

October 14, 2022

Tony Brasil
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: Accelerating emissions benefits under the Advanced Clean Fleets Rule through geofencing and plug-in hybrid retrofits

Dear Mr. Brasil:

US Hybrid appreciates the opportunity to comment on the proposed Advanced Clean Fleets Regulation, including the Initial Statement of Reasons (ISOR) and draft regulatory language. US Hybrid strongly supports the intent of the regulation and CARB's efforts to rapidly improve air quality and address climate change, including – and especially – its efforts to address pollution from heavy-duty diesel vehicles in disadvantaged communities, and we support transitioning drayage fleets to 100% zero emission vehicles (ZEVs) by 2035.

We believe the rule can be further strengthened, with resulting beneficial air pollution, climate change and economic outcomes, by ensuring post-2010 low-NOx engines retrofitted with batteries to become plug-in hybrid electric vehicles (PHEVs, or NZEVs in the regulatory documents) with at least 50 miles of range and geofencing capabilities are eligible for drayage operations through 2035. Such a change would provide additional flexibility for fleets and users of existing vehicles, while supporting more rapid reductions of greenhouse gas and criteria air pollutant emissions and ensuring zero emission operation in priority communities and regions.

We encourage you to consider these potential benefits and modify the proposal accordingly by allowing NZEV/PHEV trucks to start serving the ports in 2023 and deliver immediate zero emissions benefits in priority communities. We would also appreciate the opportunity to work with CARB and local community stakeholders to implement these new technologies, especially geofencing technology, which CARB has helped to advance through pioneering research and its efforts to support community scale strategy development and solutions to community air quality challenges.^{1,2}

¹ https://ww2.arb.ca.gov/sites/default/files/2021-01/17RD009_0.pdf

² <https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/strategy-snapshots>

About US Hybrid

US Hybrid is a California-based company, with over 60 employees between its headquarters and manufacturing facilities in Southern California. We specialize in designing and manufacturing zero-emission powertrain components for electric, hybrid and fuel cell medium and heavy-duty municipality vehicles, commercial trucks, buses and specialty vehicles worldwide.

Our products have been used in commercial vehicles worldwide, logging millions of miles of accumulated operation, including in battery and fuel cell drayage trucks for the Port of Los Angeles and Long Beach, fuel cell-powered street sweepers for Caltrans, transit buses in California and Hawaii, mining trucks, hybrid street sweepers for the New York Department of Sanitation, and many vehicles globally for the US military. US Hybrid is an ISO 9001:2015 and ISO 14001:2015 registered company, and our products meet customers' application requirements and standards, including ISO, SAE, UL, FCC, NEBS, and MIL-STD compliance.

US Hybrid recently received nearly \$2 million in grants from the South Coast Air Quality Management District (SCAQMD), U.S. Department of Energy and National Renewable Energy Laboratory to fund the construction of three parallel hybrid class 8 trucks. These trucks run on both renewable compressed natural gas (RCNG) and electricity, utilizing Cummins' near-zero emission 9.0 liter engines in parallel with US Hybrid's highly efficient, battery-electric zero emission propulsion system. This unique combination of powertrains provides the vehicles with a combined range of 750 miles or more, including an all-electric, zero-emission drive mode of up to 55 miles.

Importantly, using a GPS system, we can automate the pure zero-emission mode to activate when the truck gets within a preset distance of a port, railyard, low-income or disadvantaged community, or other priority region and to stay in zero-emissions mode until it leaves the port or priority community and is a preset distance away from it. This "geofencing" technology is already available on roughly 20% of a new all electric trucks, but costs for electric trucks remain high and impractical for many fleet operators, without significant subsidies. Deploying this combined set of cost-effective and demonstrated technologies, which are available today, can have an immediate and measurable impact on reducing emissions in our most polluted communities and facilities, and would provide an important and tangible return on taxpayer- and government-funded research and development programs.

Significant Benefits Associated with Geofencing and Plug-In Hybrid Technology

We appreciate that CARB has been at the forefront of research and development of this important technology. For example, CARB has identified geofencing as one of its "strategy snapshots" to support community-scale strategy development, which includes "some of the most common strategies community members, air districts, and the public have raised as

potential solutions to community air quality challenges.”³ Specifically, the snapshot identifies the promise of geofencing technology as being able to “reduce emissions in certain locations by establishing geographic boundaries that automatically switch applicable mobile source operations to zero emissions.” We are excited to work with you and interested communities and stakeholders to shift this promise into practice.

CARB has further supported development of this technology through sponsored research to quantify its benefits. The resulting report, *Geofencing as a Strategy to Lower Emissions in Disadvantaged Communities*,⁴ authored by researchers at UC Riverside, identifies an array of geofencing strategies and benefits in the heavy-duty trucking sector, including but not limited to significant air quality and climate change benefits. For example, the report finds that restricting access in disadvantaged communities to vehicles that meet certain emissions requirements would deliver high benefits and has high technological readiness. It also identifies engine and emission control management as two strategies delivering medium-to-high benefits that appear technologically ready. Additional strategies and benefits may include improved routing, speed management, eco-driving, and others. Altogether, the report finds that:

...the fact is that geofencing has been successfully implemented under a variety of circumstances in the past, and new opportunities will arise from ongoing changes in technology. Therefore, an action should be taken to establish a more formal role for geofencing strategies in some of California’s premier efforts to reduce local and regional air pollution such as AB 617 community air quality plans, reducing air toxics exposure, achieving federal and state clean air standards, and achieving greenhouse gas reduction targets.⁵

We fully agree. Specifically supporting retrofits of existing, low-NOx RCNG engines with PHEV and geofencing capabilities can deliver additional emissions reductions benefits and accelerated transition to zero-emissions trucking, especially in priority communities such as low-income and disadvantaged communities near ports, railyards, and elsewhere. Doing so would deliver on many of the priorities and rationale for the regulation identified in the ISOR, as well, including addressing state policy and reducing exposure and risk in impacted communities, NOx and particulate matter emissions, greenhouse gas emissions, and emissions beyond combustion.

An Economic and Technologically Ready Solution

The ISOR repeatedly identifies upfront costs and infrastructure challenges as potential challenges associated with transitioning heavy-duty fleets to ZEVs. For example, the ISOR notes that “Today and for the foreseeable future, purchases of most BEVs and FCEVs will cost more than their combustion-engine-powered counterparts.”⁶ More pointedly, the economic analysis suggests that electric and fuel cell Class 8 trucks will remain more expensive than diesel trucks

³ <https://ww2.arb.ca.gov/our-work/programs/resource-center/strategy-development/strategy-snapshots>

⁴ https://ww2.arb.ca.gov/sites/default/files/2021-01/17RD009_0.pdf

⁵ Ibid, pg. x.

⁶ ISOR, pg. 175

through at least 2030,⁷ while the ISOR acknowledges “NZEVs are expected to have a lower upfront cost per vehicle than full ZEVs.”⁸

The ISOR also acknowledges current worldwide supply chain constraints and its impacts resulting in “limited production capability from manufacturers in the immediate future.” This compounds challenges associated with the ZEV market transition, which is still clearly in its infancy. According to CARB’s own technology assessment, “Most major truck manufacturers have announced plans to introduce market ready zero-emission trucks in the near future.”⁹ Based on truck OEM’s information from historical and recent delivery schedules and timelines for Class 8 trucks, it does not appear that they currently have a fully reliable and validated timeline for full commercial production and delivery of zero emission trucks. Indeed, the San Pedro Bay Ports Draft Clean Air Action Plan’s Feasibility Assessment for Drayage Trucks suggests that over the next two years, OEMs will be demonstrating, testing, and validating zero emission Class 8 trucks in drayage service, which will precede larger-scale commercial launches.¹⁰ The assessment further notes that Class 8 ZEV trucks today are likely to be priced at least three times higher than diesel trucks.¹¹

The draft regulations propose to address these concerns “by recognizing that bridging technology like NZEV [PHEVs]... will need to play a larger role than CNG vehicles in transforming the transportation sector to ZE [zero emissions].”¹² We ask that CARB extend this sentiment to the drayage portion of the regulations, as well, and **allow any Class 8 truck, utilizing a parallel hybrid drive system that is capable of zero emission operations while operating at the ports and surrounding disadvantaged communities, be allowed to register in the CARB Online System beginning now and through the year 2035.** The San Pedro Bay Ports Feasibility Assessment for Drayage Trucks expresses their interest in this technology, as well, provided it aligns with CARB regulations and is allowed in drayage operations.¹³

None of this is to cast doubts on the long-term market for zero emission trucks or the feasibility of achieving 100% ZEVs for drayage by 2035. However, we don’t need to wait for costs to come down, supply chains to ease, or OEMs to fully commercialize ZEV trucks to transition more trucking operations to zero emissions in and around disadvantaged and other priority communities. US Hybrid can convert a low-NOx RCNG vehicle to an NZEV/PHEV within less than three months, at low cost compared to ZEV alternatives, and without supply constraints hindering others in the industry. We have interest from fleet operators with hundreds of vehicles to convert, which we could convert and place into drayage operations in 2023.

⁷ ISOR, pg. 179

⁸ ISOR, pg. 173

⁹ <https://ww2.arb.ca.gov/sites/default/files/truckstop/zev/zevinfo.html>

¹⁰ pg. 3 at <https://kentico.portoflosangeles.org/getmedia/c4ceda78-54d5-44ce-bf4c-68c41f8d3a22/draft-2021-update-drayage-truck-feasibility-assessment-update>

¹¹ Ibid, pg. 2

¹² ISOR, pg. 111

¹³ Pg. 85 at <https://kentico.portoflosangeles.org/getmedia/c4ceda78-54d5-44ce-bf4c-68c41f8d3a22/draft-2021-update-drayage-truck-feasibility-assessment-update>

Conclusion

US Hybrid strongly supports CARB setting strong standards through the Advanced Clean Fleets Regulations, including achieving 100% ZEVs in drayage applications by 2035. In pursuit of that objective, CARB should not exclude technologies that can deliver additional, immediate, and cost-effective emissions reductions – especially in disadvantaged communities – while ZEV truck markets remain in their infancy. We strongly urge you to allow NZEV/PHEVs with geofencing capabilities to help clean up drayage operations now, even as the state transitions to ZEVs in these applications over time.

Thank you for your consideration of these comments, and please do not hesitate to reach out with any questions about US Hybrid, the strong market for conversions to NZEV/PHEV in drayage, or these comments.

Sincerely,

Macy Neshati, Interim CEO
US Hybrid