

**DOCKETED**

<b>Docket Number:</b>	21-TRAN-03
<b>Project Title:</b>	Zero Emission Vehicle Infrastructure Barriers and Opportunities
<b>TN #:</b>	241387
<b>Document Title:</b>	Volvo Group comments on Zero-Emission Vehicle Infrastructure Plan (ZIP)
<b>Description:</b>	N/A
<b>Filer:</b>	System
<b>Organization:</b>	Volvo Group/Aravind Kailas
<b>Submitter Role:</b>	Public
<b>Submission Date:</b>	2/3/2022 11:55:23 AM
<b>Docketed Date:</b>	2/3/2022

*Comment Received From: Aravind Kailas  
Submitted On: 2/3/2022  
Docket Number: 21-TRAN-03*

## **Volvo Group comments on Zero-Emission Vehicle Infrastructure Plan (ZIP)**

Patty Monahan  
Commissioner, Clean Transportation  
California Energy Commission  
715 P Street  
Sacramento, CA 95814  
cc: Hannon Rasool

Submitted to: Docket No. 21-TRAN-03

Re: Zero-Emission Vehicle (ZEV) Infrastructure Plan (ZIP)

Dear Commissioner Monahan,

Volvo Group North America (Volvo Group) would like to thank the California Energy Commission (CEC) for the opportunity to provide comments on the Zero-Emission Vehicle (ZEV) Infrastructure Plan (ZIP) to support the transition to a ZEV future for all Californians. Volvo Group appreciates CEC's efforts on this front, and we stand ready to work with the Governor's Office of Business and Economic Development (GO-Biz), other state agencies, and the rest of the industry to transition to ZE freight solutions in the Golden State.

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 almost 100,000 people and serves customers in more than 190 markets. North America is a major market for the Volvo Group, employs more than 17,000 people, and operates 10 manufacturing and remanufacturing facilities in seven U.S. states, as well as three plants in Canada and one in Mexico.

In California, the Volvo Group and its dealers employ more than 1,000 people with locations in Mountain View, Costa Mesa, Corona, Hayward, Fontana, Stockton, Fresno, La Mirada and other locations. Volvo Group is in the process of training and certifying dealers to sell and service its electric products. Currently three dealers in California have been certified with more expected to be added soon.

The Volvo Group has spent years developing complete solutions for electromobility, and

today, in North America, we are selling the Volvo VNR Electric and Mack LR Electric for regional distribution and refuse applications. Both heavy-duty (Class 8) models are assembled exclusively in the U.S. for this market. While battery-electric vehicles are a suitable solution for city distribution, city buses, regional haulage and similar applications, Hydrogen fuel cells (to power the electric driveline) will be a good option for heavy transport and demanding long-haul applications. For use cases involving heavier loads and/or drive longer distances, the weight of the batteries themselves become a limiting factor, and hydrogen fuel cells are likely to be an interesting alternative. With this in mind, the Volvo Group has formed a joint-venture (called cellcentric ) with Daimler Truck AG to drive the development of fuel cell technology for heavy-duty vehicle applications and planning large scale productions in the second half of this decade.

Within the Volvo LIGHTS project in California, we have successfully demonstrated deploying Class 8 electric trucks in real-world applications. To-date (starting from early 2020), 20+ Class 8 electric trucks have aggregated well over 225k miles in different regional applications – we are the first heavy-duty original equipment manufacturer (OEM) to achieve this milestone. Volvo is the first truck OEM to sell battery electric Class 8 trucks to commercial customers. Based on this experience, and our ongoing ZEV product development efforts, our biggest concerns about the Class 8 truck market are not related to technology viability, but rather to other conditions beyond our control that are critical to ensure a favorable market environment.

Class 8 trucks are operated very differently compared to personal light-duty EVs. Class 8 electric trucks will require significantly higher power levels and the light-duty charging solutions will not work. Installing high power chargers will be costly, require site upgrades and long lead times, place unprecedented requirements on grid capacity and reliability, and engage a multitude of stakeholders (beyond OEMs and fleets). With this in mind, we support structuring ZIP to drive the integration of infrastructure plans with vehicle deployments. Below are our top recommendations.

– Interagency coordination – Failure to better coordinate funding and planning among the many state, regional and local agencies responsible for this work will jeopardize the entire transition and adoption of ZEVs. A formal structure and process needs to be created wherein CEC and other state agencies (e.g., California Air Resources Board, Public Utilities Commission, etc.) are accountable to coordinate and plan charging infrastructure with a person vested with the authority to direct changes in programs. Additionally, truck and infrastructure incentives need to be coordinated (and sustained over many years) to mitigate lack of and/or delays in infrastructure deployments and instill confidence in the market.

– OEM/fleet engagement – Establishing a stakeholder committee comprising real-world practitioners (such as OEMs, fleets, etc.) will provide the aforementioned interagency framework timely feedback on the effectiveness of state policies in the real world. This way CEC and other state agencies are meaningfully informed by technology and market implications of regulations, and calibrated to adjust as the conditions

change.

â€¢ Uniformity in policies and best practices â€“ A statewide framework will help guide intrastate utility engagement, and uniformity in policies and best practices. Additionally, harmonized and streamlined permitting requirements will simplify and reduce lead times for deploying chargers.

â€¢ Grid readiness â€“ Analysis indicates that all three major investor-owned utilities in the state require upgrades that will take 6-18 mos. Next, assuming just 10% of the 400k trucks (if we assume all fleets are compliant with the proposed Advanced Clean Fleets regulation) being plugged into a 1 MW charger at the same time will result in a GW demand â€“ is our grid ready? Finally, micro grid technology and energy storage systems are not established product lines (yet) and safety concerns and integration with utilities exist.

â€¢ Long-term operation and maintenance â€“ Projects/programs should include warranties, long-term maintenance and other associated costs. Charger uptime and reliability are critical and depend on broadband connectivity, software updates, and cyber and physical security.

â€¢ Workforce development â€“ There is a need to address barriers related to workforce development, education, outreach to first responders, and equity for underserved groups to ensure uptime for vehicles and infrastructure. Funding for these topics would be well received.

Again, thank you for your efforts to help make the transition to ZE freight solutions. Our comments are submitted in good faith to support this mission. Thank you for taking the time to read and consider them.

Kind regards,

Aravind Kailas, Ph.D.  
Advanced Technology Policy Director  
Volvo Group North America  
T. 1 714 277 8172  
aravind.kailas@volvo.com

*Additional submitted attachment is included below.*

Patty Monahan  
Commissioner, Clean Transportation  
California Energy Commission  
715 P Street  
Sacramento, CA 95814  
cc: Hannon Rasool

2022-02-01

Submitted to: Docket No. 21-TRAN-03

**Re: Zero-Emission Vehicle (ZEV) Infrastructure Plan (ZIP)**

Dear Commissioner Monahan,

Volvo Group North America (Volvo Group) would like to thank the California Energy Commission (CEC) for the opportunity to provide comments on the Zero-Emission Vehicle (ZEV) Infrastructure Plan (ZIP) to support the transition to a ZEV future for all Californians. Volvo Group appreciates CEC's efforts on this front, and we stand ready to work with the Governor's Office of Business and Economic Development (GO-Biz), other state agencies, and the rest of the industry to transition to ZE freight solutions in the Golden State.

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 almost 100,000 people and serves customers in more than 190 markets. North America is a major market for the Volvo Group, employs more than 17,000 people, and operates 10 manufacturing and remanufacturing facilities in seven U.S. states, as well as three plants in Canada and one in Mexico.

In California, the Volvo Group and its dealers employ more than 1,000 people with locations in Mountain View, Costa Mesa, Corona, Hayward, Fontana, Stockton, Fresno, La Mirada and other locations. Volvo Group is in the process of training and certifying dealers to sell and service its electric products. Currently three dealers in California have been certified with more expected to be added soon.

The Volvo Group has spent years developing complete solutions for electromobility, and today, in North America, we are selling the Volvo VNR Electric<sup>1</sup> and Mack LR Electric<sup>2</sup> for regional distribution and refuse applications. Both heavy-duty (Class 8) models are assembled exclusively in the U.S. for this market. While battery-electric vehicles are a suitable solution for city distribution, city buses, regional haulage and similar applications, Hydrogen fuel cells (to power

---

<sup>1</sup> <https://www.volvotrucks.us/trucks/vnr-electric/>

<sup>2</sup> <https://www.macktrucks.com/trucks/lr-series/lr-electric/>

the electric driveline) will be a good option for heavy transport and demanding long-haul applications. For use cases involving heavier loads and/or drive longer distances, the weight of the batteries themselves become a limiting factor, and hydrogen fuel cells are likely to be an interesting alternative. With this in mind, the Volvo Group has formed a joint-venture (called cellcentric<sup>3</sup>) with Daimler Truck AG to drive the development of fuel cell technology for heavy-duty vehicle applications and planning large scale productions in the second half of this decade.

Within the Volvo LIGHTS<sup>4</sup> project in California, we have successfully demonstrated deploying Class 8 electric trucks in real-world applications. To-date (starting from early 2020), 20+ Class 8 electric trucks have aggregated well over 225k miles in different regional applications – we are the first heavy-duty original equipment manufacturer (OEM) to achieve this milestone. Volvo is the first truck OEM to sell battery electric Class 8 trucks to commercial customers. Based on this experience, and our ongoing ZEV product development efforts, our biggest concerns about the Class 8 truck market are not related to technology viability, but rather to other conditions beyond our control that are critical to ensure a favorable market environment.

Class 8 trucks are operated very differently compared to personal light-duty EVs. Class 8 electric trucks will require significantly higher power levels and the light-duty charging solutions will not work. Installing high power chargers will be costly, require site upgrades and long lead times, place unprecedented requirements on grid capacity and reliability, and engage a multitude of stakeholders (beyond OEMs and fleets). With this in mind, we support structuring ZIP to drive the integration of infrastructure plans with vehicle deployments. Below are our top recommendations.

- Interagency coordination – Failure to better coordinate funding and planning among the many state, regional and local agencies responsible for this work will jeopardize the entire transition and adoption of ZEVs. A formal structure and process needs to be created wherein CEC and other state agencies (e.g., California Air Resources Board, Public Utilities Commission, etc.) are accountable to coordinate and plan charging infrastructure with a person vested with the authority to direct changes in programs. Additionally, truck and infrastructure incentives need to be coordinated (and sustained over many years) to mitigate lack of and/or delays in infrastructure deployments and instill confidence in the market.
- OEM/fleet engagement – Establishing a stakeholder committee comprising real-world practitioners (such as OEMs, fleets, etc.) will provide the aforementioned interagency framework timely feedback on the effectiveness of state policies in the real world. This way CEC and other state agencies are meaningfully informed by technology and market implications of regulations, and calibrated to adjust as the conditions change.

---

<sup>3</sup> <https://www.cellcentric.net/en/about-us/>

<sup>4</sup> <https://www.lightsproject.com>

- Uniformity in policies and best practices – A statewide framework will help guide intrastate utility engagement, and uniformity in policies and best practices. Additionally, harmonized and streamlined permitting requirements will simplify and reduce lead times for deploying chargers.
- Grid readiness – Analysis indicates that all three major investor-owned utilities in the state require upgrades that will take 6-18 mos. Next, assuming just 10% of the 400k trucks (if we assume all fleets are compliant with the proposed Advanced Clean Fleets regulation) being plugged into a 1 MW charger at the same time will result in a GW demand – *is our grid ready?* Finally, micro grid technology and energy storage systems are not established product lines (yet) and safety concerns and integration with utilities exist.
- Long-term operation and maintenance – Projects/programs should include warranties, long-term maintenance and other associated costs. Charger uptime and reliability are critical and depend on broadband connectivity, software updates, and cyber and physical security.
- Workforce development – There is a need to address barriers related to workforce development, education, outreach to first responders, and equity for underserved groups to ensure uptime for vehicles and infrastructure. Funding for these topics would be well received.

Again, thank you for your efforts to help make the transition to ZE freight solutions. Our comments are submitted in good faith to support this mission. Thank you for taking the time to read and consider them.

Kind regards,



Aravind Kailas, Ph.D.  
Advanced Technology Policy Director

Volvo Group North America

T. 1 714 277 8172

[aravind.kailas@volvo.com](mailto:aravind.kailas@volvo.com)