize.' ACC II will intrude on this liberty interest by preventing Californians from using ICEVs and effectively banning the infrastructure to support these vehicles. Under the California Constitution, substantive due process 'requires legislation not to be 'unreasonable, arbitrary or capricious' but to have 'a real and substantial relation to the object sought to be attained.' While California has an interest in limiting GHG emissions, ACC II's arbitrary and exclusive selection of ZEVs is neither necessary nor rationally tailored to achieve this goal.

CARB lacks authority to ban oil and gas production and refinery industries because ACC II is not rationally related to CARB's goal of reducing GHG emissions from vehicles. Low-carbon fuels and highly efficient ICEVs can achieve comparable GHG emissions reductions as ZEVs on a shorter timeline. Low-carbon fuels like renewable diesel and ethanol are compatible with existing vehicle infrastructure, from light- to heavy-duty long-haul vehicles. These fuels can immediately reduce transportation GHG emissions without waiting for the time and expenses it will take to build out EV infrastructure. Further, when viewed from a lifecycle perspective, these fuels achieve similar or greater emissions reductions without impairing liberty interests. As noted above, GHG emissions from a light-duty vehicle that runs on soybean-based renewable diesel has 25% less life cycle GHG emissions when compared to an EV, and this percentage is even greater for a vehicle that runs on waste-oil-based renewable diesel. [OP-141-34]

Comment: Commenter states that despite the acknowledgement of severe economic consequences for labor and businesses, the proposal does not reconcile ACC II with the Constitutionally protected rights of California businesses. [T2-1]

Agency Response: These comments fail to specify what constitutional provisions are at play. As such, this comment lacks specificity and is beyond the scope of the ACC II regulations, so no response is required. In any event, CARB disagrees with the premise of these comments—that ACC II will “render obsolete all businesses that operate in support of the internal combustion engine.” For one thing, ACC II does not prohibit the sale of internal combustion engines in covered vehicles. Indeed, some new plug-in hybrid covered vehicles can be sold in California under ACC II, even beyond 2035, and those vehicles are expected to contain internal combustion engines. Moreover, ACC II does not regulate the used car market or the fleet mix on California’s roads, so CARB expects light-duty conventional vehicles to remain on California roads for years after some of those vehicles could no longer be sold as new. ACC II also does not affect many other applications of internal combustion engines, including other categories of new and used motor vehicles and non-road engines and vehicles, nor other oil-consuming sectors. Indeed, CARB’s analysis shows the gasoline production and distribution industries are anticipated only to scale down proportionally to the decline in gasoline demand from the passenger vehicle fleet (a reduction in output by about 13% by 2040 and about a 15% reduction in jobs, as described in the SRIA and Final Economic Impact Statement, Form 399 Attachment). The commenters’ premise that ACC II will eliminate the need for businesses to support ICEs is factually incorrect. And because that premise is the crux of the commenters’ legal arguments, those arguments fail.

CARB further notes that commenters provided no support for their arguments. They cite to *New Method Laundry Co. v. MacCann* (1916) 174 Cal. 26, but that case dealt with fair competition and trade secrets between a laundry business and a former employee that subsequently went to work for a rival laundry business. Nothing in that decision prohibits the State from limiting (or even prohibiting) the sale of products the State has determined are harmful. With respect to “taking[s]”, see responses to comments C-16 and C-17 below.

Indeed, neither individuals nor businesses have a right to pollute or engage in actions that harm others and substantially threaten the public health and welfare, and such activities are subject to governmental restriction. (E.g., *Huron Portland Cement Co. v. Detroit* (1960) 362 U.S. 440, 442 [“Legislation designed to free from pollution the very air that people breathe clearly falls within the exercise of even the most traditional concept of what is compendiously known as the police power.”]; *Western Indem. Co. v. Pillsbury* (1915) 170 Cal. 686, 694.) As California has long recognized, and as the record here demonstrates, motor vehicle emissions pose a substantial threat to public health and welfare because of their criteria, GHG, and air toxic components. Notably, the commenters do not address criteria or air toxic pollution at all, which are foundational objectives to the rulemaking. The ACC II regulations, with tighter ZEV and LEV requirements, are demonstrably a reasonable and justifiable option to achieve, and will directly help achieve, California’s goals of limiting criteria, GHG, and air toxic emissions from passenger vehicles.

CARB did consider a low-carbon fuel alternative but rejected this alternative. See Master Responses 3 and 4 in the Response to Comments on the Draft Environmental Analysis. Notably, light-duty BEVs and FCEVs, when using grid electricity in California or renewably generated fuel, provide larger GHG reductions than conventional vehicles using low-carbon fuels, and liquid biofuel alternatives would not reduce air toxic emissions or vehicle NOx to the degree needed to meet the national ambient air quality standards, as ZEVs would.

Lastly, CARB considered the economic impacts of the ACC II regulations on labor, employment, and businesses in California. (See FSOR Appendix F; Section X of the ISOR; SRIA and Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations.) The ACC II regulations do not unlawfully impinge on the constitutional rights of businesses.

### *Regulatory taking*

16. Comment: The commenter states “CARB cannot deprive California businesses of vested rights or commit an unconstitutional taking. ACC II raises significant concerns over the vested economic interests of a variety of California businesses. California courts have held that businesses have ‘the right to continue operating an established business in which he has made a substantial investment.’ ACC II would deprive a multitude of established large and small businesses of this right...

Here, the ACC II Program has the goal of limiting all vehicles sales to ZEVs and even establishes a timeline for ICEV extinction in order to eliminate use of fossil and renewable fuels for transportation. CARB acknowledges this outcome, as it expressly accounts for the ‘displacement of fossil fuel extraction, refinement, manufacture, distribution, and combustion’ in the rulemaking support package. Notwithstanding efforts to diminish the devastating impact this would have on employees and small business owners by alluding to a ‘just transition,’ it is evident that the proposed ACC II rule would foreclose opportunities for numerous large and small businesses that have lawfully operated within in the state of California for decades and have invested heavily in their operations within the state. The shutting down of these businesses will have a potentially massive economic impact and therefore represents an unconstitutional deprivation of vested rights under California law as well as an unconstitutional taking under the U.S. Constitution. The shutting down of these businesses will have a potentially massive economic impact and therefore represents an unconstitutional deprivation of vested rights under California law as well as an unconstitutional taking under the U.S. Constitution.” [OP-141-35]

Comment: The commenter states “CARB’s plan to eventually phase out the sales of all ICEVs constitutes a regulatory taking. A regulatory taking occurs when a policy ‘substantially interferes with the ability of a property owner to make economically viable use of, derive income from, or satisfy reasonable, investment-backed profit expectations with respect to the property.’ *Jefferson St. Ventures, LLC v. City of Indio*, 236 Cal. App. 4th 1175, 1193–94.

The Associations’ members have invested substantial amounts of money in making their oil facilities safe and productive, and therefore, have significant investment-

backed expectations with respect to their properties, at least some of which may be forced to close as a result of CARB's electric vehicle mandate. California landowners also would be harmed. Landowners across the state receive royalties from renting their land to companies. Policies that shut down oil facilities would prevent companies and California landowners from realizing these investment-backed expectations. Thus, such policies would constitute a regulatory taking based on their substantial interference with these expectations, and the state would be obligated to provide just compensation for companies' and landowners' losses.

Therefore, as CARB considers the potential costs of policies that would shut down oil facilities, it should—at a minimum—account for the estimated costs of just compensation for the loss of property use and investment-backed expectations that would inevitably result." [OP-161-67, p. A-24., incorporated by reference into comment OP-97]

Agency Response: CARB did not propose or adopt an elimination of conventional vehicles or an electric vehicle mandate, and did not propose or adopt shutting down oil facilities, so to the extent commenters are making or basing their comments on such a phase out, mandate, or shut down, the comments are beyond the scope of this rulemaking.

CARB disagrees that the ACC II regulations will preclude operation of any lawful business or substantially interfere with the ability of any property owners to make economically viable use of, derive income from, or satisfy reasonable, investment-backed profit expectations with respect to their property. Notably, neither individuals nor businesses have a right to pollute or engage in actions that harm others and substantially threaten the health public health and welfare. Such activities are subject to governmental restriction. (*Huron Portland Cement Co. v. Detroit* (1960) 362 U.S. 440, 80 S.Ct. 813, 815, 4 L.Ed.2d 852, 855 ["Legislation designed to free from pollution the very air that people breathe clearly falls within the exercise of even the most traditional concept of what is compendiously known as the police power"]; *Western Indem. Co. v. Pillsbury* (1915) 170 Cal. 686, 694.) With respect to parties directly regulated, vehicle manufacturers may continue to manufacture vehicles so long as they meet the emission standards, including for vehicles that do not emit exhaust or evaporative on-board pollution. And parties indirectly affected by the regulations are not precluded by the regulations from conducting any lawful business. While markets for certain indirectly affected businesses may change, leading some market participants to change or eliminate their activities, such responses are not compelled by the regulations.

CARB considered the potential economic impacts of its proposal. The regulations do not substantially interfere with refinery operations in a manner as to require these facilities in California, many of which have been operating for years, to close. Markets remain elsewhere for the products of refineries. As described in the SRIA and Final Economic Impact Statement, Form 399 Attachment, for the ACC II regulations, the petroleum and coal products manufacturing sector is predicted to experience a reduction in growth by about 13% by 2040 and about 15% of jobs because of the regulations. (Form 399 Att., Table 6, p. 11; SRIA, p. 122.) This is not a substantial deprivation of the ability of owners of existing property in the petroleum industry to

make economically viable use of their property, derive income from it, or realize investment-backed profits from the property.

17. Comment: The commenter states “Likewise, the proposed ACC II program seeks to displace the entire renewable fuel industry in favor of electrification. Not only have renewable fuels businesses been conducting operations within the state, but the state and CARB have actively encouraged substantial investment and growth of such businesses in recent years through the LCFS. It would be an unconstitutional deprivation of their vested rights and unconstitutional taking of the substantial and unrealized investments made in response to the RFS and LCFS, as well as of the industry’s overall growth potential, to now drastically minimize and ultimately eliminate such businesses altogether.” [OP-141-36]

Agency Response: Commenter is mistaken. The ACC II regulations are not expected to displace the entire renewable fuel industry. The renewable fuel industry has multiple viable avenues to operate and is expected to do so. Refer to Master Response 3 on page 16 of the Response to Comments on the Draft Environmental Analysis for a discussion of renewable fuel needs in heavier mobile source sectors (aviation, heavy duty trucks, rail, and ocean-going vessels).

Further, the purpose of the ACC II regulations is to reduce and eliminate passenger vehicle exhaust emissions, not displace the entire renewable fuel industry. Electrification, which presumably as used in the comments means through BEVs, is not required. The ACC regulations allow use of other known zero-emission technologies (FCEVs) and a defined percentage of PHEVs as a share of a manufacturer’s deliveries for sale, and do not preclude development of other zero-emission technologies, including any that do not use electrification or batteries (although none are known to be under development at this time).

The commenter cites *Mobil Oil Corp. v. Superior Court* (1976) 59 Cal.App.3d 293 at page 305 to support its assertion that CARB may not adopt regulations that may reduce the market for renewable fuels. But as the quoted passage shows, even this supports the ACC II regulations by recognizing that the right to clean air outweighs any “right” to pollute where a regulation does not “effectively drive the Oil Companies out of business [but a]t most ... puts an economic burden on them increasing the cost....” The record does not establish that the ACC II regulations will drive renewable fuel producers out of business or force them to close, nor does the commenter provide any such evidence beyond speculation.

#### *Economic and feasibility analysis*

18. Comment: Commenter states “CARB must perform a complete and sufficient assessment of economic impacts resulting from rapid electrification of the transportation sector. The provisions of the California Administrative Procedures Act (APA) and the California Health & Safety Code (HSC), and their implementing regulations, that govern CARB’s regulatory authority require CARB to consider the economic impacts associated with any rulemaking proposal. These also require CARB to consider potential impacts to California’s workers, businesses, and greater economy. CARB claims these provisions as authorizing ACC II, yet fails to comply with

the provisions' mandates to conduct a robust economic analysis. [Commenter specifically cites to [Administrative Procedures Act] APA §§ 11346.3, 11346.5(a)(7), 11346.5(a)(7)(A), and H&SC §§ 38562(b)(8), 43101, 43018.5, 57005.] While the ISOR is a preliminary assessment, it still must take into account fact-based analyses based on information and impacts currently known to CARB. Importantly, CARB's analysis cannot 'ignore evidence of impacts to specific segments of businesses already doing business in California.' As a recent decision emphasized, '[i]f the Board's proposed regulatory amendments place[s] the state's thumb on the scale for one group of in-state businesses over another, it need[s] to consider that impact.'" [OP-161-48, pp. A-1 – A-2, incorporated by reference into comment OP-97]

Comment: Commenter states "CARB's limited assessment of economic impacts resulting from the forced electrification of the transportation sector fails to meet applicable legal standards requiring comprehensive assessment of economic impacts, resulting in an ISOR that underestimates the impacts of this unprecedented action. There are various provisions of the California Administrative Procedures Act ("APA") and the California Health & Safety Code ("HSC") that require CARB to consider the economic impacts associated with any rulemaking proposal. Together, these provisions establish a broad requirement for CARB to consider potential impacts to California's workers, businesses, and greater economy. CARB cites to many of these provisions in its ACC II ISOR as governing authority for CARB's proposed rulemaking, but fails to comply with their mandates by conducting an insufficient economic analysis. [Commenter specifically cites to APA §§ 11346.3, 11346.5(a)(7), 11346.5(a)(7)(A), and H&SC §§ 38562(b)(8), 43101, 43018.5, 57005.] While the ISOR is a preliminary assessment, this assessment must still take into account fact-based analysis based on information and impacts currently known to CARB. Importantly, this analysis cannot 'ignore evidence of impacts to specific segments of businesses already doing business in California'— as a recent decision emphasized, '[i]f the Board's proposed regulatory amendments place the state's thumb on the scale for one group of in-state businesses over another, it need[s] to consider that impact.' CARB notes in its ISOR that '[t]he Executive Officer has made an initial determination that the proposed regulatory action would not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other state, or on representative private persons.' This conclusion is not supported by fact-based analysis and overlooks key impacts stemming from the electrification of the transportation sector." [OP-141-30]

Agency Response: CARB disagrees with the comment and met its obligations under the law, including the APA and the California Health and Safety Code, to assess the economic impacts of the ACC II regulations based on the totality of the evidence in the record before it. These assessments are contained in the SRIA, Economic Impact Statement, and supporting documents and appendices. CARB's analyses assessed the factors cited in the comment regarding the creation of jobs, creation of new businesses or elimination of existing businesses, expansion of businesses, ability of business to compete with business in other states, ability of state to attract and maintain business in communities with exposure to high levels of air pollution and with minority and low-income populations, automobile workers, and the benefits of the regulation to residents, worker safety, and the environment.

CARB disagrees with the comment and analyzed the impact of the ACC II regulations on demand for liquid fuels. The comment OP-161, at p. A-3, fn. 14, presents a scenario where the proposed regulation begins to be implemented, resulting in closure of petroleum refineries, but then is subsequently withdrawn, purportedly because of a hypothetical failure or infeasibility, creating a situation where demand for liquid petroleum fuel remains or increase but is not capable of being met.

CARB is not required to analyze this alternative for several reasons. CARB is not required to analyze every possible circumstance among an infinite spectrum; CARB must consider reasonable alternatives. (See Gov. Code, § 11346.2, subd. (b)(4); Cal. Code Regs., tit. 14, § 15126.6.) This alternative is not amongst the reasonable. It is, in essence, a different proposal under different starting circumstances and one that does not meet the objectives of the regulation. Based on the evidence in the record, it is not likely to occur. The technological and economic feasibility of the ACC II regulations is well established. CARB is not required to analyze the potential impacts of failures of its proposed regulation or changes to its proposed regulations. The evidence did not show that refineries would shutter completely leading to a lack of petroleum fuels for the conventional vehicles that will remain on California's roads for decades to come, continuing to provide significant market demand for fuel, in addition to remaining demand in other sectors of the economy and outside California.

CARB separately responded to the portions of the comments quoted above regarding impacts to the petroleum industry and potential leakage of emissions as part of a lifecycle analysis of the impacts of the ACC II regulations on GHG emissions. (See the comment OP-161 at pp. A-1 and A-3.) CARB responded to the leakage comments in D-6 below, under Emission Impacts. CARB responded to the comments on impacts to the petroleum industry in responses to comments C-16 above and E-55 below.

19. Comment: The commenter states, "Similar to economic impacts, the APA and HSC mandate that CARB consider the technological feasibility of proposed motor vehicle standards. CARB's interpretation of this requirement is overly narrow because it focuses only on whether a manufacturer has the technology to provide an electric vehicle. It fails to consider whether manufacturers have the resources (including critical and rare earth minerals) to shift to rapidly producing electric vehicles and whether there is a reliable supply of electricity to fuel them." Commenter specifically cites to H&SC §§ 38560, 38562, 39602.5, 43013, 43018, 43018.5, and 43101. [OP-161-58, pp. A-9 – A-12, incorporated by reference into comment OP-97]

Comment: CARB must perform a complete and sufficient assessment of the technological feasibility of the ACC II ZEV mandates including but not limited to the assessment of mineral resource availability, impacts to the California electric grid, application of ZEVs to long-distance use cases. CARB must also consider consumer behavior and acceptance rates for ZEV, which is critical to evaluating achievability of the ACC II proposal. [OP-161-39, incorporated by reference into comment OP-97]

Agency Response: Commenter is mistaken and the comment itself concedes the factual flaw in its premise. Technological feasibility is just that: whether the technology is available to meet the proposed standard. The other considerations raised by the commenter are not technological, but comprise other considerations such as



practicality, supply of commodities, and grid reliability. CARB met its obligation to consider the technological feasibility of the ACC II regulations.

Moreover, CARB met its obligation to assess the potential economic impacts of its proposed regulations, including by considering the additional, non-technological factors identified above, and is not required to ensure there will be no economic impacts. Even if manufacturers are unable to produce and sell as many vehicles under the proposed regulations as they would otherwise in the absence of the regulations, for any reason, that is not a legal bar. Nevertheless, CARB's analysis shows that manufacturers will be able to continue producing vehicles in quantities comparable to past performance and market demand and the record before CARB does not establish there will be a significant change in market demand that must be analyzed.

The comment specifically asserted a potential shortage of materials necessary for traction batteries. CARB considered the availability of these resources and efforts to increase their supply and reuse. (See ISOR, pp. 85-87; Response to Comments on the Draft Environmental Analysis, p. 15.)<sup>24</sup> The comment did not cite any other constraints on vehicle manufacturers due to the ACC II regulations on their ability to remain in business. Although the comment asserts CARB should "further explore whether vehicle manufacturers are likely to possess adequate resources to adapt to [the ACC II regulations]," CARB is not required to conduct a holistic analysis of the viability of the regulated industry to manufacture its products. CARB met its obligations to analyze the impacts of the ACC II regulations.

CARB's analysis also considers the potential impacts of the proposed regulation on the state's electricity system. CARB projects the ACC II regulations will lead to about 12 million battery-electric vehicles cumulatively by 2035 and the Western electrical grid can handle twice that without new plants. California's state agencies and electric utilities are planning to meet the projected need for electricity in California from ZEVs and other uses. See, for example:

- [ACC II ISOR \(ca.gov\)](#), pp 26-54, and cited documents;
- [Final Environmental Analysis for the Advanced Clean Car II Program](#), pp. 45-49, 97-99, 139-140;

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<sup>24</sup> See also 15-Day Notice, Att. O, Climate Adaptation Platform. February 22, 2022, accessed June 16, 2022, <https://climateadaptationplatform.com/sustainable-extraction-of-lithium/>; University of Texas at Austin. ScienceDaily - New way to pull lithium from water could increase supply, efficiency, September 8, 2021, accessed June 16, 2022, <https://www.sciencedaily.com/releases/2021/09/210908180556.htm>; CalEPA 2022, California Environmental Protection Agency, Lithium-Ion Car Battery Recycling Advisory Group Final Report, March 16, 2022, Accessed June 16, 2022, [https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022\\_AB-2832\\_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf](https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/2022_AB-2832_Lithium-Ion-Car-Battery-Recycling-Advisory-Goup-Final-Report.pdf); Second 15-Day Notice, Ford 2022b, Ford Releases New Battery Capacity Plan, Raw Materials Details to Scale EVs; On Track to Ramp to 600k Run Rate By '23 and 2m+ by '26, Leveraging Global Relationships, July 21, 2022, accessed August 8, 2022, <https://media.ford.com/content/fordmedia/fna/us/en/news/2022/07/21/ford-batterycapacity-raw-materials-scale-evs.html>.

- [ACC II RTC Document \(ca.gov\)](#), pp. 6-13, and cited documents;
- [Notice of Public Availability \[sic\]](#), Attachment O, CAISO 2022, California ISO 20-year Transmission Outlook, <http://www.caiso.com/InitiativeDocuments/20-YearTransmissionOutlook-May2022.pdf>;
- [Notice of Public Availability \[sic\]](#), Attachment O, CEC 2022. Lopez, Thanh and Madison Jarvis. 2022. Draft Zero-Emission Vehicle Infrastructure Plan (ZIP). California Energy Commission. Publication Number: CEC-600- 2022-054. April. <https://www.energy.ca.gov/sites/default/files/2022-04/CEC-600-2022-054.pdf>.
- [Notice of Public Availability \[sic\]](#), Attachment O, CEC 2018. Mahone, Amber, Zachary Subin, Jenya Kahn-Lang, Douglas Allen, Vivian Li, Gerrit De Moor, Nancy Ryan, and Snuller Price. 2018. Deep Decarbonization in a High Renewables Future: Updated Results from the California PATHWAYS Model. California Energy Commission. Publication Number: CEC-500-2018-012, [Final Project Report, Deep Decarbonization in a High Renewables Future](#); see pp. 29-30.
- Draft 2022 Scoping Plan Update, released May 10, 2022, that describes scenarios that include 100% ZEV sales for passenger vehicles by 2035, and puts the results in the context of the full electric grid. [2022 Scoping Plan Documents | California Air Resources Board](#).

CARB’s analyses considered the potential need for ZEV infrastructure. See, for example:

- [ACC II ISOR \(ca.gov\)](#), pp 26-54, and cited documents;
- [ACC II RTC Document \(ca.gov\)](#), pp. 6-13, and cited documents;
- [Final Environmental Analysis for the Advanced Clean Car II Program](#), pp. 40, et seq., 51-53, 97-99, 139-140, 148;
- [Notice of Public Availability \[sic\]](#), Attachment O, CEC 2022. Lopez, Thanh and Madison Jarvis. 2022. Draft Zero-Emission Vehicle Infrastructure Plan (ZIP). California Energy Commission. Publication Number: CEC-600- 2022-054. April. <https://www.energy.ca.gov/sites/default/files/2022-04/CEC-600-2022-054.pdf>.

And see ISOR Appendix G, pages 9-18, which discusses all the currently available and anticipated models and electric ranges for those models.

20. Comment: To help protect low-income communities from unaffordable mitigation measures, the legislature was clear in their direction to CARB when they passed AB 398 with a two-thirds vote in both the Senate and the Assembly, that achieving carbon reductions should be done in a cost-effective manner. CARB is required to consider emissions reduction strategies that will “achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit.” [OP-122-22]

Agency Response: The commenter asserts the ACC II regulations are not cost-effective but did not elaborate further. This comment lacks specificity and therefore CARB is not required to respond. However, CARB found in Resolution 22-12, at pages 13 and 16, that the ACC II regulations are cost-effective, as demonstrated in the Standardized Regulatory Impact Analysis at page 98, the Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations, at page 62, and the ISOR at pages 180-181.

21. Comment: Similarly, for all rulemakings, CARB is required to consider a reasonable range of alternatives, including “alternatives that are proposed as less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation.” California Environmental Quality Act (CEQA) Guidelines also specify that CARB must consider a reasonable range of alternatives, which “shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.” CARB is further required under AB 32 to “evaluate the total potential costs and total potential economic and noneconomic benefits of the plan for reducing greenhouse gases to California’s economy, environment, and public health” and “update its plan for achieving the maximum technologically feasible and cost-effective reductions of greenhouse gas emissions”. Rather than living up to these statutory mandates, the ACC II program allows millions of dollars in legacy technology and infrastructure to go to waste while seeking to eliminate affordable alternatives that offer substantial opportunities for more cost-effective GHG emission reductions that work in the current vehicle fleet. [OP-122-1]

Comment: CARB is required to consider emissions reduction strategies that will “achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions in furtherance of achieving the statewide greenhouse gas emissions limit.”<sup>36</sup> Similarly, for all rulemakings, CARB is required to consider a reasonable range of alternatives, including “alternatives that are proposed as less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation.”<sup>37</sup> California Environmental Quality Act (CEQA) Guidelines also specify that CARB must consider a reasonable range of alternatives, which “shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.”<sup>38</sup> California is required under AB 32 to “evaluate the total potential costs and total potential economic and noneconomic benefits of the plan for reducing greenhouse gases to California’s economy, environment, and public health” and “update its plan for achieving the maximum technologically feasible and cost-effective reductions of greenhouse gas emissions”.<sup>39</sup> Rather than living up to the statutory mandate, ACC II allows millions of dollars in legacy technology and infrastructure to go to waste while seeking to eliminate affordable alternatives that offer substantial opportunities for more cost-effective greenhouse gas emission reductions that work in the current vehicle fleet. In order to truly prioritize low-income communities—instead of just merely “considering” them—

CARB should refrain from finalizing its proposed regulation until the state has enacted the protections these communities need and deserve. [OP-122-3]

Agency Response: The comments under CEQA are addressed in the Response to Comments on the Draft Environmental Analysis. See Master Response 3 and the response to OP-121-3 on pages 16 and 47, respectively, of the Response to Comments. The obligation to evaluate total costs and benefits of the plan to reduce GHG emissions under AB 32 in Health and Safety Code section 38561 are in relation to the Scoping Plan, which is a separate proceeding and outside the scope of the ACC II regulations. Nevertheless, CARB disagrees that it failed to consider alternatives or that the ACC II regulations will result in waste. CARB evaluated and rejected several alternatives that would not meet the objectives of the ACC II regulations or that would be more burdensome, less effective, or more costly. While the ACC II regulations are expected to impose costs and negatively impact some businesses and employment, the economic analyses do not show that any businesses will be eliminated (see Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations, p. 10) and that the benefits far outweigh the costs.

See also response to comment A-34 above regarding prioritizing low-income communities.

22. Comment: CARB has entirely failed to account for substantial economic impacts to individuals in general and to vulnerable communities in particular stemming from accelerated electrification. CARB's failure to do so is a violation of the foregoing authorities and additionally demonstrates that its assessment is arbitrary and capricious. [OP-122-23]

Agency Response: The commenter is mistaken that CARB did not analyze potential economic impacts on individuals and communities in California. CARB's analyses show that individuals and communities will benefit from reduced air pollution and total cost of vehicle ownership. (See FSOR Appendix F, Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations, pp. 50-52 [health benefits, including for communities near roadways]; 38-40 [total cost of ownership for individuals].) Staff evaluated vehicle ownership cases in the TCO analysis where a BEV owner could not install a home charger. In those cases, the vehicle owner still sees cost savings soon after purchasing the vehicle, accounting for higher public charging electricity prices. See response to comment A-20 above for more information on the TCO analysis as well as for significant investments being made to increase access to ZEV infrastructure across the State.

CARB also included in the ACC II regulations several incentives in section 1962.4, under the Environmental Justice Value provisions, for manufacturers to increase access by low-income communities to new ZEVs. These are in addition to the overall effect of increased ZEV sales of creating a robust secondary market for access to used vehicles.

23. Comment: CARB must incorporate life cycle emissions from ZEV in evaluating the proposed ACC II regulation.

CARB has failed to analyze the full life cycle impacts of ZEVs, which precludes a true technology-neutral comparison and overestimates ACC II GHG reductions...CARB has

not quantified vehicle cycle emissions in the ACC II ISOR. They must be included due to the large differences in these emissions between ZEVs and internal combustion engine vehicles (ICEVs)...[T]he Ramboll LDA Study found that the vehicle cycle emissions for a model year 2026 BEV could be ~167% higher than an ICEV.

CARB has performed no life cycle emissions analysis for ZEVs and thereby failed to adequately meet the requirements of HSC Sections 43018.5 and 57005 (see Comment A.1.3 in Attachment A for further details). Highly efficient low emission vehicles, which impose significantly fewer infrastructure expenses, will achieve substantial GHG emissions reductions on a faster timeline.

CARB must, therefore, update its emission analysis to include the full life cycle of the vehicle/fuel technologies included in the ACC II proposal, to understand and present the actual implications of the regulation for public review and comment, as required by law. [OP-161-42, pp. 5-7, A-8 – A-9, incorporated by reference into comment OP-97]

Agency Response: CARB did assess the lifecycle emissions impacts of the ACC II regulations. See Response to Comments on the Draft Environmental Analysis, Master Response 4: Lifecycle Emissions Modeling, p. 18. Even if the lifecycle GHG emissions of the ACC II regulations did not support adoption, the beneficial reductions in criteria and toxic pollutant emissions does. An alternative that does not require increasing percentages of vehicles that do not emit pollutants from combustion of liquid fuels or evaporative emissions from their fuel systems does not meet the objectives of the regulation and was properly rejected.

## **Equity and Disparate Impacts**

24. Comment: CARB is required, pursuant to HSC § 43018.5(c)(2)(E), to consider “[t]he ability of the state to maintain and attract businesses in communities with the most significant exposure to air contaminants, localized air contaminants, or both, including, but not limited to, communities with minority populations or low-income populations, or both.” CARB has failed to comply with this statutory mandate, as it has not considered how low-income communities in particular would be affected by this lost business. [OP-122-21]

Agency Response: CARB disagrees. Health and Safety Code section 43018.5, enacted by AB 1493 (Pavley, Stats. 2002, Chap. 200), was directed at GHG standards—that is, what are now CARB’s LEV GHG standards in 13 CCR 1961.1 and 1961.3. While ZEVs do reduce GHGs, they also reduce other pollutants, namely criteria pollutants and air toxics. CARB has consistently relied on ZEVs for comprehensive emission reductions.

Accordingly, CARB considered the factors identified in the statute when it adopted its GHG emission standards.<sup>25</sup>

In any event, CARB did consider the impacts on the types of communities described in section 43018.5(c)(2)(E), including effects on businesses. As explained in the response to comment A-32 above, CARB engaged in extensive outreach and consulted communities about the future of zero-emission transportation, what is being done to make ZEV technologies more accessible, and suggestions these communities have for making the transition to zero-emission transportation more equitable. And CARB considered the potential effects of the ACC II regulations on the creation or elimination of businesses across California and its economy, including the communities with the most significant exposures. (See, e.g., Form 399 Attachment Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations, pp. 9-14.) Based on CARB's analysis, ACC II is expected to have little harm on business retention and little effect on the ability of California businesses to compete with business outside California almost regardless of community type. The most likely exception may be gasoline station operators in low-income communities, as noted in the jobs analysis in the SRIA. However, the analysis does not include the ways in which these stations may adapt to an increasing fleet of ZEVs by installing charging or hydrogen stations, which could mitigate some of the job losses. Additionally, these stations may continue to remain financially viable by offering non-fuel products as they do now, such as convenience foods.

For an even finer point, staff looked at Dun and Bradstreet Market Insight to identify business sites in California corresponding to the following North American Industrial Classification System (NAICS) codes, which correspond to the majority of directly and secondarily impacted industries in California: electrical equipment manufacturing (33531), general automotive repair (811111), specialized automotive repair (811114), automotive glass replacement shops (811122), automotive oil change and lubrication shops (811191), all other automotive repair and maintenance (811198), petroleum refineries (324110), petroleum lubricating oil and grease manufacturing (324191), all other petroleum and coal products manufacturing (324199), gasoline stations (457110, 457120), petroleum wholesalers (424710, 424720), crude petroleum extraction (211120), electric power generation, transmission and distribution (2211), and industrial gas manufacturing (32512). The Dun and Bradstreet data indicate that there are approximately 63,000 business sites located in California under these industry classifications. Note that this number identifies all business sites with these given industry classification codes and that some business sites identified may not be directly or secondarily impacted.

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<sup>25</sup> See CARB, Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, Aug 6, 2004, p. 150, et seq, *Rulemaking: 2004-09-23 ISOR Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles (ca.gov)*; CARB, Staff Report: ISOR for LEV III GHG and criteria pollutant amendments, Dec. 7, 2011, *CARB Document: <https://www.arb.ca.gov/regact/2012/leviiighg2012/levisor.pdf>*.

The Dun and Bradstreet data was merged with CalEnviroScreen 4.0 data to identify which businesses sites are located within a zip code that contains a disadvantaged community (DAC) as identified pursuant to Health and Safety Code section 39711.<sup>26</sup> Zip codes that contain DACs include approximately 49% of California’s population.<sup>27</sup> The table below summarizes, at the 4-digit NAICS code level, the number of business sites and the percentage located within zip codes that contain a DAC. The table illustrates that the number of business sites located within a zip code that contains a DAC or in a zip code that does not contain a DAC are approximately equal, with 53% of all identified business sites within a zip code that contains a DAC.

There are slightly more automotive repair and maintenance, petroleum and coal products manufacturing, and petroleum and petroleum products merchant wholesaler business sites located in zip codes that contain a DAC. There are slightly more electric power generation, transmission and distribution, electrical equipment manufacturing, and gasoline station business sites in zip codes that do not contain a DAC. However, the percentages of businesses located within zip codes that include a DAC and zip codes that do not contain a DAC are generally similar. Depending on the industry, approximately 44% to 58% of the business sites are in a zip code that contains a DAC.

NAICS Classification	Business Sites	% within zip code that contains a DAC	% within zip code that doesn't contain a DAC
Automotive Repair and Maintenance (8111)	42,870	56%	44%
Gasoline Stations (4571)	8,789	48%	52%
Petroleum and Petroleum Products Merchant Wholesalers (4247)	2,124	51%	49%

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<sup>26</sup> Health & Saf. Code, § 39711. This provision was added by Senate Bill (SB) 535 (De León, Stats. 2012, ch. 830) which charges the California Environmental Protection Agency (CalEPA) with designating DACs based on “geographic, socioeconomic, public health, and environmental hazard criteria.” CalEPA generally makes its DAC designations using CalEnviroScreen, a screening methodology and mapping tool developed by the Office of Environmental Health Hazard Assessment (OEHHA) that helps identify California communities that are most affected by many sources of pollution and where people are often especially vulnerable to pollution’s effects. OEHHA, “SB 535 Disadvantaged Communities,” <https://oehha.ca.gov/calenviroscreen/sb535> (accessed Oct. 3, 2022). While CalEnviroScreen scores, and thus DAC designations, are not assessed on the basis of race or ethnicity, DAC residents are disproportionately people of color, especially Latino and Black people. OEHHA, “Analysis of Race/Ethnicity and CalEnviroScreen 4.0 Scores,” Oct. 2021, <https://oehha.ca.gov/media/downloads/calenviroscreen/document/calenviroscreen40raceanalysisf2021.pdf> (accessed Oct. 3, 2022).

<sup>27</sup> U.S. Census Bureau, 2016-2020 American Community Survey 5-Year Estimates, Table DP05, <https://data.canary.census.gov/cedsci/table?g=0100000US%25240500000&tid=ACSDP5Y2020.DP05> (accessed Oct. 3, 2022).

NAICS Classification	Business Sites	% within zip code that contains a DAC	% within zip code that doesn't contain a DAC
Oil and Gas Extraction (2111)	325	50%	50%
Petroleum and Coal Products Manufacturing (3241)	320	55%	45%
Electric Power Generation, Transmission and Distribution (2211)	7,590	42%	58%
Electrical Equipment Manufacturing (3353)	762	41%	59%
Basic Chemical Manufacturing (3251)	297	50%	50%
Total	63,077	53%	47%

As described above, vehicle owners and operators are estimated to realize operational-cost savings from ACC II (see the response to comment A-20), shifting consumer spending away from categories such as vehicle maintenance and repair and gasoline towards other areas. The reduced spending in these categories is projected to account for a significant portion of the slowing of growth in certain business sectors. CARB expects these impacts to be mitigated to a degree by the requirements of the ACC II regulations that automakers make available the necessary information for independent repair shops to service ZEVs. This will ensure ZEVs are maintained and the emissions from conventional vehicles will be permanently displaced. It has the added benefit of enabling independent repair facilities to continue meeting the needs of their customers in the communities where they are located and benefit from these regulations.

Conversely, industries such as the electric power industry may see increases in growth as a result of a shift towards zero-emission vehicles. The SRIA also notes that the ACC II regulations will increase the total amount of electric vehicle miles travelled in the State, which in turn could increase utilization of charging and hydrogen stations across the State and lead to increased revenue for these businesses, making the business model for their investment more stable and predictable. Increased use of public charging stations may also have benefits to retail businesses near charging stations. Many charging stations are located in areas with available shopping, food, or services such as dry cleaning.

Demand for, and utilization of, public charging stations may be higher in areas where there is less access to home charging, such as DACs. Additionally, multi-unit dwellings have larger barriers to installing accessible home charging. Businesses may have a higher incentive to invest in charging in these areas to take advantage of higher potential utilization. And, as described in Section III.A.6 of the ISOR and the response to comment A-20, State and federal infrastructure programs are ramping up investments and prioritizing such investments in DACs. Potential impacts on business



attraction and maintenance, or creation and elimination, are similar regardless of community status, consistent with the analyses in the SRIA and Economic Impact Statement. There is a slightly higher percentage of business sites in DACs in industries where CARB anticipates decreases in demand as a result of ACC II, which could cause business contraction. There is a slightly higher percentage in business sites in non-DACs in industries where CARB estimates ACC II may result in increased demand and potential business expansion. Despite these potential impacts, the ACC II regulations deliver significant public health and economic benefits, including to minority and low-income populations.

25. Comment: [A]ccess to reliable, affordable passenger vehicle ownership is a major civil rights issue. It is critical in the vast majority of the state (where transit/walking/biking options don't exist), that transit ridership has dropped pre- and post-COVID especially among lower income commuters as confirmed by UCLA's comprehensive transit utilization reports, and the necessity of driving was recognized as a civil right - by the Legislature in authorizing undocumented immigrants to receive Drivers' Licenses (and more than a million have done so), and by the California and United States Supreme Court which have both held that driving is so critical to modern living that depriving someone of a Driver's License triggers the due process protections of the state and federal Constitutions. The ACC II Rule violates civil rights laws, as well as the State and Federal Constitution unless it is modified to include the concurrent approval of an effective, equitable, and fully-funded program to continue to provide for private vehicle ownership in our communities. [15b-2-3]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, CARB disagrees with the commenter that the ACC II regulations restrict private vehicle ownership or Californians' ability to drive. The regulations apply to manufacturers' sales of new passenger vehicles in California, not to vehicle ownership or use. Indeed, ACC II has no limitations of any kind on driving and the State provides funding for vehicle purchases by low-income individuals. See the response to comment A-20 above for a description of the TCO analysis CARB conducted and State programs working to increase access to infrastructure for lower income drivers, as well as the responses to comments E-31 and E-40 below regarding cost impacts on low-income individuals.

CARB also disagrees with the commenter that the ACC II rules violate civil rights laws and the State and federal Constitutions. California and federal courts apply due process to the loss or denial of a drivers' license, as with other government benefits and functions, but this does not elevate driving to a fundamental or civil right. (See *Miller v. Reed* (9<sup>th</sup> Cir. 1999) 176 F.3d 1202, 1206 (holding that there is no "fundamental right to drive a motor vehicle").) In enacting Assembly Bill (AB) 60 (Alejo, Stats. 2013, ch. 524) authorizing DMV issuance of driver's licenses to undocumented Californians, the Legislature issued extensive findings and declarations about the dangers posed by unlicensed drivers but did not reference any civil right to

drive.<sup>28</sup> Moreover, the State's role in providing or denying a driver's license has no equivalent in terms of vehicle ownership or access. The choice of a conventional vehicle is not a civil right or subject to due process; rather, regulating sources of pollution is squarely within states' police powers. (E.g., *Huron Portland Cement Co. v. Detroit* (1960) 362 U.S. 440, 442; *Western Indem. Co. v. Pillsbury* (1915) 170 Cal. 686, 694.)

26. Comment: The ACC II rule also ignores the fact that these consequences [the effect of banning gasoline on low-income individuals ability to afford to purchase a vehicle] are both more acute and cause racially disparate harm to California's working families. Notwithstanding CARB's failed effort in our pending CARB lawsuit to argue that it was entirely Constitutional for CARB to adopt racially discriminatory climate policies (itself a shocking argument, which the court rejected), it remains illegal for CARB to adopt regulations that cause disparate harms to racial minorities. [15b-2-13<sup>29</sup>, T2-15].

Comment: CARB's decreed climate change policies, and specifically those policies that increase the cost and delay or reduce the availability of housing, that increase the cost of transportation fuels and intentionally worsen highway congestion to lengthen commute times, and further increase electricity costs, have caused and will cause unconstitutional and unlawful disparate impacts to California's minority populations, which now comprise a plurality of the state's population. [OP-122-6]

Agency Response: CARB disagrees with the commenter's assertion that the ACC II regulations cause disparate harms to communities of color. See the responses to comments E-31 and E-40 below regarding cost impacts to low-income individuals, the response to comment A-20 above discussing CARB's TCO analysis demonstrating the ACC II regulations will result in cost savings for ZEV owners, and the response to comment A-32 above describing ACC II's equity considerations.

27. Comment: Commenter does not support banning less costly, reliable, and ubiquitous vehicles used by the vast majority of Californians and says the proposal exceeds CARB's legal authority, and its own moral commitment to ending racial injustice [15b-2-26<sup>30</sup>, T2-15].

Agency Response: CARB did not propose or adopt a phase-out or ban of passenger vehicles or internal combustion engines (ICE), and so to the extent the commenters are making or basing their comments on such a phase-out or ban, the comments are outside the scope of this rulemaking. CARB proposed and adopted emission standards on new vehicles to which the rule applies such that, by model year 2035, any

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<sup>28</sup> AB 60, Secs. 1 and 2 (Alejo, Stats. 2013, ch. 524), available at [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201320140AB60](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB60).

<sup>29</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

<sup>30</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

new vehicle sold within the State must have zero emissions or meet the requirements for a plug-in hybrid electric vehicle (anticipated to contain an ICE).

Regarding CARB's authority, see the responses to comments C-14 above and C-32 below. Regarding alleged violation of CARB's racial justice commitments, see the replies to comments A-32 above and E-40 below. Regarding costs, see the response to comment A-20 above and E-21 below describing that the ZEV regulations will reduce the total costs of vehicles, including any initial increase in purchase price, and that vehicle purchase prices are expected to reach parity between conventional vehicles and ZEVs.

## Consistency with Executive Order N-79-20

28. Comment: Executive Order N-79-20 directs that "100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035." As proposed, ACC II does not meet this directive as proposed § 1962.4(e)(1)(C) allows up to 20% of the annual compliance to be met with PHEVs through MY 2035. PHEVs are not zero emission. As a recent study found, real world fuel consumption of PHEVs is three to five times higher than expected during vehicle certification approval. This recent study was a follow to another study that showed in Europe PHEVs utilized their electric only function just 37% of the time in real life. In comparison to BEVs, the ACC II proposal actually exacerbates this issue by not extending the battery durability requirements to PHEVs, thus providing no assurances that qualifying PHEV electric only range will be maintained throughout a vehicle's lifetime. [15-8]

Agency Response: Executive Order N-79-20 is not a legally binding mandate but instead requested CARB, consistent with State and federal law, to propose regulations of "increasing volumes of new zero-emission vehicles sold in the State towards the target of 100 percent of in-state sales by 2035," and that such efforts be "consistent[] with technological feasibility and cost-effectiveness." CARB proposed and adopted the ACC II regulations pursuant to its statutory authority and based on the best information available, considering technological feasibility and cost-effectiveness, and determined that PHEVs still have a role to play in developing and supporting the ZEV market. As discussed in the ISOR starting on page 56, studies show model diversity and availability are key to driving consumer interest. PHEVs may remain a critical choice for low-income drivers as well, and the new design requirements for PHEVs will encourage greater use of zero-emission mode. Therefore, the inclusion of PHEVs helps to ensure the success of the ACC II requirements as a whole.

29. Comment: The commenter states "The Executive Order N-79-20 set a goal for the State that 100 percent of in-state sales of new passenger cars and trucks will be zero-emission by 2035 **to the extent consistent with State and federal law**. The current proposal is not consistent with the Executive Order (See **Comment A.3** and **A.4** in **Attachment A**)." [emphasis in comment, footnote omitted] [OP-161-33, incorporated by reference into comment OP-97]

Agency Response: Executive Order N-79-20 is not a legally binding requirement, nor does this comment provide any explanation for how ACC II was not consistent with the Executive Order (let alone State and federal law), and so no further response is

required. To the extent the comment is stating ACC II is not consistent with the Executive Order vis-a-vis commenter's A.3 and A.4 comments, see responses to comments B-5 and C-15 above and C-35 and D-7 below.

30. Comment: The commenter states "The Executive Order also acknowledged that without coordinated action by multiple other agencies to mitigate their impacts, implementing these targets will have profound negative consequences for low-income and working-class Californians. These impacts have not been fully identified, nor have they been mitigated." [OP-161-34, incorporated by reference into comment OP-97]

Agency Response: CARB disagrees with commenter's characterization. Executive Order N-79-20 did envision multi-agency coordination to address the climate crisis holistically through a variety of avenues and initiatives and did encourage a greater focus on low-income and disadvantaged communities; it did not acknowledge multi-agency coordination on mitigating impacts from meeting light-duty passenger vehicle zero-emission targets, nor did it acknowledge that a lack of such multi-agency coordination on mitigating those impacts would have significant adverse consequences on low-income Californians. Commenter does not further elaborate what impacts, or even what sorts of impacts, have not been identified or mitigated, and so no further response is necessary. In any event, see responses to comments C-19 and C-22 above for economic impacts and the Final Environmental Analysis for environmental impacts.

31. Comment: The ACC II proposal is contrary to Executive Order N-79-20 because it is not consistent with State law. The proposal continues to have severe deficiencies and omissions in the analysis [inadequate demonstration of achievability, incomplete cost assessment, inadequate environmental assessment, and inadequate alternatives analyses] that are contrary to APA and the HSC Code requirements. [OP-161-38, incorporated by reference into comment OP-97]

Agency Response: Executive Order N-79-20 is not a legally binding requirement, and CARB disagrees that ACC II is inconsistent with State law. See responses to comments A-10, A-13, A-14, A-20, A-25, A-28, B-3, B-5, B-14, C-18, C-19, C-22, C-23, C-35, D-6 through D-8, E-55, E-66, and E-67.

## **Compliance with the Administrative Procedure Act**

32. Comment: ACC II is a regulation, and as such is subject to, but has failed to comply with the requirements of: A. The Administrative Procedure Act ("APA") substantive regulatory content criteria, which prohibits the approval of new regulations unless they satisfy six discrete criteria, as defined in full below (Gov't Code § 11349)

(a) "Necessity" means the record of the rulemaking proceeding demonstrates by substantial evidence the need for a regulation to effectuate the purpose of the statute, court decision, or other provision of law that the regulation implements, interprets, or makes specific, taking into account the totality of the record. For purposes of this standard, evidence includes, but is not limited to, facts, studies, and expert opinion.

(b) "Authority" means the provision of law which permits or obligates the agency to adopt, amend, or repeal a regulation.

(c) "Clarity" means written or displayed so that the meaning of regulations will be easily understood by those persons directly affected by them.

(d) "Consistency" means being in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or other provisions of law.

(e) "Reference" means the statute, court decision, or other provision of law which the agency implements, interprets, or makes specific by adopting, amending, or repealing a regulation.

(f) "Nonduplication" means that a regulation does not serve the same purpose as a state or federal statute or another regulation. This standard requires that an agency proposing to amend or adopt a regulation must identify any state or federal statute or regulation which is overlapped or duplicated by the proposed regulation and justify any overlap or duplication. This standard is not intended to prohibit state agencies from printing relevant portions of enabling legislation in regulations when the duplication is necessary to satisfy the clarity standard in paragraph (3) of subdivision (a) of Section 11349.1. This standard is intended to prevent the indiscriminate incorporation of statutory language in a regulation.

. . . ACC II violates the "necessity" prong because CARB has not independently verified the necessity of this regulation to comply with the Legislature's SB 32 target of 40% lower greenhouse gas emissions by 2030. ACC II violates the "authority" prong because CARB has acted directly contrary to the Legislature's rejection of an internal combustion engine vehicle sale phase-out, and neither CARB nor the governor (via Executive Order) have the independent authority to impose a policy by regulation that has been expressly rejected by the people's elected representatives in the Legislature. ACC II violates the "consistency" prong because it is not at all in harmony with, and in fact in conflict with, constitutional and statutory protections of the right to travel, the right to drive, and the right to not be deprived of an effective mobility option shown to be required to protect the health, welfare, economic security, educational attainment, and upward mobility of working families, including low-income families from communities of color. [15b-22<sup>31</sup>]

Comment: It is also a policy determination that the Legislature – representatives of the people in our democratic system – declined to enact, after hearing from scores of interested parties and members of the public. [15b-2-19<sup>32</sup>]

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<sup>31</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

<sup>32</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

Agency Response: CARB agrees with the commenter that the ACC II regulations are subject to the APA but disagrees that the regulations violate the APA's standards of necessity, authority, and consistency.

California does need the specific ACC II regulations to protect public health by attaining federal and State standards for ozone and particulate matter pollution, to mitigate the increasingly severe climate crisis, including by meeting California's statutory GHG emissions reduction targets, and to address the disparate pollution burdens of environmental justice communities. As explained in detail throughout the rulemaking record, including in the ISOR,<sup>33</sup> the ACC II regulations contribute critically to these goals.

The commenter asserts that the Legislature has "expressly rejected" conventional vehicle sale phase-out and that such rejection limits CARB's authority to adopt ACC II. CARB disagrees that unsuccessful legislation limits other statutory authority or necessarily indicates the Legislature's view. CARB also disagrees that the Legislature has "expressly rejected" conventional vehicle sale phase-out. The commenter does not specify the bill to which this statement refers, but it may concern Assembly Bill (AB) 1745, the "Clean Cars 2040 Act" introduced by Assemblymember Phil Ting in 2018. That bill would have prohibited, beginning in 2040, the original Department of Motor Vehicles (DMV) registration of passenger vehicles with exhaust emissions of any criteria pollutant or GHG. Setting aside the accuracy of the commenter's assertion that an agency may not impose by regulation a policy that the Legislature declined to pass in a legislative proposal, AB 1745 differs significantly from ACC II. AB 1745 concerned DMV registration and thereby would have prohibited Californians from legally owning and driving new conventional passenger vehicles, while ACC II regulates manufacturers' sale of vehicles in the State. AB 1745 applied to passenger vehicles with any criteria or GHG exhaust emissions, while ACC II includes PHEVs as an optional compliance flexibility.

The commenter may also have intended to invoke AB 1108, introduced by Assemblymember Autumn Burke in 2016, which would have required CARB to adopt a regulation by December 31, 2017, to require that at least 15% of all new passenger cars sold in California be ZE by 2025. The bill was not rejected by the Legislature but, having been introduced only two weeks before the end of the Legislative session, stalled in the committee referral process and did not proceed to a full vote.<sup>34</sup> Again, this unsuccessful legislation has no bearing on CARB's authority to adopt the ACC II regulations. Regarding CARB's authority, see the response to comment C-14 above.

CARB disagrees with the commenter that the ACC II regulations restrict Californians' ability to travel, drive, or access passenger vehicles as a mobility option. The ACC II

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<sup>33</sup> See, e.g., ISOR, Executive Summary, pp. 4-6; ISOR pp. 3-10.

<sup>34</sup> A bill numbered AB 1108 was introduced on March 26, 2015; it concerned beverage container recycling. On August 16, 2016, the bill was "gutted and amended" – a common practice toward the end of legislative sessions – to remove the existing text and add new text addressing ZEV sales. The legislative session ended on August 31, 2016. See [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201520160AB1108](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1108).

rulemaking sets requirements on automakers for new vehicle sales, not mobility options nor used vehicles already in the market. Further, there is no evidence that CARB's vehicle regulations restrict access to purchasing new vehicles.

CARB also disagrees with the commenter's assertion that the right to travel (which bars states from burdening interstate travel), or any right to access mobility options, is violated by State regulation of vehicle emissions. See *Miller v. Reed* (9th Cir. 1999) 176 F.3d 1202, 1205, 1206 (holding that "burdens on a single mode of transportation do not implicate the right to interstate travel" and that there is no "fundamental right to drive a motor vehicle") and *Monarch Travel Services, Inc. v. Associated Cultural Clubs, Inc.* (9th Cir. 1972) 466 F.2d 552, 554 (rejecting the argument that regulations with an effect of increasing travel costs burden the right to travel). Individuals and businesses do not have a right to pollute or engage in actions that harm others and substantially threaten the public health and welfare, and such activities are subject to governmental restriction. (E.g., *Huron Portland Cement Co. v. Detroit* (1960) 362 U.S. 440, 442 ["Legislation designed to free from pollution the very air that people breathe clearly falls within the exercise of even the most traditional concept of what is compendiously known as the police power."]; *Western Indem. Co. v. Pillsbury* (1915) 170 Cal. 686, 694.) As California has long recognized, and as the record here demonstrates, motor vehicle emissions pose a substantial threat to public health and welfare because of their criteria, GHG, and air toxic components. The ACC II regulations, with its tighter ZEV and LEV requirements, is demonstrably a reasonable and justifiable option to achieve, and will directly help achieve, California's goals of limiting criteria, GHG, and air toxic emissions from passenger vehicles.

33. Comment: Commenter suggests that the California Air Resources Board may have a legal obligation to postpone making a final decision on the Advanced Clean Cars II proposal. The rulemaking process requires that relevant information be carefully considered and that stakeholders have a reasonable opportunity to provide input and defend their legitimate interests. There is no exception for significant new information that arrives out of the blue in an untimely fashion. Regulatory decisions like these must ultimately be made in a constantly changing world, but the passage of the IRA represents far more than an incremental shift in the market conditions impacting the feasibility of the ZEV mandates. The carefully crafted balance that has been achieved by this proposal has been toppled by the federal government at the last minute of the eleventh hour. It is a fine proposal, but it should not be finalized until the effects of the Inflation Reduction Act have been vetted and appropriate adjustments have been made. The relentless escalation of the climate crisis is very troubling and requires swift, bold action, but we need to take the time to get this proposal right. In the grand scheme of things, a delay would not severely undermine the proposal or delay the 2035 target date. [15b-4].

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, CARB disagrees with the commenter's assertion that CARB has a legal obligation to postpone ACC II, and CARB has adopted the regulations. CARB satisfied its obligations under the APA for adopting these

regulations, providing meaningful opportunities for stakeholder engagement and public review and comment (see the response to comment C-38 below). Passage of the IRA by Congress does not significantly change the record before CARB on which it made its decision, affect CARB's authority, or directly affect the ACC II requirements (though, the IRA in part provides notable incentives for ZEVs and affirms Congressional support for CARB's GHG emission and zero-emission vehicle requirements, which support ACC II). CARB also disagrees that a delay would not undermine ACC II or its emission reduction goals—a delay could result in at least some vehicles not being subject to the standards for the 2026 and later model years, and thus could hinder reaching the standards for model year 2035. Since the IRA did not pose any legal obligation or factual basis to delay adoption of ACC II, CARB did not do so.

34. Comment: Commenter contends that CARB failed to follow requirements for the Administrative Procedure Act's Standardized Regulatory Impact Analysis ("SRIA")(Gov't Code §11346.3), which requires an assessment of the economic impact of a regulation on California businesses and individuals. CARB's SRIA fails to analyze the harms caused by ACC II to individuals in working families, rural areas, and communities of color, but it fails even more dramatically to assess the harms caused to the small businesses owned and operated in these communities. Independent truckers, contractors and other essential workers who must transport tools or goods in personal vehicles to do their jobs and be paid, food service owners reliant on food trucks and customers reliant on cars, delivery services, drivers for rideshare services, ministers and counsellors, medical personnel and first responders, labor organizers, entertainers and athletes – all require access to affordable, reliable, personal vehicles – as well as ample supplies of electricity, safe and secure electric vehicle charging infrastructure, and (for the many essential workers forced to travel 100 miles or more each day, and for the households where vehicular use is shared by multiple workers on consecutive shifts) much more extended ranges [15b-2-23].

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, contrary to the comment, CARB prepared the SRIA and related analyses that are required under the Administrative Procedures Act and its implementing regulations. The SRIA considered the impacts and benefits of the ACC II regulations on small businesses and families. (See SRIA, pp. 41 [emission benefits]; § 3.2, p. 86, et seq. [direct costs to vehicle owners]; § 3.4, p. 100, et seq. [direct costs on small businesses]; § 3.5, p. 102, et seq. [direct costs on individuals].) These analyses show positive benefits from the ACC II regulations to individuals and small businesses. See also responses to comments A-20 and C-24, above, and E-32 and E-40, below.

CARB agrees that public welfare is enhanced by access to affordable and reliable transportation, adequate supplies of electricity, vehicle charging infrastructure, and zero-emission vehicles with adequate ranges to meet the needs of drivers. (See, e.g., Pub. Resources Code, §§ 25001 [electrical energy and supply].) It is also important to reduce overdependence on petroleum fuels for transportation to mitigate the wide



variety of societal problems created by that overdependence. (See, e.g., Health & Saf. Code, § 43000, subd. (e); Pub. Resources Code, § 25000.5, subd. (a).)

The ACC II regulations are designed to support meeting these policy goals. For example, they include requirements for minimum ranges for zero-emission travel, fast-charging capability, and features that facilitate access to charging infrastructure. They expand the percentage of vehicles that will provide clean transportation, including by encompassing medium-duty vehicles for which manufacturers choose to make subject to the ZEV regulations. This increases the likelihood that ZEVs will be produced that meet the needs for larger vehicles as described by the commenter. They include incentives to increase equitable access to zero-emission transportation in disparately impacted and low-income communities. Note that the ACC II regulations do not apply to heavy-duty vehicles and only optionally apply to medium-duty vehicle manufacturers.

While outside the scope of the ACC II regulations, other activities are being undertaken by the State to expand electrical generation capacity and access to charging infrastructure. See, e.g., response to comment A-20, above, and Master Response 1 in the Response to Comments on the Draft Environmental Analysis.

#### *Performance standard*

35. Comment: “By federal law, the state must be technology neutral when preparing and implementing the proposed rule. The state is not allowed to prepare or implement the proposed rule if it gives an advantage to or inhibits the use of any technology that can be used to meet the federal air quality standards goal of the proposed rule.” [OP-13].

Comment: The commenter states “CARB must set a technology neutral performance-based standard rather than the Zero Emission Vehicle (ZEV) mandate that is currently proposed in the ACC II regulation.

Under Government Code Section 11346.2(b)(4)(A), when CARB proposes a regulation that would mandate the use of specific technologies or equipment, or prescribe specific actions or procedures, it must consider performance standards as an alternative (See Comment A.4 in Attachment A for further details). The Proposed ACC II Regulation is presented as a performance standard by CARB. CARB argues in the ISOR at page 180 that no specific technology is mandated, contradicting the draft regulation that proposes a ZEV sales mandate for passenger cars and light-duty trucks beginning at 35% for 2026 model year and ramping up to 100% for the 2035 model year and beyond. This is not a performance standard; it is a technology mandate. Despite multiple comments by many stakeholders, including the Associations, over the last two years, CARB has explicitly included ZEV technology mandates in its ACC II and Advanced Clean Fleets (ACF) proposals, without the necessary analyses to justify the choice of a sales mandate over a performance-based standard.” [OP-161-36, pp. 2-3. incorporated by reference into comment OP-97]

Comment: CARB is therefore required to conduct these studies [lifecycle emissions on alternatives based on low carbon-intensity fuels] and consider these performance standards as an alternative to the ACC II ZEV mandate, where the alternatives better meet the other Administrative Procedures Act (APA), Office of Administrative Law

(OAL) regulations and Health & Safety Code (HSC) requirements. CARB should not move forward with the ACC II ZEV mandate as it is currently proposed but instead should draft a technology-neutral performance-based standard based on the life cycle emissions of LDVs. [OP-161-36, pp. 4, incorporated by reference into comment OP-97]

Comment: ACC II fails to comply with the APA because it effectively mandates the use of specific technologies.

APA § 11346.2(b)(4)(A) requires CARB to consider performance standards as an alternative whenever CARB proposes a regulation that would mandate the use of specific technologies or equipment, or prescribe specific actions or procedures.

ACC II will establish interim requirements for the percentage of EV sales starting in 2026—the requirement increases by 8 percentage points per year for the first 5 years, and then 6 percentage points per year for the latter 5 years, achieving 100% ZEV sales by 2035. In its ISOR, CARB indicates that its proposed ACC II program is a performance standard because ‘manufacturers can meet this proposed regulation requirements using BEV, PHEV or [fuel cell electric vehicle (FCEV)] technologies and with several options for securing ZEV values. ‘However, CARB also notes that, even if ACC II is considered a prescriptive standard, ‘[a]nything less prescriptive than ACC II in terms of emission limits and requirements for ZEVs erodes the proposal’s ability to secure the emissions reductions needed for meeting California’s public health and climate goals and State and federal air quality standards.’

CARB’s conclusion that ACC II is not a prescriptive standard entirely ignores the prescriptive effect of mandating one specific avenue for compliance— ACC II requires a transition to ZEV technologies rather than setting minimum emission standards that can be achieved through a variety of technologies such as highly efficient ICEVs and low-carbon liquid fuels. Providing flexibility to choose among various ZEV technologies does not change CARB’s clear selection of one compliance pathway, because this ‘choice’ is itself prescriptive. [OP-161-36, pp. A-13 – A-14, incorporated by reference into comment OP-97]

Comment: CARB’s proposed regulations are not technology-neutral if they inhibit or give an advantage to certain technologies over others irregardless of how few or many emissions are created. [OP-117]

Agency Response: The commenters assert the ZEV regulations are prescriptive and that CARB may not adopt a prescriptive standard without considering a performance-based standard. The commenters are mistaken.

Performance-based standards establish objectives with criteria for achieving them. (Gov. Code, § 11342.570.) The criteria do not turn a performance standard into a prescriptive standard. A prescriptive standard establishes the sole means of compliance by specific actions, measurements, or quantifiable means. (Gov. Code, § 11342.590.)

Standards to require ZEVs are performance-based, for vehicles that do not emit exhaust or evaporative emissions. The ACC II regulations establish emission standards and related requirements to ensure the vehicles reliably and consistently meet those standards in a verifiable manner, which manufacturers certify they meet. The ACC II

regulations also establish requirements to ensure that shortcomings may be remedied. These requirements are tailored to the known technologies that are employed to meet them but do not preclude the use of new technologies to meet the performance-based emission standards. The ACC II regulations allow vehicle manufacturers to use any means of meeting those standards so long as the related requirements are met. The ACC II regulations do not give an advantage to any particular technologies. Manufacturers determine the means to comply and presumably do so with the most cost-effective means available.

Moreover, to the extent the criteria of the requirements are themselves standards, they similarly establish performance-based criteria and do not specify the sole means of compliance. To the extent the ACC II regulations or any aspects of them are prescriptive, CARB has met the requirements for adopting such standards. Their application is limited to specific classes of vehicles and their inherent attributes, which is necessary to accurately confirm compliance with the requirements to ensure that motor vehicle emissions are permanently reduced. (Reso. 22-12, p. 17.) It is also necessary in instances to ensure user safety, such as the requirements for electrical and liquid fuel connections. The requirements for ZEVs are required given the necessity to put strong ZEV requirements in place in California to achieve the maximum emission reductions possible of both GHG and criteria emissions. Further, strong ZEV requirements provide more clarity for numerous stakeholders on which vehicle technologies are likely to enter the market. Fueling infrastructure, grid and hydrogen supply expansions, and vehicle supply chain (component manufacturing) changes all rely on long-term investments. See also the response to comment B-5.

In any event, federal and State law do not require either California's vehicle emission standards or any standards to attain the NAAQS to be "technology neutral." Federal and State law do not prohibit regulations that particular technologies are known to be capable of meeting. To the contrary, CARB must demonstrate its regulations are technologically feasible. This is done by analyzing the capability of known technologies to meet the standards, which CARB has done. It is true that the APA requires agencies that adopt prescriptive standards to consider performance standards that are a reasonable alternative and explain their reasons for rejecting reasonable alternatives they choose not to propose. (Gov. Code § 11346.2(b)(4)(A).) To the extent the ACC II regulations may adopt prescriptive requirements, CARB met its obligations to do so under the APA. (ISOR, pp. 180-181.)

In addition to the ZEV regulation provisions in ACC II, new requirements were put in place for criteria emission control through the performance standards for conventional vehicles in the LEV IV regulations. This includes stronger controls on emissions under cold start and aggressive driving conditions and ensuring conventional engine vehicles continue to reduce criteria emissions while the fleet expands with ZEVs.

36. Comment: Multi-technology pathways can help the state achieve faster and more certain emission reductions while expanding ways to reduce greenhouse gas emissions, to comply with the requirements of Government Code Section 11346.2(b)(4)(A). CARB should evaluate and propose performance standards as an alternative to the proposed ACC II ZEV mandate. [OP-161-62, incorporated by reference into comment OP-97]

Comment: Without adequately considering the emissions reductions available from a performance-based vehicle emissions standard, CARB has exceeded its regulatory authority under APA § 11346.2(b)(4)(A). [OP-161-62, p. 7, p. A-15, and Att. D to comment letter, incorporated by reference into comment OP-97]

Agency Response: The commenter contends the ACC II regulations are prescriptive rather than performance-based and improperly limits the technologies that may be used to meet the requirements. As discussed in the preceding response (C-35) and in the response to comment B-5 above, the regulations establish performance-based requirements. They do not limit the technologies that may be used to meet the emission standards.

The commenter also requests CARB consider performance-based standards as an alternative. Even if the ACC II regulations are considered to be prescriptive, CARB considered several alternatives. An alternative that did not include zero-emission vehicle standards did not achieve the objective of reducing and eliminating GHG, criteria, and toxic emissions from vehicles.

### *Outcome determinative*

37. Comment: Valero encourages the California Air Resources Board (CARB) to reevaluate its current approach to the ACC II Program. The proposed ACC II rule seems to have been outcome determinative, designed to meet the Governor's stated goal to electrify the transportation sector. This political goal appears to have foreclosed meaningful consideration of any low carbon option other than electrification – even if such options would achieve the same or better full life-cycle reduction, achieve reductions earlier, achieve reductions at lower cost, and achieve reductions with greater energy security. [OP-141-23]

Comment: Importantly, CARB is prohibited from predetermining a particular method in order to narrow the alternatives it considers for achieving the agency's ultimate policy goals. When examining whether or not alternatives or particular features have been foreclosed by the agency, courts look "to the surrounding circumstances to determine whether, as a practical matter, the agency has committed itself to the project as a whole or to any particular features, so as to effectively preclude any alternatives or mitigation measures that CEQA would otherwise require to be considered."<sup>56</sup> By deeming ZEVs as the only acceptable technologies and not even considering in this rulemaking how other low-carbon technologies could provide less costly and more timely reductions in GHG emissions, CARB is effectively predetermining the outcome of this proceeding. This predetermined outcome is not only arbitrary and capricious but also a violation of CARB's statutory obligations. [OP-141-8]

Agency Response: CARB disagrees with the commenter's characterization. CARB followed the obligations of the APA and CEQA, which ensure fair, transparent, and reasoned consideration of alternatives and public comments and feedback. It is normal and permissible for agencies to have overarching goals and objectives for rulemakings; indeed, these help agencies to evaluate among alternative courses of action. For ACC II, two critical goals were reducing emissions from light-duty passenger vehicles of

greenhouse gases to meet climate targets and criteria pollutants to meet ambient air quality standards.

Though the commenter does not specify here, CARB presumes (based on the comments attached to this cover letter) the “Governor’s stated goal” is Executive Order N-79-20. That Executive Order provided a holistic strategy for the State to reduce emissions from the transportation sector at large to address the climate crisis and public health and safety—within the confines of State and federal law, existing authorities, and technological and economic feasibility—with one goal being all new passenger vehicles sold in the State being zero-emission by 2035. Importantly, the Executive Order did not limit or envision decarbonization of and emission reductions from the transportation sector to be solely from electrification. Nor does ACC II so limit or mandate.

CARB did consider a low-carbon fuel alternative but rejected this alternative in part because it would not result in needed NO<sub>x</sub> emission reductions and has notable supply limitations. See Master Responses 3 and 4 in the Response to Comments on the Draft Environmental Analysis, as well as the response to comment D-8 below.

#### *Notice and comment process*

38. Comment: CARB must conduct a meaningful public notice and comment process for its complex ACC II ZEV mandate. There are significant technical, economic, and legal facts and analysis that CARB has ignored in its process, in violation of the law. CARB should address these process and analysis deficiencies by conducting technical working groups to foster stakeholder participation in scenario development and assessment. It should workshop revised ACC II language before submitting it to its Board for consideration. [OP-161-44, incorporated by reference into comment OP-97]

Agency Response: CARB conducted extensive public engagement during the development of the ACC II regulations and properly followed its notice-and-comment obligations under the APA. CARB held five public workshops and listening sessions from September 2020 through October 2021, in addition to dozens of meetings with stakeholder groups and individual stakeholders. These included assessment and discussion of regulatory concepts, alternatives, data and analysis, and regulatory language. CARB provided the notices and public comment periods required under the law.

CARB disagrees with commenter’s characterization of “facts and analysis that CARB has ignored in its process, in violation of the law.” This comment does not further elaborate what those deficiencies purportedly are, and so no further response is required. Nevertheless, see responses to comments C-18, C-19, C-21 through C-23, and C-35 above with respect to technical and economic feasibility and responses to comments C-1 through C-3, C-11, and C-15 above with respect to federal and State law.

39. Comment: Commenter provided two sets of timely Civil Rights comments on the ACCII regulations, and commenter indicates there has been no CARB staff report or other response to those comments, or other comments. Commenter says there should

be no further progress on this rulemaking until CARB has published a comprehensive response to comments. [15b-2-1]<sup>35</sup>

Comment: Commenter previously submitted extensive comment outlining racial, equity, and civil rights issues that the commenter says are raised by ACC II and commenter says there has been no staff report or other responses to their comments. [T2-15]

Comment: Commenter is requesting today that the Board take additional time to consider and provide a sufficient written response to technical information that has been previously provided by written comments. This information, which includes cost-benefit analyses and overall feasibility conducted by outside consultants, deserves a more meaningful evaluation and a response from CARB prior to final decision. This information analyses have direct implications to the proposed rules' impacts on disadvantaged front-line communities, infrastructure development, energy security, as well as supply chain management. [T2-57]

Agency Response: In developing and adopting the ACC II regulations, CARB has complied with APA and CEQA requirements regarding consideration of and responses to public comment. Neither law requires CARB to respond to comments at a point in the rulemaking process before this FSOR (with the exception, under CEQA, of certain comments concerning environmental impacts, which do not include the comments referenced by this commenter—and CARB did respond to those comments and posted those responses as required by CEQA<sup>36</sup>). In accordance with CARB's legal obligations, responses to the referenced comments are contained in this FSOR. CARB considered the comments, oral and written, submitted to it, before proceeding to adopt the ACC II regulations. CARB disagrees that it should postpone the ACC II rulemaking until it publishes a comprehensive response to comments.

40. Comment: Second, we received a second 15-day Notice of the Availability of Additional Documents, but were shocked and saddened to learn that your agency's commitment to racial equity was again thrown under the bus as some of these additional documents were available solely for in-person review at your office in Sacramento if and to the extent a designated staff member agreed to accommodate an in-person request. As your second 15-day Notice states, after listing TWENTY-FOUR entirely new documents as additions to this rulemaking record, that:

These documents are available for inspection at the California Air Resources Board, 1001 I Street, Sacramento, California, 95814, between the hours of 9:00am to 4:00pm, Monday through Friday (excluding holidays). To inspect these documents please

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<sup>35</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

<sup>36</sup> CARB, Response to Comments on the Draft Environmental Assessment Prepared for the Advanced Clean Cars II Program (Aug. 2022), [ACC II RTC Document \(ca.gov\)](#).

contact Bradley Bechtold, Regulations Coordinator, at Bradley.Bechtold@arb.ca.gov or (279) 208-7266.

Many of these documents can instantly be posted on the CARB website, alongside other documents in this rulemaking record, and made available for actual public review by people who work at real jobs – and cannot take the time to travel to Sacramento for likely more than work day to review these documents. This reversion to an in-person, appointment-only, weekday review is also deeply disrespectful of those at heightened risk of COVID – and this August-only period also ignores the twin chaos of summer vacations and school starts that further impair extended weekday visits to the CARB office. The second 15-day notice process must restart, following online posting and brief content descriptions, of the TWENTY-FOUR new documents that CARB staff has concluded are critical to the defensibility of the proposed ACC II regulation. [15b-2-2].

Agency Response: In response to this comment and to direct requests by others during the pendency of the Second 15-Day Notice, CARB provided electronic copies of documents that were made available by the Second 15-Day Notice that are not subject to copyright.

CARB did not restart the 15-day comment period as requested because these documents were available for public viewing in accordance with applicable law.<sup>37</sup> We note that 12 of these documents are publicly available on other websites at the links provided in the Second 15-Day Notice. Ten of the documents are spreadsheets and workbooks of data and calculations that are not susceptible to meeting requirements that CARB make its documents that it posts on its website accessible to blind and visually impaired people.<sup>38</sup> For this reason, the documents were not posted on CARB's website for this proceeding, as allowed under applicable law.<sup>39</sup>

As stated in the Second 15-Day Notice, the two documents that are subject to copyright are:

- SAE J2534-2/BA\_0500\_202201, "Pass-Thru Extended Feature – Base Document," January 2022, and
- SAE J2534-2/RE\_0500\_202201, "Pass-Thru Extended Feature – Resource Document," January 2022.

CARB does not have a license to publicly post these documents and is not required by the law to do so. The copies of these two documents that CARB acquired for public inspection were made available as described in the Second 15-Day Notice as required under the law. CARB received no requests to inspect these documents.

41. Comment: Commenter notes that Board Resolution 20-33 ("A Commitment to Racial Equity and Social Justice") states, "institutional and structural racism continues to

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<sup>37</sup> Gov. Code § 11347.3(a).

<sup>38</sup> See Gov. Code § 11546.7.

<sup>39</sup> Gov. Code §§ 11340.85, 11347.3(a).

threaten CARB's ability to equitably fulfill its charge so that all people of color . . . are treated without prejudice, bias and derision." Commenter says CARB has treated with derision and bias the intersectional consequences of the ACC II rule, along with the concerns of scores of already-stressed workers who have taken the time to testify in person before CARB to respect their need for affordable, reliable, personal vehicles. Commenter says these workers waited in many cases hours and hours for the opportunity to speak for just one minute [15b-2-25].

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, CARB disagrees that it has treated any comments, concerns, or potential impacts with "derision and bias." CARB considered all testimony and comments prior to finalizing the ACC II regulations and is responding to comments in this FSOR. CARB disagreed with or declined to propose changes based on some commenters' procedural or substantive suggestions for reasons explained in this FSOR.

The commenter is correct that the commenters at the two public hearings on the ACC II regulations were required to wait their turns to testify, as everyone was required to do. The Board Chair may place reasonable limits on the time taken for each public comment, and limiting the time allotted to each speaker at the June 9, 2022, Board meeting was necessitated by the large number of people who wished to provide oral comment and ensure that the Board had the opportunity to hear from and consider the comments by everyone who wanted to testify. It was appropriate given that each oral commenter also had the same opportunity to submit written comments (during the designated comment periods and on the hearing dates) as interested parties who did not provide oral comment. Additionally, oral commenters had the option to speak remotely, allowing them to engage in other activities while awaiting their turns.

42. Comment: The California Air Resources Board's regulatory process, and the Initial Statement of Reason (ISOR) and associated documents, have been conducted through an open, deliberative, and factual manner. The basis for the ACC II regulation has been well reasoned and rational, and in many instances, staff has used conservative assumptions as described below. The process has also allowed for considerable public and stakeholder input through numerous public workshops since September of 2020, with NRDC and other affected stakeholders participating in many of these. [OP-99]

Agency Response: CARB appreciates support for the Advanced Clean Cars II regulations and the way that it conducted its rulemaking process consistent with the Administrative Procedures Act. CARB adopted the final ACC II regulations at its August 25, 2022, hearing.

#### *Flexibility on Environmental Justice Value Categories*

43. Comment: Allow the CARB Executive Officer or Section 177 states to approve additional programs that qualify for credits as new opportunities arise in the evolving ZEV market and equity landscape. [OP-86]



Comment: Commenter proposes establishing an alternative environmental justice value pathway to allow a manufacturer to submit an application to CARB that would include details of the alternative program and metrics/data to demonstrate compliance with specific criteria, such as a statement of need and justification for adopting an alternative program. Environmental justice values would be given based on the manufacturer's sufficient demonstration that the approved criteria are achieved [OP-124].

Comment: New Section to Encourage Innovative Programs: We recommend adding a new section that would allow manufacturers to propose, and the Executive Officer to approve, innovative clean mobility programs designed to increase EVs in equity communities. For example, this provision could allow infrastructure investments in equity communities, which the current regulations do not appear to allow. Other ideas to improve access to and use of EVs in equity communities might include EVs in community car-share or rideshare programs. Or offering vehicle bundles (new or used) that include vehicle, insurance, and fuel. In addition to encouraging new and innovative programs in California, this would also allow the same in states that follow California under Section 177 of the Clean Air Act. We recognize that States' processes related to adoption of new regulatory language may preclude the ability of CARB to propose "open ended" language that would provide Executive Office authority, so we are open to further dialogue about processes that could otherwise provide fast-track approval of new ideas. Our goal is to ensure that new, creative ideas can be proposed and approved to further EV adoption. [OP-133, OP-155, incorporated by reference into comments B1-20, OP-124, T1-8, T1-9, OP-57, OP-98, OP-150, OP-95, T2-34]

Comment: As proposed, the equity credit provisions are specifically tailored towards California's current programs, and it is important that ARB also consider the ability of Section 177 states to implement these same provisions to accelerate public health and air quality benefits across Section 177 states. Since all Section 177 states may not have specific equity programs akin to California, such as Clean Cars for All, ARB should incorporate language that identifies the primary objectives for state programs to qualify, such as accelerating ZEV deployment particularly in overburdened communities or air basins. State agency officials or the equivalent Executive Officer counterparts, subject to their state administrative procedures, could identify those specific programs that meet the objectives of the equity provisions. [OP-99]

Comment: BMW NA is supportive of identifying innovative programs that will increase adoption of electric vehicles in underrepresented communities. These proposals must include components that will have clear metrics for success (raising awareness of ZEV and adoption/purchasing of ZEVs), proven feasibility/impact and defined timeframes. Furthermore, it is key to permit a scope that allows OEMs across all segments to participate with a range of solutions – also beyond the vehicle – within a viable economic model. [15-33].

Agency Response: Commenters recommended that the ZEV Regulation include flexibility for CARB's Executive Officer to approve additional categories of environmental justice values in the future. Commenters desired this flexibility both for California and for Section 177 states that adopt the ACC II regulations. CARB declined to adopt this recommendation for both legal and policy reasons.

California's APA and its implementing regulations require that California regulations subject to the APA (including the ACC II regulations) meet a standard of clarity such that "the meaning of regulations will be easily understood by those persons directly affected by them." (Gov. Code § 11349(c).) The APA implementing regulations provide: "A regulation shall be presumed not to comply with the 'clarity' standard" if, among other things, "the regulation can, on its face, be reasonably and logically interpreted to have more than one meaning[.]" (CCR, tit. 1, § 16(a)(1).)

The Office of Administrative Law, which implements the APA and reviews subject California regulations for compliance with the APA and its implementing regulations, has explained that the clarity standard limits the discretion that subject regulations can provide to State agencies. If a regulation leaves so much discretion to an agency that a directly affected entity cannot reasonably anticipate how the regulation will affect them, or application of the discretion could reasonably and logically result in multiple interpretations or outcomes of the regulation, the regulation is considered insufficient under the California APA clarity standard. CARB determined that open-ended flexibility for the Executive Officer to approve additional categories and amounts of environmental justice values may not fulfill the APA clarity standard. And CARB does not regulate outside California, and CARB regulations may not include an option for Section 177 states that is not available under California law.

As a policy matter, CARB also determined that it is appropriate for any additional environmental justice value categories and amounts to be developed and adopted through the APA notice and comment rulemaking process. This process provides maximal opportunity for the public and stakeholders to review and comment on proposals under consideration and for CARB to make decisions based on this informed input. For the creation of any additional environmental justice value categories, along with their respective procedures and accounting, extensive input and vetting from disadvantaged and low-income communities, other stakeholders, and the public is particularly important. The provisions are intended to affect disproportionately impacted communities that are outside the traditional populations of new vehicle buyers, and rely on manufacturer and dealer participation.

## D. Emission Impacts

1. Comment: Historically we've led the nation on setting strong auto emissions standards — but carbon dioxide is not a pollutant. It is necessary for life on earth to exist. Without it, all plant life would die. Attempting to reach 100% zero-emission vehicle sales by 2030 or even 2035 is a fool's errand. California must lead the way by abandoning the foolish drive to eliminate carbon dioxide. [OP-158]

Agency Response: Carbon dioxide is a gas necessary for life in Earth's ecosystem. However, excessive amounts of carbon dioxide, far beyond levels under which human life has developed and particularly from anthropogenic industrial activities, damages ecosystems and harms human life by changing the climate and exacerbating poor air quality as temperatures rise. Indeed, both State and federal law recognize carbon

dioxide (among other greenhouse gases) as a pollutant.<sup>40</sup> Refer to Section II.A in the ISOR, and cited publications, for a detailed description of the challenges posed by climate change and the need for emission reductions.

2. Comment: If CARB requires all vehicles to be battery electric vehicles (BEV) or fuel cell electric vehicles (FCEV), CARB is simply pushing the emissions “upstream”. An electric vehicle is only as clean as the electricity use to power it. This has further implications for the section 177 states that have adopted California’s automotive emission standards but may not have as clean of electricity as California is lucky enough to have....Furthermore, when evaluating vehicle emissions, life-cycle emissions should be considered rather than day-to-day emissions. Although the average electric vehicle is cleaner than the average gasoline-powered vehicle, it has been demonstrated that after emissions from manufacturing and disposing of the much larger battery are considered... vehicle emissions should be evaluated using a full life-cycle emissions analysis. [OP-117]

Comment: The current energy infrastructure is based on fossil fuels. So all you are doing is replacing energy efficient internal combustion engines with even dirtier sources. [B2-10]

Comment: How can transporting the renewable natural gas made on a farm to a power plant turning it into electricity and then transporting that electricity back to the farm to charge the farm equipment, create less emissions than the farmers powering their equipment directly from their own locally created fuels? Requiring those farmers to put their renewable natural gas into the pipeline is not logistically viable. [T2-54]

Agency Response: CARB is not requiring BEVs and FCEVs, but rather has adopted emission standards on new vehicles to which the rule applies such that, by model year 2035, any new vehicle sold within the State must have zero emissions or meet the emission standards and requirements for a plug-in hybrid electric vehicle (anticipated to contain an internal combustion engine).

CARB did evaluate upstream emission impacts from greater amounts of ZEVs, including BEVs and FCEVs. See Chapter 4.B.3 of the Final Environmental Analysis for air quality impacts analysis and Master Response 4 on page 18 of the Response to Comments on the Draft Environmental Analysis for a description of how lifecycle emissions with light-duty ZEVs in California are lower than combustion engine vehicles, even when using alternative fuels. And California’s electrical power is generated not just from natural gas but also from hydroelectric and renewable energy sources, with the latter increasingly making up larger portions. In the Response to Comments on the Draft Environmental Analysis, see Master Response 1 on pages 7-9 and the response to comment OP-141-15 beginning on page 67 regarding California’s renewable energy requirements and energy investments. California also has other programs for

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<sup>40</sup> E.g., Health & Saf. Code, §§ 38501, 38510, 39013; *Massachusetts v. EPA* (2007) 549 U.S. 497, 528-532; 74 Fed. Reg. 66,496 (Dec. 15, 2009).

controlling upstream emissions more directly, such as LCFS, Cap-and-Trade, and the Renewable Portfolio Standard.

Further, farmers can still purchase conventional vehicles up through 2034, and PHEVs thereafter, where liquid gasoline or diesel fuel alternatives are a viable fuel option. Diesel conventional vehicles can use biodiesel alternatives produced locally. If automakers offer flex-fueled conventional vehicles on the market, locally produced ethanol can be used. However, ACC II is not requiring automakers to market FFVs. The ACC II regulations also do not preclude a facility from using renewable natural gas generated on-site.

3. Comment: It is argued that the environmental impacts outweigh the economic costs of the regulation, however, there is some evidence that suggests environmental impacts may potentially be exaggerated. Environmental Research Letters published the article, "Environmental and economic impact of electrical vehicle adoption," where the authors conducted a comprehensive impact assessment of battery electric vehicle (BEV) adoption (Chen, Carrel, Gore, & Shei, 2021). In this article the authors state that "[a]lthough BEV adoption leads to decreases in tailpipe emissions, increased manufacturing activity as a result of productivity increases or subsidies can lead to growth in non-tailpipe emissions that cancels out some or all of the tailpipe emissions savings". Additionally, the Emissions Analytics released a newsletter in May 2022 highlighting research that demonstrates pollution from tire wear can be 1,850 times worse than car exhaust emissions in real-world settings. Since CARB does not take tire wear emissions into consideration when evaluating the cost versus the benefit of the regulation, the proposed environmental impacts may be misleading. Emissions Analytics first released information in their 2020 press release that pollution of tire wear can be 1,000 times worse than car exhaust emissions, however, since then they have conducted more testing and analyses under a wide range of driving conditions and performed a detailed chemical analysis. Tire wear mass emissions were measured by high-precision scales to weigh all four wheels (tires and rims together without detaching) over at least 1,000 miles on real roads along with a proprietary sampling system that collects particles at a fixed point immediately behind each tire that are drawn into a real-time detector measuring the size of distribution of particles by mass and number. Particles from 10 microns down to 6 nanometers were measured. Tailpipe particles were measured using a diffusion charger analyzer for dynamic mass concentration and condensing particle counter for number concentration, coupled with a standard Portable Emissions Measurement System (PEMS). Their results indicate that tire wear emissions are 1,850 times greater than tailpipe emissions. Additionally, they discuss risks associated with battery electric vehicles (BEVs): battery weight can result in tire emissions that are almost 400 more times greater than real-world tailpipe emissions. [OP-103]

Comment: In addition, ZEVs are not the sole answer to our environmental woes. They still create brake and tire dust. [T1-25]

Agency Response: CARB agrees that ZEVs are part of a broad array of measures to address the adverse environmental impacts of contemporary society. However, commenter is mistaken regarding tire wear emissions: vehicle brake wear and tire wear emissions are accounted for in the environmental impact analysis of ACC II. See

Appendix D of the ISOR for methods and results of the emissions inventory analysis, and Chapter 4.B.3 in the Final Environmental Analysis for an evaluation of air quality impacts, particularly Table 12 and Figure 6. This analysis shows notable decreases overall in fine particulate matter emissions (two tons per day or 4,553 tons by 2040) from ACC II even considering particulate matter emissions from tire wear that may be exacerbated by comparable vehicles that, all else being equal, are heavier for battery-electric versions than the corresponding conventional versions. CARB notes, though, that it is not foregone that light-duty vehicle weight and associated particulate matter emissions will increase if a vehicle electrifies. Although some electric vehicle components may be weight intensive, such as battery packs, automakers may offset this with weight reduction in other components or the vehicle body. It would be speculative to project a net increase in vehicle weight as a result of ACC II. As such, CARB assumed tire wear particulate emissions are similar for all vehicle types and brake wear declines for ZEVs with regenerative braking capability which reduces the demand on friction brakes.

CARB further notes that commenter's framing is unclear and potentially misleading. Commenter does not specify the actual volume of emissions, just that tire wear percentage might be magnitudes higher. As tailpipe emissions go down, the tire wear emissions (even if not changing) will look to be a larger share of the total emission inventory, even as absolute emissions are falling.

Regarding "increased manufacturing activity", refer to Master Response 4 beginning on page 18 of the Response to Comments on the Draft Environmental Analysis for a description of how staff evaluated lifecycle emissions.

4. Comment: Evaluate the impact of the proposed ZEV penetration on the state-wide particulate matter (PM) inventory (notably, due to heavier battery electric vehicles (BEVs)), especially in PM2.5 nonattainment areas. [OP-161-86, incorporated by reference into comment OP-97]

Agency Response: This is commenter's summary of previous, pre-rulemaking comments, which themselves were not submitted. CARB did evaluate particulate matter impacts. See preceding response (D-3).

5. Comment: Provide data regarding the expected emission impacts of medium duty vehicle travel that is in towing mode. Note: CARB presented some verbal comments about the emissions impact of this regulation but has not provided emission calculations. [OP-161-89, incorporated by reference into comment OP-97]

Agency Response: This is commenter's summary of previous, pre-rulemaking comments, which themselves were not submitted. CARB did provide this data. The expected emission impacts from towing are discussed in the SRIA (Appendix C of the ISOR), which included data on the emission impacts for the proposed MDV PEMS in-use standard that would affect towing emissions primarily from diesel vehicles. Figure 2 from the SRIA on page 30 shows the baseline emission rates and the emission rates for MDVs meeting the proposal. The baseline emission rates were calculated based on vehicle operation data collected by CARB, which correlates vehicle emission rates and vehicle speed. Although towing emissions were not included in the baseline

calculation, it shows that a significant reduction is still achieved from operation at the lower vehicle speeds and during higher vehicle speed operation. If the towing emissions were included in the baseline calculation, the reductions would be 4-6 times larger. With these emission rates an annual reduction can be calculated.

For additional emissions data during towing, CARB conducted testing on several diesel MDVs and presented the data in Appendix H of the ISOR. The data shows emissions for two MDVs during towing at 80% gross combined weight rating (GCWR) with emissions four to ten times larger than normal vehicle operation at half payload. Following release of the ISOR, further testing was conducted on gasoline MDVs while towing; these data were added to the rulemaking record in the Second 15-Day Notice.<sup>41,42</sup> The gasoline emissions data is evaluated using the moving average window (MAW) standards shows similar emissions increase while towing as the diesel vehicles.

6. Comment: CARB fails to consider the leakage potential of its ZEV proposal, based on an accurate life cycle analysis of the greenhouse gas (GHG) emissions associated with electric vehicles and associated infrastructure, as well as residual demand for liquid fuels for internal combustion engine vehicles (ICEV) remaining in 2035 and beyond. CARB has a responsibility to minimize the “leakage” potential of any regulatory activities. As part of this responsibility, CARB must analyze the potential for emissions reduction activities in the state to be offset by an equivalent or greater increase in GHG emissions outside the state. This analysis necessarily requires estimating emissions impacts outside the state, including how higher in-state power sector costs would drive greater economic investment outside of California, potentially resulting in increased emissions outside of the state, which CARB has failed to do. CARB acknowledges that “ICEVs will remain in use on California’s roads well beyond 2035,” but fails to account for the possibility that competitive disadvantages to California oil and gas production and refinery businesses will either drive these businesses out of state or force these businesses to shut down, requiring California to import petroleum or refined petroleum products to meet remaining demand. [OP-161-51, incorporated by reference into comment OP-97]

Comment: CARB fails to consider the leakage potential of its ZEV proposal, based on remaining demand for liquid fuels for ICEVs remaining in 2035 and beyond. CARB has a responsibility to minimize the “leakage” potential of any regulatory activities. As part of this responsibility, CARB must analyze the potential for emission reduction activities in the state to be offset by an equivalent or greater increase in emissions of GHGs outside the state. This analysis necessarily requires estimating emissions impacts outside the state, which CARB has failed to do. CARB acknowledges in its ISOR that “ICEVs will remain in use on California’s roads well beyond 2035,” but fails to account for the economic and emissions consequences that would occur if disadvantages to

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<sup>41</sup> California Air Resources Board. 2022. PEMS data of MY2020 Ford F250 class 2b gasoline used for MAW analysis. CARB2022xxx, Second 15-Day Notice.

<sup>42</sup> California Air Resources Board. 2022. PEMS data of MY2021 Silverado 2500 Class 3 gasoline used for MAW analysis. CARB2022yyy, Second 15-Day Notice.

California oil and gas production, refining, and renewable fuel businesses ultimately result in greater reliance on imports to meet remaining demand for non-transportation fuels impaired by this rulemaking and/or for residual transportation fuel demand. [OP-141-1]

Comment: [T]he ISOR does not fully analyze and minimize leakage associated with electricity demand, the source of which will be out of state as California struggles to increase its own grid capacity and the increased risk of wildfires. [T2-1]

Comment: Commenter states “CARB does not consider how the Proposed Regulation could cause businesses to relocate to other states.” [OP-141-12]

Agency Response: The comments assert that CARB must analyze “leakage” of emissions and failed to do so. Commenters are mistaken. “Leakage” in this case means emission increases outside California that offset emission reductions in California. (Health & Saf. Code, § 38505.) CARB analyzed potential emissions outside California. See the response to comment OP-141-1 on pages 55-56 and Master Response 4 on page 18 of the Response to Comments on the Draft Environmental Analysis for responses on leakage and lifecycle emissions, respectively. The analysis of the ACC II regulations shows that the GHG emission reductions are significant. The potential emissions from manufacturing outside California that may not otherwise occur but for the regulations cannot be estimated with any reasonable accuracy given the extent of significant uncertainties and variation regarding such emissions. These uncertainties and variations include manufacturing location, sources of materials and components, process technologies used at various facilities, local environmental regulations in foreign countries, etc. However, numerous studies have shown the lifecycle GHG reduction potential of existing ZEVs, including GHG emissions from well-to-wheel operations and vehicle manufacturing and disposal. The emission reductions within California from the ACC II regulations are expected to outweigh emissions associated with manufacturing and result in a significant beneficial environmental impact. See Master Response 4 at page 20 of the Response to Comments on the Draft Environmental Analysis.

Moreover, electricity produced out of state and used in-state for ZEV fuel demand will be controlled in separate programs given that imported electricity is included in the AB 32 GHG emissions inventory and therefore subject to the SB 32 statutory emission reduction target for 2030. Any electricity transmitted (regardless if from in state or out of state) was addressed in the ACC II analysis, as the emissions factors used reflect compliance with the SB 100 Renewable Portfolio Standard targets, as explained in Master Response 4. This is described in further detail in Appendix D of the ISOR and the response to comment OP-25 in the Response to Comments on the Draft Environmental Analysis (page 81).

CARB also considered forecasts of electricity supply and costs. The evidence in the record does not show that the demand for electricity from the ACC II regulations will significantly increase retail electricity prices, which are subject to regulatory controls. See Master Response 1 at pages 6-9 of the Response to Comments on the Draft Environmental Analysis; Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations (ACC II regulations), pp.

34-35, Fig. 4. Because of the planning and investments underway to ensure an adequate energy supply at reasonable costs, the record does not show that significant numbers of businesses are expected to relocate outside California because of the effects on retail electricity costs of the ACC II regulations. Electricity produced out of state and used in-state for ZEV fuel demand will be controlled in separate programs given that imported electricity is included in the AB 32 GHG emissions inventory and therefore subject to the SB 32 statutory emission reduction target for 2030.

CARB did analyze the impact of the ACC regulations on demand for liquid fuels. Please refer to the ISOR Appendix D for a description of staff's analysis related to upstream fuel production and delivery. Staff assume oil extraction and petroleum production and delivery activities will decline proportionately to declining gasoline demand from the passenger vehicle fleet. Staff estimate sufficient in-state production of gasoline will remain because of the continuing in-state demand from conventional vehicles that will remain in use for years to come. The regulations are designed to be feasible in the time provided, and so will minimize the potential for leakage.

Lastly, comment OP-161-51, at p. A-3, fn. 14, presents a scenario where the proposed regulation begins to be implemented, resulting in closure of petroleum refineries, but then is subsequently withdrawn or substantially not complied with, purportedly because of a hypothetical failure or infeasibility, creating a situation where demand for liquid petroleum fuel remains or increases but is not capable of being met.

CARB is not required to, and did not, analyze this alternative for several reasons. CARB is not required to analyze every possible circumstance among an infinite spectrum; CARB must consider reasonable alternatives. (See Gov. Code, § 11346.2, subd. (b)(4); Cal. Code Regs., tit. 14, § 15126.6.) This alternative is not amongst the reasonable. Furthermore, it is, in essence, a different proposal under different starting circumstances and one that does not meet the objectives of the regulation. Based on the evidence in the record, it is not likely to occur. The technological and economic feasibility of the regulation is well established. CARB is not required to analyze the potential impacts of failures of its proposed regulation or potential future changes to its proposed regulations. The evidence does not show that refineries would shutter completely leading to a lack of petroleum fuels for the conventional vehicles that will remain on California's roads for decades to come, continuing to provide significant market demand for fuel, in addition to remaining demand in other sectors of the economy and outside California.

7. Comment: CARB completely overlooks the significant current and projected reductions in GHG emissions associated with the liquid transportation fuel pool that are occurring in response to the LCFS, the federal Renewable Fuel Standard (RFS), and interest from shareholders to reduce GHG emissions associated with the production of fuels. Production of fuels with lower carbon intensity has already resulted in significant reductions in GHG emissions attributable to the domestic transportation fuel pool and, due to the continued success of the LCFS and RFS, there is significant and increasing private investment in low-carbon fuel technologies that will further expand GHG reductions in the transportation economy. Further, numerous companies involved in both exploration and production of crude oil as well as production of both renewable and nonrenewable liquid fuels have begun projects to sequester, capture,



or displace carbon, further reducing the GHG emissions associated with liquid fuels in the transportation sector. [OP-161-61, incorporated by reference into comment OP-97]

Comment: CARB has authority to prescribe standards for new motor vehicles, but CARB should take caution in establishing standards that undermine other critical statutorily-authorized programs such as the LCFS. The LCFS is a proven GHG reduction program. CARB should seek to harmonize the continued success of the LCFS with a mobile source program that incentivizes investment in a broad range of low-emission technologies rather than limit innovation in a manner that stifles the progress made by other programs...

The EO acknowledged the need for an extension to the LCFS program beyond 2030 as the transition of California's light-duty fleet is implemented. Moreover, the EO does not mandate, as CARB proposes, a specific zero-emission technology at the expense of others. By prescribing specific zero-emission technologies, CARB unreasonably ignores and frustrates the vast emission reduction framework achieved via the LCFS. [OP-141-37]

Agency Response: CARB disagrees with the assertion or implication that the ACC II ZEV regulation and the LCFS may be in conflict, and instead views them as complementary programs.

The LCFS regulation requires fuel producers and importers to reduce the average statewide carbon intensity of transportation fuels and includes a credit mechanism to provide flexibility to regulated parties to meet the applicable standards. This framework results in a strong market-based incentive for low carbon fuels, including renewable fuels, electricity, and hydrogen, which can generate credits to be sold to other regulated parties for their compliance. In this way, the LCFS regulation is working to reduce lifecycle GHG emissions from transportation fuels as commenters note. The emissions benefits associated with the LCFS regulation have already been accounted for in the regulatory baseline, so the commenter incorrectly asserts that CARB "completely overlooks the significant current and projected reductions in GHG emissions associated with the liquid transportation fuel pool." Furthermore, any low carbon fuels that are produced and sold as a result of the LCFS regulation would not result in new benefits by including these fuels in the proposed regulation. Conversely, when estimating the benefits of the LCFS regulation and its amendments, staff recognized that the LCFS regulation by itself would not be sufficient to encourage manufacturers to begin producing ZEVs because it would mean manufacturers would need to switch to a new vehicle technology and a new fuel type rather than continue producing conventional vehicles that operate on a low-carbon variant of the same fuel. Therefore, the emissions benefits associated with increased adoption of ZEVs were not attributed to the LCFS regulation and are instead properly attributed to the ACC II ZEV regulation.

Overall, the ACC I and ACC II programs are vehicle emission regulations. Meeting the emission standards is expected to affect the types of fuels passenger vehicles use in a way that supports, rather than conflicts, with the carbon intensity reduction requirements of the LCFS. LCFS is a transportation-fuels performance standard that

requires increasingly low-carbon fuel alternatives for the types of fuels demanded by passenger vehicles and other mobile sectors. The LCFS supports both the transition to ZEVs and the decarbonization of legacy internal combustion engine vehicles on the road. See also responses to comments B-3 (regarding a low-carbon fuels alternative) and C-2 (regarding a lack of conflict with RFS) above. It should also be noted that the ACC I and ACC II programs require increasing numbers of ZEVs that present unique emissions benefits compared to existing vehicles; namely, that ZEVs have the inherent capability of emitting no tailpipe emissions of criteria pollutants or GHGs, and emit reduced emissions of PM compared to conventional vehicles (as a result of regenerative braking).

8. Comment: I strongly encourage you to adopt regulations guided by life cycle assessment (LCA) emissions analysis. Unlike regulations which only consider tailpipe emissions, LCA based regulations account for the full scope of vehicle environmental impact. To only focus on tailpipe emissions is to discount very important big picture environmental factors such as the carbon net negativity offered by ICE renewable fuels production, adverse environmental impact of BEV and battery production, and adverse environmental impact of electricity production for BEV propulsion. [OP-174]

Comment: Has the true life-cycle of CO2 emissions really been calculated properly?

1. Vehicle production which includes CO2 emissions released during all vehicle stages of production processes.
  - a. This would include the extraction of raw materials and include the final vehicle assembly.
  - b. Where will we get the raw materials from? This has national security implications.
  - c. This includes the production of the truck and the large lithium-ion battery.
2. Energy production and consumption which includes CO2 emissions released during the production of energy (e.g. the production of electricity at a power plant, or the refining of diesel fuel or gasoline from crude oil).
  - a. This would include the CO2 emissions from fuel consumption of the internal combustion engine.
3. Vehicle disposal and recycling which includes emissions related to the disposal of or recycling of the truck and all its related parts which would include the recycling of any lithium-ion batteries or other technologies to power the vehicle.

Is there a method to completely recycle a lithium-ion battery now or will some of this end up in a landfill? Good question. [OP-75]

Comment: SEMA believes that, before this regulation is adopted, further analysis of the full emissions impacts of BEVs should be analyzed and reviewed by CARB to determine if, when factoring upstream and downstream emissions impacts, BEVs have less of an emissions impact than ICEVs. [15-5]

Comment: Before this regulation is adopted, further analysis of the full emissions impact of battery electric vehicles should be analyzed and reviewed by CARB to determine if, when factoring in upstream and downstream emissions impacts, battery electric vehicles have less of an emissions impact than internal combustion engine vehicles. [T2-46].

Comment: The life cycle assessment of the manufacturing of parts for these vehicles [Evs] far exceed the climate impacts that we hope to negate. [B1-23]

Agency Response: Though the ACC II regulations target direct vehicle emissions, CARB, in fulfilling its statutory obligations, considered full emissions and environmental impacts of the regulations. CARB conducted a full and robust environmental analysis, which included evaluations of lifecycle emissions, low-carbon fuels, BEV and battery production, and electricity generation. In the Response to Comments on the Draft Environmental Analysis, see Master Response 2 regarding semi-precious metals mining impacts, Master Response 3 for an evaluation of low-carbon fuels as an alternative, Master Response 4 regarding lifecycle emissions; see also Final Environmental Analysis chapter 4.B.3 for air quality impacts analysis, including from electricity generation. Further, note that California has a number of separate requirements on transportation fuel production and feedstock collection to reduce upstream emission impacts.

9. Comment: Even if other states adopt California’s internal combustion engine ban, global climate change outcomes will remain unchanged. [15b-2-16]

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, the commenter is incorrect: the ACC II regulations do not ban internal combustion engines and are estimated to significantly reduce climate-changing emissions. Reducing such emissions are necessary to reduce the effects of climate change.<sup>43</sup>

10. Comment: Although it is not stated explicitly, the emission reduction analysis shown in Appendix D of the ISOR appears to include a GHG tailpipe reduction in MY 2026 due to increased ZEV penetration. However, in MY 2026 manufacturers will be governed by the existing GHG tailpipe fleet average standards imposed by the ACC I GHG regulation or the recently adopted federal standards. Those standards allow manufacturers to include ZEVs in the fleet average, which means that emission reductions from ZEVs can be offset by emission increases elsewhere in the fleet. NRDC does not have manufacturer-specific compliance plans for MY 2026 but as a general rule we have not assigned any GHG tailpipe reductions to increased ZEV penetration under ACC I. Manufacturers may choose to voluntarily over comply with the GHG tailpipe fleet average in MY 2026 in anticipation of a future rule that removes the ability to include ZEVs in the fleet average, but our understanding is that from a legal

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<sup>43</sup> See, e.g., ISOR references USGCRP 2018. U.S. Global Change Research Program. 2018. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II. [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. GCRP, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018; Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. 2018. Indicators of Climate Change in California. May 2018. <https://oehha.ca.gov/media/downloads/climatechange/report/2018caindicatorsreportmay2018.pdf>.

standpoint they are not required to do so. Assuming that new federal and/or State GHG tailpipe standards are adopted for MY 2027 and beyond, this issue only applies to MY 2026. [OP-99]

Agency Response: The commenter describes different scenarios for modeling vehicle GHG emissions and recommended CARB reflect these in its analysis, although conceded the changes would not have a significant impact. Although it is possible there could be an off-setting increase in MY 2026 tailpipe GHG emissions due to the use of ZEVs in the fleet averaging provisions of ACC I, staff did not model such a scenario for the following reasons: (1) the 2026 federal fleet average standard is in place and will be more stringent than the current California ACC I regulation, which will likely require manufacturers to sell cleaner (i.e. lower GHG-emitting vehicles) to meet the standards; (2) it would be costly for manufacturers to undo changes that have been implemented to comply with current standards under the ACC I regulation such as lightweight materials, aerodynamic body designs and more efficient engine/transmissions; and (3) such back-sliding would make the manufacturers ill positioned to meet future Federal standards.

11. Comment: The commenter states “CARB must provide justification as to why rescinding the SAFE rule would result in an increase in BEVs in the State’s baseline fleet from ~11% to ~19% in 2026. The Emissions Inventory Methods for the ACC II analysis (ISOR Appendix D) appear to update the baseline BEV and PHEV sales following the rescinding of the Safer Affordable Fuel-Efficient Vehicles (SAFE) rule. However, in the newest version of EMFAC released (v1.0.2), the light-duty auto (LDA) population in 2026-2050 does not appear to change relative to the population from the previous version of EMFAC (v1.0.1), which included the SAFE rule. It is not clear how CARB has derived these new ZEV vehicle baseline population values presented in the ISOR Appendix D, and their basis for increasing the BEV population baseline based on the rescinding of the SAFE rule is similarly unclear. The SAFE rule sets a standard for GHG emission reductions, not a mandate of increased BEV and PHEV sales. CARB must provide justification as to why this would result in an increase in BEVs in the State’s fleet from ~11% to ~19% in 2026 given the SAFE rule does not require the sale of ZEVs and provide EMFAC runs to show where how this new population baseline was derived to ensure transparency in their emissions inventory development through this rulemaking process. [OP-161-78, incorporated by reference into comment OP-97]

Agency Response: While the newest version of EMFAC does reflect the repeal of the SAFE rule, it does not currently reflect the recent federal GHG standards implemented by the U.S. EPA in 2021. In this rule, U.S. EPA staff projected nationwide ZEV sales as a regulatory compliance mechanism in model years 2023-2026, projecting nationwide ZEV sales fractions of 10%, 12%, 16%, and 17% for passenger cars and 5%, 9%, 11% and 17% for light-trucks in those model years, respectively. Given California ZEV sales fractions have historically been higher than the national average, CARB believes it was appropriate to reflect the impact of the newly adopted federal GHG standards and to increase the ZEV sales fractions in the California fleet in those model years accordingly. CARB made the adjustments using the U.S. EPA CAFE Compliance and Effects Modeling System (CCEMS) output associated with the federal rule. This output

provided year-by-year nationwide sales fractions by technology type for passenger cars and light trucks. With this information, CARB calculated the year-over-year incremental change in nationwide ZEV sales fractions by technology type for passenger cars and trucks and applied those incremental changes to the California ZEV sales fractions for model years 2023-2026. When those changes are applied, the combined ZEV (i.e., BEV + PHEV) sales fractions in the California fleet increase substantially from 10% in 2022 to 22% in 2026. The specific baseline sales fractions derived from this analysis are presented in Appendix D of the ISOR.

## E. Economic Impacts

### Vehicle Costs

1. Comment: The ZEV technology package costs used in the ISOR have been reduced relative to those used for the Standardized Regulatory Impact Assessment (SRIA). NRDC appreciates staff's engagement on cost issues and use of more recent data. Even with those changes, however, the projected ZEV costs used in the ISOR are significantly greater than those derived by other recent authoritative analyses. [ICCT and BNEF] [OP-99]

Comment: Using the ISOR estimates, ZEVs reach price parity with conventional vehicles much later than in the other analyses referenced below. Although staff's recommended stringency is not directly tied to price parity, more rapid cost reduction would provide additional support for the accelerated MY 2029-2034 trajectory recommended by NRDC. [OP-99]

Agency Response: CARB appreciates NRDC's willingness to provide input to CARB related to ZEV costing and understands that NRDC still believes the costs CARB used to be too conservative. CARB determined that the ZEV standards are the maximum feasible, based on the evidence in the record, considering the relevant factors. These include the time to develop and implement the technology and necessary aspects of the standards, like battery durability, which do not seem to be accounted for in the ICCT and BNEF analysis. Even with higher costs relative to those cited by the commenter, the ACC II regulations still provide net benefits to Californians.

2. Comment: We reviewed ARB's assumptions on battery costs and found that these are well aligned with the best available evidence and the scientific literature. [OP-149]

Agency Response: CARB acknowledges the commenter's review of staff's assumptions on battery costs and appreciates that the commenter believes them to be aligned with the best available evidence and scientific literature.

3. Comment: Businesses purchasing ZEVs will face significantly higher purchase costs. Today, the incremental cost for a ZEV compared to an ICE vehicle with similar features, capabilities, and range is well over \$10,000 for small vehicles, and well over \$20,000 for high-end sedans, SUVs, and pickup trucks. The California Air Resources Board (CARB)-issued Standard Regulatory Impact Report (SRIA) for the ACC II proposed regulation assumes that the current price increments will diminish sharply between now and 2035, due to improved and simplified battery cell and pack designs,

introduction of new battery chemistries, new manufacturing techniques, and economies of scale from increasing production volumes.

Even if the SRIA's optimistic assumptions are realized, however, price differentials will remain significant through 2035 for larger vehicles used by businesses, such as pickups and vans. For example, CARB estimates that the incremental manufacturing cost for a high-end battery-powered electric vehicle (EV) pickup with towing capacity will be \$11,600 in 2026 and remain at \$4,000 above a comparable ICE vehicle in 2035. The implication is that it will take many years of operational savings to offset the higher up-front incremental costs resulting from purchases of more expensive ZEVs. [OP-161 Attachment E (p. 3-4)<sup>44</sup>]

Agency Response: CARB made several adjustments to BEV, FCEV, and PHEV attributes and costs after the SRIA was released based upon stakeholder comments and newer information that became available, such as Argonne National Laboratory (ANL)'s advanced vehicle technology study.<sup>45</sup> The details of those changes are explained in Section X.A.1. of the ISOR. Some non-battery cost formulas were adjusted for all the technologies, mechanical all-wheel drive (AWD) delete costs for conventional ICE powertrains were accounted for, adjustments to FCEV specific costs and attributes were made, usable battery energy (UBE) percentages were reduced (increasing total battery energy (TBE) and battery pack costs) for BEVs and PHEVs to better account for battery durability requirements, ACC I GHG technology incremental costs slightly increased, and towing package motor power was adjusted.

The regulation does not require every vehicle to be a BEV. FCEVs and PHEVs are additional technological pathways within the regulation. In the segments that are more difficult to electrify, like long range, towing capable pickups and SUVs, PHEVs and FCEVs may be a better fit. CARB's fleet modeling showed that no towing package BEV pickups or SUVs were chosen due to the higher incremental cost relative to their FCEV and PHEV counterparts. The towing packages were also incremental to base conventional vehicles. Staff did not include higher towing level packages that are available on conventional vehicles like high output diesel or gasoline engines, larger fuel tanks, or other components that may also add significant incremental cost which would effectively reduce the incremental cost of those analogous BEV, PHEV, and FCEV vehicle technology packages. CARB's analysis showed that the average incremental vehicle cost per vehicle is projected to be \$1,119 for model year 2035.

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<sup>44</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

<sup>45</sup> ANL 2021. Islam, Ehsan Sabri, Ram Vijayagopal, Ayman Moawad, Namdoo Kim, Benjamin Dupont, Daniela Nieto Prada, and Aymeric Rousseau. 2021. A Detailed Vehicle Modeling & Simulation Study Quantifying Energy Consumption and Cost Reduction of Advanced Vehicle Technologies Through 2050. Report to the US Department of Energy, Contract ANL/ESD-21/10, Energy Systems Division, Argonne National Laboratory. <https://publications.anl.gov/anlpubs/2021/06/167626.pdf>.

Some vehicle segments and technology combinations may experience lower incremental manufacturing costs than their conventional ICE counterparts and other combinations may be higher.

4. Comment: The towing requirements established by ARB for a subset of BEV SUVs and pickup trucks lead to greatly inflated cost estimates. The towing requirements as formulated require battery capacities much larger than the battery capacity used in BEV pickups currently on the market.

ARB should reexamine the assumptions that require large increases of battery capacity on towing package BEVs. ARB's cost model for pickup trucks requires between 102 and 131 kWh of additional battery capacity. In the case of the 'base' BEV pickup model, this additional battery is larger than the battery in non-towing models (i.e., more than double the battery capacity), meaning that the "300 mile" BEV pickup model is modeled as having over 600 miles of range when not towing, a result which artificially inflates BEV costs and places them much higher than other powertrain options. [OP-172].

Agency Response: With the requirement to reach 100% ZEV and PHEVs by 2035, staff made its best effort to characterize the technology and project future costs for all vehicle segments. Several existing conventional ICE powertrain pickups and larger SUVs are capable of towing significant mass while also retaining the ability to refuel quickly. Many of those vehicles also have options to add larger fuel tanks to retain reasonable ranges while towing. Staff modeled towing capable pickups and larger SUVs with similarly capable BEV, PHEV, and FCEV powertrains to analyze what those vehicles would cost consumers that require that capability. The results of that analysis showed that towing capable PHEV and FCEV technology packages were significantly more cost effective and thus chosen by staff's fleet modeling scenarios over the BEV versions in all cases.

5. Comment: We agree with the decision to include a delete cost for mechanical all-wheel drive (AWD) systems when considering the cost of electric drive AWD system. However, UCS believes that the estimate of \$500 is too low. Based on research commissioned by UCS and the Center for Applied Environmental Law and Policy (see attached report), we believe that mechanical AWD systems have a cost of \$1,409, based on the same Manufacturers' Suggested Retail Price (MSRP) and Retail Price Equivalent (RPE) approach used by ARB. Using ARB staff's estimate of \$325 for shared AWD and electric drive AWD components, the delete cost for mechanical AWD should be increased to \$1,084. [OP-172]

Agency Response: In the absence of teardown cost information similar to what was used for other components, CARB relied on the best available information to estimate an AWD mechanical delete cost based on retail cost differences between FWD and AWD models of the same trim levels. The details of that analysis can be found in Section X.A.1. of the ISOR with calculations shown in Table X-1.

The commenter included its own analysis of what they believe the AWD mechanical delete cost should be. However, the report included with the comments is overly brief and lacks the level of detail needed to fully understand whether the analysis is in direct

manufacturing costs or retail price equivalent and it is unclear what components the \$1,409 was covering. That analysis appears to include a technology known as secondary axle disconnect (SAX) that mechanically decouples the secondary axle in an AWD system to reduce parasitic drag and improve fuel economy. SAX is a technology included in fleetwide analysis of what it would cost to meet EPA's 2026 GHG standards. Staff already captured the cost of that technology within the GHG reduction equipment technology removal costs portion of the costs that are deleted from a conventional vehicle. Details of that cost can be found in Section VI.D. of the ISOR Appendix G: ACC II ZEV Technology Assessment. Based on staff's assessment, it expects the \$1,409 was a retail price equivalent for the complete AWD system as staff found a similar price difference (\$1,500) for one of the two models surveyed. If this is the case, then the difference between staff's calculated non-shared direct manufacturing costs (\$500) and the commenter's after correcting for RPE and removing shared costs (\$614) is only \$114 instead of the \$1,084 suggested by the comment.

6. Comment: For the fleet as a whole, a wide range of vehicle types will see savings. Roush found that the incremental powertrain cost of purchasing a BEV instead of an ICEV in 2030 will be lower for almost all vehicle subclasses and packages. When the Roush projections are combined on a fleetwide average basis, the incremental powertrain cost of purchasing a BEV is cheaper than an ICEV in both 2030 and 2035, regardless of the choice of ICEV technology.

Roush also found that for every vehicle subclass and segment analyzed, it is less expensive to own a BEV purchased in 2030 over the life of the vehicle than it is to own a gasoline or diesel vehicle. And in almost every case there was TCO parity with ICEVs at the time of purchase in 2030. The payback for large premium SUV BEVs is estimated to take 2 years and the payback for premium pickup BEVs is one year after purchase in 2030. For a full summary of the preliminary results of this analysis see Attachment A.

These preliminary results, which are expected to be finalized shortly, reinforce the fact that ARB's proposal overstates the costs of BEVs and that in fact a rapid transition to BEVs is not only cost-feasible but will provide significant savings to consumers within the first few years of the program. [OP-142]

Comment: For context, if ICEVs are required to adopt these additional GHG control technologies by 2030, the added delete cost of \$3,350 per vehicle for passenger cars would be more than twice ARB's current estimated incremental cost of \$1,366 for BEV300 small cars in 2030. In other words, simply incorporating these additional ICEV costs without addressing any of the other issues we have raised with ARB's ZEV cost assumptions, including the rapidly declining costs Roush identified above, would result in ZEVs reaching cost parity with ICEVs much earlier in the program and possibly well before 2030. To accurately project the cost of ZEV sales requirements, we strongly urge ARB to include these additional delete costs in its final analysis. [OP-142]

Agency Response: CARB made a robust effort to project ZEV costs out to 2035 based on the best information available. The commenter cites a Roush study they included stating that it demonstrates BEVs are already close to cost parity with conventional vehicles. CARB looked at the study and disagrees with what Roush considers as a base



ICE powertrain to conduct its incremental cost analysis of BEVs from, particularly when considering GHG reducing technology needed for vehicles to meet the ACC I regulation. To not double count the GHG compliance costs, CARB chose to start at base ICE powertrain configurations such that the fleet average cost to comply with ACC I could be subtracted from BEV, FCEV, and PHEV incremental costs rather than applying compliance technology assumptions to the base ICE powertrain. Section 3.1.1.2.d. of the SRIA describes the base ICE powertrain assumptions with updates made to those assumptions detailed in Section X.A.1. of the ISOR.

For example, a small SUV in Roush's analysis qualifies a base powertrain to have the following U.S. EPA-defined technologies: high compression ratio level 1 Atkinson cycle (HCR1), cooled exhaust gas recirculation (CEGR), and an advanced eight-speed transmission. Each of those technologies adds significant cost over what CARB considers to be a base configuration, and including those technologies likely means that the base vehicle would meet GHG reduction requirements out to the 2025 model year. Given the CARB methodology already accounts for technology costs added to ICE vehicles to meet the 2025 GHG standards in the delete costs for the ZEV packages, it would be inappropriate to double-count such costs by further adding them to the remaining ICE vehicles.

As described in the response to comment A-20 above, even without further changes to CARB's cost assumptions as suggested by the commenter, the TCO analysis showed that even 2026 model year BEV owners will cumulatively save money over the ten-year period studied. However, assessment of the feasibility of transitioning to a predominantly ZEV light-duty fleet is more than just an analysis based on cost savings to the driver. The state of ZEV technology itself is a major factor in determining feasibility, and BEV and FCEV technologies continue to evolve at a rapid pace. Manufacturers need to be able to make the transition and reorient supply chains, design processes, and manufacturing facilities without unnecessarily terminating current powertrains or vehicles prematurely and at a significant cost. EV charging and hydrogen infrastructure needs to be expanded statewide, and the electric grid supply and distribution infrastructure needs to be enhanced. Vehicle purchasers, both new and used, need increased awareness, interest, and assurances that ZEV technologies will meet their vehicle needs. All of these factors, and more, were part of the overall assessment by staff in determining the feasibility and appropriate stringency of the ACC II requirements.

7. Comment: Commenter states "The ISOR assessment of the prices of ZEVs is unfounded and leads to a skewed cost assessment that does not fully capture the cost of ZEVs to consumers. The ISOR estimates of the future ZEV price declines do not consider the supply-chain constraints that could have an impact on the cost of the ZEVs. Capitol Matrix Consulting (CMC) completed a review of the impact of ACC II on California Businesses (Attachment E) and notes that CARB has assumed a continued decrease in battery costs of ~7% per year from 2020-2030 and ~5% annually from 2030-2035. CMC found that this does not take into account key factors that drive battery prices up such as supply constraints and worldwide demand for battery-powered vehicles. CMC cites that battery prices are rising in 2022 due to increases in prices of battery-related metals. These prices could potentially continue to increase as

there is a continued growing uptake of battery-powered vehicles, and this would be further exacerbated by the additional demand generated by the implementation of the ACC II proposal.

CMC estimated the resulting incremental purchase price of a EV pickup would be \$16,000 in 2026 and nearly \$10,000 in 2035, if the recent uptick in battery prices was taken into account and the future price decline assumptions in the SRIA were cut in half. CARB should re-evaluate they assumptions for BEV vehicles update their cost-effectiveness and benefit-cost ratio analysis to reflect the recent market trends noted in CMC’s analysis (Attachment E).” [OP-161-75, OP-97]

Comment: CARB estimates of future ZEV price declines may be overstated. While it is reasonable to assume some reduction in ZEV prices as the market achieves scale and technological advances continue, recent trends suggest that the size of the reductions may be significantly less than assumed by CARB in the ACC II SRIA projections. The CARB projections are based on the assumption that battery costs, measured as dollars per kilowatt hours (kWh) of battery capacity, will decline steadily by 7 percent per year between 2020 and 2030, and by 5 percent annually between 2030 and 2035. However, battery prices are rising in 2022 due to sharp price increases for battery-related metals such as cobalt, nickel sulfate and lithium carbonate, and it is probable that these upward pricing pressures will continue for several years. Key factors pushing up battery prices are growing worldwide demand for battery-powered vehicles and supply constraints caused by long lead times needed to open new mines and strong resistance to new mining in the U.S. and other western countries.

As an illustration of the impact of slower price-declines in battery costs on future vehicle price differentials, if we (1) take into account the recent uptick in battery prices and (2) then assume that future price decline in battery costs from 2022 levels are one-half that assumed in the SRIA (i.e., 3.5 percent instead of 7 percent annually through 2030 and 2.5 percent instead of 5 percent annually between 2030 and 2035), the resulting incremental price for the EV pickup would be \$16,000 in 2026 and nearly \$10,000 in 2035.

It is important to note that these differentials reflect only manufacturing costs. The full price difference is magnified significantly when dealer markup, sales taxes, vehicle license fees, and financing costs are included. Also, the price increment does not consider the additional expense of on-site chargers, which can range from the high hundreds of dollars to several thousands of dollars for level-2 chargers, depending on whether electrical upgrades are needed. For rapid chargers, annual costs can easily

exceed \$75,000 for the charger and installation costs combined. [OP-161 Attachment E (p.4)<sup>46</sup>]

Comment: With the cost of transition minerals expected to escalate as a function of limited supply and increasing demand, the costs to manufacture and purchase EVs will likely rise. [OP-141-26]

Agency Response: CARB described the projected battery costs used for the technology cost modeling in section 3.1.1.2.a. of the SRIA. CARB's battery cost projections are based primarily on the National Academies of Sciences, Engineering, and Medicine's (NAS)'s light-duty vehicle technology report released in 2021. The report was developed by NAS's Committee on Assessment of Technologies for Improving Fuel Economy of Light-Duty Vehicles Phase 3, a group of highly respected experts from the light-duty vehicle industry. The committee held several public meetings soliciting information over two and a half years and provided extensive background and justification for their cost projections. While the commenter does not state its source for the increase in battery costs, CARB is aware that BloombergNEF (BNEF)'s most recent Electric Vehicle Outlook report shows a slight uptick in battery costs for 2022 over 2021.<sup>47</sup> However, the report states that while its previous projections showed battery costs heading below \$100/kWh by 2024, the recent slight uptick in costs could delay that a few years in some markets. CARB's battery cost projections are above \$100/kWh in 2025, so new BNEF projections that may show battery costs not reaching below \$100/kWh before 2026 would be right in line with the midpoint of the NAS projections that CARB used for the cost modeling.

CARB disagrees that its analysis is unfounded. Through several public workshops and posting of cost modeling workbooks, staff solicited information and data to be used in the development of BEV, PHEV, and FCEV costs. That process helped generate an extensive amount of information which staff used to develop the incremental costs utilized in its regulatory cost analysis. That bank of information includes vehicle teardown data for most non-battery related costs and peer reviewed reports like those from NAS and ANL to develop battery cost projections, vehicle attributes, and some non-battery related components. The details of that information can be found in ISOR Appendix G: ACC II ZEV Technology Assessment.

The commenter cites its attached analysis from CMC Consulting (CMC) in support of potential future increases in battery costs presuming that recent price increases in battery raw materials remain into the future and that further improvements in removing cost from batteries significantly slows down. Historically, however, staff have avoided relying on using short term trends in costs or prices as the basis for long term

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<sup>46</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

<sup>47</sup> <https://about.bnef.com/electric-vehicle-outlook/>

rulemakings. As described in the detailed assumptions staff used for incremental cost modeling in the SRIA, the ISOR, and ISOR Appendix G, longer term trends or projections by independent bodies were more heavily used. This is also consistent with most widespread projections such as BNEF's revised projections noted above that slightly adjust prior projections based on current prices rather than plot a wholesale new trajectory based on short term cost or price changes. An added complexity is that battery technology continues to rapidly evolve as manufacturers learn to use alternate formulations, alternate raw materials, and new manufacturing techniques to reduce cost. This means that the future costs are not as simple to assess as just looking at the price of raw materials used in today's technology. Vehicle manufacturers and suppliers also have an extensive history of cost optimization and design flexibilities to avoid over-dependance on any one material or sector. Examples include catalyst technology that has evolved over 40 years to change what precious metals they utilize and dramatically reduce the overall quantity needed through better manufacturing and design processes. Even in ZEV technology, this is already happening as advancements such as the creation of permanent magnet electric motors without the use of heavy rare earth metals by Honda and its suppliers<sup>48</sup> or the switch to lithium iron phosphate batteries by Tesla, Ford, and others. Given these complexities, staff relied upon numerous independent projections by entities such as NAS and BNEF to be better predictors of likely long term future costs.

Regarding the comment about the differentials only reflecting manufacturing costs and not dealer markup and sales tax, CARB's economic analysis also includes a retail price equivalent (RPE) factor of 1.5 as a multiplier to manufacturing costs to account for retail markups to the price a vehicle purchaser would actually see. Section 3.1.3 of the SRIA discusses how RPE was used. Sales tax on the increased consumer purchase price was also included in the rulemaking analysis and documented in the SRIA.

Regarding the comment that costs for 'on-site' Level 2 charging were not considered, this is incorrect. Staff's analysis includes costs for every ZEV and PHEV to be delivered with a combined Level 1 and Level 2 convenience cord that will eliminate the need for many vehicle purchasers to separately purchase a home charging unit and will greatly increase the number of purchasers that can make such a charger work without modification to their home's wiring to accommodate it. For the costs associated with a needed increase in the number of publicly accessible DC fast charging stations, the analysis assumes the costs of deploying such stations are reflected in the rates billed to consumers for charging, much like gasoline fuel prices reflect the costs of deploying and maintaining gas stations.

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<sup>48</sup> "How Honda developed the world's first heavy rare earth-free hybrid motor," Honda Worldwide site 2018, [https://global.honda/content/dam/site/global/about/cq\\_img/sustainability/environment/Face/archives/PDF/59.pdf](https://global.honda/content/dam/site/global/about/cq_img/sustainability/environment/Face/archives/PDF/59.pdf), accessed October 10, 2022

8. Comment: CARB's assumptions in the ZEV Cost Modeling workbook released prior to the May 6<sup>th</sup> ACC II workshop are optimistic and do not reflect the true cost increase that consumers would likely experience while purchasing a ZEV.

Note: CARB has updated some of these parameters but has not released an updated cost analysis workbook. [OP-161-83]

Agency Response: This is commenter's summary of previous, pre-rulemaking comments, as well as an assertion that CARB has not released an updated cost analysis workbook. Through a robust public process, including several public workshops and posting of multiple versions of the incremental cost workbook (in May 2021, October 2021, and March 2022), CARB solicited feedback and data to be used in the development of BEV, PHEV, and FCEV costs. That process helped staff make refinements to the cost modeling and generated a data set for which staff used to develop the incremental costs utilized in its regulatory cost analysis. CARB released an updated ZEV cost analysis workbook as part of the First 15-Day Notice. Commenter did not comment on the updated workbook.

CARB looked extensively at current vehicle parameters in an effort to accurately capture factors that would affect battery sizing and vehicle cost and compared them to projections from ANL. CARB believes that it struck the right balance in developing realistic inputs for estimating future vehicle costs by using class-leading current BEV models to validate and modify ANL's projections.

Staff also adjusted its UBE percentage downward from the values used at the time of the release of its May 2021 ZEV Cost Workbook, (staff was using 97% UBE at the time), to better account for future durability requirements. CARB made additional modifications to the UBE assumptions in the final analysis to account for reducing the durability requirement for the 2026 through 2029 model years and made these modifications available for public review and comment before adopting the regulations.

9. Comment: CARB should incorporate the cost implications of the proposed Durability and Minimum Warranty Requirements on the future sales prices of ZEVs. [OP-161-87]

Agency Response: CARB has accounted for the cost of the durability and minimum warranty requirements by updating its UBE percentage values in its ZEV Cost Workbook for BEV battery cost calculations. CARB also used the midpoint of the NAS battery cost projections, instead of the most aggressive case to account for the added expense of making the batteries more durable and longer lasting to meet the ACC II program requirements. A description of the UBE percentage assumption changes and the values used can be found in the in the First 15-Day Notice.

10. Comment: Recent data from the California Energy Commission's ZEV dashboard shows ZEV sales in Q1 2022 reaching 16% of total California light vehicle sales, and further review of the data show 65% of sales are from one single luxury brand with average transaction price above \$65,000. The ACC2 requirement would force the ZEV market to move to the mainstream quickly. This means we need ZEV product in the Camry/RAV4 price range, around low to mid \$30,000. [OP-150]

Agency Response: CARB agrees that an increasing variety of ZEVs at various price points will be critical to higher market penetration rates. CARB's incremental cost analysis, which is detailed in ISOR Appendix G, shows that ZEV costs should reduce over time and eventually reach parity with conventional ICEs in most vehicle segments by model year 2035. CARB notes that the current average transaction price is a misleading metric given that it obscures the true variability in prices of ZEV that auto manufacturers offer and can be skewed higher by a small volume of high-priced vehicles; this average may also not include tax incentives or rebates that do not apply at the point of sale so that the effective price paid by consumers would be lower.

Manufacturers are also speeding up ZEV production lines and large numbers of new ZEV models are expected to come to market soon. Figure 3 in ISOR Appendix G shows that the projected number of ZEV models available to consumers for model year 2022 more than doubled from the previous model year. Another 57 models are projected to come to market by model year 2025. That increase in models and diversification should help to increase ZEV market share and availability of more mainstream priced ZEVs.

Furthermore, the ACC II program aims to increase affordable access to ZEVs and PHEVs by providing an incentive for manufacturers to offer lower priced vehicles. This is especially important in the earlier years of the ACC II program when battery costs are higher. Incremental vehicle costs of ZEVs and PHEVs are anticipated to remain above the cost of conventional vehicle technology in the near term and through the first few years of the ACC II program. These higher costs are likely to be passed onto consumers and reflected in part or in whole in the price of new vehicles. Affordability of ZEVs and PHEVs, particularly the upfront vehicle price, is one of the biggest barriers for consumers deciding on whether to purchase an electric vehicle over a conventional vehicle. The ACC II program therefore includes a provision that a 2026 through 2028 model-year ZEV or PHEV delivered for sale with an MSRP less than or equal to \$20,275 for passenger cars and less than or equal to \$26,670 for light-duty trucks can earn an additional 0.10 vehicle value under the ZEV regulation.

11. Comment: CARB staff's cost modeling includes an assessment of transmission removal costs, which serve to represent the cost saving/increment that accrues to advanced technology vehicles (PHEVs, BEVs, and FCEVs) relative to conventional ICEVs. CARB's estimates are based on 2017 NHTSA CAFE186,188 and 2018 NHTSA187 (references refer to the References section of Appendix G). Notable is that the references 186 and 188 contains no transmission removal costs and are perhaps referenced in error or in lieu of other more authoritative sources. CARB assumes that PHEV transmission costs are the same as ICEV transmission costs, referencing primarily the NHTSA reference. 187 Islam (ANL) uses the same source for ICE transmission costs \$2483 as CARB (Reference 187), but finds that PHEV transmissions are \$793, ~\$1600 less expensive than is in the CARB model. Because the ANL modeling is treated as an authoritative reference throughout the CARB cost modeling document, we recommend that CARB adopt Islam's (2021) same incremental cost of transmission removal for PHEVs. [OP-107]

Agency Response: CARB appreciate the thoroughness with which the commenter analyzed its references to discuss transmission removal costs. The commenter notes

footnote references 186, 187, and 188 from ISOR Appendix G and disagrees that they provide a basis for the ICE drivetrain transmission removal costs that CARB used in its analysis. Reference number 187 specifically refers to US DOT NHTSA's 2018 CAFE model compliance work and a specific file containing technology cost data used within the model. References 63 and 64 of the SRIA provide additional information on ICE and transmission costs. Within reference 63, NHTSA shows its base 5 speed automatic transmission (AT5) with a price of \$2,085.30. When accounting for a RPE of 1.5, that brings the cost to roughly \$1500 when accounting for additional supporting components, like cross members that would not exist on a ZEV. For larger vehicles that require bigger and higher power capable components, additional cost was added to the transmission to account for that. CARB chose not to apply a different transmission delete cost from PHEVs, because the AT5 transmission is a relatively low technology and would not contain the mechanical, electromechanical, or software calibration complexity of a series/P2 position or power-split (PS) PHEV specific transmission.

12. Comment: CARB staff's cost modeling also includes a model of "assembly cost" for advanced vehicles. The result of this model of assembly cost as published is that BEVs are represented (in the costing worksheet) as having an assembly cost credit of \$1600, due to "less complex assembly process." However, not many quantitative references for this benefit of Evs exist. McKinsey quantifies this benefit at \$600, long-term (for native EV design), without any reference to primary sources, datasets or other literature. ICCT is the primary reference for this assembly cost credit in the CARB Appendix, but the ICCT report referenced uses "vehicle assembly" to represent the entirety of components and process, scaled-up from a reference to the UBS report wherein this \$1600 value and ICEV values are not present (UBS, 2017). In our assessment, there is some confusion in interpretation of the ICCT publication in that ICCT uses "vehicle assembly" to mean what the experts in this field have traditionally called "glider cost". Further evidence is that the CARB cost model assumes that there is a \$1600 cost savings available in vehicle assembly process costs, when the total vehicle assembly costs are asserted to be \$2600 by the UBS report referenced. It is implausible that BEV's "less complex assembly process" reduces processing/labor costs by 62%. [OP-107]

Comment: CARB's ZEV Cost Workbook applies a constant \$1,600 reduction to ZEV assembly costs relative to conventional vehicles over the 2025 to 2035 analytical timeframe. While it is well established that BEV assembly costs are already much lower than conventional vehicle assembly costs, there is evidence to suggest that the assembly cost gap between BEVs and conventional vehicles will continue to grow...This continued BEV cost reduction potential does not appear to be considered in CARB's most recent March 2022 ZEV Cost Workbook. It is thus recommended that CARB consider the most recent evidence regarding the potential for ZEV assembly cost reductions in the agency's analysis of incremental ZEV costs. [OP-149]

Agency Response: The commenters identify CARB's assumptions for the difference in costs to assemble a ZEV versus a conventional vehicle; CARB appreciates the thoughtfulness of this comment. Staff referenced ICCT's work in this space, because they specifically identified direct assembly costs for BEVs and conventional vehicles

and included indirect cost differences between the two. Staff assumed that the total of those two differences in the 2025 model year would form the basis for the cost difference. Staff solicited more information on ZEV assembly costs during its public workshops, specifically its September 2020 and May 2021, workshops. In the September workshop, information on slide 56 disclosed by Ford showed that BEV assembly plants could allow a 50% reduction in footprint, a 50% reduction in capital investment, 30% reduction in hours per unit, and a flexible tooling/process that is fully scalable and reconfigurable. In its September workshop, staff proposed the \$1600 reduction cost based on ICCT direct and indirect cost differences for BEVs with half that value used for more complex FCEVs. Commenters did not include any additional information as evidence to change the ZEV assembly cost reduction. Given the feedback that was received and the absence of additional information, CARB believes that ICCT's research is currently the best available information in this area and left the ZEV assembly cost reduction value at \$1,600 for rule's analysis.

13. Comment: We also found that ARB's estimates of overall incremental battery electric vehicle (BEV) costs are conservative, and we recommend revising these assumptions downward based on available evidence. Specifically, we identified several elements of the ZEV Cost Workbook that we believe could be updated to better reflect the latest evidence and analysis, and we provide recommendations below for how ARB staff could improve the cost model. Updating the ZEV Cost Workbook based on the recommendations below would reduce the incremental ZEV costs and accelerate the expected timing for cost parity, which further strengthen the case for adopting the proposed ZEV targets of the ACC II program. [OP-149, T1-42]

Comment: The BEVs considered in ARB's Cost Workbook are limited to 300- and 400-mile range BEVs. We believe there is evidence that many consumers, as they weigh the trade-offs between capital costs and range, may continue to prefer shorter-range BEVs through 2035, and this would have a significant impact on the assessed BEV costs. The minimum 300-mile range analyzed is longer than many popular BEVs on roads in California, the United States, and other markets with high electric vehicle uptake. Data on BEV travel behavior demonstrates that many BEVs with below 300 miles of range have been sufficient to meet consumer mobility needs, and that the technology can match or even exceed the average annual mileage driving patterns of combustion vehicles...As charging speeds increase and home, workplace, and public charging infrastructure become widespread, and as BEV penetration increases among lower-income consumers, shorter-range BEVs can increasingly be attractive to a broader group of drivers. [OP-149]

Comment: We understand that ARB, in its Cost Workbook, must make projections about how both vehicle technology and consumer preferences will change over time and as BEV penetration reaches first a majority and then 100% of passenger vehicle consumers. We believe the Norwegian data shows that even as penetration increases across the entire market, there is a strong market for ranges less than 300 miles. This acceptance of a lower range vehicle suggests that people will buy the range that they can afford rather than waiting for longer range vehicles that they may like marginally better. As current US BEV sales are dominated by luxury vehicles, it would be appropriate to assume that as the market expands into mainstream customers, many



of these new consumers would be satisfied with the same BEV ranges as are being purchased today, if not lower range. [OP-149]

Comment: Due to all the above reasons, ICCT suggests that ARB staff explicitly include 200- and 250-mile range BEVs in its analysis of ZEV incremental costs and consider a lower "average" BEV range of 250 miles in 2025 to analyze compliance costs. Doing so would reduce the estimated incremental costs of BEVs by about \$2,800 in 2025. [OP-149]

Agency Response: The commenters believe that staff analysis includes BEVs with ranges longer than what many consumers will buy in the future. The commenters are requesting that staff look to other markets with high ZEV penetration rates, like Norway, to set modeled vehicle ranges when assessing future compliance costs. Staff spent considerable time deciding what range BEVs would be appropriate to include in its analysis. As discussed in the ISOR section III.C.3.b), current BEV owners prefer a BEV range of roughly 309 miles and the broader U.S. public would consider purchasing a BEV if they could drive at least 300 miles on a single charge. In staff's analysis, 300 miles represents an average for vehicles in that segment, meaning that there may be some models with less range and some with more. Only comparing Norwegian to Californian consumer driving behavior based the commenters' referenced studies is likely not a good comparison. The annual VMT derived from the EMFAC model reference is inclusive of the entire California market, where the Norwegian travel survey for BEVs very likely heavily biases newer vehicles. New vehicle VMT is somewhat more uncertain in California due to the time until those vehicles undergo their first emissions inspection, but the EMFAC model shows those new vehicles travelling over 20,000 miles in their first year based on the data that is available. Staff appreciate that Norway could be a good metric for projecting future BEV ranges, but without the Norwegian mileage accrual schedules for its vehicles which could be normalized against the Californian mileage accrual schedules, projections of future BEV ranges that consumers will require in California cannot be fairly made. Given the desire of U.S. consumers for longer ranges and that the ACC II program requires 100% of the fleet to be ZEVs and PEVs to be 2035, staff believes they have chosen future BEV ranges that are desirable enough for consumers to choose those products. Despite ranges longer than what the commenters are suggesting, the ACC II program is still found to deliver net benefits to California.

14. Comment: While ARB's analysis considers cases where BEVs have additional all-wheel drive and towing costs, the analysis of removal costs does not appear to include the additional deletion costs for combustion towing vehicles and combustion vehicles with all-wheel drive (AWD). For example, the cost of adding a Heavy Duty Trailer Tow Package to the 2021 Ford Expedition is \$795.15 For all-wheel drive costs, the Toyota Prius LE is priced at \$1,400 greater than the standard Toyota Prius LE.<sup>16</sup> Including technology costs for towing and all-wheel drive components in the analysis would more comprehensively reflect combustion vehicle removal costs. If indeed ARB's analysis adds in the full cost of towing and all-wheel drive for applicable BEVs without subtracting the ICE delete costs for these components, we would recommend ARB subtract these delete costs to ensure towing and all-wheel drive costs are not double counted for BEVs. [OP-149]

Agency Response: The commenter is suggesting that staff's costs for AWD and towing packages do not include all the relevant components evidenced by the Ford Expedition and Toyota Prius examples. Staff's methodology for costing ZEV technology for the purposes of economic analysis of the ACC II program is an incremental one. In the case of heavy-duty towing packages, staff costed for the incremental difference between a BEV and a conventional vehicle. Staff assumes that the additional components provided on the heavy-duty towing package for the ICE Ford Expedition would be the same or similar to those on the BEV version. Ford's Heavy-Duty Trailer Tow Package includes the following items:

- 3.73 Non-Limited Slip Rear Axle
- Integrated Trailer Brake Controller
- Pro Trailer Backup Assist™
- Rear View Camera – Digital
- Reverse Brake Assist
- Two-Speed Automatic 4WD (4x4 only) with Neutral Towing Capability
- 360-Degree Camera with Trailer Reverse Guidance (Only Available on XLT High (202A) with Special Edition Package, Timberline High (501A), Limited, King Ranch, and Platinum)

The rear axle is likely no additional incremental cost over an Expedition without the towing package and the other items with the exception of the automatic 4WD transfer case would all likely to be included on a BEV version. The automatic transfer case does not seem to add any towing specific additions other than potentially having higher towing capability carried over the single speed transfer case which may have more to do with shared parts commonality than specific cost additions. For comparison, the Max Trailer Tow Package for the F-150 Lightning BEV can be optioned for an additional \$1,000 which includes additional cooling hardware and other towing accessories analogous to the Expedition Heavy-Duty Tow package. Staff believes it has captured the incremental towing package cost differences between a BEV and a conventional ICE vehicle in its analysis. Staff does not consider the Prius AWD option as the best ICE-based comparison to identify incremental AWD costs. The Prius AWD utilizes a mechanically disconnected electric rear motor that is lower power, but very similar in function to 2-motor AWD BEVs on the market. The basis for the mechanical AWD component cost removal is discussed in more detail in section VII.3.A.3 of the ISOR Appendix G.

15. Comment: We understand that ARB's Cost Workbook incorporates additional combustion vehicle costs in 2025 for compliance with the state LEV3 criteria pollutant, current GHG, ACC II criteria pollutant, and ACC II GHG regulations that apply to new vehicles through model year 2025. Beyond 2025, ARB's ZEV Cost Modeling Workbook applies the same ICE and transmission removal costs, LEV3 criteria emissions costs, current GHG compliance costs, and ACC II criteria pollutant and GHG compliance costs through 2035. Yet over this same timeframe, state and federal emissions and efficiency standards that get progressively more stringent would result in modest, gradual vehicle price increases for ICE vehicles. Although state and federal regulations for post MY2025 have yet to be finalized, California and the United States are very likely to continue to adopt increasingly stringent criteria pollutant and GHG

regulations. Previous analysis of light-duty vehicle efficiency technology and costs found that the cost of adding technologies to the baseline vehicles increases the combustion vehicle engine and transmission costs by about 0.35% per year.<sup>17</sup> If ARB is using BEV incremental costs to project the cost impacts that consumers would bear in purchasing a BEV compared to an ICE in future years, then it would be appropriate to account for these projected increases in ICE costs by applying gradual and modest vehicle price increases to combustion vehicles to more accurately reflect combustion vehicle removal costs beyond 2025. We thus recommend that ARB incorporate an annual ICE and transmission cost increase of, for example, 0.35%, for all years after 2025. [OP-149]

Agency Response: The ACC II regulations do not include amendments to California's light-duty vehicle GHG emission standards, and so CARB did not include additional GHG compliance costs for conventional vehicles. Changes to State and federal standards are speculative, as are costs associated with such changes.

16. Comment: Specifically, CARB appeared to increase BEV DC efficiency by about 8% and reduce BEV motor power by about 2%. While these changes bring ARB's analysis more in line with recent evidence on vehicle specifications, ICCT believes that the updated assumptions for BEV motor power and efficiency do not appear to fully reflect the extent of technological progress to date or expectations for continued advancements based on recent research. This affects the cost analysis because cost increases with motor power and the worse the efficiency, the larger and more expensive the battery becomes for the vehicle. Refining these inputs based on the most up to date data and technical analysis would more accurately reflect BEV technology and its incremental costs. [OP-149]

Comment: Argonne National Laboratory's "Autonomie" model presents an option for considering how technology can be expected to improve over time, and ARB could consider using the projected inputs in this model in their ZEV Cost Workbook. Autonomie is an advanced simulation tool for vehicle energy consumption and performance analysis co-developed with industry.<sup>18</sup> This tool provides projections of vehicle weight and specifications in 2025, 2030, and 2035. However, as we show in a comparison between the Autonomie inputs and real-world BEV data below, even the Autonomie model does not adequately capture expected improvements in vehicle efficiency. At the conclusion of our analysis, we present a correction factor ARB could combine with the Autonomie inputs to account for expected improvements in both vehicle weight and efficiency improvements unrelated to weight. [OP-149]

Comment: ARB's weight assumptions for BEVs in the Cost Workbook are not clear; we do not know how they compare to the weight assumptions in the Autonomie model but suspect that assuming higher vehicle weights could help explain the relatively poor efficiencies assumed in ARB's Workbook. [OP-149]

Comment: We thus suggest that ARB follow the inputs in the Autonomie model for vehicle weight in future years, but apply the 11% correction factor we calculated above to account for the non-weight related efficiency improvements we expect based on real-world evidence. [OP-149]

Comment: We find that, on average, our recommendation for efficiencies for the vehicle classes are 10% better (i.e., energy consumption is 10% lower) than ARB's assumptions for 2025. The implication of this finding is that BEVs could be produced with smaller batteries and thus at lower cost than ARB has assumed. [OP-149]

Comment: Overall, the 2025-2035 specifications for BEV motor power in the low-technology Autonomie model are an average of 9% lower than ARB's assumptions. We do not have enough information to understand how ARB derived its motor power assumptions; however, we note that the early BEV market may not be a good indicator of future motor power. The early BEV market has been characterized by a disproportionately high share of high-income consumers and some popular BEV models have catered to that demographic with luxury features, including high motor power. This is best evidenced by the Tesla Model 3 and Tesla Model S, which have motor power ranging from 211 kW to 580 kW. As BEVs become mainstream, a greater share of consumers are likely to choose lower cost over high performance, and hence we expect average motor power for any given vehicle size and weight to decline.<sup>23</sup> The lower motor power assumptions in Autonomie are based on benchmarked acceleration typical to that available in current gasoline vehicles and benchmarking on premium vehicles could explain the difference between ARB's motor power assumptions and those in Autonomie. We recommend ARB consider aligning its assumptions on motor power with those in the Autonomie model. [OP-149]

Agency Response: The commenters suggest using ANL's 2021 Advanced Vehicle Technologies study which utilizes ANL's Autonomie model to project future vehicle efficiencies and power requirements. Staff appreciates the thoroughness of the commenters' analysis and its suggestion. Staff did use the study to update the previous vehicle modeling it had done for this final analysis. Section IV.A. of ISOR Appendix G provides details on what technology pathways staff used (low technology vs. high technology, etc.) from the Autonomie report and the updates to BEV and PHEV efficiencies resulting from that work. Section V. contains the details of how Autonomie report data was used to develop projected future vehicle motor power. Staff view the vehicle attributes and costs it developed using the 2021 Autonomie report as the most likely scenario. Staff's analysis using what the commenter considers to be conservative values still shows that ACC II program can deliver net benefits to California.

17. Comment: The total non-battery powertrain component costs applied in CARB's March 2022 ZEV Cost Workbook appear to be greater than the non-battery powertrain costs quantified in recent electric vehicle teardown analyses. Table 7 summarizes the BEV non-battery powertrain components and their costs for a representative 150 kW Chevrolet Bolt. As shown, the total costs for 2025 are \$2,562. As context, the total non-battery costs for a 300-mile range "SmallCar" – the vehicle class of the Chevrolet Bolt – in CARB's March 2022 ZEV Cost Workbook is \$3,317, which is about \$750 greater than the component costs found in the component-level cost analysis by UBS (2017) and the National Academies of Sciences, Engineering, and Medicine (2021). We thus recommend that CARB re-examine non-battery powertrain component costs based on the latest evidence. Doing so would reduce BEV

incremental costs by several hundred dollars and accelerate the expected timing for cost parity. [OP-149]

Agency Response: The commenter is comparing CARB's non-battery costs to the commenter's projected non-battery powertrain costs for a theoretical future 150kW Chevrolet Bolt which is based on two sources: a 2017 UBS study and the NAS study. Staff looked at both studies when developing its non-battery powertrain costs. However, staff had access to even more information in the form of different component and full vehicle teardown data that is described in Section V. of the ISOR Appendix G. The commenter did not provide a detailed breakdown of what is included in each of the categories listed in Table 7 of the comment. Without that information, CARB is unable to determine where the disparity may exist between the commenter's example and CARB's costs. Staff made a concerted effort to capture all the non-battery powertrain components required by a ZEV which are listed in detail in the ZEV Cost Workbook. Staff thinks its non-battery costs are more representative of what will be included on a ZEV for the years covered by the ACC II regulations.

18. Comment: [I]t is important that ARB account for the full cost of future GHG controls on ICEVs. We specifically recommended that ARB add these additional costs to the ICEV delete costs when calculating the incremental cost of a ZEV. Failing to do so biases the cost projections for BEVs on the high side. For MYS 2027 and beyond, ARB has assumed no further increase in the stringency of GHG standards for ICEV, and thus no added cost of compliance, even though available technologies can deliver additional reductions from these vehicles, and it is likely that they will deploy them. With this proposal, California is moving toward ensuring all new vehicles sold by 2035 are zero-emitting, and so, while neither EPA nor California have yet adopted post-2026 greenhouse gas standards, it is unreasonable to compare ICEVs with no additional greenhouse gas controls to ZEVs in the 2030 timeframe. ARB must correct this error to avoid overestimating the cost of BEVs. [OP-142]

Agency Response: Although staff agree that future conventional vehicle costs may increase as a result of future State or federal GHG vehicle emission standards that may be adopted during the time period of the ACC II proposal, in 2026 and beyond, CARB declined the commenter's request to include technology costs that may be necessary to comply with potential future GHG vehicle emission regulations. Such costs are speculative, like the potential standards. The costs for conventional vehicles to meet existing GHG regulations have been accounted for in previous GHG rulemakings. The current ACC II proposal only includes changes to criteria emission standards and test procedures for light-duty and medium-duty vehicles and zero-emission vehicle standards and test-procedures for light-duty vehicles. Since CARB did not propose changes to its GHG vehicle emission regulations, it would be inappropriate to include related costs in this rulemaking, especially considering that any amended GHG vehicle emission standards for model years 2026-2035 were not proposed and were not under consideration in this rulemaking.

## Total Cost of Ownership (TCO)

19. Comment: Additionally, the repair-cost advantages of electric cars typically exclude the large replacement costs for batteries in the second half of an electric car's life. Recurrent Auto released the article, "Costs of Electric Car Battery Replacement," that states a replacement battery can cost up to \$20,000 per vehicle when the car is out of warranty, not including the cost of labor and taxes (Witt, 2022). Although the cost of batteries may be expected to decline over the years, the cost is still substantial. The Wharton analysis suggests that by 2025, the cost of a 100 kWh battery replacement out of warranty may cost up to \$13,500 per vehicle. AGC of California urges CARB to evaluate these additional costs. [OP-103]

Agency Response: Staff assumed vehicle owners would not need to replace batteries during the life of the vehicle, and therefore would not incur an in-use cost for that repair, because manufacturers must meet long-term (10 years or 150,000 miles) durability requirements based on the vehicle's range and provide a long-term (8 years or 100,000 miles) battery warranty for buyers, similar to requirements for the emission-related parts for conventional vehicles, and for which engine replacement is not considered a maintenance cost. (See ISOR, pp. 69-77.) Refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted, and response to comment E-35, below, for a discussion of expected maintenance costs.

20. Comment: Additionally, EVs have already been proven to provide significant consumer benefits, and a strong ZEV program will help the maximum number of consumers realize the cost-savings of an EV. [OP-108]

Comment: Although the upfront costs of some electric vehicles are currently higher compared to comparable gas-powered vehicles, many EV owners already see cost savings over the lifetime of their vehicles. This is because operating expenses—including fuel and maintenance costs—are typically lower for electric cars. [OP-99]

Comment: If CARB staff considered the consumer benefits for first owners and for the entire vehicle lifetime, the expected benefits from transitioning to ZEVs would be substantially greater and cost parity would be achieved earlier than currently quantified. [OP-149]

Agency Response: CARB agrees that ZEVs have already been shown to provide significant benefits to consumers, including cost savings, and adopted the ACC II regulations, supported by TCO analyses that show net cost savings for BEV owners as described in Section VI.E of the ISOR. Refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted.

CARB made a rigorous effort to project ZEV costs out to 2035 based on the best information available. The set of high-quality sources discussed in ISOR Appendix G in combination with a robust public process that solicited information from stakeholders led to the costs used for the ACC II program cost analysis. They are representative of staff's best estimate of future costs inclusive of the ACC II program requirements and potential future uncertainties that staff could foresee.

21. Comment: The commenter states “CARB has not proven that consumers will be able to buy ZEVs on the schedule outlined in the rule. While the ISOR analyses indicates that the total cost of ownership of ZEVs are less than their ICEVs counterparts, they have not evaluated if consumers will have the capital necessary to invest in ZEVs which have a higher purchase price than ICEVs. Capitol Matrix Consulting (CMC) completed a review of the impact of ACC II on California Businesses (Attachment E) and found that the ACC II regulation could lead to a ‘loss of customer discretionary income tied to higher ZEV purchase prices’. As a result, customers who do not want to give up their extra discretionary income may postpone the purchase of a ZEV, resulting in lower ZEV sales rates than those assumed under the current ACC II proposal. While CARB claims that the purchase price of ZEVs will drop rapidly in the future (~7% annually from 2026-2030 and ~5% annually from 2030-2035), current market trends indicate otherwise (refer to Comment B.10 for further details). Affordability of ZEVs has not been guaranteed by the proposed ACC II regulation, leaving consumers with very few choices for affordable ZEVs. CARB must consider customer-related impacts of the proposed ACC II as described in the CMC analysis (Attachment E) while evaluating the feasibility and cost-effectiveness of their proposal.” [OP-161-77, OP-97]

Comment: Future operational and refueling cost-savings are highly uncertain. According to estimates presented in the ACC II SRIA, higher upfront costs for ZEVs will be offset by lower costs for refueling and maintenance. However, in calculating the offsets, business owners will need to consider that (1) the operational savings will occur over many years, and (2) any prospective savings will be subject to uncertainties regarding both the future costs of electricity versus gasoline and future business conditions (which in turn will impact the usage of the newly purchased vehicle). From a business perspective, future savings related to operation and maintenance costs need to be discounted to reflect these uncertainties, making it even less likely that total costs of ownership over the lifetime of the ZEV vehicle will be comparable to the ICE vehicle counterpart. We also note that one of the key assumptions in the SRIA is that much charging will be accomplished through overnight charging on level 1 and level 2 chargers, which holds down prices per kilowatt hour. This is a reasonable assumption for businesses that (1) have access to garages or storage facilities for overnight charging; and (2) use their vehicles at predictable times and on local routes. However, the assumption is less applicable to businesses that are reliant on public or private shared chargers, especially those that use vehicles for longer and more variable routes or operate their vehicles on a continuous schedule. These businesses will need to recharge “on the road,” using more expensive rapid chargers, and hence will achieve relatively less fueling-related savings over time. A closely related factor is that “time is money” for businesses. The added costs involved in planning and altering routes to match locations of public chargers, and the additional time spent recharging (up to 45 minutes for rapid charges and up to 8 hours for level 2 chargers, versus less than 5

minutes for gasoline vehicles), translates into lost productivity, higher expenses and lower revenues for these businesses. [OP-161 Attachment E (p. 4-5)<sup>49</sup>]

Agency Response: The commenters question whether consumers will purchase ZEVs in the quantities projected. The comment misunderstands the requirements. The ZEV requirements are a percentage of sales. They do not require absolute quantities of vehicles to be produced. Manufacturers must determine their product offerings to meet the requirements considering their ability to sell their products in a competitive market.

Although there are current market price fluctuations with all vehicles, including ZEVs, given the supply disruptions on vehicle components and the need to scale up manufacturing for ZEVs and batteries, the scope of the analysis for the ACC II rulemaking is 2026 through 2040. Staff expect manufacturing capacity to meet demand by 2026 and that the number of ZEV models will continue to expand in the market providing sufficient choice for consumers.

Refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted, including maintenance savings and discount rates for future costs. In the analysis, discretionary spending impacts on the vehicle owner, or for a business owner, are minimal for the BEV300 passenger vehicle case evaluated. ZEVs are expected to reach purchase price parity over the time of the ACC II regulations. The TCO analysis assumed the vehicle buyer would have a five-year loan for the purchase of the vehicle, enabling the purchase costs to be spread out over that multi-year time period. Even when accounting for higher finance costs with the larger loan, the annual savings in fuel offset the higher annual loan payments within the first year of ownership. This minimizes the time period of extra budget planning for businesses with their fleet ownership. Note the savings shown in the TCO analysis did not include purchase incentives from the State or federal government. Buyers who receive incentives will see even larger savings, and may have a lower upfront purchase cost than a comparable conventional vehicle.

Staff relied on fuel price projections from the 2021 CEC IEPR, accounting for cost growth rates in both electricity and gasoline. Refer to the response to comment A-20 above for details. For gasoline, the assumed retail prices were \$3.92 in 2026 increasing to \$4.34 in 2035. Although electricity rate decisions in the future likely will result in rates different than what staff assumed from the IEPR, gasoline prices will also fluctuate differently than assumed in this analysis. Had staff relied on the high gasoline prices of mid 2022 in the market, above \$5.50 in many places in California, the TCO

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analysis would have resulted in substantially larger savings for business that own BEVs, in addition to individual vehicle owners.

For business fleet operators that do not have access to overnight fleet yard charging, DC fast charging will be an option, as the state's public DC fast charging network is expanding. DC fast charging speeds are also increasing with technology improvements, which will enable substantial passenger vehicle range to be added to vehicles in 10-15 minutes. Additionally, fleet operators that predominantly drive their BEVs within a single urban region will not have to fully refuel their vehicles in any one charging session if they know they have time constraints or have access to cheaper charging rates at a later session.

The assertion that businesses will be required to alter routes to refuel and recharge vehicles is speculative. The locations of new facilities are not known. Moreover, it may be that refueling and charging infrastructure is built in convenient locations along roadways, just as liquid refueling stations have.

Additionally, for consumers or businesses with long-distance driving needs, hydrogen fuel cell electric vehicles remain a compliance option within the ZEV regulation. These vehicles refuel as quickly as conventional gasoline vehicles and have driving ranges exceeding 350 miles. An expanding network of hydrogen refueling stations is developing within the State to provide convenient refueling options. Currently, 62% of California residents live within a 15-minute drive of one of the 110 hydrogen stations open or under development.<sup>50</sup> Support programs at the CEC and CARB help co-fund the development of hydrogen fueling stations so that the network grows to eventually replicate the convenience of today's gasoline fueling network, which would not need to be entirely State funded<sup>51</sup>. A 1,000-station hydrogen fueling network would allow 94% of California's population to be within a 15-minute drive and 63% within a 6-minute drive of a hydrogen station,<sup>52</sup> which more closely resembles today's gasoline fueling experience for most drivers. Plug-in hybrid electric vehicles will also remain options beyond 2035 which allow drivers to use gasoline (or potentially hydrogen) after the battery has been depleted.

Further, the record does not show that sales will be diminished because of these requirements but even if it did, CARB is not required to ensure that does not occur.

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<sup>50</sup> California Air Resources Board. 2022 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development. [https://ww2.arb.ca.gov/sites/default/files/2019-11/AB8\\_report\\_2018\\_print\\_ac.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-11/AB8_report_2018_print_ac.pdf) (Accessed October 10, 2022).

<sup>51</sup> California Air Resources Board. October 2021. Hydrogen Station Network Self-Sufficiency Analysis per Assembly Bill 8. [https://ww2.arb.ca.gov/sites/default/files/2021-10/hydrogen\\_self\\_sufficiency\\_report.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-10/hydrogen_self_sufficiency_report.pdf) (Accessed October 10, 2022)

<sup>52</sup> California Air Resources Board. 2018 Annual Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fuel Station Network Development. [https://ww2.arb.ca.gov/sites/default/files/2019-11/AB8\\_report\\_2018\\_print\\_ac.pdf](https://ww2.arb.ca.gov/sites/default/files/2019-11/AB8_report_2018_print_ac.pdf) (Accessed October 10, 2022).

22. Comment: Commenter opposes the proposal due to concern over personal financial hardships by consumers from lower resale values of ZEVs due to battery degradation. [OP-174]

Agency Response: The ACC II regulations require vehicle manufacturers to meet long-term (10 years or 150,000 miles) vehicle durability requirements on electrification components, and to provide a long-term (8 years or 100,000 miles) warranty for buyers. The regulations also require that vehicles provide information on battery health. These requirements are expected to result in improved batteries and protect vehicle residual value in the used vehicle market.

23. Comment: The commenter states “The ISOR analysis does not address distributional impacts of the Proposed ACC II regulation. CMC also conducted a review of the distributional impacts of the ACC II proposal (Attachment F) and found that the incremental cost for a BEV compared to an ICE vehicle with similar features, capabilities, and range is \$12,000 or more for small passenger vehicles, and well over \$20,000 for high-end sedans, SUVs, and pickup trucks. The increased expenditures required to purchase and maintain a ZEV will be disproportionately felt by lower and middle-income households. CARB must consider these cost implications when evaluating the proposed rule.” [OP-161-76, OP-97]

Comment: Currently, the incremental cost for a BEV compared to an ICE vehicle with similar features, capabilities, and range is \$12,000 or more for small passenger vehicles, and well over \$20,000 for high-end sedans, SUVs, and pickup trucks.<sup>6</sup> (The price differences for fuel cell hydrogen vehicles are even greater.) The California Air Resources Board (CARB) Standard Regulatory Impact Report (SRIA) for the ACC II proposed regulation assumes that this difference will fall by over 50 percent between 2020 and 2026 – and further in subsequent years – due to improved and simplified battery cell and pack designs, introduction of new battery chemistries, new manufacturing techniques, and economies of scale.

Unfortunately, recent trends are moving in the opposite direction. Price differentials between BEV and comparable ICE vehicles are expanding rather than contracting for several models in 2022 due to strong demand and soaring costs for battery metals such as cobalt, nickel sulfate and lithium carbonate. These increases are not expected to ease for several years as worldwide demand for battery-powered vehicles grows and battery supplies are constrained by supply shortages, long lead times needed to open new mines, and strong resistance to new mining in the U.S. and other western countries.

[Figure omitted]

In short, there is no assurance that price differentials will narrow as much as assumed in the ACC II regulation SRIA, yet there is no provision in the regulation that would alter the phase-out period for ICE vehicles if the economics were less favorable than assumed.

While price differentials of \$10,000 (or more) for a small vehicle may be only a moderate inconvenience for those at the top of California’s income distribution, the incremental price will have major impacts on lower- and moderate-income households

in the state. As noted above, these households are much more likely to have limited or non-existent liquid savings and virtually no room in their budgets to finance more-expensive BEV purchases.

Of particular concern is that low-income owners attempting to cover the higher costs through increased borrowing will face higher financing charges due to poorer loan-to-value and loan-to-income ratios. The impacts will be especially significant for younger households with limited credit histories or those with weaker credit scores. As an indication of how significant additional financing costs can be, financing an additional \$10,000 to cover the incremental price of a BEV would cost low-income owners \$15,660 over the life of a 7-year loan. Beyond the direct costs, these households also will have to pay more for insurance, sales taxes, and annual vehicle fees. [OP-161 Attachment F (pp.2-3)<sup>53</sup>]

Comment: Low- and moderate-income households that cannot afford the higher upfront costs for BEVs can purchase ICE vehicles during the 2026-to-2035 transition period. And they can avoid BEV purchases beyond 2035 by holding on to their aging ICE vehicle or purchasing ICE vehicles on the used-car market. These individuals will avoid costs associated with purchasing BEVs. However, they will still face higher costs associated with continued maintenance and operation of ICE vehicles under the ACC II regulation. A small portion of these higher costs are directly related to the ACC II regulatory proposal provisions focused on reducing emissions from ICE vehicles sold during the transition period. However, the great majority of the impact is related to the phase-out of the markets for petroleum fuels and ICE vehicles as the government-mandated ban on new ICE vehicle sales takes hold.

CARB estimates that a 2035 ban on ICE vehicle sales will reduce gasoline sales in California by 66 percent by 2035, and by 90 percent by 2050. Declines of this magnitude will likely result in a major consolidation, and perhaps the entire elimination, of the petroleum refining industry in California. Recent estimates made by Stillwater Associates (a transportation consulting firm) indicate that gasoline sales declines of these magnitudes will lead to an over 50 percent drop in retail fueling stations by 2035, and an 80 percent decline in fueling stations by 2050. A key result of this decline is that per-gallon gasoline prices will rise significantly, as the fixed costs related to the distribution and sales of gasoline are spread over fewer and fewer customers. The rise in fixed costs per-gallon sold, combined with higher expenses related to the Low-Carbon-Fuel-Standard and Cap and Trade programs, will add \$1.70 to the price per gallon by 2035, and \$4.27 to the price per gallon by 2050. All projections as to possible future costs of transportation fuels are only projections, and

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the actual costs will be determined by fuels market dynamics such as supply and demand.

Any higher costs will have a major impact on lower-income households, which are the most likely to hold onto ICE vehicles in the face of higher costs for BEV's. If we assume (1) the average vehicle is driven 12,500 per year in this state; and (2) the average mileage of California's light passenger fleet will be about 25 miles per gallon by 2030 – the cost per household of a \$1.70 per gallon price increase is about \$1,275 per year. If we further assume that the fleetwide mileage rate increases to 29 miles per gallon by 2050, the \$4.27 per gallon increase in that year would translate into \$2,815 per year. These cost increases are particularly significant in view of the extremely tight budgets and limited liquid savings held by low- and moderate-income households in this state. [OP-161 Attachment F (p. 5)<sup>54</sup>]

Comment: The ACC II regulatory proposal will have a disproportionate impact on low- and moderate- income households, whose budgets are already stretched because of many years of lagging income growth and California's high cost-of-living. The disproportionate impacts are related to higher BEV prices (which are amplified because of financing costs), relatively higher charging costs, higher utility-related electricity costs, and (for those that defer purchases of BEVs) higher costs for petroleum-based fuels. Lower- and moderate-income households will also be disproportionately affected by the reduction in jobs in the construction and petroleum industries, which will mean fewer good-paying jobs opportunities for workers with high school and technical degrees. While the state budgets enacted in 2021-22 and proposed for 2022-23 begin to address some of these issues, the ACC II SRIA is largely silent on the disproportionate impacts that the ACC II regulation would have on millions of lower-income Californians. [OP-161 Attachment F (p.9)<sup>55</sup>]

Agency Response: CARB disagrees with the comments that the ZEV regulations will have excessive impacts that disproportionately fall on low-income individuals. Notably, commenters provide no evidence to substantiate their claims. They make many questionable assumptions, such as extrapolating current price differentials for some models and short-term trends to the entirety of ACC II, counter to the evidence in the record, and presuming light-duty gasoline sales are the predominant or only revenue source for the refining industry.

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As part of the economic analysis, staff conducted a TCO assessment and considered equity impacts. See responses to comments A-20 and C-24 above. This TCO analysis accounts for a number of cost factors, including vehicle price, loan fees, sales taxes and registration fees, fuel costs, maintenance costs, and a home charger capital investment for some buyers (though as noted above, even drivers without a home charger save money). The results show that even when factoring in all these cost factors BEV owners will save \$3,216 over ten years in the most conservative case evaluated (a 2026 model year BEV with higher electricity prices assuming no access to a home charger) and will realize savings within the first year of ownership. Ten-year savings are much larger, at \$8,835, with the lower cost 2035 model year BEV coupled with access to a home charger.

Beyond the TCO analysis conducted for ACC II, State and federal vehicle purchase incentives are available now and are anticipated to remain in effect for a number of years to mitigate the impact of the purchase cost of a new or used ZEV. See, e.g., Assembly Bill 179, statutes 2022, chapter 249, that provides \$14,250,000 in support of ZEVs. Incentives were not included in the CARB TCO analysis, which means the ten-year ownership savings will be larger than the estimates above if a consumer qualifies for vehicle purchase incentives.

CARB notes that the 66% reduction in gasoline sales estimate cited by the commenter is based not on the ACC II regulations but on the Mobile Source Strategy, which is a comprehensive planning document including much more than just ACC II. Furthermore, this estimate compares future gasoline demand to current levels rather than future levels with and without new regulations. This exaggerates the effect of the Mobile Source Strategy given that other factors are already contributing to future decreases in gasoline demand; the reduction from the light-duty vehicle fleet estimated in the Mobile Source Strategy comparing 2035 levels with and without the Mobile Source Strategy is therefore lower than what Stillwater Associates reports. When evaluating only the impacts of the ACC II regulations, CARB finds gasoline consumption in 2035 will only be 38% less than in the baseline scenario without the ACC II regulations and diesel consumption would only be 12% lower,<sup>56</sup> and the decline in output from the refinery industry to be about 13% relative to the baseline by 2040, which does not support the argument that this will result in major consolidation or elimination of the refinery industry.

See also responses to comments A-32 above and E-40 under Economic and Equity Impacts below and the Master Response 2 in the Response to Comments on the Draft Environmental Analysis.

24. Comment: To accommodate an all-electric transportation system, utilities and state and local governments will need to incur major up-front costs associated with installing a BEV-charging network that has sufficient capacity in all areas of California to avoid

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<sup>56</sup> California Air Resources Board. 2022. Proposal VMT and Fuel Calculations. CARB 2022ddd, First 15-Day Notice.

fueling bottlenecks and give prospective BEV owners confidence that they will be able to complete longer trips, regardless of destination. According to the California Energy Commission's assessment of charging infrastructure needs released in its July 2021 report, 1.2 million public and shared private chargers are needed to support almost 8 million BEVs in 2030, which is consistent with the number that would be on the road under the Clean Cars II proposal. That is about 1 million more than the 193,000 chargers that are online or in planning stages throughout California. We estimate that another 1 million chargers would be needed by 2035 to fully support the number of BEVs on the road under the ACC II regulation. A key finding of the CEC report is that more public funding will be needed, starting immediately, to achieve even the 2030 goals.

Beyond the costs of chargers, the state will incur expenses for developing additional power generation and upgrading its electrical grid. In March 2021, the California Energy Commission (CEC), CARB, and California Public Utilities Commission (CPUC) jointly issued an updated analysis on California's progress toward its zero carbon electricity goals. The report indicated that under a "high electrification scenario," which is consistent with the Governor's ZEV goals, electricity demand from the state's transportation sector will grow from 3,000 Gigawatt-hours in 2020 to an estimated 81,000 Gigawatt hours in 2045. Expanding the grid to accommodate those and related needs will require record build rates for utility-scale solar and other power sources. Combined costs for light vehicle chargers and upgrades to the grid will be in the multiple tens of billions of dollars. Funding for these types of capital improvements has traditionally come primarily from California utility ratepayers, which already face among the highest and fastest rising rates in the U.S. (see Figure 3).

Higher utility rates will disproportionately affect lower- and moderate-income households mainly because these households devote a much larger share of their annual income to electricity consumption than do their higher-income counterparts. According to the 2018-19 Consumer Expenditure, households in the bottom 20 percent of California's income distribution devoted 7.7 percent of their income to electricity purchases in the 2018-19 period. This percentage is ten times more than the 0.7 percent that their counterparts in the top 20 percent of the income distribution devoted to electricity purchases. This difference occurs because the average income of the top 20 percent of households (\$237,713) is 19 times that of the bottom 20 percent of households (\$12,460), yet electricity consumption by this top group is less than double the size of the bottom group. The relatively small difference in consumption rates reflects the fact that electricity is a necessity, used by all households regardless of income to keep the lights on and appliances working.

Two other factors are also behind the disproportionate impact. First, lower-income households are less likely to be homeowners, and thus less likely to benefit from rooftop solar systems that would otherwise enable them to avoid higher utility costs, at least partially. Second, lower-income households tend to be located in inland regions of the state, where temperatures are hotter and cooling needs are greater. As shown in Figure 4 (next page), average per-household consumption of electricity in the state's inland counties is nearly double that of counties in the Bay Area, and about one-third higher than Southern California coastal counties. At the same time, median

incomes in these inland counties are about 50 percent lower than the Bay Area counties and about 25 percent lower than the Southern California coastal counties. Similarly, poverty rates in the inland counties are, on average, nearly double that of the Bay Area counties, and about 50 percent higher than the Southern California coastal counties.

In summary, higher utility costs resulting from electrification of the transportation system will disproportionately affect low-income households, especially those in inland regions of the state where electricity consumption is much higher than in coastal counties. Because low- and moderate income families will likely be later adopters of ZEVs, they will also pay higher utility rates without receiving the benefit of avoided gasoline expenses. [OP-161 Attachment F (p.6-7)<sup>57</sup>]

Comment: Utilities will incur major up-front costs associated with installing an adequate-sized ZEV fueling network. According to the California Energy Commission's assessment of charging infrastructure needs outlined in its July 2021 report,<sup>3</sup> 1.2 million public and shared private chargers are needed to support almost 8 million ZEVs in 2030, which is consistent with the number that would be on the road under the Clean Cars II proposal. That is about 1 million more than the 193,000 chargers that are currently online or in planning stages throughout California. Charging needs will continue to expand sharply after 2030 to accommodate the growing fleet of ZEVs mandated by the ACC II proposed regulation.

Utilities will also incur major costs for upgrades to the electric grid needed to accommodate an all-electric transportation system. Based on annual data contained in the CARB 2021 study titled "2021 SB 100 Joint Agency Report" (SB 100 report), we estimate that full electrification of California's economy will require total utility investments of \$1.8 trillion during the 30-year period from 2020 to 2050, about 50 percent above that required by a "business as usual" baseline. About 60 percent of the added costs relative to the baseline is directly attributable to upgrades needed to accommodate a fully electrified transportation system, with the balance needed to accommodate electrification of the commercial, industrial, and residential sectors of the economy.

Funding for additional chargers and grid upgrades has traditionally come from utility ratepayers (although in 2021-22 and 2022-23 the state has used surplus General Fund resources to support one-time commitments to charging subsidies). The projected funding needs imply substantial increases in electricity rates paid by businesses, which already pay rates that are among the highest in the U.S.

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<sup>57</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

This is demonstrated in Figure 3, which shows that the average electricity rate paid by commercial businesses in California was 19.29 cents per Kilowatt hour during February 2022. This was more than double the average paid by commercial businesses in neighboring states (Oregon, Washington, Arizona and Nevada) and about 64 percent above the national average. Rates paid by industrial users were also more than double those in neighboring rates and were about 87 percent above the national average.

[Figure Omitted]

Further ratepayer increases will have substantial impacts on all California businesses, irrespective of their usage of electrical vehicles. This is because electricity is a major power source for lighting, heating, cooking, air conditioning, refrigeration, and for a variety of other appliances and machinery used by businesses. [OP-161 Attachment E (p. 6)<sup>58</sup>]

Agency Response: Staff did consider the numerous public and private programs in place to expand public charging infrastructure, which are described in the staff ISOR in Section III.A.6, including public funding. The CEC AB 2127 analysis that projects EV charging infrastructure needs statewide in future years includes a number of scenarios for varying levels of ZEV projections. The commenter cites the scenario for 8 million BEVs by 2030, however, the fleet projections from the compliance analysis in the ACC II rulemaking results in approximately 5.8 million ZEVs and PHEVs by 2030, requiring less infrastructure than cited by the commenter. This is described in the ISOR section noted above. As described in CEC's ZIP, the State is on track to meet its goal established in Executive Order B-48-18 of 250,000 chargers by 2025, which includes 10,000 fast charging stations. Additionally, refer to the response to comment A-20 above for further details.

The staff TCO analysis accounts for increasing electricity prices in future years relying on the most recent 2021 CEC IEPR projections. Refer to the response to comment A-20 above. See also the response to comment E-33 below regarding electricity price impacts on and ZEV affordability for low-income households.

25. Comment: The SRIA asserts that the higher incremental purchase price paid for a BEV will be offset by reductions in fuel and maintenance costs. This is illustrated in Figure 2, which is extracted from the SRIA report, and is based on CARB's assumptions of rapidly falling BEV prices.

Figure 2 specifically shows CARB's estimated TCO over the 10-year life of a small passenger vehicle purchased in 2026. It shows that – for an owner with access to overnight charging – the projected savings from lower fuel and maintenance expenses more than offsets the higher upfront costs for the car and charger, yielding a net

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savings of \$1,732 over the life of the vehicle. For an owner without access to a home charger, there is still a net savings, but it is much less – \$484 over the life of the vehicle. The lower net savings occurs because this owner would have to rely on more expensive electricity from shared direct-current chargers.

Again, it is important to note that the net reduction in total ownership costs is highly dependent on CARB's assumption that relative prices of BEVs will fall sharply from today's levels. At current price differentials, total costs of ownership would be several thousand dollars higher for BEV owners with chargers – and even more for BEV owners without home chargers.

Regardless of the bottom-line costs or savings, however, the key takeaway from Figure 2 is the much lower total cost of ownership for owners having access to chargers as compared to owners that do not. This is important because:

- Lower income households are more likely to be renters (according to the 2018-19 Consumer Expenditure Survey for California, about 56 percent of the bottom 60 percent of households are renters, versus 22 percent of the top 20 percent of households); and
- Renters living in older high density multi-family dwellings are less likely to have garages or other points of access to inexpensive overnight charging.

Those that have access to overnight charging will pay much less per charge than those that are required rapid chargers during peak hours of the day. The SRIA recognizes a significant difference in charging costs, by assuming average home charging rates of \$0.26/kWh versus rapid charging rates of \$0.40/kWh. It is because of this difference that CARB shows the lower cost of ownership in Figure 2 for those with home chargers. We note that the actual difference is likely to be even larger than shown in Figure 2, given the recent outsized increases in rapid charging rates. For example, current rates for Tesla superchargers during daytime hours are 0.58/kWh. [OP-161 Attachment F (p. 4-5)<sup>59</sup>]

Agency Response: As the commenter notes, even drivers without access to home charging will save money driving BEVs, as shown in the TCO analysis. The commenter cites costs in the SRIA, and staff updated the analysis for the staff ISOR in Sections VI.E and IX showing savings to be even larger than projected in the SRIA. As described in the response to comment A-20 above, the TCO analysis assumed a vehicle buyer would pay off the purchase cost over five years in a vehicle loan, which results in TCO net savings within the first year, even for drivers without home chargers where they need to rely on more expensive electricity prices from DC fast chargers. Retail prices

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for electricity from DC fast chargers in the TCO analysis were \$0.40/kWh in 2026 growing to \$0.44/kWh in 2035.

26. Comment: Commenter states the environmental costs of no biodegradable batteries will be staggering, and states that as a retired person living on a fixed income struggling to afford basic essentials now, especially with inflation, could never afford the price of an electric car and associated maintenance costs. [OP-22]

Agency Response: ZEVs are expected to reach purchase price parity with conventional vehicle within the years of the ACC regulations. They will be as affordable as conventional new vehicles. They will also be more affordable from a TCO perspective. The ACC II rulemaking includes new requirements for manufacturers to meet long-term (10 years or 150,000 miles) vehicle durability requirements on electrification components, and to provide a long-term (8 years or 100,000 miles) warranty for buyers. Both of these are expected to result in improved batteries and help with vehicle residual value in the used vehicle market. These battery improvements will also reduce the number of batteries that need to be replaced during a vehicle's lifespan. Further details on battery recycling and battery secondary use can be found on pages 32-39 and Chapter 4.B.9 of the Final Environmental Analysis and Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis. See also response to Technological Feasibility and Supply Chain comment A-15 above. Staff assumed vehicle owners would not need to replace batteries during the life of the vehicle, and therefore would not incur an in-use cost for that repair. Refer to the response to comment A-20 above for details on the TCO analysis CARB developed, including maintenance savings for BEVs.

27. Comment: CARB has not factored the subsidization of electric vehicles into its economic analysis. The electric vehicle market is buoyed by state and federal subsidies. From California this includes grants for the purchase of zero-emission buses, grants for the replacement or repower of heavy-duty vehicles, and various rebate programs such as the Clean Vehicle Rebate Project and the Clean Fuel Reward program, and from the federal government this includes a tax credit of up to \$7,500 for the purchase of a new electric vehicle. Similarly, CARB must consider the impact of electric vehicle mandates on all motor vehicles, not just electric vehicles, as manufacturers spread unrecouped and compliance costs across their business. CARB cannot claim to have reasonably considered cost impacts to consumers or accurately evaluated electric vehicle purchase prices without adjusting for these subsidies and cross-subsidization. [OP-161-57, OP-97]

Agency Response: Staff did not include vehicle purchase incentives in the TCO analysis given the uncertain nature of the funding behind those programs. Although recent budget proposals from California expand funds for incentive programs, and recent federal legislation expands vehicle tax incentives, the programs still have limitations where many vehicle buyers will not be eligible for the funds. State incentive programs have limitations on the ZEV MSRP, and commonly do not have sufficient funds each year to pay for all the ZEV sales that occur. At the federal level, the vehicle incentives have limitations on automakers and which vehicle models are eligible. At the time of the staff analysis before the Inflation Reduction Act was passed, the federal incentive programs had automaker caps restricting access to the incentives for automakers that

have strong ZEV sales, such as Tesla and General Motors. As such, staff decided to evaluate TCO net costs without incentives to avoid being overly optimistic, and the TCO results still reveal cost savings for BEV owners over the ten years studied. Staff do assume the regulated party in the ACC II regulations, manufacturers of passenger vehicles, will cross-subsidize their compliance costs across their varying passenger vehicle products in the market. Staff analysis for automaker compliance derived the average new vehicle incremental cost, accounting for the ZEVs and conventional vehicles in the new vehicle market. This can be found in Section X.A.5 of the staff ISOR in Table X-8.

28. Comment: CARB must consider the impact of electricity rates. CARB acknowledges that by increasing the amount of electricity used, this will increase the amount of Utility User Tax levied. However, CARB fails to address the fact that low-income and disadvantaged communities spend a disproportionate amount of their income on essential utilities, such as electricity. In order to facilitate the ACC II targets, significant infrastructure buildout is necessary to support the increased electricity demand. Electrification of transportation sector will require an estimated \$49 billion dollars. Low-income households will bear a disproportionate share of these costs. [OP-161-55, OP-97]

Comment: Attachment F (p. 2). The ACC II regulation would have multiple impacts on low- and moderate-income households. As highlighted in Figure 1 (next page), those families that purchase new battery-powered electric vehicles (BEVs) would have to pay much more for these vehicles. Lower-income BEV owners would likely pay more for electricity to charge their vehicles than their higher-income counterparts that have access to overnight charging. Those that stay with ICE vehicles will also pay higher prices for gasoline and repairs. Lower- and moderate-income households will be hard-hit by regressive increases in utility rates to cover costs of electrifying the transportation system. And lower- and moderate-income households would be negatively affected by the loss of good-paying job opportunities as a result of the regulation's impact on traditional energy jobs. [OP-161]

Comment: Commenter expressed concerns over price competition and pricing mechanisms regarding increased use of electricity from electric vehicles, and a need to ensure reasonable and affordable access to charging is available to all. [OP-114]

Agency Response: In staff's TCO analysis, increasing electricity rates were accounted for in both residential home charging cases and in public charging infrastructure. Refer to the response to comment A-20 above for details on the TCO analysis staff conducted, including details of incremental vehicle costs and net savings, and for electricity prices assumed. Additionally, staff did consider the numerous public and private programs in place to expand public charging infrastructure, including with a focus on disadvantaged and low-income communities, which are described in the staff ISOR in Section III.A.6, including public funding. Refer to the response to comment A-20 for additional details.

29. Comment: While the costs considered in the calculation include charger costs for single family homes (detached, attached, duplex, triplex, and quad), CARB has not accounted for the costs associated with multi-family residential, public, and workplace

chargers which would include direct current (DC) fast charging stations. CARB claims that the “capital cost of public charging infrastructure is assumed to be passed through to the consumer via refueling rates”. Upon further review, it appears that the commercial/residential fueling (electricity) rates used in the SRIA were developed based on the fuel forecasts in the California Energy Commission’s (CEC’s) 2021 Integrated Energy Policy Report (IEPR). While the 2021 IEPR notes that the key driver of electricity rates is the cost of investment in the grid infrastructure (including chargers) to meet state policy goals, it also states that the demand forecasts “do not incorporate currently nonexistent policies, such as [the proposed] Advanced Clean Cars II”. Hence, the electricity rates do not account for the costs associated with these (multi-family residential, public, and workplace) chargers. We estimated a total cost of \$13 – 24 billion for these chargers using the charger purchase and installation costs (Table B-1) from South Coast Air Quality Management District’s (SCAQMD’s) Final Staff Report for the Warehouse Indirect Source Rule and projected number of chargers (Table B-2) required for the implementation of the ACC II from the Draft 2022 State Strategy for the State Implementation Plan. If just the costs associated with multi-family residential/public/workplace chargers were accounted for in the ACC II SRIA benefit-cost analysis, the benefit-cost ratio would fall to 1.08-1.12. [OP-161-71, OP-97]

Agency Response: CARB vehicle regulation analyses consistently rely upon CEC’s IEPR fuel forecasts, which are adopted through a rigorous public process for robustness. This provides consistency in fuel price forecasts between rulemakings and also provides a single data source that includes multiple types of fuels (e.g. electricity, gasoline, and diesel). The IEPR forecasts in fuel prices are not able to account for unforeseen future policy decisions on electrification loads or gasoline demand changes. It would not be realistic to speculate on potential future rate changes due to electric loads in future policy decisions. If bounding fuel price scenarios are incorporated into rulemaking analyses, it would need to account for different gasoline prices and not just different electricity prices. As was evident in 2022, gasoline prices fluctuated widely, including prices substantially higher than what staff assumed in the TCO analysis (\$3.92/gallon in 2026 rising to \$4.34/gallon in 2035). Further, as transportation electricity demand increases, the costs of investment in grid infrastructure would be spread across a larger base. This could result in lower per unit energy refueling rates, as evidenced in the lower costs of electricity under CEC’s 2021 IEPR high-demand scenario compared to the mid-demand scenario.

Staff did not assume that all BEV drivers that live in apartments would have access to a charger. Instead, for a portion of the vehicle owners, staff assumed they do not have a home charger and instead rely on approximately 55% of their electricity from DC fast chargers (with the remainder from level 2 charging in public or at work). The higher price of DC fast charging included in the TCO analysis is not based on the IEPR price levels, but instead on EVgo and Electrify America actual rates, and is increased at the rate of the CEC commercial electricity forecasts. The DC fast charging price assumes the installation costs of the equipment is passed through to the drivers in the price of the fuel.

30. Comment: The ISOR overestimates the potential benefits associated with the vehicle-to-grid (V2G) technology. CARB has assumed there would be savings associated with V2G technology as seen in total cost of ownership calculations. These savings begin in 2027 at \$2 million, increasing over time to \$5.3 billion by 2040. The cumulative savings for V2G technology are nearly 40% of the total net savings as a result of the ACC II proposal and are therefore a significant driver in the benefit-cost ratio calculation. CARB has described these purported benefits, without accounting for the costs of V2G technology on the lifetime and warranties for battery electric vehicles (BEVs). If the batteries in BEVs are used as a source of power for homes, this would increase the number of vehicle battery charging cycles without adding miles which will negatively impact the battery state of health and the lifetime. Further, BEVs currently available in the market are not intended to be used in this fashion. Hence, there is potential for the battery warranty to be voided with such use. There is no mention of V2G technology in the draft regulatory language for BEVs in the proposed ACC II. Hence, warranty requirements for future BEVs manufactured to meet the sales requirements of ACC II may preclude V2G technology from being used on these vehicles. Assuming benefits for V2G technology without considering the potential cost impacts to the vehicle battery lifetime and warranty results in a one-sided benefit-cost evaluation. Additionally, CARB has assumed that up to 25% of BEV owners in single-family homes will partake in this use case, without any factual basis or hard references for these assumptions. Because of this, the savings calculated as a result of these numbers must be re-evaluated and considered carefully in the benefit-cost analysis. CARB should update the SRIA to present a more complete analysis. [OP-161-73, OP-97]

Agency Response: Staff assumed 1% of drivers in a single-family home will be able to partake in vehicle-to-grid (V2G) use cases starting in 2030, and that this percentage scales up to 25% by 2035. Staff assumed drivers export 6 kWh per day to power the home during peak times, then recharge the 6 kWh along with their normal driving needs during off-peak times. Staff assume this to grow over time to 10.4 kWh per day by 2035 due to batteries becoming more efficient and larger and increased driver confidence in the technology. Staff assumed a delayed usage of this feature due to the time needed to develop the vehicle models that can support this technology and the time needed to develop home charging systems that are capable of interfacing with the home electrical system to power the house. Staff also assumed a low usage of the V2G capabilities due to the cost of installing the compatible charger and the availability of the vehicles on the market capable of this use case.

There are several vehicles on the market today that support exporting electricity from the vehicle to another object such as a house or power tools. The Ford F-150 Lightning and the Rivian R1T currently support exporting electricity from the vehicle battery in some form. Staff assumed that drivers will operate the vehicles within the parameters recommended by the automaker to avoid voiding the warranty and that because such use is expected, the batteries and vehicles will meet the durability requirement of the regulations.

CARB also included provisions for the manufacturer to be able to define excessive use of V2G in determining enforcement test group eligibility in section 1962.7. According to ISOR Appendix F-9, p. 17, it is necessary to maintain flexibility and determine

excessive levels on a case-by-case basis and using good engineering judgment. To that end, the Executive Officer must consider the reasonable frequency, distribution, and impact on battery degradation of vehicle-to-grid and DC charging activities, or usage at high battery temperatures, adherence to the manufacturer's recommendations or guidelines for such activities, and any other relevant information. These considerations allow the application of relevant scientific and technological principles of zero emission vehicle design and performance to determine appropriate limits and criteria in a given instance when the Executive Officer conducts enforcement testing.

## ZEV Affordability

31. Comment: CARB received several comments concerned about the ability to afford electric vehicles, including for those in low-income, working class, and over-burdened communities. [OP-31, OP-141-32, T1-18, T1-69, T1-97, T1-99, OP-44, OP-88, OP-153, OP-42, OP-171, OP-163, OP-22, OP-64, 15b-7<sup>60</sup>, T2-29]

Comment: Agricultural workers need affordable, reliable cars to get themselves to and from the job site in rural areas. Many used ZEV are currently selling above their original list price. Will the used ZEV market be at a price that is affordable to California farm workers? For those used ZEV and PHEV that are affordable, will they be reliable or require expensive repairs such as a new battery. Current ZEV and PHEV are mainly owned by white collar workers, will they withstand the dirt roads and neglected roads that California farmworkers drive to reach job sites? [15b-5<sup>61</sup>]

Comment: Commenter encourages CARB to find a better balance between technology affordability and allow an even playing field and says it's hard to compete in a global market when California has rules that no other state and country that requires their businesses to adhere to. [T2-11]

Comment: Commenter says "...this proposal will...force those who can least afford it to pay the most," and "will also do economic harm, further erode economic upward mobility, and cost the state well-paying jobs." [OP-119]

Comment: Commenter opposes the timeline in the proposal and says it is too aggressive when considering low-income and minority populations who cannot afford a ZEV within the timeline [T1-102]

Comment: "...her family doesn't have the ability to buy an expensive electric car. While there may be a few years before gas powered cars are illegal, I don't see any

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<sup>60</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

<sup>61</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.

lowering in the price of an electric vehicle, and it seems only the wealthy can afford to make this change.” [OP-115]

Comment: Commenter opposes the proposal citing economic burden for households who cannot afford to transition to higher-priced ZEVs [OP-129]

Comment: The new ACC II regulations will hurt my family’s pocketbook. Our family doesn’t have the ability to buy an expensive electric car. While there may be a few years before gas powered cars are illegal, I don’t see any lowering in the price of an electric vehicle, and it seems only the wealthy can afford to make this change. [OP-74]

Comment: Especially consider how to encourage and make feasible the transition to electric vehicles for individuals of all incomes and backgrounds! Leave no one behind. Let’s do this right! [OP-76]

Comment: Commenters request a better balance between technology and affordability and allow an even playing field and recommend the Board reject the proposal. [T1-65, T1-66]

Comment: Commenter states “Although the SRIA acknowledges that severe negative economic impacts are anticipated for specific businesses in the economy, it downplays them. For example, CARB estimates the cost of the Proposed Regulation to vehicle manufacturers to be ‘an average annual cost of \$199.4 million and a cumulative cost of about \$3.2 billion through 2040.’ Valero agrees with CARB’s observation that ‘these direct costs are ultimately passed through to end-users in California,’ but these costs are likely understated; each electric vehicle enjoys thousands of dollars’ worth of Federal and state subsidies, which are ultimately funded by taxpayers, and automakers’ ability to sell Evs to consumers depends on substantial price subsidies in the form of credit support. While CARB also claims that operational savings will ‘more than offset the incremental cost over the vehicle lifetime,’ this ignores the reality that many Californians currently are unable to afford the upfront costs of purchasing a ZEV in the first place. [OP-141-25]

Agency Response: CARB has considered the multiple comments citing the high cost of ZEVs as a reason to oppose the ACC II regulations but disagrees that the current higher cost of ZEV technology will persist by the time the ACC II regulations takes effect and that the overall cost of compliance will outweigh the benefits to human health and the environment resulting from the ACC II regulations.

Some of the comments seem premised on a misunderstanding that all conventional vehicles, new and used, will need to be replaced by a ZEV prior to 2035. The ACC II regulations applies only to new vehicles being sold and does not require the replacement of existing conventional vehicles or somehow make illegal the continued operation of gasoline-powered vehicles. As explained in the response to FSOR Appendix C, Comment E-1, automakers can sell new plug-in hybrids, which can use gasoline, and fulfill up to 20% of their ZEV requirement with these vehicles throughout the ACC II regulations phase-in and beyond 2035 when the regulation is fully phased in.

Although the average price of new ZEVs sold today is currently higher than the average price of new conventional vehicles, this average is skewed by the high proportion of luxury ZEVs sold. The ACC II regulations applies to all manufacturers and the luxury market is limited in size such that manufacturers cannot only sell ZEVs to this market to meet the increasing requirements. As more auto manufacturers introduce more mainstream models, the average price of new ZEVs is expected to decline relative to conventional vehicles. The higher production volume requirements of the ACC II regulations, as well as similar regulations globally, will contribute to economies of scale that will help to lower costs from today's levels. As shown in Table 30 in Appendix G of the ISOR, price parity between BEV300s and conventional vehicles is expected as soon as 2031 for the small car and medium SUV segments and 2033 for the small SUV segment.

Even before price parity is achieved on the initial purchase, from a TCO perspective net cost savings can be achieved at the start of the regulations. Refer to the response to comment A-20 above for further details. ACC II also includes regulatory incentives for automakers that take action to help improve environmental justice outcomes as described in section III.C.5 of the ISOR. These actions include providing ZEVs and PHEVs at a discount to community clean mobility programs; retaining used ZEVs after leases in the California market for low-income vehicle purchasing and finance assistance programs (such as Clean Cars 4 All); and offering lower-priced new ZEVs to the market. These optional provisions will help increase affordable access to ZEVs, particularly in environmental justice communities in California.

Moreover, the ACC II regulations provide California net benefits beyond their costs. The ACC II regulations and the supporting documents meet the requirements for protection of public health and considering the economic impacts of doing so. Additionally, CARB is aware that, beyond the ACC II regulations, more must be done to ensure environmental justice communities benefit equitably from the transition to 100% new ZEV and PHEV sales and Resolution 22-12 directed staff to work to expand access to ZEVs (p. 20). In addition to the ACC II regulations, statewide actions can include significant increases in funding for targeted incentives and infrastructure development, as well as more directed equity actions from private industry.

For rural or agricultural communities with typically longer distance driving needs, FCEVs and PHEVs remain compliance options as discussed in response to comment E-21. Auto manufacturers are also beginning to offer ZEV pickup trucks such as the Ford F-150 Lightning, the GMC Hummer EV, and the Rivian R1T that are capable of enduring rugged conditions that may be more prevalent in rural environments. The State is also proposing to spend nearly \$1.7 billion on light-duty ZEV Infrastructure through fiscal year 2025-2026. This spending includes \$384 million from the National Electric Vehicle Infrastructure Program which will fund over 830 fast chargers and the State is committed to direct at least 50% of this funding for California-designated disadvantaged communities and/or low-income communities and 40% of funding in federally designated Justice40 communities, which include tribal lands. California may also nominate additional routes that include rural locations and historically disadvantaged and low-income communities where private investment in charging infrastructure is lacking.



32. Comment: The average cost of an internal combustion engine vehicle (ICE) is \$12,000 less compared to a similar battery electric vehicle (BEV). This differential would be devastating to the everyday Californians who overwhelmingly rely on gas-powered vehicles to drive increasing distances to commute to work. [OP-53]

Agency Response: See preceding response (E-31) on price differential. Related to driving increasing distances, the ACC II regulations will require ZEVs to have a minimum range of 200 miles and meet other measures to ensure that these vehicles can serve as replacements for gasoline vehicles. This minimum range captures the vast majority of round-trip commuting distances. As part of the ZEV assurance measures, the ACC II regulations also requires that manufacturers ensure that vehicle range is durable over the life of the vehicle and offer warranties that cover battery replacements if the all-electric range has deteriorated significantly. Further, the TCO analysis is based on average annual vehicle miles traveled. Consumers with higher-than-average commute distances would accrue even greater savings than was estimated in the ISOR. In other words, the record shows that ZEVs are expected to greatly benefit Californians who use personal vehicles to commute to their jobs. Finally, even after full implementation of the ACC II regulations, consumers whose driving needs exceed those of BEVs in their price range may continue to operate their existing conventional vehicles, purchase a used conventional vehicles, purchase a new or used plug-in hybrid (which can operate on gasoline), or purchase a new or used fuel cell electric vehicle (which uses hydrogen and has vehicle ranges over 400 miles and refuels as quickly as a gasoline vehicle).

33. Comment: These regulations would only exacerbate an already alarming income inequality divide in California and effect working families and low-income families the most. Access to overnight charging, increased electricity rates, and higher prices for gasoline will affect lower income families the most and all be amplified because of these regulations. [OP-53]

Agency Response: U.S. household expenditures on energy consumption have ranged between 4% and 8% of their disposable income, and it has been shown historically that consumers spend higher shares of their income on energy expenditures when energy prices are higher. The impact of higher energy prices can be more significant for low-income households, as they spend larger magnitudes of their disposable income on energy expenditures. Increasing availability of ZEVs with their lower operating costs would therefore benefit low-income households more and protect them from volatile gasoline price fluctuations.

The staff TCO analysis accounts for increasing electricity prices in future years relying on the most recent 2021 CEC IEPR projections. Specific rates will be determined by the CPUC as that agency manages proceedings and decisions with electric utilities to approve rates accounting for necessary investments in distribution and supply equipment. Refer to the response to comment A-20 above for further details. Unlike electricity, whose rates are set by State agencies through a public process, gasoline prices are unregulated and instead set by the global commodities market and individual retailers. There is no evidence that this regulation will increase the price of gasoline and this argument runs counter to basic economic theory. At the market level, a reduction in demand for a product implies a reduction in a price rather than an

increase. While in the short run a reduction in demand may change a firm's average cost, this does not correspond with a price increase, but a change in producer surplus. In the long run a lower demand environment may lead to exit of higher cost producers, but in either case price would not be expected to increase. As suggested by our response to the Department of Finance's comments to the SRIA, the expectation is that if anything gasoline prices may decrease relative to the baseline forecast as a result of the decreased demand resulting from this Regulation.

34. Comment: [T]he California Air Resources Board (CARB) estimates rely upon BEV prices falling. For this transition to make it affordable for working people and low-income families, this price differential is critical. However, studies show that the price differential is increasing. The strong demand for battery metals such as nickel, cobalt, and lithium is only going to raise the prices for these battery components which BEV producers will only pass along to consumers. This will be regressive and make it harder for lower income families to afford BEV. [OP-53]

Agency Response: Refer to the Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis related to the availability of minerals used in battery production. Given that CARB disagrees with the premise that mineral supply will be constrained, CARB also disagrees with the commenter that subsequent price impacts would affect the affordability of a BEV. Additionally, as noted in response to comment A-20, the total cost of ownership will be lower for BEVs than for conventional vehicles. Given that lower-income households typically spend a larger share of their income on energy costs, lower-income households will benefit more from any savings than higher-income households. Lastly, as noted in response to comment A-32, the ACC II regulations as well as other State actions are targeting assistance to increase access to ZEVs by lower-income households.

35. Comment: New electric cars cost far more than conventional vehicles, and unlike conventional vehicles cannot be maintained indefinitely. Once EV batteries wear out, they must be replaced, or the car is worthless. EVs are not designed to allow battery replacements, and for the few for which battery replacement is an option, the battery replacement cost is over \$15,000 – over three times the amount allowed for our poorest families to own a car without losing food and cash assistance [15b-2-10].

Agency Response: This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, CARB notes that the price differential between new ZEVs and conventional vehicles will narrow over time, eventually reaching parity between 2031 and 2033 for most size classifications, as discussed in the response to comment A-20 above. For BEVs, this price parity occurs partly because battery costs have declined, which would decrease the cost of a battery replacement. CARB further disagrees that BEVs are not designed to allow battery replacements. As discussed in the ISOR, auto manufacturers do occasionally replace batteries under warranty and are also designing battery packs to allow for only select modules to be replaced rather than the entire battery pack, which will substantially lower the costs of repairing any battery failure (see ISOR, p. 86). Until that occurs, as part of the ACC II regulations, auto manufacturers are incentivized to produce lower-cost ZEVs with manufacturer

suggested retail prices below \$20,275 for a passenger vehicle and \$26,670 for a light truck – which is much below the average purchase price of new vehicles, again whether conventional or ZEV. The requirement for increasing new ZEV sales will also increase the supply of used ZEVs, which will also help to lower prices of used ZEVs. Lower-income families will continue to have access to used vehicles that are both ZEV and conventional vehicles from which they can choose based on their driving needs and budget constraints.

CARB disagrees with the commenter’s implication that, in contrast to ZEVs, conventional vehicles can be cost-effectively maintained in perpetuity. Conventional vehicles can also encounter problems with significant repair bills that would exceed the value of the vehicle, particularly after a vehicle has exceeded its expected useful life (under the emission standards for conventional vehicles) of 150,000 miles, and especially if a major component needs repair or replacement, such as the engine or transmission, neither of which have infinite durability. Economic theory would suggest that whether the cost of repair is one dollar more than the value of the vehicle or three times the value, the decision in both cases would be for the owner to scrap the vehicle regardless of whether the vehicle is a ZEV or conventional vehicles. Lower income households are more likely to own vehicles that are only a fraction of the original purchase price, so the cost of repair of a conventional vehicle need only be in the low thousands of dollars – not the tens of thousands – for the vehicle to be considered economically irrational to repair.

Further, the ACC II regulations includes a suite of ZEV assurance measures designed specifically to reduce the likelihood that the battery would “wear out” or need replacement as the commenter poses to help ensure that ZEVs will displace the emissions of conventional vehicles. By establishing minimum requirements for the performance of ZEVs, the ZEV assurance measures help support access to reliable ZEVs for those that may not be buying new vehicles, but for whom reliable and durable mobility options are especially important. These measures include requirements for durability, warranty, data standardization battery labeling, and serviceability. These measures individually and collectively support the emission reductions of this regulation by ensuring that the vehicles perform as needed to fully and permanently replace conventional vehicles. In addition to providing consumer confidence and reliability so that ZEVs can fully penetrate both the new and used vehicle markets, such requirements also have important distributional equity implications, as they can assure the performance of vehicles bought used and when vehicles are more affordable. ACC II is also expected to increase participation of small independent repair shops in the transition to ZEV technologies since these repair shops will now be guaranteed access to repair information for ZEVs. Their participation increases competition with dealer repair services and helps to lower overall repair costs of ZEVs.

36. Comment: The policy neglects the huge challenge of building enough ZEVs to meet your requirements. Over the next 15 years, the mining and extraction system in the U.S. will not produce enough lithium for all the batteries needed. This will create scarcity, which means punishing high prices for Californian working families. [T1-25]

Agency Response: See Master Response 2 on page 13 of the Response to Comments on the Draft Environmental Analysis for a discussion on the supply of critical minerals. Battery materials are drawn from a global market, not just in the U.S. Existing global supplies, anticipated new mines, and an increasing battery recycling industry will provide mineral resources for battery manufacturing. The record does not establish that the ACC II regulations will change the overall sales trajectory of vehicles, nor that ACC II will significantly affect mineral supply. And the federal Inflation Reduction Act incentivizes expanded domestic production of batteries.

37. Comment: ARB's staff analysis – together with auto industry statements – has shown that the ramp up in standards is feasible and cost-effective. The standards would not only significantly cut pollution, but also *reduce* transportation costs for the average household in the state, leading to significant economic benefits. [OP-99]

Agency Response: CARB concurs with the commenter that the ACC II regulations will reduce transportation costs for households throughout California.

38. Comment: A driver of a 2021 Nissan Leaf would need over 6 hours to gain 120 miles of charge at a Level 2 public charging station, at a cost between \$15.78 and \$29.54 (\$0.13 and \$0.25/mi, respectively), depending on time of use and location within California. At a gasoline price of \$6 per gallon, the same driver would spend fewer than 5 minutes and \$0.18/mi fueling a 2021 Toyota Corolla. Despite popular sentiment that electric vehicles are less expensive to own and drive than their internal combustion engine counterparts, this is clearly not the case for drivers that lack access to home charging infrastructure. Even if public charging stations were readily available within disadvantaged communities, the cost and time burdens render electric vehicle ownership entirely impractical for communities that rely on Level 2 public chargers. [OP-122-18]

Agency Response: CARB disagrees. As part of the economic analysis for the ACC II rulemaking, staff developed a TCO assessment and considered equity impacts. The BEV technology is projected to be the dominant strategy for compliance by automakers, and staff project TCO net cost savings for BEV owners, as described in Section VI.E of the staff ISOR, which will enable increased discretionary spending by families. Details of the methods and assumptions used in the TCO analysis can be found in the SRIA Section 3.5, attached as Appendix C to the ISOR. Notably, commenter is only comparing price per mile and time spent refueling or recharging, which do not capture a TCO (leaving out maintenance costs, registration costs, etc.). Refer to the response to comment A-20 above for additional information on CARB's TCO analysis.

The TCO results show that BEV owners will save \$3,216 over ten years in the most conservative case evaluated (a 2026MY BEV with higher electricity prices assuming no access to a home charger) and will realize savings within the first year of ownership. Ten-year savings are much larger, at \$8,835, with the lower cost 2035MY BEV coupled with access to a home charger. Essentially, this shows that even if a BEV driver does not have a home charger and must use more expensive public electric charging, they still save money. However, to improve access to more convenient home charging, refer to the response to comment A-20 above for information on state programs to

prioritize disadvantaged communities in state support electric vehicle charging investments.

CARB further disagrees with commenter's assertion that time burdens also render BEVs impractical. Generally, one could save time charging a vehicle overnight, during the workday, or while conducting other trips. However, given the uncertainty in how time impacts would ultimately net out, these benefits and burdens were not included in the TCO assessment.

## Economic and Equity Impacts

39. Comment: CARB is required to assess any adverse economic impacts on California business enterprises and individuals resulting from its proposal. Further, under Executive Order N-79-20, CARB must ensure that its ZEV regulations "serve all communities and in particular low-income and disadvantaged communities." These requirements are written broadly to ensure that CARB considers a wide range of both direct and indirect impacts to individuals—this consideration must include electricity rate increases. . . . CARB has failed to fully account for substantial economic impacts from forced electrification to individuals in general and to vulnerable communities in particular. [OP-161-54, OP-97]

Agency Response: Refer to the response to comment A-20 for a description of the TCO analysis CARB conducted, showing that operating a BEV over time leads to substantial savings for the owner, thereby increasing discretionary spending. Regarding impacts to lower income families, refer to the response to comment A-32 for a response about how ACC II provisions benefit disadvantaged and low-income communities and include specific provisions to encourage automakers to support lower income buyers. Additionally, refer to the response to comment A-20 above for a response on electricity pricing and access to charging infrastructure.

40. Comment: The cost for these vehicles will unduly punish those in the lower income brackets of California. [B2-10]

Comment: CARB's ongoing policy bias of creating racially disparate steep new financial burdens and job losses on working families [OP-122-5]

Comment: Another concern of the Advanced Clean Cars II regulation is the imposed cost the ZEVs for consumers and businesses. Within the Cambridge University press article, "The Benefits and Costs of Automotive Regulations for Low-Income Americans," the authors discuss who bears the costs of automotive regulations which are consumers of vehicles, employees of the industry, suppliers and/or dealers, and owners/investors (Conrad & Graham, 2021). Consumer of vehicles are affected in the form of higher vehicle prices or diminished product quality and employees in the industry are affected by responding to higher costs by reducing the compensation for employees or number of employees. Higher new vehicle prices, whether it be due to regulation or other factors, can create upward pressure on demand and prices for used vehicles. The increase in cost for new and used vehicles will be particularly challenging for low-income households and businesses. [OP-103]

Comment: Commenter says ACC II will create major inequities due to lack of affordability and increased utility rates. [T1-66]

Comment: The ACC rule ignores the real consequences to real people of banning the source of ongoing, reliable, cost-effective, and low-emission cars that are affordable in the used car market for Californians who cannot afford a \$40,000 electric vehicle. The ACC rule ignores the consequences that are both acute and more racially disparate and harmful to California working families. For example, families that own a car worth more than \$4,650 lose access to key public assistance programs like CalWORKs and food subsidies. There are real consequences CARB that continues to ignore and refuse to respond to. [T2-15]

Comment: Commenter says fixed route public transit can steal 20 hours per month from workers who use transit instead of driving, hours that can be spent caring for children, or on improving health and education outcomes. [15b-2-7]<sup>62</sup>

Comment: Commenter believes climate programs such as ACC II that impose higher economic costs on the poor also cause racially disparate harms to communities of color. [15b-2-5]

Comment: Commenter says only 20% of adults living below the national poverty line do not have access to a car and families that own a car worth more than \$4,650 lose access to key public assistance programs like CalWORKs and food subsidies [15b-2-9].

Comment: Commenter believes car ownership massively expands employment opportunities even in transit served, higher density coastal regions [15b-2-8].

Comment: The ACC II rule ignores the real consequences to real people of banning the source of ongoing, reliable, cost-effective, and low emission cars that are affordable in the used car market for Californians who cannot afford a \$40,000 EV. [15b-2-12]

Comment: CARB's ACC II rule, along with the four anti-housing measures we challenged in the 2017 Scoping Plan, and the far more extensive and foundational flaws we have commented on for the Draft 2022 Scoping Plan, is another "progressive" Wilsonian triumph: it makes the poor poorer, and singles out communities of color and working families for disparate and massive harms to plow past the Legislature's rejection of CARB's ACC II diktat. [15b-2-21]

Agency Response: CARB considered these comments that the ACC II regulations disproportionately burden low-income households and communities of color but believes that the regulations are consistent with CARB's environmental justice policies

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<sup>62</sup> This comment and the five that follow were submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, these comments are beyond the scope of the comment period and no response is required. And, CARB notes it did not propose or adopt a ban of low-emission cars, and so to the extent the commenter is making or basing its comments on such a ban, the comment is beyond the scope of this rulemaking. Nevertheless, they are responded to here.

and other legal requirements and do not disproportionately impact people of any race, culture, or income as indicated in Resolution 22-12 (p. 17).

The TCO analyses included in Section VI.E of the ISOR show net cost savings for BEV owners, with savings of \$3,200 over ten years in the most conservative case evaluated (a 2026MY BEV with higher electricity prices assuming no access to a home charger). Under the most optimistic assumptions (a 2035MY BEV with access to a home charger), savings over ten years are much greater at \$8,800. Refer to the response to comment A-20 above for further details. The TCO analysis also accounts for increasing electricity prices in future years relying on the most recent 2021 CEC IEPR projections. See the response to comment A-20 also for details on infrastructure public investments occurring to increase access and on electricity rates.

These savings apply for ZEVs purchased new. Used ZEVs could be expected to generate similar or greater savings as their initial purchase price is substantially lower than new ZEVs which also lowers costs associated with purchase price such as sales tax or insurance; meanwhile, other costs such as operating costs remain roughly constant over the life of the vehicles. US household expenditures on energy consumption have ranged between 4% and 8% of their disposable income, and it has been shown historically that consumers spend higher shares of their income on energy expenditures when energy prices are higher. The impact of higher energy prices can be more significant for low-income households, as they spend larger magnitudes of their disposable income on energy expenditures. Lower operating costs of BEVs and PHEVs would therefore benefit low-income households more and protect them from volatile gasoline price fluctuations.

Accordingly, CARB has included provisions within the scope of the ACC II regulations to promote access to ZEV technology, and Resolution 22-12 directed staff to work to expand access to ZEVs (p.20). While the current average purchase price of ZEVs is higher than that of conventional vehicles, these are mostly in the luxury market which exaggerates the price differential between the technologies. The increasing ZEV requirements will require all manufacturers to participate in the ZEV market and offer more mainstream or entry-level models, which, combined with the reduction in technology costs discussed in the response to comments E-31 and E-32 above, means that in the future ZEVs will be more affordable to a broader range of consumers.

In the meantime, CARB and other State agencies administer a number of grant and incentive programs to improve clean transportation access and to increase zero-emission mobility choices for lower income and underserved communities. Low-income residents receiving public assistance must consider their own circumstances for any vehicle purchase decision regardless of whether the vehicle is a ZEV or conventional vehicles, or new or used, and the potential impact of this Regulation on this decision is outside the scope of this rulemaking.

These ACC II regulations do not directly impose requirements on used vehicles. However, to the degree that higher new ZEV prices translate to higher used ZEV prices, having a broader range of new ZEVs at all price points as a result of the ACC II regulations will also mean that future consumers will have a broader range of used ZEV prices analogous to today's used conventional vehicles price ranges, particularly

after price parity between the technologies has been achieved. As prices of new ZEVs decline with time, the prices of used ZEVs can be expected to fall as well. To accelerate this process, the ACC II regulations specifically includes a provision to incentivize manufacturers to produce low-cost ZEVs in the earlier years. Additionally, if the TCO savings of ZEVs, ZEV assurance measures, or other factors make used ZEVs more attractive to consumers than conventional vehicles, used ZEV prices would be expected to increase if their supply is constrained. The increasing ZEV requirements of the ACC II regulations will increase the supply of used ZEVs and help contain any such price increases.

41. Comment: Apart from this general charger availability deficit, low-income and disadvantaged communities do not enjoy the same access to ZEV infrastructure, exacerbating economic burdens for these vulnerable groups. The CEC's 2020 SB 1000 Report on Equitable Distribution of Charging Infrastructure found that public chargers are unevenly distributed across state air districts—the Report noted that relatively more chargers appear in census tracts with low population density and that low-income communities on average have the fewest public Level 2 and total chargers per capita. This problem of inequitable access is clearly visible in comparing existing electric vehicle charger density to CalEnviroScreen 4.0 percentile scores [OP-122-16]

Comment: Indeed, many individuals, and in particular low-income populations, who are unable to charge vehicles in their homes—for example, those residing in apartment complexes or multi-family units or in homes that otherwise have street-only parking—will have to rely on DC fast chargers at an increasingly disproportionate rate. But as demonstrated above, it is precisely these populations that will also have disproportionate travel distances to and from public DC Fast Charging Stations, which are also more expensive and time consuming to the consumer and degrade EV batteries at an increased rate. [OP-122-17]

Comment: Uneven access to ZEV charging infrastructure means that low-income and disadvantaged communities have some of the longest drive times from community centers to the nearest public DC Fast Charging Station. [OP-122-19]

Comment: The plan disproportionately impacts rural communities who lack the infrastructure of charging stations. It also disproportionately impacts migrant farm workers because they may travel out of state to communities that lack charging stations. [15b-5]<sup>63</sup>

Comment: Longer drive times may also create challenges for businesses located near or within these communities, potentially forcing them to relocate to areas with higher charger densities and leaving less economic opportunity in the low-income communities left behind. [OP-122-20]

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<sup>63</sup> This comment was submitted during the Second 15-Day Notice, the scope of which was solely additional documents relied upon being added to the record. As such, this comment is beyond the scope of the comment period and no response is required. Nevertheless, it is responded to here.



Agency Response: Refer to Section III.A.6 of the ISOR for a description of State and federal infrastructure programs and how they are prioritizing investments in disadvantaged communities, as well as the response to comments A-20 and E-31 above and Master Response 1 on page 6 of the Response to Comments on the Draft Environmental Analysis. Additionally, the ACC II rulemaking will require that vehicles are equipped with charging cords capable of both Level 1 and Level 2 service, enabling drivers to access charging circuits even if they do not have the ability to purchase a Level 2 home charger. This can also reduce the cost for businesses to install workplace charging for fleet vehicles.

As part of the economic analysis for the ACC II rulemaking, staff developed a TCO assessment and considered equity impacts. The BEV technology is projected to be the dominant strategy for compliance by automakers, and staff project TCO net cost savings for BEV owners, as described in Section VI.E of the staff ISOR, which will enable increased discretionary spending by families. See the response to comment A-20 above. For a business, these cost savings from the operation of fleet BEVs would provide additional revenue for other expenditures. Given the prioritization at both the State and federal level to invest in ZEV infrastructure in disadvantaged communities, and the overall cost of ownership savings, the evidence in the record does not support commenter's speculation that businesses may move away from these communities.

## General Economic Impacts

42. Comment: The result of the adoption of these regulations will have far reaching impacts upon on all Californians, dictating how they must run their businesses, what cars they can drive, where they can live, and what stove they can cook with. Life as we know it in California will be altered going forward.

Some of the major implications for businesses and individuals in California, include:

- Increasing costs to businesses, especially agricultural and transportation sectors. [OP-75]

Comment: The proposed regulations will have devastating effects on our industry, on California businesses, on the state's economy, and ironically on the environment. [T2-46]

Comment: This Plan hurts the working men and women of Central Valley. California is not on track to build enough charging stations that will meet the demand of the mandate, especially in low-income communities throughout the Valley. Our region deserves better- the politicians talk about raising economic opportunities for us and then adopt a plan that will mean higher costs for all working families. [OP-73]

Comment: On behalf of the African American Farmers of California we respectfully urge this Board to go back to the drawing board on ACC II to lessen the harm to growers already struggling in this state. Our members operate small farms, a few acres and these regulations pose a real threat to the viability of small black farms throughout the state. These new rules, ironically will lead to what some proponents purport to oppose- large agri-business. Only large, corporate agriculture companies can withstand these changes and survive. Smaller farms, many which are brown and

black growers may have to sell to larger corporations or simply shut down. Please consider farmers like myself before you adopt the rules before you today. [B1-18]

Comment: Multiple commenters say the Regulation will negatively impact farmers, their employees, rural communities, utility rates, and the cost of food. [T1-107, OP-129, OP-140, OP-146, OP-153, OP-165, 15b-5<sup>64</sup>, T2-51]

Comment: A coalition of groups & individuals known as Energy IDEAS states: the regulation could potentially reduce personal income by \$15 billion dollars, car ownership would increase by \$6,000 per car, economic output could be reduced by as much as \$22.7 billion, and low income communities will carry a disproportionate burden of these costs. Food security and affordability will be negatively impacted, and small businesses will pay a huge price along with 85,000 jobs that could be impacted or eliminated by a shift to electrification of all motor vehicles. [OP-140]

Comment: Commenter states the estimated economic impact created by CARB's ACC II Rule would be devastating for California businesses and consumers. CARB's only estimates show that this regulation will reduce personal income in the state by 15 billion as well as increase the cost of vehicle ownership by an average of just under 6,000 per car per California Department of Finance... while the goals of CARB's proposed ACC II Rule are admirable and noble, IWLA cautions against its implementation without sufficient consideration of its dire economic impacts. [T2-30]

Comment: This is something that all Californians can afford, not just small businesses but consumers. And installing charging stations, much contrary to the prior discussion is – and for our business owners with – will cost hundreds of thousands of dollars. Plus, we tens of thousands of dollars to maintain every year. [T2-29]

Comment: Commenter states these regulations are a big step backwards for working families and small businesses. ACC II regulations are simply too much, too fast for minority owned businesses to shoulder. [T2-22].

Comment: The proposal will hurt the Central Valley communities. Families are having a hard enough time raising their families in California and now you plan to impose these new regulations in California. [T1-92]

Comment: [R]espectfully urge this Board to go back to the drawing board on ACC II to lessen the harm to growers already struggling in this state. Our members operate small farms, a few acres and these regulations pose a real threat to the viability of small black farms throughout the state. These new rules, ironically will lead to what some proponents purport to oppose- large agri-business. Only large, corporate agriculture companies can withstand these changes and survive. Smaller farms, many which are brown and black growers may have to sell to larger corporations or simply

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shut down. Please consider farmers like myself before you adopt the rules before you today. [B1-18, B1-28].

Comment: This mandate will increase costs for vehicles and utilities, so it will ultimately increase the cost of food because it will be much more expensive for farmers to produce and transport it. Especially for small grower like myself, who travel to different farmers markets to sell our specialty crops. And how do we compete against growers in other states or across our southern borders when they do not have to adhere to their CA standards and drive home-grown companies out of business or to another state. CA is not an island and I hope you all consider these rules put us at a disadvantage to other out of state competitors. [B1-17, B1-27]

Comment: Commenter is a working parent, and is concerned that ACC II regulations will lead to “thousands of lost jobs and billions of dollar to the local economy- I didn’t make up these numbers, your own report lists these figures”, and wants more time for Central Valley families who “can’t afford this change and who are in danger of losing their livelihood.” [OP-113]

Comment: Commenter voices concern that the proposal will mean higher costs for working families. [OP-157, OP-162]

Comment: Banning the internal combustion engine would cause significant financial harm to the working men and women of the Building Trades by banning the sale of internal combustion engine (ICE) light-duty vehicles beginning in 2035. [OP-53]

Agency Response: CARB has not proposed or adopted a ban on ICEs. The ACC II regulations establish emission standards on new vehicles to which the rules apply such that, by model year 2035, any new vehicle sold within the State must have zero emissions or meet the requirements for a plug-in-hybrid electric vehicle (and associated low-emission standards). It does not require replacement of existing vehicles in use by homeowners or businesses. Under the regulations, the sale of new conventional vehicles remains permissible through model year 2034 and the sale of new PHEVs remains permissible thereafter. Beyond 2035, new PHEVs and FCEVs remain available options that can meet the needs for those who travel long distances and/or need faster refueling or do not have home or nearby charging access.

However, many ZEVs are expected to reach purchase price parity with conventional vehicles and have a lower TCO. Refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted, showing that BEV owners will save a substantial amount of money over a ten-year period and the response to comment E-29 above for how increased electricity demand could result in lower per unit energy refueling rates. To the extent that businesses purchase BEVs for their operations, these savings would lower their costs of producing their goods.

For farms or agricultural communities specifically, the purchase of a BEV would lower their overall costs which the modeling shows would result in a small decrease in food prices for all consumers. The ACC II regulations do not target the agriculture industry specifically. To the extent that this industry or these communities rely on vehicles with certain attributes such as towing or long-distance travel, the increasing ZEV requirements will necessitate that auto manufacturers produce vehicle offerings that

meet the needs of all consumers, which also include PHEVs and FCEVs. Used conventional vehicles will continue to be allowed to be operated and purchased beyond 2035 as well as sales of new conventional gasoline or diesel medium-duty vehicles.

As described in the response to comments A-20 and E-31 above and Master Response 1 in the Response to Comments on the Draft Environmental Analysis, significant investments are being made to ensure infrastructure is available to refuel and recharge ZEVs, including in rural, tribal, and low-income or disadvantaged areas. Additionally, chargers placed within rural areas will only require a 20% match share from the installer rather than the typical 50%.

43. Comment: Please stop forcing Californians to buy electric cars... Stop trying to regulate everything and forcing this on ca residents. People are leaving the state due to crap like this. [OP-64]

Agency Response: CARB considered the comment that the regulations will cause residents to relocate outside California. There is no evidence this is a significant effect. Overall, the regulations will improve public health, benefit the economy, and are consistent with market demand for clean transportation. The ACC II ZEV regulation apply to manufacturers who produce new light-duty vehicles for sale in California and establish vehicle emission standards, and do not propose purchase requirements on citizens of California.

44. Comment: These [energy cost] impacts also disproportionately affect younger Californians including millennials (the majority of whom are minorities), as well as workers without college degree. [OP-122-7]

Agency Response: The ACC II rulemaking applies to automakers and new vehicles, not used vehicles commonly purchased by lower-income drivers. Further, conventional vehicles may still be sold in California through 2034, past the date when BEVs are projected to become cheaper to buy than conventional vehicles, and vehicle financial incentives are available separate from ACC II. Further, refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted, showing that BEV owners will save a substantial amount of money over a ten-year period.

45. Comment: SEMA is concerned that the proposed regulations, mandating that all new vehicle sales in California be zero-emission starting in 2035, will have devastating effects on our industry and on California businesses and our state's economy. [15-5]

Agency Response: The SRIA and updated economic analysis found that the negative impacts would be small and limited to only certain sectors. The economic modeling showed a 15% decline in output from the automotive repair and maintenance industry in 2040 relative to baseline output for that year; the decline stems mostly from the assumed reduction in regular maintenance for ZEVs relative to conventional vehicles. The cost of the ACC II regulations is justified by the benefit to human health, public welfare, and the environment. To help mitigate any job impact, policy options could be considered for job retraining and transfer support, particularly for lower income individuals. Additionally, specialty automotive aftermarket parts may continue to find a market with automotive enthusiasts who can maintain their existing conventional

vehicles or purchase used conventional vehicles. Further, PHEVs will continue to be options for automakers which will preserve some conventional vehicles components that may require continued aftermarket parts. Lastly, a new market for aftermarket ZEV components may emerge to replace some of the demand for conventional vehicle components.

46. Comment: Multiple commenters opposed the Regulation due to increasing energy and transportation costs. [OP-112, OP-119, OP-22, OP-25, B2-7]

Comment: Attachment E (p. 5), [T]he SRIA does not address the very important impact that the O&G declines will have on businesses that continue to rely on ICE vehicles. These vehicle operators will have to travel further and pay more to cover the increased per-gallon cost of gasoline and diesel as the oil and gas industry phases out, which will raise expenses and depress bottom-line earnings. [OP-161, T2-1]

Agency Response: CARB's analysis found that while ZEVs have higher upfront costs for purchasers for the first half of the ACC II program, they provide a net savings on a TCO basis as discussed in response to comment A-20. Over time, this leads to a reduction in production costs for businesses that adopt ZEVs, which will increase, not decrease, productivity.

The argument that this regulation will increase the price of gasoline runs counter to basic economic theory, where at the market level a reduction in demand for a product implies a reduction in a price rather than an increase. While in the short run a reduction in demand may change a firm's average cost, this does not correspond with a price increase, but a change in producer surplus. In the long run a lower demand environment may lead to exit of higher cost producers, but in either case price would not be expected to increase. As suggested by CARB's response to the Department of Finance's comments to the SRIA, the expectation is that if anything gasoline prices may decrease relative to the baseline forecast as a result of the decreased demand.

## Employment Impacts

47. Comment: California is the nation's leader in clean vehicle jobs. Adopting ACC II will drive clean vehicle development and manufacturing and the well-paying jobs that come with that. And the ACC II program will support consumer demand and jobs across the country, including in states like Michigan and Kentucky. [OP-142]

Agency Response: CARB appreciates the support for the ACC II program and agrees it will support job creation related to clean technology.

48. Comment: Commenter states that a stronger ACC II proposal will give incentives for job growth, particularly for unionized workers in the renewable energy field. [T1-40]

Agency Response: CARB concurs with this comment that the ACC II will benefit California's economy, including specific sectors such as the electric power industry. Staff's assessment of the Advanced Clean Cars II regulation on jobs reflects this commenter's assertion. As noted on page 170 of the ISOR, "the electric power industry is one of the main industries to benefit from the regulation seeing a gain of about 5,600 jobs (17.5% of baseline), as ZEV purchasers spend more on electricity to

power their vehicles.” Staff’s assessment does not assume unionization or further detail on the number of jobs in this category dedicated to renewable electricity and regulations regarding employment in the automotive industry are not within the scope of the proposal regarding emission standards.

49. Comment: Multiple commenters opposed the Regulation citing the loss of 85,000 jobs. [OP-75, OP-25, OP-119, OP-140, OP-72, T2-11, T2-3, T2-4]

Comment: Your own report says that we will lose a net 40,000 jobs. And there’s no guarantee that other jobs generated by this policy will bring the wages, benefits, and security of our current building trades union jobs. [T1-25]

Comment: Commenter is concerned about the impacts to California businesses. SEMA member companies, many of which manufacture products compliant with CARB emission standards for internal combustion vehicles, have a significant presence in California, employing thousands of workers across the state. CARB’s impact analysis for the ACC II notes that job losses will be in the tens of thousands and economic impacts in the billions because of the mandated shift to so stated zero-emissions vehicles. [T2-46]

Agency Response: Following the release of the SRIA in January, updated economic analyses have been provided as part of the ISOR and the First 15-Day Notice, which found a smaller net job impact of 40,800 jobs foregone in 2040 rather than the 60,000, 93,000, and 85,000 values the commenters cite. When evaluated in the context of the size of the California economy projected in 2040 this represents a change of less than - 0.2 percent. Additionally, as the California economy is forecast to grow over the regulatory horizon this job impact should be interpreted as a small decrease in the growth rate rather than loss of jobs. With the proposed regulation in effect the California economy is still projected to have over 3.1 million more jobs in 2040 than in 2021. The analysis also does not compensate for the loss in local government jobs resulting from reductions in gasoline tax revenues even though there are currently initiatives in progress to develop revenue replacements as discussed in response to comment E-60 below.

Specific actions to create replacement employment opportunities in other industries are outside the scope of this proposal to reduce emissions from vehicles. CARB notes, however, that the 2022-2023 State budget includes \$45 million one-time General Fund (\$15 million annually from 2022-23 through 2024-25), to restart the California Workforce Development Board’s Low Carbon Economy Workforce grant program. See [Labor and Workforce Development \(ca.gov\)](#), p. 127. Additionally, Governor Newsom’s Executive Order N-79-20 directed the Office of Planning and Research to partner with the Labor and Workforce Development Agency to create a Just Transition Roadmap to address the changes in key industries and regional economies resulting from a transition to carbon neutrality.

50. Comment: Multiple commenters opposed the Regulation citing general job losses in specific sectors such as oil and gas, biofuels, agriculture, and vehicle repair and service. [OP-53, OP-112, OP-174, T1-93, T1-106]

Comment: [T]he effect that this would have on the oil and gas industry, and the thousands of jobs that industry currently supports, cannot be overstated. The SBCTC represents tens of thousands of construction workers whose jobsites happen to reside inside the fence-line of a refinery. CARB's own data estimate job losses of over 60,000 in 2030 and 93,000 jobs in 2037. There is nothing currently underway at CARB or in the State Legislature that would begin to mitigate the economic harm that would cause tens of thousands of working families who are earning middle class livelihoods because of this critical industry. [OP-53]

Comment: [T]his rule will result in the loss of high-wage industry jobs, which could further increase the number of low-income households in California. A 2019 report found that the oil and gas industry supports nearly 366,000 jobs in California and paid workers \$26 billion in wages.<sup>32</sup> Additionally, in rural areas like Modoc County, the oil and gas industry contributed \$2.5 million in labor income to the local economy. [OP-121, OP-122-28]

Comment: Given the myriad other regulations and barriers to business investment in this state, ZEV component manufacturing is not sitting or growing in our state. There will be little to no replacement "green jobs" to account for this significant economic loss. [OP-119]

Agency Response: As detailed in the SRIA and ISOR, staff estimated the direct reduction in gasoline sales resulting from the ACC II regulations as well as the indirect employment and output impacts on upstream industries supply the gasoline.<sup>65</sup> The final analysis found that for the petroleum manufacturing industry, the regulation is estimated to result in about 1,400 jobs foregone and \$14.7 billion in reduced output by 2040 relative to the baseline, or 13% decrease in both cases. The oil and gas extraction industry in California is also estimated to be impacted by the reduced sales, with a projected 919 jobs foregone and \$1.4 billion in reduced output in 2040 relative to the baseline, or 7.5% decrease in both cases.

As discussed in the SRIA, the proposed regulation is expected to ultimately result in an increase in spending directed towards the auto manufacturing industry and the upstream ZEV supply chain industry due to the incremental cost of ZEVs being passed through to purchasers. Workers at the one typical vehicle manufacturer in California, Tesla, are not expected to be negatively impacted, as the business already produces only ZEVs and may benefit from the value of the ZEV credits generated under the proposed regulation. Similarly, ZEV startups in California may benefit as well. An analysis of the impacts to the auto manufacturing industry outside of California was not performed and is not required, though the large increase in spending for vehicles could result in growth of the industry.

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<sup>65</sup> CARB also recognizes, as shown in its baseline analysis, that the industry overall will be producing more ZEVs. This increasing trend will result in environmental, fiscal, and economic changes similar to (but perhaps to a lesser degree than) those CARB analyzed for the ACC II regulations, even in the absence of the ACC II regulations.

The updated economic analyses have found that, while there will initially be a slowing of growth in construction jobs, by the end of the regulatory horizon the growth in the industry slightly accelerates. Given, the growth forecasted in the construction sector, there is still estimated to be about 66,000 more jobs in construction in 2040 than in 2021 with the proposed regulation in effect.

The updated economic analysis provided made available with the First 15-Day Notice estimated about 33,300 jobs foregone in the automotive maintenance and repair industry by 2040 under the ACC II regulations. It is important to note these estimates of foregone jobs represent a structural shift for these industries that directly corresponds to substantial benefits to ZEV owners from much lower operational, maintenance, and repair costs of their vehicles. To help mitigate this job impact, policy options could be considered for job retraining and transfer support, particularly for lower-income individuals. Additionally, the ZEV assurance measures within the ACC II regulations will also increase the opportunity for independent repair shops to participate in the servicing and repair of ZEVs which could offset some of the job losses estimated in this sector.

The available data does not support reliable quantitative estimates for the impact to farm jobs resulting from the regulation. However, in general because this industry is not directly impacted by the ACC II regulations, its impacts would be similar to other industries that are indirectly impacted. In these cases, business that adopt ZEVs realize significant cost savings on the basis of total cost of ownership. These savings would lower businesses' production cost and contribute to increased productivity and lead to growth over time.

51. Comment: CARB estimates that the ACC II regulatory proposal will reduce employment by 60,084 jobs in 2030, 86,929 in 2034, and 93,117 jobs by 2038. CARB attributes the employment losses to the impact of higher ZEV prices on consumer spending on other goods and services in California's economy, as well as the reduction in state and local revenues on employment in the public sector.

We believe that the job losses, though significant, are understated, in that they fail to consider the likely impact of an ICE ban on California's petroleum industry. CARB's estimate shows only a 1,536 decline in jobs related to the petroleum refining industry by 2040, a reduction of about 15 percent from current levels. Absent a shift in refining activities to hydrogen or biofuels, we would expect a rapid phase-out of gasoline-powered vehicles to due to lower demand, resulting in a rise in unit costs of production and forcing more rapid consolidations and more job losses in the refinery industry. Reductions in this industry would have major consequences for the broader economy due to the hundreds of millions of dollars spent by refineries each year for major maintenance and modernization investments. Consolidations in the refinery industry will affect multiple thousands of workers employed in supplying industries. These include construction workers and electricians, many of them in trade unions, working on refinery turnaround projects. The losses in petroleum and construction industries are of particular importance because of their negative impacts on job



opportunities that are so important to upward mobility of workers in this state with high-school diplomas and technical training. [OP-161 Attachment F (p. 8-9)<sup>66</sup>]

Agency Response: The commenter provides their opinion that the impacts to jobs in the petroleum refining industry are understated and their assumptions about what they expect to occur, but does not provide specific comments about what assumptions or inputs into the economic impact modeling should differ from that used in staff's analysis. As detailed in the SRIA, the estimated reduction in petroleum demand, as well as changes in demand and cost for all other industry, are input into an economy-wide economic impact model (REMI PI+), which systematically accounts for the market interactions the commenter describes, in order to project the impact of the proposed regulation. Overall, the updated economic analysis provided in the 15-day changes and FSOR describe CARB's final analysis of the total economic impact of the proposed regulation on the California economy and no changes are found to be necessary based on this comment.

52. Comment: For this transition to benefit auto workers, the entire supply chain, from the gathering of minerals needed to power batteries to the manufacturing of the battery and other parts to final assembly, must support the creation and preservation of good union jobs. [OP-93]

Comment: To lead the future, electric vehicles and other green technologies must be harnessed to create good U.S. union jobs where workers have a voice on the job. It is important to ensure all manufacturing workers can join a union free from intimidation by employers seeking to maintain the status quo. Jobs building cleaner vehicles must pay family and community-sustaining wages and provide benefits that workers can count on to care for themselves and their loved ones. [OP-93]

Comment: The UAW supports a coordinated industrial policy centered on maintaining and growing high-quality jobs in U.S. manufacturing while combating climate change and advancing equity. [OP-93]

Comment: The shift to Evs cannot come at the expense of good wages and benefits and it is critical that we do not leave workers behind as the industry transitions to electrification. [OP-93]

Comment: There is nothing in these rules that create new jobs and you can bet these jobs are going to be blue collar ones. People want a higher minimum wage and I support those efforts but what good is a higher wage if the job is eliminated. There should not be any changed until there is a way to keep or grow the jobs, especially here in the Central Valley. [OP-72]

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<sup>66</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

Comment: Please work closely with the Unions to help them reframe the automation and electrification discussion so that we are not pitting the economy against the environment. We must and can assure good paying jobs with this transition if it is done intelligently. What good is a job if there is no health? How can we protect our public and children so that they can breathe? Commitments can be made by all parties so that lower and middle income families and individuals prosper versus suffer. [OP-44]

Agency Response: The Advanced Clean Cars II regulations apply to new light-duty vehicle manufacturers and do not control the labor policies of those manufacturers. Specific actions to create replacement employment opportunities or secure certain wages for workers producing ZEVs are outside the scope of this proposal to reduce emissions from vehicles. CARB notes, however, that the 2022-2023 State budget includes \$45 million one-time General Fund (\$15 million annually from 2022-23 through 2024-25), to restart the California Workforce Development Board's Low Carbon Economy Workforce grant program. See [Labor and Workforce Development \(ca.gov\)](#), p. 127.

53. Comment: We are concerned that CARB does not – has considered the impact of transitioning the transportation sector. By way of example, the EO calls for a transition roadmap to be adopted by a labor workforce development agency by July of 2021. This has not happened. We understood that this would require a group effort. By pushing forward CARB risks significant impacts to our most vulnerable populations. [T1-10, pp. 108:18-25]

Comment: CARB should work with the Labor and Workforce Development Agency as well as other agencies, community groups, and labor partners to expand high quality job opportunities for communities of color and low-income communities. [OP-160]

Agency Response: Job transition support is important, and California is making it a priority separate from the CARB ACC II rulemaking. The Governor's Office of Business and Economic Development (GoBiz) created the ZEV Market Development Strategy, in consultation with numerous State agencies.<sup>67</sup> This strategy includes four pillars, one of which is Economic Development and Jobs. Additionally, the 2022-2023 State budget includes \$45 million one-time General Fund (\$15 million annually from 2022-23 through 2024-25), to restart the California Workforce Development Board's Low Carbon Economy Workforce grant program. See [Labor and Workforce Development \(ca.gov\)](#), p. 127.

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<sup>67</sup> California Governor's Office of Business and Economic Development, California Zero-Emission Vehicle Market Development Strategy (Feb. 2021) [https://static.business.ca.gov/wp-content/uploads/2021/02/ZEV\\_Strategy\\_Feb2021.pdf](https://static.business.ca.gov/wp-content/uploads/2021/02/ZEV_Strategy_Feb2021.pdf).

## Impacts to Businesses

54. Comment: Multiple commenters requested delays in the phase-in schedule for ZEVs to reduce the economic impacts especially to small or small minority-owned businesses. [OP-31, OP-112, T1-83, T1-95, T1-96, T1-104, B1-14, T2-3, T2-11, T2-4, T2-51]

Comment: Commenter does not support the proposal because fleet vehicle owners will have to change out their existing vehicles to ZEVs by 2035 [T1-101, T1-105]

Comment: Commenter recommends the Board consider giving OEMs more time to produce lower-priced delivery vehicles in support of small business owners who have fleets and cannot afford to swap those vehicles out for ZEVs within the timeframe of the proposal [T1-100].

Comment: For my company to go all electric would put a heavy burden on my company. I do think we need to do something about the climate but I also think that the CARB Board is being too aggressive. To the point of affecting all businesses and the consumer. My feeling is that the board is putting the cart before the horse. You would like us to be all electric by 2035 2040. [OP-42]

Comment: Although I drive an electric vehicle, I am opposed to forcing businesses to switch to electric vehicles so quickly. It can only encourage more businesses to move out of California and cost thousands of jobs. [OP-32]

Comment: Commenter is a small business owner with a fleet of five vehicles. Commenter says replacing those vehicles with ZEVs – with or without incentives – would be burdensome and likely drive him out of business. For this reason, the commenter believes the proposal is too extreme. [T1-81, OP-42]

Comment: Commenter recommends the Board consider giving OEMs more time to produce lower-priced delivery vehicles in support of small business owners who have fleets and cannot afford to swap those vehicles out for ZEVs within the timeframe of the proposal. [T1-100]

Agency Response: The ACC II regulations apply to manufacturers who deliver for sale light- and medium-duty vehicles in California. This is not a requirement on fleets to purchase these vehicles, nor a requirement to replace existing vehicles. The ACC II regulations require production of cleaner vehicles that are expected to reach purchase price parity with conventional vehicles and that have a lower TCO. Refer to the response to comment A-20 above for a description of the TCO analysis CARB conducted, showing that BEV owners will save a substantial amount of money over a ten-year period. This applies to businesses that own and operate vehicles as well, which in turn would be expected to lower the production costs for industries that use light-duty vehicles. Overall, the ACC II regulations are not estimated to have a significant impact on the overall California economy. See FSOR App. F, Updated Costs and Benefits Analysis, pp. 19-22; response to comment C-24, above; Form 399 Attachment, Proposed Amendments to the Low-Emission, Zero-Emission, and Associated Vehicle Regulations (ACC II regulations), pp. 10-14, 41-43, and 57-58; SRIA, pp. 101-102. Accordingly, the Executive Officer determined that the proposed regulatory action would not have a significant statewide adverse economic impact

directly affecting businesses, including the ability of California businesses to compete with businesses in other state, or on representative private persons.

Furthermore, the regulations do not require solely battery electric vehicle sales and allows for new plug-in hybrids vehicles (which use gasoline) and fuel cell electric vehicles (which use hydrogen) to be sold throughout the regulation period and beyond 2035. These additional technology types may be better suited for consumers with limited access to charging infrastructure or whose driving patterns require long travel distances and fast refueling.

As discussed in the ISOR beginning at page 180, CARB evaluated an alternative that would delay the requirement for 100% ZEVs and only require 70% ZEVs by 2035 (Alternative 1). Although Alternative 1 would have reduced employment impacts, the alternative was rejected because it failed to maximize the number of ZEVs deployed, and does not maximize NOx, PM2.5, and GHG reductions. The benefit to cost ratio for this alternative is better, however, it gets less emission benefits than the proposal. It does not maximize NOx and PM2.5 emission reductions from the transportation sector which are necessary to meet SIP attainment goals. Alternative 1 also does not reduce GHG emissions, failing to meet the goals of the regulations. ZEVs are expected to reach purchase price parity with conventional vehicles during the time of the regulations and have lower total costs of ownership. The record does not support the need for delaying the requirements.

55. Comment: [A]s electric vehicles increase, this will result in a significant reduction in the demand for vehicle fuels that gas stations sell, causing many to shut down. This will result in fewer gas fueling stations for owners of traditional vehicles, who are more likely to be low-income, and will cause such vehicle owners to drive farther in order to find fuel. Boston Consulting Group has estimated that if electric vehicles take off rapidly, this could render as much as 80% of the fuel retail market unprofitable by 2035. If demand for gasoline completely disappeared, many of the more than 100,000 gas stations through the nation would be at risk of going out of business. Importantly, these gas stations will not be able to compete by simply installing electric vehicle charging stations, as such stations can be installed in the parking lots of practically any business. [OP-121, OP-122-24]

Comment: CARB does not consider any competitive impacts to oil and gas production and refinery businesses in the state, nor to any of the numerous other businesses related to the petroleum industry (e.g., storage terminals, asphalt production, lubricants, and others). In assessing competitive advantage or disadvantage in its SRIA, CARB considers only the potential advantage to certain vehicle manufacturers as a result of already producing ZEVs. This analysis completely overlooks the blatant "thumb on the scale" that ACC II will place in favor of the electricity sector as compared to oil and gas producers and refineries by forcing electrification of the transportation sector. This analysis also overlooks potential competitive disadvantages to California businesses as compared to businesses in other states. [OP-161-50]

Comment: CARB provides no or only superficial consideration of competitive impacts to oil and gas production and refinery businesses in the state and the numerous other

businesses related to the petroleum industry (e.g., retail stations, auto maintenance shops, auto parts stores, storage terminals, asphalt production, petrochemicals, lubrication facilities, and others), and it fails to consider impacts on renewable fuels industries such as ethanol, biodiesel, and renewable diesel production. In assessing competitive advantage or disadvantage in its SRIA, CARB considers only the potential advantage to certain vehicle manufacturers as a result of already producing ZEVs.<sup>17</sup> This analysis completely overlooks the blatant “thumb on the scale” that ACC II will place in favor of the electricity sector as compared to oil and gas producers and refineries by accelerating electrification of the transportation sector. This analysis also overlooks potential competitive disadvantages to California businesses as compared to businesses in other states. [OP-141-31]

Agency Response: CARB considered these comments that the SRIA and economic analyses did not fully evaluate the impacts to the oil and gas sector and disagrees with these comments. The SRIA fully analyzed the impacts to this sector in terms of employment and sales and CARB completed an updated analysis reflecting the final regulations<sup>68</sup>. The competitive advantage analysis focused correctly on the directly affected industry – auto manufacturing – whose overall methodology the Department of Finance reviewed and with which they concurred.

Staff assume the gasoline production and distribution industries will scale down proportionally to the decline in gasoline demand from the passenger vehicle fleet. But staff do not expect the industries and jobs to be eliminated, and fuel retail outlets may remain operational but expand fuel options to hydrogen and electric DC fast charging; these outlets will continue to be able to offer other products and services to drivers, such as convenience foods, that tend to be their profit centers. As the commenter notes, charging facilities require space, among other things such as convenient road access and electrical power, which gasoline stations have. Contrary to the comment, they may be well positioned to compete for charging use or leverage their locations for higher uses. Further, in today’s market, it is common to have redundancy in gasoline station supply as shown by the frequency with which there are several stations in close proximity. Considering this, there could be minimal impact to the market if there are fewer retail pumps. While not discussed specifically in the Competitiveness section in the SRIA, the macroeconomic analysis does consider the general impacts the commenter describes as it relates to the impact of reduced gasoline demand and increased electricity demand (see FSOR Appendix F). The indirect economic effects to other industries related to changes in demand for gasoline and electricity are also accounted for as part of the macroeconomic analysis, which uses an economy-wide model to consider all of these types of indirect effects. See preceding response to comment E-54 for a response to comments about the effects of the ACC II regulations on businesses.

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<sup>68</sup> California Air Resources Board. 2022. ACC 2 REMI Results Proposal 15-day July. CARB 2022hhh, First 15-Day Notice.

Further, as noted in the response to comment B-5 above, the ACC II regulations are technology-neutral performance standards and hydrogen remains as a compliance path that can potentially expand the industrial gas sector.

56. Comment: The Board received comments asking for CARB to mitigate the damage the regulations will have on businesses, including small businesses, and Californians. [OP-141, T1-98, T2-11, T2-22]

Comment: Commenter asks how businesses can be helped and kept out of bankruptcy as a result of the proposed regulation [T1-101]

Agency Response: Businesses and individuals who adopt ZEVs will realize significant cost savings on the basis of total cost of ownership. These savings would lower businesses' production cost and contribute to increased productivity and lead to growth over time. Refer to the response to comment A-20 above for further details on the TCO analysis CARB conducted. See also response to comments E-50 and E-54, above.

57. Comment: CARB's ACC II regulations are a misguided, rushed attempt to oversimplify a solution, and do not consider impacts outside of California's large cities. We do not currently have the infrastructure nor is our industry set up to support this rapid shift. We rely on workers who get to and from work in their own gas-powered cars and trucks. 2035 is right around the corner and mass transit and a middling charging infrastructure is not going to work and is going to cause real economic pain for growers and farmworkers alike. [B1-16, B1-24]

Comment: Finally, California businesses will face indirect customer-related effects from the proposed ACC II regulation. For example, higher costs for ZEVs will leave less room in household's budgets for purchases of other goods and services supplied by businesses. Those businesses operating in the Central Valley, Southern California and other regions significantly impacted by the phase-out of the O&G industry will face reduced demand for their product and services due to higher unemployment and weaker economic conditions. Retail businesses in all regions will face increased pressure to install chargers in parking lots and garages – at a significant cost – to attract and retain customers that are ZEV owners without access to overnight charging at home and thus in need of shared charging. While these costs could presumably be recovered through charging fees, the up-front investments may prove challenging to businesses without access to adequate cash-flows or credit to cover the up-front investment. [OP-161 Attachment E (p. 7)<sup>69</sup>]

Agency Response: CARB did not propose or adopt a phase-out of the oil and gas industry, nor will ACC II result in such a phase out. The ACC II rulemaking applies to

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<sup>69</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

automakers and new vehicles, not existing vehicles in use by homeowners or businesses. Further, conventional vehicles are still an option up through 2034, past the date when BEVs are projected to become cheaper to buy than conventional vehicles. Further, refer to the response to comment A-20 above for details on the TCO analysis CARB conducted which found that the regulations will result in net savings overall which households can spend throughout the economy. The record does not support the assertion that businesses will be required to install charging infrastructure. If a business decides to do so, it will be upon the determination that doing so will result in a positive return on investment like any other decision to improve its facilities. Additionally, as noted in the response to comment A-20 above, several billion dollars in funding is available from the State and federal governments to supplement private investments to install charging infrastructure throughout California. See also response to comment E-54, above, regarding impacts on businesses.

58. Comment: ACC II will have disparate impacts on small businesses. The impacts shown in Figure 2 will have different effects on small businesses throughout the state. Clearly, businesses with large vehicle fleets and significant travel requirements will be hit hard by the regulation. But other businesses will also bear disproportionate impacts. For example, businesses located in hot inland regions will be hit harder by rising electricity rates stemming from the regulation because of their higher electricity requirements for air conditioning and refrigeration as compared to their counterparts located on the coast. Also, contractors located in rural areas that purchase ZEVs – especially those needing to travel long distances – will face greater challenges than their urban counterparts in finding shared charging stations, especially during the transition period when the charging network has yet to be built out. Similarly, rural businesses that retain ICE vehicles and need to travel long distances will be hit particularly hard by rising gasoline costs and fewer fueling stations as petroleum supplies phase out. [OP-161, Attachment E (p. 3)<sup>70</sup>]

Comment: Low-income rural areas will be particularly negatively impacted, as these areas are places where people already are more likely to drive longer distances in general, and these places also likely to already have fewer gas stations when compared to urban areas. [OP-122-26]

Agency Response: The ACC II rulemaking applies to automakers and new vehicles, not existing vehicles in use by homeowners or businesses. Further, conventional vehicles are still an option up through 2034, past the date when BEVs are projected to become cheaper to buy than conventional vehicles. Refer to the response to comment A-20 above for details on the TCO analysis CARB conducted. See also response to comment E-54, above, regarding impacts on businesses. Drivers in rural areas may

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<sup>70</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

have access to home chargers for the majority of their charging needs, but with longer range BEVs entering the market, sufficient range should exist to reach public fast charging for longer distance travel if home charging is not available or insufficient. As noted in the response to comment A-20 above and Master Response 1 in the Response to Comments on the Draft Environmental Analysis, several billion dollars in funding is available from the State and federal governments to invest in charging infrastructure throughout California, with a priority on disadvantaged communities. Further, from 2035 onward, PHEVs will still be an option along with FCEVs, both of which provide different fueling options compared to BEVs depending on a drivers access to electric charging.

59. Comment: Businesses that are unable (or unwilling) to incur the higher costs and lost productivity for ZEVs can purchase ICE vehicles through the 2026-to-2035 transition period, and all car owners can continue to drive light-duty vehicles after 2035, either by holding onto existing vehicles or purchasing ICE vehicles on the used-car market, Businesses that continue to use ICE vehicles will avoid costs associated with purchasing ZEVs. However, they will still face higher costs associated with continued purchases and operation of ICE vehicles under the ACC II regulation.

A relatively small portion of these higher costs are directly related to the ACC II regulatory proposal provisions focused on reducing emissions from ICE vehicles sold during the transition period. According to CARB calculations, these provisions will increase per-vehicle costs by \$80 for light duty vehicles, and \$660 for medium and heavy-duty vehicles sold in 2026.

However, the much larger impact relates to the phase-out of petroleum fuels and ICE vehicles that will result from the government-mandated shift to an all-ZEV market. According to Stillwater Associates (a transportation fuels consulting firm), the ACC II regulation will reduce gasoline sales by 66 percent by 2035, and by 90 percent by 2050. Stillwater also projects that diesel sales will fall by 34 percent by 2035 and by 60 percent by 2050. Declines of this magnitude will likely result in a major consolidation, and perhaps the entire elimination, of the petroleum refining industry in California, as well as an over 50 percent decline in retail fueling stations by 2035, and an 80 percent decline in fueling stations by 2050. Per-gallon petroleum fuel costs will rise, as the fixed costs related to the distribution and sales of gasoline are spread over fewer and fewer customers. [OP-161, Attachment E (p. 5)<sup>71</sup>, T2-1]

Agency Response: CARB's analysis found that while ZEVs have higher upfront costs for purchasers, they provide a net savings on a TCO basis. Over time, this leads to a reduction in production costs for businesses that adopt ZEVs, which will increase, not

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<sup>71</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.



decrease, productivity. They are also expected to reach purchase price parity during the time of the regulation.

The impacts on the oil and gas industry and downstream industries are analyzed in the SRIA and are estimated to see declines corresponding with the reduced demand for gasoline and diesel fuel. The commenter's characterization as this resulting in major consolidation or elimination of the industry within the regulatory horizon is speculative and not supported by CARB's analysis, which found the impact to the refinery industry to be a decline in output of about 13% relative to the baseline. See also response to comment E-54, above, regarding impacts on businesses.

## Gas Tax Revenue Impacts

60. Comment: [ACC II] will prove devastating for the gasoline tax revenue stream dedicated to improving and maintaining California's infrastructure and replenishing the general fund. [OP-53]

Comment: CARB has provided no blueprint for recouping lost revenue to maintain our highway transportation infrastructure, which is currently generated by vehicle fuel taxes. We believe it is irresponsible to create such a budget shortfall without having a plan to replace those lost revenues, the loss of over \$15 billion for critical road infrastructure. It would result in more potholes, more decaying bridges and overpasses, and more traffic safety concerns leading to more vehicle damage and more crashes. [T1-94]

Comment: If this regulation passes, in the 13 years when it takes effect, the state will have a decrease in gas tax revenue that will likely lead to two uncertain outcomes. First, an increase in the gas tax therefore further burdening low-income family as most can't afford an EV alternative or second, another tax to compensate for the lost revenue. [OP-164]

Comment: Commenter does not support the proposal because it will hurt and drive businesses out of California, reduce gas tax revenue that helps maintain our roadway infrastructure, and affect residents of the state who cannot afford ZEVs [T1-83].

Comment: The ACC II regulations only risk accelerating this contraction, depriving Californians of safe roads and highways and our members of middle-class jobs building and improving the state's infrastructure. [OP-53]

Comment: The reduction in gasoline and diesel sales will also result in a major decline in excise and sales taxes, which are major funding sources for California's transportation infrastructure. According to the CARB SRIA, total losses in excise and sales tax revenues on gasoline and diesel will be \$41 billion over the 2026 through 2040 period, which will be only partially offset by \$12 billion in new revenues from the \$100 road improvement fee levied on ZEVs.

While the SRIA acknowledges the reduction in excise and sales taxes available for transportation infrastructure, it does not address the consequences of such a reduction, which would be severe. Absent the replacement of the gasoline excise tax with an alternative statewide funding source, the decline in gasoline sales will result in

less maintenance, fewer road expansions, and fewer road improvements – all of which will lead to more traffic, longer travel times, faster vehicle depreciation, and, ultimately, reduced business productivity and earnings in the state. [OP-161 Attachment E (p. 6)<sup>72</sup>]

Comment: The economic analysis estimates that state gasoline excise tax revenues will decrease by a cumulative \$17.7 billion from 2026 through 2040, while the State Highway System (SHS) is already facing a significant funding gap. The 2021 State Highway System Management Plan has identified 10-year unmet funding needs of \$61.9 billion to maintain the existing assets on the SHS, expand the bicycle and pedestrian infrastructure, mitigate for potential sea level rise, and remove transportation induced fish passage barriers. While offsetting revenue increases are identified in the economic analysis, revenues from vehicle registration and license fees, the energy resource fee, and vehicle sales tax are not dedicated to transportation infrastructure.

The economic analysis further estimates a \$13.3 billion reduction in excise tax revenues for cities and counties, while local governments are similarly facing a significant transportation funding shortfall. California’s 2020 Statewide Local Streets and Roads Needs Assessment identified \$64 billion in unmet needs for maintaining local street and road infrastructure in a state of good repair over the next decade. This significant funding gap includes a \$37.6 billion in unfunded needs for pavement maintenance and rehabilitation; \$22.1 billion in unfunded needs for existing essential street components, such as curb ramps, sidewalks, storm drains, streetlights, and traffic signals; and \$4.3 billion in unmet needs for repairing or replacing deficient local bridges. These estimates do not include the cost of making safety improvements, including new active transportation infrastructure.

While the economic analysis indicates that the state’s revenue losses will be partially offset by increased registration and vehicle license fee revenues and, to a smaller extent, increased vehicle sales tax revenues, the analysis appears to ignore that 1) all vehicle license fee revenues after administrative costs are dedicated to local government public safety services, and 2) a significant portion of the revenue from the transportation improvement fee established by Senate Bill 1, statutes of 2017, chapter 5, which is charged upon registration for both ZEV and non-ZEV vehicles, is allocated to local transit, rail and multimodal corridor grants, as well as both state highway and local street and road maintenance and improvements. Accordingly, the economic analysis significantly understates the state revenue impact of the proposed rule. [15-29].

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<sup>72</sup> CARB notes that the commenter did not explain in its comments how this discussion in the attachment to its comments was related to its comment, and that the attachment states it was prepared in response to a request for an analysis of the ACC II proposal. Because the commenter did not cite this discussion, it is not clear if this was intended to be a comment on the regulations. Nevertheless, CARB responded in the interests of public participation.

Comment: Commenter states “[B]usinesses will not be the only entities the Proposed Regulation negatively affects—state and local government will suffer as well. At a time when California will need to be investing more heavily in public transportation infrastructure to support those who cannot afford ZEVs, the Proposed Regulation will devastate a primary source of state and local public transportation funding in the state. In California, gasoline taxes include a 51.1 cents per gallon state excise tax, as well as a state and local sales tax that averages 3.7% across California.<sup>7</sup> CARB rightly observes that ‘[d]isplacing gasoline with electricity will decrease the amount of gasoline dispensed,’ thereby ‘resulting in a reduction in tax revenue collected by’ state and local governments. For state governments, CARB estimates that the Proposed Regulation will cause ‘an increase of \$193.3 million over the first three years of the regulation and a cumulative decrease of \$851.2 million over the regulatory horizon.’ Similarly, CARB estimates the total fiscal impact of the Proposed Regulation to local government will be ‘a decrease of \$60.4 million over the first three years of the regulation and a cumulative decrease of \$14.52 billion over the regulatory horizon.’ Before enacting the Proposed Regulation, California must secure replacements for this decimated funding. [OP-141-29]

Comment: The proposed regulations would establish a significant reduction in transportation infrastructure funding. And additionally, the reduction of this funding would result in terminating thousands of middle-class construction careers. We urge the Board to continue to work on identifying revenue sources that will replace the loss of existing transportation funding sources.... [T2-38]

Comment: Commenter states the proposed rulemaking will have drastic negative impacts to transportation funding and the State's ability to build, repair, and maintain our multi-modal transportation system. [T2-56]

Comment: We believe that CARB's economic analysis of the proposed rule underestimates the impacts to State and local transportation funding, which already quantifies a cumulative reduction in fuel excise tax revenues to the States and locals to the tune of 31.1 billion between 2026 and 2024. California's fuel excise tax revenue is allocated nearly exclusively to maintaining and improving local streets, and roads, and State highways, including active transportation improvements, sidewalks, bike lanes, et cetera. And these needs will continue to be acute even with a fleet increasingly compromised of zero emission vehicles. The State highway system is already facing a significant funding gap. The most recent analysis of the States highway system management plan identified a 10-year unmet funding need of \$61.9 billion. That includes expansion needs to equip the State highway system, where appropriate, with bicycle and pedestrian infrastructure, mitigation for potential sea level rise, et cetera. Similarly, local governments are facing significant transportation funding shortfalls. The most recent assessment of that system identified 64 billion in unmet needs. And I'd like to point out that it is where the local system primarily facilitates active transportation and transit modes of transportation. So those needs in that system is a critical component for transportation going forward. While offsetting revenue increases are identified in the economic analysis from vehicle registration and license fees and energy resource fee and vehicle sales tax, these funding streams are not dedicated to transportation infrastructure, so therefore don't actually offset some of

the losses anticipated by the regulation. I know I'm running short on time, so let me close by saying we are supportive of the State's efforts today, but urge CARB to take a leadership role in helping the State of California develop a workable, realistic, and implementable plan to replace the gas tax with an alternative mechanism. [T2-56]

Agency Response: CARB considered these comments objecting to the Advanced Clean Cars II regulation on the basis of the expected losses in fuel tax revenues, and such revenue loss was included in CARB's analysis. Even so, the updated analysis described on page 22 of Appendix F to the FSOR shows that the ACC II regulations will deliver a cumulative net benefit of \$91.1 billion to California from 2026 to 2040. As discussed in the ISOR, p. 169, this foregone revenue, which supports important programs in the State, may eventually be replaced by revenue from other sources or changes in how electricity for transportation is taxed, in which case negative job impacts to State and local government would be diminished. There is no certainty that fuel tax rates will increase and burden lower-income households. Currently, Senate Bill 1, statutes of 2017, chapter 5, places an additional registration fee on electric vehicles, including FCEVs, to partially compensate for their avoided fuel taxes. The Legislature has the responsibility for managing the State's budget, including the funding of road maintenance, imposing taxes which are outside of CARB's authority, and is exploring options for revenue replacement. Senate Bill 1077 (Stats. 2014, ch. 835) recognized that "[t]he gas tax is an ineffective mechanism for meeting California's long-term revenue needs because it will steadily generate less revenue as cars become more fuel efficient and alternative sources of fuel are identified" and created a Road Usage Charge (RUC) Technical Advisory Committee to study alternatives to the current gas tax and advise the California State Transportation Agency's pilot program on a road usage charge.<sup>73</sup> The RUC Committee continues to meet quarterly to guide research activities around pricing as a revenue-replacement strategy. Senate Bill 339 (Stats. 2021, ch. 308) charges the committee with developing a pilot program that charges a mileage-based fee based on the fuel efficiency of vehicles and consider ways for assessing the charge equitably for low-income commuters. See also response to comment E-54, above, regarding impacts on businesses.

61. Comment: [T]he loss of public funds by way of gas taxes is not factored into the economic analysis and should be. [OP-161-52, p. A-3.]

Comment: CARB should consider the costs of additional road maintenance and loss of revenue from fuel sales into a techno-economic feasibility and cost-effectiveness assessment. [OP-161-87]

Agency Response: CARB disagrees with the commenter that the economic analysis did not incorporate the loss of gas tax revenues. As discussed in the ISOR, p. 169, the decrease in gasoline sales is estimated to significantly reduce fuel tax revenue at the State and local level. This reduces government spending, leading to about 21,200 jobs

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<sup>73</sup> California Road Charge Pilot Program 2017 Final Report, <http://caroadcharge.com/media/htbpngos/rcpp-final-report-a11y.pdf> (accessed October 7, 2022).

foregone (0.9% of baseline) in 2040 in State and local government employment as a result of ACC II if revenue decreases are not offset. Commensurately, the change in output for State and local governments is a decrease of less than 0.2% in 2030 and less than 1% in 2040. (See also Final Economic Impact Statement, Form 399 Attachment, p. 65.). These job impact estimates are results of the macroeconomic modeling, which is based on how the average dollar is spent in State and local governments in California. The majority of which is spent directly on government employment, while a significant share is spent on construction.

## Economic Analysis

62. Comment: Figure 30 in the ISOR, reproduced below, shows staff's updated estimate of ZEV baseline (business-as-usual) ZEV sales as compared to the baseline used in the SRIA. Staff updated the baseline by applying the ZEV sales increase assumed in the recently adopted USEPA standards to California baseline sales, beginning in MY 2022. Although applying the United States EPA rate of increase is reasonable, the baseline ZEV sales trajectory shown above clearly understates actual MY 2021 California ZEV sales and very likely understates MY 2022 sales. NRDC suggests that a more appropriate trajectory would start with actual MY 2021 ZEV sales (a known quantity) and apply the United States EPA growth rate from there. That results in the trajectory shown in Figure 19 and Table 8 below. Increasing the baseline would reduce both the incremental cost and the emission benefits of the ACC II rule, because fewer additional ZEVs would be needed to comply. But it would not change the fundamental rationale for adoption. [OP-99]

Agency Response: The commenter requested that CARB model expected ZEV sales from the perspective of current sales rather than current requirements and reflect the results in its analysis, although conceded the changes would not have a significant impact. Staff relied on the EMFAC2021 model for current and future year projections of California light-duty vehicle sales for the ACC II rulemaking. For the analyses pertaining to fleet sales projections, 2021 model year sales were not a known quantity to CARB staff and were not incorporated into the EMFAC model. The model uses a 2019 base year and represents CARB's best estimate of the vehicle sales at the time of the rulemaking. Future iterations of the model will include updated vehicles sales for the 2020 and 2021 model years to reflect vehicle sales more accurately in California. Staff agree that the current assumptions are more conservative in nature in that the final analysis slightly overestimates the cost of the regulation while slightly underestimating emission reductions. Such slight changes, however, do not change the fundamental rationale for adoption of the regulation as the commenter states.

63. Comment: The overstated technology costs used in the ISOR directly result in overstated negative economic impacts. The SRIA, using staff's initial cost estimates, showed that ACC II adoption would have negative impacts on California employment, output, and gross domestic investment. Using the updated costs, the ISOR shows smaller impacts, but the results are still negative. NRDC does not have the capability to conduct a macroeconomic analysis using more appropriate cost projections but such an analysis would reduce or eliminate the purported negative impacts. [OP-99]

Agency Response: CARB agrees that lower technology costs would result in less negative economic impacts. However, as discussed in responses to comments E-7, E-8, and E-12 above, CARB believes that the technology cost assumptions of the ISOR are appropriate and should not be lowered to reduce or eliminate negative economic impacts. As described in Appendix F of this FSOR, the vehicle costs were updated to reflect the change in the battery durability requirement which lowered the overall compliance costs of the regulation. Accordingly, the economic impacts are slightly less than those reported in the ISOR. Nonetheless, some small, negative economic impacts persist under the updated cost assumptions due to the continued reduction in gasoline fuel demand and reduced vehicle maintenance needs which are not eliminated by reducing vehicle costs.

64. Comment: The ISOR's conclusion that ACC II has negative macroeconomic impacts could adversely affect ACC II adoption in Section 177 states as well as the development of the next round of federal standards. Opponents of the regulations will cite California's projected negative economic impacts to support their case. California's ability to influence other jurisdictions to adopt aggressive standards is undermined. [OP-99]

Agency Response: CARB considered this comment but disagrees that these impacts should be reevaluated to increase the likelihood of adoption of the ACC II regulations by Section 177 states, as CARB does not regulate outside California. Each Section 177 state has its own rulemaking processes which will evaluate the costs and benefits of the regulations for the state's specific circumstances. CARB conducted the analysis based on the best available information. The regulation adopted by CARB has lesser negative macroeconomic impacts than shown in the ISOR, though there may still be negative impacts. However, these impacts continue to be minor – overall employment changes would be less than 0.15% different from baseline levels throughout the regulation period and overall State output would be less than 0.2% different. As shown in the ISOR and accompanying updated analyses, the cost of the regulations is justified by the benefit to human health, public welfare, and the environment. The final net result of these analyses shows the ACC II regulations deliver a cumulative net benefit to California of \$92.8 billion and has a benefit-cost ratio of 1.43, meaning benefits are more than costs between 2026 and 2040. California's macroeconomic impacts will not necessarily mirror those in other states due to differing composition of their economies.

65. Comment: CARB should account for increased financial burden on non-dealer Independent Repair Shops resulting from ZEV transition. [OP-161-88]

Agency Response: CARB did account for the impact on repair shops in the SRIA, which include independent shops. The available information and the record before CARB do not support distinguishing between dealer and non-dealer repair shops. As shown in the updated analysis in FSOR Appendix F, the automotive repair and maintenance sector is expected to see up to a 15% reduction in output relative to baseline levels as a result of assumed decreased maintenance needs of ZEVs. However, the ZEV transition has already begun with 16% of new vehicles sales in California being a ZEV in the first half of 2022. Currently, non-dealer independent repair shops are excluded from servicing ZEVs which will become a growing portion of the fleet as a result of the

ACC II regulations. As discussed beginning on ISOR p. 83, ACC II's ZEV assurance measures will enable these shops to participate in the servicing and repair of ZEVs. Without this component of the regulation, these shops would face a shrinking customer base and greater financial burden.

66. Comment: CARB has not fully assessed the economic impact the proposed regulation would have on the liquid fuels supply chain.

CARB assumes that gasoline prices will follow the current CEC IEPR fuel price projection but has not assessed the impacts a technology mandate could have on these prices and how this will affect the domestic and foreign supply-chains. As discussed in the Stillwater Study if the proposed regulation goes into effect as currently written, there will be a 66% decrease in gasoline sales by 2035 and a 90% decrease by 2050. Gasoline and petroleum-based diesel demand will be reduced to 1 billion gallons per year, which is less than half of what is produced by a moderate California facility today. As a result of this, it is likely California will consolidate or eliminate the entire petroleum refining industry in the State and shift to imported finished product (See the Stillwater Study and Attachment E). This will lengthen the supply chain and threaten the security of supply. Capitol Matrix Consulting predicts that per-gallon petroleum prices will increase as a result of this increased importation of finished product as the supply chain is lengthened and the fixed costs for distribution and sale of gasoline are spread over a decreasing number of customers (Attachment E). CARB has addressed the job and income related impacts of declining oil and gasoline production, refining and distribution in California, but has not addressed the long-term impacts to the gasoline and diesel prices in the state and the impact this would have on consumers and the economy." [OP-161-74, OP-97]

Comment: Stillwater Associates predicts that the ACC II proposed regulation will reduce gasoline sales by 66% by 2035, and by 90% by 2050; likewise, diesel sales could fall by 34% by 2035, and by 60% by 2050. [OP-122-25]

Comment: Aware of the significant ongoing demand for petroleum products, ACC II's attempt to phase out critical refining production is irresponsible and threatens to leave millions of Californians without transportation fuel. [OP-122-27]

Comment: CARB does not consider how the negative economic impact this Proposed Regulation will have on the petroleum industry could result in the abandonment of carbon capture, utilization, and storage technology already being developed, thereby increasing GHG emissions. [OP-141-16]

Agency Response: CARB considered these comments and determined that although the ACC II regulations will reduce gasoline and diesel fuel consumption, it will not cause transportation fuel shortages. The impacts on oil and downstream industries are analyzed in the SRIA and the commenter's characterization that this will result in major consolidation or elimination of the industry within the regulatory horizon is speculative and not supported by the evidence before CARB, which instead shows the impact to the refinery industry to be a decline in output of about 13% relative to the baseline by 2040. According to the updated emissions analysis, gasoline consumption in 2035 will

only be 38% less than in the baseline scenario and diesel consumption would only be 12% lower,<sup>74</sup> which is substantially less than the reductions cited by the commenters.

CARB notes that the Stillwater Associates estimate is based not on the ACC II regulations but on the Mobile Source Strategy, which is a comprehensive planning document including much more than just ACC II. Furthermore, this estimate compares future gasoline demand to current levels rather than future levels with and without new regulations. This exaggerates the effect of the Mobile Source Strategy given that other factors are already contributing to future decreases in gasoline demand; the reduction from the light-duty vehicle fleet estimated in the Mobile Source Strategy comparing 2035 levels with and without the Mobile Source Strategy is therefore lower than what Stillwater Associates reports (and also greater than what the ACC II regulations will produce).<sup>75</sup>

While CARB agrees that future petroleum consumption levels will be lower as a greater fraction of the fleet changes to ZEV, this does not necessarily mean that Californians will be left without transportation fuel. As discussed in the response to comment OP-141-1 in the Response to Comments on the Draft Environmental Analysis, there is no significant or credible evidence in the record to support the claim that California would become more dependent on increased petroleum imports. Additionally, the diesel consumption volumes of light- and medium-duty vehicles in the EMFAC model are less than 0.5% those of the gasoline volumes and therefore a marginal consideration in the business decisions of fuel producers or fueling station operators.

The argument that this regulation will increase the price of gasoline runs counter to basic economic theory, where at the market level a reduction in demand for a product implies a reduction in a price rather than an increase. While in the short run a reduction in demand may change a firm's average cost, this doesn't correspond with a price increase, but a change in producer surplus. In the long run a lower demand environment may lead to exit of higher cost producers, but in either case price wouldn't be expected to increase. As suggested by our response to the Department of Finance's comments to the SRIA, the expectation is that if anything gasoline prices may decrease relative to the baseline forecast as a result of the decreased demand.

Regarding carbon capture, such capture, utilization, and storage technology being developed and commercialized can be coupled with various sources of CO<sub>2</sub> in California. In fact, the recent 2022 Draft Scoping Plan highlighted the need for this technology in conjunction with several types of industrial facilities,<sup>76</sup> and the California

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<sup>74</sup> California Air Resources Board. 2022. Proposal VMT and Fuel Calculations. CARB 2022ddd, First 15-Day Notice.

<sup>75</sup> CARB 2020 Mobile Source Strategy, Vision Model - LDV Raw Data and Results [https://ww2.arb.ca.gov/sites/default/files/2020-11/LDV\\_MSS\\_supporting\\_materials\\_ISAS\\_Nov2020.xlsx](https://ww2.arb.ca.gov/sites/default/files/2020-11/LDV_MSS_supporting_materials_ISAS_Nov2020.xlsx) (accessed October 5, 2022).

<sup>76</sup> See page 66 in Chapter 2 of the CARB 2022 Draft Scoping Plan, <https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf>.



Legislature recently passed, and the Governor approved, Senate Bill 905 (Stats. 2022, ch. 395) directing CARB to establish a Carbon Capture, Removal, Utilization, and Storage Program and a unified permit application for carbon capture, removal, and sequestration projects. Commenter provides no evidence or further elaboration of how ACC II would result in an abandonment of these developments, or how such abandonment would increase GHG emissions, beyond speculation. CARB also notes any increased GHG emissions would likely be offset by the reduction in gasoline consumption. See also response to comment OP-141-16 in the Response to Comments on the Draft Environmental Analysis.

Lastly, CARB did not propose or adopt a phase out of refining production, and so to the extent the commenter is making or basing its comments on such proposed phase out, the comments are beyond the scope of this rulemaking.

67. Comment: Commenter states “Despite CARB’s access to ample information related to the economic impacts of electrification and existing strains on California’s grid, CARB failed to address these impacts, and instead constrained its analysis to a narrow consideration of direct costs centered around vehicle manufacturing and ownership. CARB’s SRIA concludes that only vehicle manufacturers are directly affected by the proposed ACC II program, which fails to account for extensive economic impacts stemming from the electrification of the transportation sector, discussed in detail below. This assessment is therefore insufficient to fulfill CARB’s legal duty to broadly consider economic impacts.” [OP-161-53, OP-97]

Comment: Commenter states “Finally, despite CARB’s access to ample information related to the economic impacts of electrification and existing strains on California’s grid, CARB has failed to address these impacts, constraining its analysis to a narrow consideration of direct costs centered around vehicle manufacturing and ownership. CARB’s SRIA concludes that only vehicle manufacturers are directly affected by the proposed ACC II program, which fails to account for extensive economic impacts stemming from the electrification of the transportation sector, discussed in detail below. This assessment is therefore insufficient to fulfill CARB’s legal duty to broadly consider economic impacts.” [OP-141-33]

Comment: The commenter states “CARB has cited growth in the electric utilities sector and noted that new infrastructure will be needed to support this transition, however, they have failed to account for the costs of the infrastructure needed for this regulation in the SRIA, and have instead ascribed benefits to the electric utilities sector for job growth. This is misleading, and CARB must evaluate the full economic impact to electric utilities as a result of this regulation rather than just account for the benefits while ignoring the required costs associated with this transition.” [OP-161-24]

Comment: CARB must perform a complete and sufficient assessment of the economic impacts of the ACC II mandates to fully assess the impact on California’s economy. This assessment should account for the costs associated with upgrades to the California grid infrastructure (new and upgraded generation, transmission, and distribution)... [OP-161-40, OP-97]

Comment: Additionally, CARB has failed to account for the electricity grid infrastructure (generation, distribution, and transmission) upgrade costs that would be necessary to support the additional load demand generated from the ACC II proposal. While the SRIA acknowledges that there would be tremendous growth in the electricity grid infrastructure and estimates the benefits of job growth in this sector, it remains silent on the costs associated with this grid infrastructure upgrades and development. As noted in the 2018 E3 Deep Decarbonization in a High Renewables Future Report (2018 E3 Report), these costs could be significant. For example, the cumulative cost for electric grid infrastructure development and maintenance for a high electrification scenario that includes the deployment of 35 million ZEVs is of \$1.55 trillion from 2026-2050. This value is \$378 billion higher than the current policy reference case that was evaluated in that 2018 E3 Report. (Refer to Table A-3 for further details on the current policy scenario and the high electrification scenario). Hence, CARB must include the costs associated with the electricity grid infrastructure updates needed for the implementation of the proposed ACC II in their benefit-cost analysis. [OP-161-72, OP-97]

Agency Response: CARB disagrees with this comment that the SRIA does not account for the indirect effects of the regulation on sectors outside of vehicle manufacturing. As discussed in the response to comment C-34 above, CARB prepared the SRIA and related analyses that are required under the Administrative Procedures Act and its implementing regulations.

Section 5 of the SRIA, p. 116 et seq., discusses the macroeconomic impacts based on decreases in demand for gasoline and the associated increase in demand for electricity and hydrogen resulting from the ACC II regulations. The reduction in consumer spending on gasoline results in decreases in demand for petroleum and coal products manufacturing and oil and gas extraction, as well as the industries that support the retail sale of gasoline to consumers represented in the retail and wholesale trades. The increase in consumer spending on electricity enhances the electric power generation, transmission, and distribution industry. As discussed in the SRIA and the updated analysis detailed in Appendix F of this FSOR, employment and output impacts to these sectors track with the changes in demand. Thus, the electric power industry is one of the main industries to benefit from the regulation. The operational cost-savings from fuel and maintenance expenditures realized by consumers from the regulation will be redirected to other sectors of the economy. As a result, the overall net change in employment and state output is less than 0.2% relative to the baseline.

See the responses to comments A-25 regarding grid impacts and A-20 on electricity prices. As noted in the response to comment A-20, the electricity price forecasts account for increasing electricity costs associated with electric utility investments for higher load demands, renewable supplies, and upgrades to transmission and distribution costs.

68. Comment: Have we really considered the actual cost of this unprecedented approach? [OP-75]

Agency Response: CARB completed a SRIA in accordance with the Administrative Procedure Act and its implementing regulations (Cal. Code Regs., tit. 1 § 2001, et

seq.) for regulations anticipated to have an economic impact on California business enterprises and individuals in an amount exceeding \$50 million in any 12-month period between the date it is filed with the Secretary of State through 12 months after it is fully implemented (defined as major regulation). The SRIA includes an assessment of the costs and economic impacts of the ACC II regulations. CARB submitted the SRIA to DOF on February 1, 2022, with updates in the ISOR. These analyses show the cost of the ACC II regulations is overcome by the benefits to human health, public welfare, and the environment. The final net result of these analyses shows the ACC II regulations deliver a cumulative net benefit to California of \$92.8 billion and has a benefit-cost ratio of 1.43, meaning benefits are more than costs between 2026 and 2040. Refer also to the responses to comments C-18 and C-34.

69. Comment: We cannot comprehend the Economic Impact, Infrastructure Requirements, and Bond Requirements for implementation.

What Capitalization would be needed for both private and public. What model is being used for the timeline. How is the GDP Gross Domestic Product being overlaid. What demographics are used. Are you using Census data. What is the impact on the manufacturers. What is the projected retail cost to the consumer. What are other state's requirements-now and proposed. How does this effect the power industry-instate and outstate. From where is the generation of resources derived for power supplies to implement these regulations. Is the timeframe realistic to the costs and to the implementation. [OP-168]

Agency Response: ISOR Section X and ISOR Appendix C-1 discuss the data, methods, and findings of how CARB assessed the compliance costs for manufacturers, the electric utility industry within California, and the impacts to consumers. See the responses to comments A-25 regarding grid impacts and FSOR Appendix C, Comment A-3 on the implementation timeframe for the ACC II ZEV regulation. The commenter's question on "other state's" current and proposed requirements is unclear as to whether it concerns other regulatory programs within California, Section 177 states that may adopt California's requirements, or non-Section 177 states, and CARB is therefore unable to respond. Similarly, the commenter's reference to "bond requirements" is not clear or specific enough for CARB to be able to respond other than to note that the ACC II regulations do not include bond requirements or otherwise concern bonds.

## F. Other

1. Comment: The commenter states "Consistent reliance on fast charging also will shorten battery life, resulting in a need to replace the battery and/or the vehicle more frequently." [OP-141-28]

Agency Response: DC fast charging will be one of several charging options for BEV drivers. Level 1 and Level 2 charging at home, work, and in public likely will continue to provide the majority of most drivers' fueling needs. However, battery technology is advancing and is less susceptible to degradation from fast charging. Further, staff are confident automakers will educate buyers of charging patterns that reduce risks for

the battery, particularly as they will be required to provide vehicle warranties under the ACC II regulations.

2. Comment: Commenter believes the rulemaking must diversify fuel types and not rely solely on electricity, leaving California vulnerable to cyber-attacks. [T2-11]

Agency Response: Evaluating the impacts on the grid from potential physical and cybersecurity threats is outside the scope of the impacts analysis required by CARB's vehicle emission regulations. CARB is aware that electrical grid risks and cyberattack mitigation are monitored and addressed by the Federal Energy Regulatory Commission (FERC) and the U.S. Department of Homeland Security (DHS).

Further, the California transportation fuel demand resulting from ACC II will include several fuel types, not solely electricity. Hydrogen will increasingly be used, and a portion of the fleet will continue to use gasoline and diesel, though at a declining rate over time.

3. Comment: Commenter states that trucks, especially last mile (loading/unloading, delivery) need to be a priority as well. [OP-90]

Agency Response: Many truck classifications are out of scope of the ACC II regulations for emissions from light- and medium-duty vehicles. CARB notes, however, that emission standards for such vehicles are, or may be, covered in separate CARB regulations. The ACC II regulations apply to light and medium duty trucks designed for passenger vehicles and light commercial service (pickup trucks and passenger vans). Specifically, the ZEV regulation covers vehicles up to 8,500 lbs GVWR, and the LEV criteria regulations cover vehicles up to 10,000 lbs GVWR. Some vehicles used in these classes may be used for loading, unloading, and delivery of goods to the ultimate purchaser.

4. Comment: We continue to urge California and the Biden Administration<sup>1</sup> to develop standards that are harmonized and encourage industry to move confidently toward our shared – and ultimate – goal of an all-electric, low-carbon transportation future. We caution against finalizing mismatched, divergent, and inefficient regulations that will hinder industry's ability to effectively engage on the substantive challenges that must be met to achieve the nation's climate goals.... We strongly believe that the fastest way to reduce emissions and achieve an all-electric future is through a national program with emission reductions that are harmonized between NHTSA, EPA, and California. A harmonized program will reduce regulatory uncertainty and enable all stakeholders to focus cooperatively on reducing greenhouse gas emissions, conserving energy, and growing the economy. The ability to sell the same fleet in all 50 states will also reduce consumer price and manufacturing complexity, enabling quicker fleet turnover with sales of newer, more efficient vehicles.... We recommend that CARB coordinate with federal regulators to ensure the same test procedures, test fuels, vehicle test group definitions, crediting provisions (e.g., off-cycle, air conditioning, averaging, banking, trading) and electric vehicle treatment (i.e., EVs are 0 g/mile and counted toward averaging requirements) in criteria pollutant and GHG regulations. Together, aligning these aspects of the regulation ensure the same fleet

of vehicles can be deployed to meet our shared emission-reduction goals and simultaneously meet the state and federal regulations. [OP-98]

Comment: For EVs, CARB should harmonize with global and federal requirements wherever possible. State-specific requirements add complexity and increase compliance costs without environmental benefit, especially since the end goal is a fleet of zero emission vehicles. [OP-155, incorporated by reference into comments B1-20, OP-124, T1-8, T1-9, OP-57, OP-98, OP-150, OP-95, T2-34]

Agency Response: CARB coordinates with federal agency staff on developing and implementing vehicle emission standards and considers harmonizing requirements where doing so meets California's needs to protect public health and the environment. In this proceeding, CARB has significantly harmonized its ACC II regulations with federal standards and test procedures. Many of the federal test procedures are incorporated by reference into California's procedures. California and federal automotive evaporative emission requirements and test procedures are essentially the same. And harmonized regulations enable manufacturers to perform one set of evaporative emission testing, which is used to comply with both California and federal emission requirements. Virtually all (98%) of vehicle test groups for model years 2022 and 2023 are certified as 50-state vehicles (i.e., certified for all the United States, including California). The federal government does not have zero-emission vehicle standards with which to harmonize. The ACC II proceeding did not propose to amend CARB's light-duty vehicle GHG emission standards.

California's existing ACC GHG and criteria emission regulations were harmonized with the federal vehicle standards for a period of time, before the prior federal administration scaled back the stringency of the federal GHG regulations. However, ACC II does not change the State GHG vehicle emission standards; CARB anticipates supporting and working closely with U.S. EPA as the two agencies consider GHG emission standards for future model year light-duty vehicles.

5. Comment: Commenter encourages consideration of EV conversion kits to convert existing ICE to ZEVs. [15-2]

Agency Response: The scope of the ACC II regulations is for requirements for manufacturers for new vehicles, not for aftermarket conversions of in-use vehicles. Some automakers do have models that are available in a conventional vehicle variant and a ZEV variant, the latter which could qualify for the ZEV regulation if it meets minimum technical and performance requirements as a new vehicle (not an aftermarket conversion). The ACC II regulations do not preclude owners of existing vehicles from converting conventional vehicles to ZEVs.

6. Comment: Commenter is critical of automaker commitments to meet auto emissions standards [T1-90].

Agency Response: Currently, automakers are in compliance with the existing California ZEV and LEV criteria emission regulations and have banked credits from prior model year over-compliance. The ACC II regulations have an aggressive stringency but staff are confident automakers can comply either with their own vehicle products or through the purchase of vehicle values from other automakers.

7. Comment: Commenter states another thought would be to enforce that all vehicles already on the road have emission compliance systems. I hear and see vehicles blowing smoke/burning oil because the piston rings going bad or vehicles with chopped off (loud) exhaust systems that clearly do not meet CARB standards. [OP-90]

Agency Response: CARB, in coordination with the Bureau of Automotive Repair and the Department of Motor Vehicles, enforces existing regulations with periodic testing of in-use vehicles to assess emissions performance in vehicles as emission control systems and components age and to ensure that vehicles in use continue to meet emission requirements. For more information, please visit [Environmental Complaints | California Air Resources Board](#). These measures are in addition to and not substitutes for the ACC II regulations. For more on CARB's enforcement programs, please visit: <https://ww2.arb.ca.gov/our-work/topics/enforcement>.

8. Comment: ACC II should prioritize efficiency to drive widespread access to low-cost, no-compromise ZEVs Just as you deliberately and successfully designed ACC I to advance longer range ZEVs, we encourage CARB to design ACC II around ZEV efficiency. With increasing range now a staple in the ZEV marketplace, efficiency will be the determining factor as to when long-range, no-compromise ZEVs reach all vehicle segments. By prioritizing and rewarding efficiency, the ACC II regulation can accelerate universal access to ZEVs, including for lower income residents and disadvantaged communities – accelerating market, emissions and equity outcomes. ZEV efficiency is the single most important parameter CARB can influence to reduce the cost and environmental impact of ZEVs and advancing ZEV efficiency is the best way to align ACC II with CARB's approach to climate change, which as described in the Draft Scoping Plan, includes identifying a “technologically feasible, cost-effective and equity-focused path” to meet the state's climate goals. Improved ZEV efficiency delivers the same benefits as it does for conventional vehicles – including improved environmental impact, enhanced national security, and lower operating costs. It reduces electricity grid impacts, upstream emissions, and the amount of additional energy resources needed to support the State's electrification priorities. It reduces demand for lithium and critical materials, along with potential supply chain bottlenecks. Unlike conventional vehicles, where improved efficiency tends to increase production costs, ZEV efficiency can yield a virtuous cycle: efficiency can reduce vehicle production costs and purchase prices by reducing the amount of batteries needed to achieve a targeted range, lowering vehicle curb weight due to use of fewer batteries and smaller packs (battery modules are generally the heaviest component in an electric vehicle) which can thereby further reduce the required cell count to achieve a desired range, and reducing the cost of the battery pack itself by lowering demand per vehicle for lithium and other critical materials thus applying downward pressure on commodity prices. We agree with the statement in the ISOR that “Innovations leading to lower cost ZEV models likely will result in increased sales within the mass market,” and we feel strongly that efficiency can serve as a primary innovation leading to lower cost ZEVs over the coming decade. Given the clear and broad benefits of ZEV efficiency, and direct alignment with the State's priorities, we encourage CARB to proactively design ACC II to promote ZEV efficiency. While Lucid prioritizes efficiency in our vehicle designs, CARB should not assume the market will prioritize or reward ZEV efficiency on its own. Therefore, we strongly encourage CARB to take steps to

reward ZEV efficiency through ACC II and through other programs such as the Low Carbon Fuel Standard....

Create a separate category for Exceptional Efficiency Values, worth additional 0.5 ZEV values. With added stringency to create a market for ZEV values, CARB can better advance an array of priorities through additional crediting opportunities to advance ZEV efficiency. Specifically, we encourage CARB to add a new crediting category for Exceptional Efficiency Values, which would be worth 0.5 credits and available through at least the 2031 model year. This category, like the Early Compliance Values category, would serve to accelerate mass market availability and adoption of ZEVs. Coupled with a more stringent regulation overall, this crediting approach could generate additional value for exceptional efficiency, supporting the more rapid production and adoption of low-cost, no-compromise ZEVs. ZEVs eligible under this category would have to be at least 50% more efficient than CARB's baseline assumptions. A vehicle that is 50% more efficient would require 33% less battery, reducing incremental vehicle costs by well over \$2,000 under CARB's analysis. It would also require 33% less energy to travel a mile, reducing greenhouse gas and criteria pollutant emissions from upstream electricity generation by a similar amount. While we appreciate and support the move towards one credit/value per ZEV, the proposed regulation already deviates from that model to support equity investments, early compliance, and compliance flexibilities. This proposal would further support compliance flexibility, accelerated mass market adoption of ZEVs, and equity – if coupled with a more stringent compliance requirement to ensure that actual ZEV sales required by the regulation outpaces automakers' BAU planning. [OP-154]

Agency Response: The commenter requests ACC II focus on ZEV energy efficiency and create an additional vehicle value for exceptional battery energy efficiency. CARB declined to follow commenter's suggestion because the energy efficiency of ZEVs is outside the scope of this rulemaking.<sup>77</sup> CARB did not notice or propose any such measures or metrics, and these potential measures are sufficiently distinct from the regulatory concepts included in the notice, important and complex in their own right. Preliminarily, CARB would expect further emissions reductions through more efficient energy usage by ZEVs, to the extent feasible, to be substantially smaller than those under ACC II as adopted, especially when accounting for the ongoing emission reductions associated with generating and delivering fuel (such as electricity) for ZEVs from renewable energy. And CARB does not have sufficient information at this time to determine what efficiency value thresholds to establish and the feasibility to achieve

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<sup>77</sup> Notably, CARB noticed a regulatory proposal that "will drive the sales of zero emission vehicles (ZEV) and the cleanest-possible plug-in hybrid-electric vehicles (PHEV) to 100-percent in California by the 2035 model year, all while reducing smog-forming emissions from new ICEVs in the fourth iteration of the Low Emission Vehicle (LEV) regulation." The goals of the regulatory proposal were primarily "to transition the new light-duty vehicle fleet to ZEVs and PHEVs and clean-up Internal Combustion Engine Vehicles (ICEVs) to reduce emissions of criteria, toxic, and greenhouse gas pollutants," because those "[e]missions from motor vehicle engines hurt public health, welfare, the environment, and the climate in multiple interrelated ways." In other words, this proposal was focused on expanding ZEVs and PHEVs in the light-duty fleet and reducing emissions from the vehicles themselves.

those thresholds. As such, CARB did not pursue efficiency measures or values at this time but will continue to reevaluate technology development and deployment to identify opportunities for further feasible reductions in the future.