January 21, 2020

Mary Nichols, Chair
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Comments on Policy Recommendations to Increase the Use of Zero-Emission Vehicles per SB 498.

Dear Chair Nichols and Members of the Board,

The Volvo Group appreciates the opportunity to comment on the Policy Recommendations to Increase the Use of Zero-Emission Vehicles per SB 498.

The Volvo Group is one of the world's leading manufacturers of trucks, buses, construction equipment and marine and industrial engines. The Group also provides complete solutions for financing and service. The company, which employs some 100,000 people worldwide, has production facilities in 19 countries and sells products in more than 190 markets. In the United States, it employs more than 15,000 people and has nine manufacturing plants in six states.

In California, the Volvo Group and its dealers employ more than 1,000 people with locations in Mountain View, Costa Mesa, Corona, Haywood, Fontana, Oakland, West Sacramento, Stockton, Fresno, Redding, Paso Robles, Bakersfield and La Mirada. The Volvo Group is the only major truck manufacturer that produces all of its vehicles for the U.S. market in the U.S.

Introduction

Volvo Group supports CARB's interest in reducing greenhouse gas and NOx emissions in the state of California as well as the desire to accelerate the introduction of heavy-duty zero emission vehicles (ZEVs) in the marketplace as a means of achieving its environmental goals. The improvements in battery technology and reductions in cost over the last few years have led major OEMs to accelerate the development and commercialization of battery electric heavy-duty trucks. Volvo has spent hundreds of millions of dollars and worked with a multitude of stakeholders to successfully launch its all-electric Volvo FL and FE model trucks into the European market.

In North America, Volvo is currently cooperating with 15 partners in the CARB-funded Volvo LIGHTS project to homologize this technology into products for the U.S. market. We are convinced that heavy-duty ZEV trucks will eventually meet the reliability and cost effectiveness

needs of U.S. fleets and have committed to a low volume commercial product offer before the end of this year (2020). Nevertheless, we are seriously concerned that the lack of additional actions to support the marketplace – many of which are recommended in this SB 498 report – will undermine the state's efforts and slow the adoption of these vehicles, both in California and throughout the U.S.

Comments

As you know, our Volvo LIGHTS project will be deploying electric trucks in commercial operation within a few short months. We expect to apply critical learning and product development improvements from this project, including truck operational and life-cycle cost information, which is critical for customer evaluation and market adoption. The real-world lessons from this project will help us optimize our trucks for specific applications and prepare us and our customers for the commercial launch of the vehicles before the end of the project timeline.

In addition to the readiness of the vehicle technology, having the necessary market conditions in place will be equally important. Of these, two in particular stand out as being most critical. The first, and maybe most obvious, is the availability of sufficient charging infrastructure, as highlighted in your report.

Unlike light-duty EVs, heavy-duty commercial EVs require more sophisticated infrastructure to be in place before they can become operational. While it is true that certain return-to-base operations will be best-suited to control their own access to chargers, there are many underlying issues which can threaten the timeliness of their availability. These include:

- Insufficient funding for the grid upgrades and equipment installation, and
- Permitting and other local government entitlement delays given the complexity of organizations involved and their unfamiliarity with the technologies.

We are concerned that failure to better coordinate funding and planning among the many state, regional and local agencies responsible for this work could jeopardize the entire transition and adoption of these vehicles. In addition, infrastructure funding and planning needs to be tightly coordinated with vehicle delivery in order to effectively put the electric trucks into service.

The second crucial factor for accelerating the market penetration of heavy-duty ZEVs is the continued availability of purchase incentives for fleet owners.

It's widely known that the up-front purchase price of advanced technology vehicles such as heavy-duty ZEVs will be substantially higher than today's clean diesel or natural gas trucks. Over time, prices can be expected to fall as technology improves and economies of scale grow, but this will take many years.

Unlike the light-duty market, different buyer motivations, lower vehicle volumes and diverse market segmentation mean that the economy of scale wheels will turn much more slowly. Heavy-duty trucks are each custom-built with thousands of variants resulting in millions of possible combinations. Customers optimize their specifications to their exact application needs (example: dump trucks, daycab local tractors and sleeper cab long-haul tractors are all very different although often based on a common chassis), therefore scale benefits are divided over thousands of options resulting in higher capital costs.

HVIP funds were over-subscribed within days of CARB's approval of the FY19-20 budget without any major OEM Class 8 HD ZEVs being available in the marketplace. Fleets and OEMs need confidence that these funds will have robust, multi-year funding if they are going to make investments in this new technology, rather than the uncertainty that comes from annual funding determinations.

Based on our Volvo LIGHTS project and our ongoing ZEV product development efforts, our biggest concerns about bringing heavy-duty EVs to market are not related to technology viability, but rather to other conditions beyond our control that are critical to ensure a favorable market environment—having incentives available to cover incremental costs and infrastructure installation.

Recommendations

The Volvo Group is making significant investments to meet California's ZEV vehicle demands and believes the best way for the state to support an acceleration of heavy-duty ZEVs in the marketplace would be to ensure:

- A formal structure and process is developed that coordinates funding incentives for ZEV vehicles and infrastructure from state agencies through one single interface for the fleet customer.
- Robust funding for heavy-duty ZEV purchase incentives are maintained for multiple years to offset the higher costs and risk facing fleets and OEMs until ZEV vehicles are more competitive and accepted in the marketplace.

- Closer collaboration between CARB staff and industry to share learnings from current ZANZEFF projects and inform future regulations and incentive programs.

- Incentive funding remains available for heavy-duty ZEV vehicles for a period of time even after regulatory mandates are put in place in recognition of the unprecedented costs of the paradigm shift towards electrification which is underway in the heavy-duty transportation sector.

Thank you again for the opportunity to comment.

Sincerely,

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