



May 14, 2021

California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: 2020 Mobile Source Comments

Dear CARB Staff,

The Volvo Group recognizes the persistent and challenging air quality issues faced by the state of California and appreciates this opportunity to comment on CARB's Draft 2020 Mobile Source Strategy (MSS).

Introduction

The Volvo Group drives prosperity through transport and infrastructure solutions, offering trucks, buses, construction equipment, power solutions for marine and industrial applications, financing and services that increase our customers' uptime and productivity. Founded in 1927, the Volvo Group is committed to shaping the future landscape of sustainable transport and infrastructure solutions. The Volvo Group is headquartered in Gothenburg, Sweden, employs nearly 100,000 people and serves customers in more than 190 markets. Volvo Group North America, with headquarters in Greensboro, NC, employs around 13,150 people in the United States and operates 11 manufacturing and remanufacturing facilities in seven states. In California, the Volvo Group and its dealers employ over 1,000 people with locations in Mountain View, Costa Mesa, Corona, Haywood, Fontana, Stockton, Fresno and La Mirada. The Volvo Group is the only major truck manufacturer that produces all its vehicles for the North American market in the U.S. In 2020, the Volvo Group's global net sales amounted to about \$36.8 billion. Volvo shares are listed on Nasdaq Stockholm. For more information, please visit www.volvogroup.com.

In 2020, the Volvo Group made a commitment to having 100% of its product sales being fossil free by 2040, including a nearer term goal of 35% of product sales being zero-emission by 2030. We have more than 5,000 electric transit buses in service throughout the world and have been selling heavy-duty battery electric trucks in Europe since 2019. In the United States, we have Class 8 battery-electric tractors and refuse trucks as well as compact construction equipment all being used in customers' commercial operations. In addition to batteries, we recognize that hydrogen fuel cells will be needed to power electric drivelines for heavy transport and

demanding long-haul applications and we have formed a joint venture with Daimler Truck to accelerate the development of this technology. Since our business is limited to medium and heavy-duty on- and off-road vehicles, we will limit our comments below to those areas of the MSS.

Overall Comments

As a manufacturer of the vehicles critical to California's air quality and climate change goals, we are submitting these comments based on our experiences to date to inform the state's future programs and policies. Unfortunately, the draft 2020 Mobile Source Strategy (MSS) is comprised of scenarios based on several underlying assumptions which are overly optimistic or not sufficiently developed which could lead to unfulfilled expectations. For example, on page 134 it states a major assumption of the phase-in of heavy-duty vehicles is that delivery and drayage fleets will have 100 percent ZEV sales starting with model year 2024 and that all vehicles sales after 2035 will be ZEVs. Based on Volvo Group's experience with the Volvo LIGHTS project, we believe this assumption is significantly misleading in terms of the realities of vehicle availability, fleet acceptance and infrastructure readiness. Another weakness relates to the failure to consider costs and other factors which differentiate the decision-making of commercial fleets relative to light-duty vehicle owners.

The Executive Summary of the MSS states: "California only has one fleet of vehicles and equipment" and provides a virtually identical scope of strategic concepts for on-road light-duty vehicles, on-road medium- and heavy-duty vehicles and off-road vehicles. This language does not exemplify an appreciation of each segment's unique challenges or the diversity of fleet and equipment demands that must be addressed to achieve the desired level of advanced technology penetration in the marketplace.

Both SB44 and Governor Newsom's executive order N-79-20 acknowledge that the transition to zero-emission technologies should take place "where feasible" to achieve "reasonable achievable goals" for vehicle emissions reductions, a tacit acknowledgement of the wide range of applications in which medium and heavy-duty vehicle are engaged.

Similar to its overreliance on the same core concepts across vehicle and equipment segments, we believe the MSS places undue priority on regulatory mechanisms to achieve its strategic goals. Most heavy-duty OEMs have commercial or pilot ZEV vehicles operating in California and have made massive investments to develop this technology in pursuit of announced goals. The Volvo Group has already announced commercial production and delivery of heavy-duty zero-emission trucks and equipment in the U.S. this year and maintains that the availability of fueling infrastructure and public funding to support higher vehicle and infrastructure costs are far more crucial to the successful transition to ZEVs. Market acceptance of new technology is driven by reliability, product support and a competitive total cost of operation relative to existing products and cannot be mandated by a specific date as exemplified by CARB's past effort to mandate light-duty ZEV sales. For this reason, CARB should give equal priority to a broader

scope of programs, policies and incentives to encourage the quickest turnover of older vehicles and adoption of ZEVs.

We would underscore the importance of incentive programs and charging/fueling infrastructure planning and development measures included in the MSS to support the transition to cleaner technologies. At their current low volume and high cost of production, the referenced “incentive programs” are needed not merely as promotional tools or accelerants but are critical to ensure ZEV total cost of ownership enables them to be worthy capital investments. Because heavy-duty vehicles are typically commercial vehicles, they must be both capable of accomplishing the work tasks demanded of them and doing so at a cost that will allow the owner to maintain his/her business profitability.

We believe the availability and affordability of charging infrastructure will largely determine the success or failure of this transition to commercial electric vehicles. This view is supported in the MSS on page 128 which states, “the biggest challenge identified for heavy-duty battery-electric technology is infrastructure availability and cost, which is key for scaling up from a small number of vehicles to larger deployments.” Infrastructure is a new cost element for heavy-duty electric vehicles compared to the conventional diesel vehicles they are designed to replace. Significantly, unlike the ubiquitous liquid fuel infrastructure for legacy vehicles, “refueling” for this new generation of vehicles needs to be designed, built and scaled to the tasks the vehicles will need to perform. We urge the California government to expend equal if not more effort developing programs and policies to ensure the timely availability of charging infrastructure as it does on the production of zero-emission vehicles.

These two elements of incentives and infrastructure are even more critical if, as is outlined in Chapter 4 of the MSS, the transition to electric commercial vehicles is focused on a near-term timeframe such as the next five-to-ten years. Given expected continuing high component costs and the significant lead time needed to install vehicle chargers, especially for heavy-duty vehicles, the need for strong government coordination and development of easy-to access programs to facilitate industry willingness to take risks on incorporating new vehicles into their businesses will be paramount.

Finally, the draft MSS notes that CARB staff is directed “to advance regulatory deadlines where feasible in order to reduce emissions earlier than previously planned.” With regulatory mandates for these zero-emission vehicles beginning as soon as 2024 and the long time needed both for infrastructure development and availability of technology across different vehicle classes and duty cycles, California will need to reconsider its precedent of not allowing public funding to achieve regulatory mandates. Failure to do so will undermine ZEV adoption since infrastructure and vehicle prices will certainly not fall as quick as the mandates enter into force.

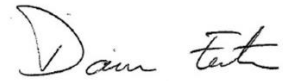
Volvo Penta Comments

Volvo Penta is a supplier of power solutions for marine and industrial applications in the Volvo Group, developing zero-emission power solutions for several sectors addressed in the MSS

including yard tractors and airport rescue trucks. With regards to the MSS conceptual off-road strategies, we would like to note that Volvo Penta supports the proposed emission reductions for SIME recreational marine vessels.

With regards to Tier 5 and OBD for off-road engines/equipment, we recognize the importance of in-use monitoring for achievement of CARB's goals, however the development of full OBD capabilities would detract from resources available to accelerate the development of hybrid and zero-emission power solutions. An alternative suggestion would be to monitor in-use emissions with NOx sensors and PEMS. In this and all future emissions regulations, we support global harmonization efforts to help OEMs achieve the most cost-effective technology solutions.

Respectfully Submitted,

A handwritten signature in cursive script that reads "Dawn Fenton". The signature is written in black ink and is positioned below the "Respectfully Submitted," text.

Dawn Fenton
Vice President, Government Relations & Public Affairs
Volvo Group North America