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Ms. Liane Randolph
Chair, California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Lucid Comments on the Proposed Advanced Clean Cars II (ACC II) Regulations

Dear Chair Randolph, Vic Chair Berg and Members of the Board:

Lucid Motors appreciates the opportunity to comment on the Proposed ACC II Regulations. We thank you and the CARB team for proposing this groundbreaking regulation, which will ensure the complete transition to zero emission vehicles (ZEVs) in California and other Section 177 states, and for the thorough and deliberate process that has gone into developing this proposal. As the automotive industry transitions to ZEVs, we urge you to view the ACC II regulation not only as a backstop to expected industry activities, but rather a tool to proactively guide and accelerate the ZEV market in ways that align with the State's priorities. With a few adjustments to motivate automakers accordingly, this regulation can quickly unleash a wave of innovation that will bring to market efficient, low cost, long-range, no-compromise ZEVs necessary to transition the entire market and all communities to ZEVs.

About Lucid Motors

Lucid Motors is a California-based electric vehicle manufacturer, with headquarters in Newark, CA. With a range of up to 520 miles, the fastest recharge speed in the industry (350 kW), and vehicle-to-grid capabilities, the Lucid Air is the world's most powerful and efficient electric sedan in the market. We have a clear vision for transitioning our market-leading technology to mainstream market segments with newly announced plans to increase our global production capacity mid-decade to reach 500,000 EVs per year¹. Importantly, our technology leadership – especially on efficiency – will be key to enabling electrification of heavy-duty sectors and unlocking low-cost, mass market, no-compromise ZEVs.

The structure of ACC II regulations will drive outcomes

Throughout the ACC II regulatory process, we have been consistent in advocating for a set of key principles to accelerate mass market development and adoption of ZEVs:

¹ <https://ir.lucidmotors.com/news-releases/news-release-details/lucid-advances-global-sustainability-vision-announcing-new>

1. The ACC II regulations should be guided by the State's prevailing air quality and climate obligations, which requires as much or more focus on driving ZEV sales in the 2021-2026 timeframe as it does in achieving 100 percent ZEV sales by 2035.
2. Transitioning to 100 percent ZEV sales requires a regulation designed around no-compromise solutions.
3. Efficiency matters, including for ZEVs, and should be an underpinning metric of ACC II.
4. The regulation should be designed to support and maintain a competitive ZEV market that drives continual innovation.

Adhering to these principles will ensure that low cost, no-compromise ZEVs quickly become available, maximizing emissions reductions and equity outcomes. We strongly encourage CARB to advance these priorities through the design of the ACC II regulation.

The design of the ACC II regulation will drive market outcomes, just as it did under ACC I. In that rule – at a time when conventional wisdom expected limited range, high-cost ZEVs to persist, and the idea of achieving 100% ZEV sales by 2035 felt farfetched – CARB designed the regulation to reward longer range. By every metric, it has been unbelievably successful. Even though the market has far outpaced regulatory requirements, the design of the ACC I regulation created conditions that supported and rewarded innovation around a priority attribute – range – and increased the role and opportunities for ZEVs in the market. By designing around range, automakers rapidly innovated accordingly, putting the market in the position it is today to plan for a cost-effective transition to 100% ZEVs.

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.²

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

² CARB (2022) Draft 2022 Scoping Plan Update, California Air Resources Board.

<https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf>

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,”³ 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,⁴ 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.⁵

Creating market conditions for success: Stringency + Incremental “Exceptional Efficiency Values”

Based on the current proposal, we are not convinced that similar conditions as previously existed with ACC I credits will materialize under ACC II to drive priority outcomes. In addition to designing around the four principles referenced above, CARB should ensure a competitive market exists for ZEV values that rewards investments in the low-cost, no-compromise ZEVs by:

- Increasing the stringency of the regulation in at least 2026-2030, and
- Creating an “Exceptional Efficiency Values” category, where ZEVs with at least 50% greater efficiency than assumed in CARB’s baseline generate an incremental 0.5 ZEV values.

Strengthen stringency, especially in 2026-2030, to drive ZEV sales beyond BAU

As a starting point, the proposed stringency of the regulation appears to be low. This means that a market for values is unlikely to materialize in any significant way under ACC II, and automakers are unlikely to plan for strategies to accumulate extra values, including through

³ pg. 173.

⁴ We appreciate reference to Lucid Motors’ “impressive efficiency,” for example on page 16 of the ISOR and in Appendix G: ACC II ZEV Technology Assessment.

⁵ For example, in forthcoming amendments to the Low Carbon Fuel Standard (LCFS), we hope CARB will consider including an option for automakers with highly efficient ZEVs to generate incremental LCFS credits by applying for a unique energy efficiency ratio (EER), similar to the way they can generate incremental credits for smart charging.

Environmental Justice Vehicle Values, Early Compliance Values, or the proposed Exceptional Efficiency Values. This unnecessarily limits CARB's ability to influence automaker behavior beyond the minimum technical and ZEV assurance requirements or to drive equity investments or other outcomes through ACC II.

The proposed regulatory package confirms that stringency through at least 2030 is expected to be below business as usual (BAU) ZEV sales levels that would otherwise exist in the absence of the rule. For example, the Initial Statement of Reasons (ISOR) notes that: "The proposed trajectory for 2026 through 2030 aligns with what OEMs have stated in projections of ZEVs and PHEVs."⁶ It further notes, with a sense of surprise:⁷

What is striking about these projections is that they were submitted by manufacturers prior to future regulations being adopted. This means these projections do not consider the effect of more stringent GHG tailpipe emission regulations nor this ACC II proposal, which would likely affect manufacturer's response to the survey.

In its analysis related to model turnover scenarios, CARB finds the proposed stringency to be less than the "Slow Phase" model turnover scenario through 2030. That analysis does not appear to consider the significant flexibilities built into the proposed regulation, which allow actual ZEV sales in 2026-2030 to be 20+% less than required ZEV compliance values during those years, suggesting actual ZEV sales could lag a slow industry transition to ZEVs even more than modeled.⁸ Finally, CARB's economic analysis shows that a passenger car BEV with 300 miles of range has a lower total cost of ownership than conventional vehicles in less than one year, even for model year 2026 technology and conservative assumptions around battery pack costs (\$95.30/kWh), BEV efficiency (3.7 mi/kWh), and gasoline prices (about \$4/gallon).

Altogether, CARB's analyses indicate the proposal is a conservative regulation that could be strengthened to deliver additional economic, emissions, and equity benefits. While this proposed regulation does strengthen ZEV value requirements in 2026-2028 compared to previously workshopped scenarios,⁹ it adds additional flexibilities that mean ZEV sales in those years could be theoretically lower than in earlier proposals,¹⁰ and it actually reduces stringency in 2029-2030 by 1-2 percentage points compared to earlier proposals.¹¹

⁶ ISOR, pg. 40. <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/isor.pdf>

⁷ ISOR, pg. 39. <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/isor.pdf>

⁸ ISOR, pg. 41. <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/isor.pdf>

⁹ The proposal presented at the October 13, 2021 ACC II workshop (slide 27) included 30% stringency in 2026, 40% in 2027 and 50% in 2028. The proposed regulation increases those requirements to 35%, 43% and 51%, respectively. https://ww2.arb.ca.gov/sites/default/files/2021-10/accli_october_2021_workshop_presentation_ac.pdf

¹⁰ The proposed regulation adds flexibility through early compliance values, which can be used for up to 15% of compliance through 2028. With EJ values (5%) and values from banked credits (15%) offering additional flexibility, in theory, 35% of compliance can be met with these values in MY 2026-2028. This means the minimum annual vehicle sales under the proposed regulation would be 23%, 28%, and 33% in MY 2026, 2027 and 2028 respectively – compared to 24%, 32% and 40% according to the October 13, 2021 workshop (slide 27). https://ww2.arb.ca.gov/sites/default/files/2021-10/accli_october_2021_workshop_presentation_ac.pdf

¹¹ The October 13, 2021 workshop proposed requirements of 60% and 70% in MY 2029 and MY 2030, respectively. The proposed regulation includes requirements of 59% and 68% in MY 2029 and MY 2030.

Rather than lagging automaker's planned activities, ACC II should strive to accelerate the transition to ZEVs more quickly and completely than already planned. We encourage CARB to consider a regulation with constant 5-6 percentage point increases in stringency over its lifetime. This would lead to annual ZEV value requirements of 46-55% in 2026 and 70-75% in 2030, on the way to 100% in 2035. As described next, this increased stringency could be coupled with increased crediting from "exceptional efficiency values," to provide additional compliance flexibility while advancing mass market availability of ZEVs and equity outcomes.

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.¹² 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.¹³ 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.

Additional comments

Aside from the proposal above, Lucid Motors offers the following additional comments on the proposed regulation.

¹² For example, the SRIA assumes passenger BEVs have an average efficiency of 3.7 mi/kWh over model years 2026-2035 (pg. SRIA-88), suggesting passenger vehicles eligible for "Exceptional Efficiency Values" would have an average efficiency of 5.55 mi/kWh over those model years.

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appc1.pdf>

¹³ For example, the SRIA estimates the incremental battery cost for a small car in 2026 to be \$6,889 for a BEV300 and \$9,385 for a BEV400 (Table 27, SRIA-64). A 33% reduction in this cost translates to savings of \$2,273 and \$3,097, respectively. The savings for larger vehicles with larger battery packs would be even greater, and additional incremental cost savings would accrue from lower sales tax and registration.

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appc1.pdf>

Pooling is a detriment to the regulation and emissions benefits in Section 177 states

The time for pooling has passed, and we encourage CARB to eliminate pooling as a compliance mechanism in ACC II. Pooling may have made some sense in the early market and beginning of ACC I. But as ACC II looks to put California and Section 177 states on an accelerated path to 100% ZEV sales over about a decade, it is time to support actual ZEV deployments in all states. Pooling is the antithesis of one credit per car and creates a self-fulfilling prophecy by which Section 177 states will lag in adoption specifically because manufacturers have opted to exceed their requirements in California as the path of least resistance. Further, as noted above, the proposed regulation sets sales requirements at or below BAU levels, suggesting automakers are already well-positioned to deliver the required number of vehicles in any given state. California should avoid a policy that will place it in direct conflict with the goals of the multitude of other states seeking to join this effort.

We support added values for early compliance, but the proposal seems unattainable for many in the industry

In our previous comments, Lucid Motors suggested CARB support early action ZEV deployments before Model Year 2026 through design of the ACC II program. Accordingly, we are grateful for CARB staff's consideration of this item and intrigued by the proposal for early compliance values in the draft rule.

We believe this can be a powerful tool and important part of the regulation to accelerate ZEV sales and emissions outcomes. Nevada, for example, recently adopted standards with early action as a key attribute of the regulation. However, rather than simply being used as a concession to automakers, it should result in the continued raising of the bar by adjusting the stringency accordingly.

We support the addition of low-MSRP ZEVs to Environmental Justice Values

Lucid Motors supports addition of low-MSRP ZEVs in the Environmental Justice Values category. We have advocated for CARB to include support for low-MSRP ZEVs in ACC II and thank CARB staff for considering our recommendations and taking this initial step.

However, we are skeptical that this proposal, on its own, will be able to quickly bring these vehicles to market. Automakers will only be able to deliver low-MSRP ZEVs that meet the minimum technical requirements by developing vehicles with exceptional efficiency. Developing attractive, low-MSRP ZEVs that meet the proposed regulation's technical requirements and assurance measures will not be cheap or easy. Automakers will have to make significant investments in technology and manufacturing and see clear potential returns in order to commit the resources necessary to deliver on this vision.

An important aspect of this calculus, just as it was under ACC I for automakers investing in longer range ZEVs, will be the availability and value of ZEV credits/values under ACC II. If the

ACC II regulations create a market for ZEV values similar to that which existed for ZEV credits during the early years of ACC I, and if automakers are appropriately incentivized through ZEV values for exceptionally efficient vehicles necessary to deliver low-MSRP ZEVs, ACC II can be designed to deliver on the vision of widespread ZEVs available at all price points and to all markets. Without such programmatic design, we fear that low-MSRP ZEVs may not fully materialize over the next decade.

Therefore, we feel the above proposal to strengthen stringency and add Exceptional Efficiency Values is necessary to support the development of low-MSRP ZEVs. It will also advance equity outcomes from the regulation by enabling more residents of varied income levels to get into ZEVs more quickly, while also more rapidly growing the market for low-cost, long-range, used ZEVs.

ZEV assurance measures should avoid unintended consequences

‘Finally, we encourage CARB to avoid adding costs or other burdens and risks unnecessarily, through ZEV assurance measures. We remain seriously concerned about the mandate to require 3rd party access to vehicle systems. Our concern is based on both the philosophical basis for the mandate as well as its risks in practice.

The discussion over two years on this topic presumes that a broad consumer market for BEVs will have similar service needs to that of the current fleet of ICE vehicles; thereby requiring the multitude of service options we have today. We disagree wholeheartedly with this assessment, as reports indicate that BEVs will require less service over time than an ICE vehicle. However, even if service requirements were comparable, the risks in practice (for which there is recent precedent with ICE vehicles) should be acknowledged and addressed.

Access to a vehicle’s electronic systems increases cybersecurity and safety risks for both the manufacturer and the consumer. Furthermore, there are countless examples of “defeat devices” for ICE vehicles for which a comparable product for BEVs could lead to performance enhancements at the expense of a vehicle’s efficiency or safety systems. The continued insistence on including PHEVs as an ongoing part of the compliance program creates a more significant issue in this regard. For it is well known that manufacturers have increased performance at the expense of greater vehicle emissions in the recent past. As the State has endeavored to reign in bad actors in this space, it seems hardly productive to expand the list of potential bad actors from just the OEMs to include any and all independent actors.

These challenges are paired with another concern over proprietary rights in advanced technologies. The significant development cost and effort for advanced BEV powertrain solutions constitute substantial investments in the creation of intellectual property, which might be jeopardized by a requirement to enable third-party access to vehicle systems. Such access implies a certain level of disclosure of hardware and software systems, and know-how. The considerable risks to cybersecurity, safety, intellectual property, and emissions goals should be carefully weighed in evaluating any access requirements.

In conclusion, we do not believe it serves the public good to elevate economic concerns of an industry over the health and safety of the public. We would urge reconsideration of this policy on the whole and in its proposed scope.

Conclusion

Thank you again for the opportunity to comment on proposed ACC II regulations. We are grateful for the level of public engagement throughout this process and the efforts of CARB staff to develop a thoughtful, deliberate rule that balances the circumstances of states automakers while transitioning quickly to 100% ZEV sales. As you finalize the rule, we hope you will consider the additional modifications proposed here to most quickly usher in a widespread, shared transition to ZEVs in all communities.

Thank you,

Daniel Witt
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Lucid Motors