November 26, 2018

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95814

Re: Proposed Amendments to the Innovative Clean Transit Regulation

Dear Sir/Madame:

On September 24, 2018, Allison Transmission, Inc. ("Allison") submitted comments to the California Air Resources Board ("CARB") concerning its draft Innovative Clean Transit ("ICT") Regulation. On November 9, 2018, CARB released proposed amendments to the ICT Regulation, along with summary explanations for the changes and two additional documents containing supplementary economic and modeling analyses. Allison appreciates the opportunity to offer additional comment on the revised ICT Regulation during the 15-day period allowed for such input.

Allison is the world's largest manufacturer of fully automatic transmissions for medium- and heavy-duty commercial vehicles and is a leader in hybrid propulsion systems for city buses. Allison also supplies the vast majority of transmissions for the school bus market. Therefore, our company has a strong interest in CARB's proposed changes to the Fleet Rule for Transit Agencies and new requirements concerning the purchase of zero emission buses ("ZEBs").

As we noted in our original comments, Allison recognizes that CARB has several important goals in mind in proposing to make changes to the current ZEB program, including the need to meet air quality standards and greenhouse gas requirements. After reviewing the proposed changes, we also believe that CARB has made significant improvements to its original regulatory text. CARB has taken action to improve the clarity of definitions and regulations affecting the purchase of hybrid vehicles, particularly with respect to Low-NOx requirements. These changes will be beneficial to the operation of the medium- and heavy-duty market. Despite performing additional economic analysis, however, Allison does not believe that CARB has fully addressed the economic impacts of its proposed regulations and the "affordability" of ZEBs. This could, in turn, mean that projected benefits from the regulation will be less than contemplated. Our specific comments on these issues follow.

I. Regulatory Provisions Affecting Hybrid Vehicles

A. Conventional Internal Combustion Engine Bus Definition

Allison previously provided comments concerning CARB's definition of "conventional internal combustion engine bus." 13 CCR §2023(b)(13). As we noted in our September 24, 2018 comments, a plain reading of this definition includes buses utilizing Allison H 40 EP and H 50 EP transmissions. The definition refers to "a combination of an internal combustion engine with an electric propulsion system commonly referred to as a hybrid powertrain." *Id*. As an established, two-mode parallel hybrid transmission that has been in production for over a decade, the Allison H 40/50 EP™ Series obviously is "commonly referred to as a hybrid powertrain."

The amended regulatory language proposed by CARB retains the definition of "conventional internal combustion engine bus" without change. CARB's modifications to the proposed regulation order, however, would amend provisions allowing for the purchase of hybrid vehicles (*i.e*., through obtaining one of the exemptions allowed by 13 CCR §2023.4) by further defining the situations in which an exemption will be granted. But such changes do not affect the initial classification (*i.e.*, definition) of the vehicle as a hybrid, pursuant to §2023(b)(13).

Allison would urge CARB to maintain this position in its final regulations. Allison has proven -- through the operation of thousands of buses for many years in the transit fleets of some of the nation's major cities -- that up to 25% in fuel savings can be achieved by hybrid technology vehicles. Such substantial reduction in emissions and fuel use is consistent with, and contributes to the goals of CARB's program.

B. Low-NOx Purchase Requirements

CARB is proposing amended language to address engine/hybrid system pairing and NOx performance. Specifically, CARB proposes to impose the Low-NOx engine purchase requirement for situations where a new conventional internal combustion engine bus *or hybrid bus* purchase is made. In this situation, two criteria must be met: (1) the engine or "hybrid propulsion system paired with the engine" must have been available for purchase or lease for two years; and (2) the engine or "hybrid propulsion system paired with the engine" must be certified to the lowest level of NOx emissions that is "suitable." *See* §2023.6(a)(1)-(2).

As noted above, Allison's H 40 EP and H 50 EP systems have been in commercial production for well over a decade. Thus, such systems meet the first criteria, *i.e*., they have been available for purchase for at least two years. With regard to the second criteria, CARB has helpfully amended previous language to recognize that engines and hybrid systems work in concert with each other. Thus, emission levels may vary depending on which engine/hybrid systems are used or can be used for a particular vehicle. The specification of the lowest level of NOx emissions that is "suitable" addresses this impact as evidenced by CARB's explanatory document noting that "pairing" is to "clarify that a hybrid bus would only be required to have a low NOx engine if the hybrid propulsion system in combination with the engine was certified to the Low-NOx engine standard."[1]

[1] *Id.* at 7.

Allison appreciates this clarification of the original language and recommends that it remain in the final regulation promulgated.

II. CARB Should Maintain Flexibility Provisions

In our September 24, 2018 comments, Allison encouraged CARB to retain waivers for 2023 and 2024 ZEB purchase requirements where transit agencies committed to an "early purchase" of ZEBs by 2020 and 2021. Allison also supported options to implement zero-mobility programs in lieu of purchasing ZEBs.

In its modifications to the proposed regulation order, CARB is proposing to retain the early ZEB purchase incentives by lowering the requirement for 2020 (to 850 ZEBs down from 1,000) and to increase the requirement to 1,250 ZEBs from 1,150 for 2021. This change is described as "improv[ing] the likelihood the initial target would be met" while increasing emission benefits overall.[2] CARB also proposes to retain the zero-emission mobility programs as option in lieu of ZEB purchases.[3]

Allison continues to support program flexibilities that allow for beneficial actions to be undertaken by transit agencies apart from ZEB purchases. Based on our analysis in Section III of these comments and other considerations, we believe that such flexibilities are important to the successful implementation of the program, especially in the earlier years of the ZEB purchase requirements that are specified in §2023.1(a)(1).

III. CARB Should Continue to Improve its Regulatory Analysis

Allison's September 24, 2018 comments took issue with the representation that the ZEB purchase requirements in the ICT Regulation would save money over time. Specifically, CARB projected $1.5 billion in net cost savings from 2020 to 2050. Allison pointed out that CARB's regulatory analysis showed that the program would cost more than the benefits generated *each year through 2038* and that sources of funding identified for the program appeared to be inadequate to address estimated costs of the mandate incurred as phased in through 2029 and perhaps later.

CARB has issued a supplement to its economic impacts assessment.[4] This document indicates that "the annual costs of the regulation reflect higher initial costs for zero-emission buses and associated infrastructure without grant funding or finance."[5] The supplemental analysis also notes that "[f]unding cannot be guaranteed to be available indefinitely."[6] These are helpful clarifications to the original analysis.

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[2] Public Notice at 4.

[3] *Id.* at 65.

[4] Supplemental to Economic Impacts Assessment of the Initial Statement of Reasons for the Innovative Clean Transit Regulation.

[5] *Id.* at 1.

[6] *Id.*

In the supplemental analysis, however, CARB indicates that the financial needs of the program could be met through the financing of bus purchases to spread out costs, rather than through upfront purchase of vehicles. CARB uses an example where $300,000 of a bus purchase price is financed over 14 years, rather than paid upfront in year one. This financing arrangement (at 3.5% interest) then leads to $27,471 in annual payments, or $384,594 over the full 14 year period. In other words, out-of-pocket capital costs are about 28% higher.

Despite the long-term disadvantage of financing, CARB's supplemental analysis claims that the total annual cost of purchasing and operating battery electric buses "are about the same or lower than conventional buses in most years."[7] But this conclusion is driven by counting the external economic factor of Low Carbon Fuel Standard Credits ("LCFS") over the lifetime of the financed purchase. Versus a "base case" of purchasing a diesel bus, the LCFS credits generate between $10,280 to $11,742 in annual "revenue" for transit agency selection of a battery electric bus ("BEB") vehicle.[8] This 14 year revenue stream then makes the *apparent cost* to the transit agency less than the cost of purchasing a conventional diesel vehicle, but does not represent the actual cost to the state in terms of the allocation of its financial resources.[9]

In its final analysis, CARB should not only consider the costs to transit agencies as offset by other state policies such as the LCFS – but the overall cost of the ZEB purchase mandate versus reliance on conventional buses and hybrid technologies to the state as a whole. Under such an analysis, the costs of financing the ZEB technology option (versus a "baseline option of conventional vehicles and hybrid vehicles) and the cost of state incentives in the form of the LCFS can be more directly be assessed. Such an analysis would better inform CARB's overall assessment of the achievability of the ZEB purchase mandates and resulting benefits to the public that can be realistically expected.

IV. Conclusion

Allison supports the regulatory clarifications that are now being proposed by CARB as well as retention of program flexibilities. We believe, however, that it would be beneficial for the state to conduct a broader assessment of the economic impacts of this program, especially within the early years through 2029 when the ZEB purchase mandate is phased in.

Sincerely,

[Scanned Signature]

Greg Mann, Director
Mobile Source Emissions Regulatory Activities
Allison Transmission, Inc.

[7] Supplemental analysis at 3.
[8] Supplemental Analysis at 7.
[9] CARB analysis also indicates that LCFS credit values will vary over time and with respect to electricity source. Grid electricity produces $0.11/kWh in LCFS credit revenue in 2016 versus $0.15/kWh in revenue when solar electricity is sourced. Appendix H, Low Carbon Fuel Standard (LCFS) Program and Examples at 2.