



March 16, 2020

Submitted via Electronic Mail

Jack Kitowski, Division Chief
Mobile Source Control Division
California Air Resources Board
1001 I Street, Sacramento, CA 95812

Re: Comments on Changes to Proposed Advanced Clean Truck Regulation

Dear Mr. Kitowski,

This letter is a follow-up to CARB’s February 20th workshop on proposed changes to the Advanced Clean Truck Regulation. At the December 12th Board hearing, a groundswell of public commenters urged CARB not to squander the rule’s potential to alleviate one of the largest pollution burdens in frontline communities.¹ Consequently, a majority of Board Members directed Staff to strengthen the rule, ensure its consistency with the State’s air and climate targets, and accelerate benefits for disadvantaged communities.

We are pleased to see Staff’s commitment to addressing these concerns by aligning the Advanced Clean Trucks regulation with specific objectives so that “[t]he proposed regulation will contribute towards the goal of achieving a zero-emission truck and bus fleet by 2045 everywhere feasible.”² We welcome CARB’s Goals and Pathway to 2045 Carbon Neutrality,³ which calls for an all zero-emissions fleet by:

¹ The call from frontline communities for a stronger Advanced Clean Truck regulation has now been echoed by hundreds of public health experts, scientists, and physicians; state legislators and local government officials; major newspaper editorial boards; labor unions; fortune 500 companies; and over 21,000 Californians from organizations within our coalition.

² CARB, Public Workshop to Discuss Proposed Changes to the ACT Regulation, (Jan. 31, 2020) <https://content.govdelivery.com/accounts/CARB/bulletins/2790f13>.

³ CARB, Proposed Advanced Clean Truck Sales Regulation Potential Modifications (Feb. 20, 2020) at slide 13 https://ww2.arb.ca.gov/sites/default/files/2020-02/200220presentation_ADA_0.pdf

- 2035 for Drayage Trucks
- 2040 for First/Last Mile Delivery, Refuse Trucks, Local Buses, Utilities and Government Fleets⁴
- 2045 for All Other Truck Segments Feasible.

These goals, however, will only yield concrete improvements to public health and the environment if CARB sets sales mandates consistent with a realistic path for meeting them. Below we describe necessary changes for aligning the manufacturer sales mandates with these goals.

1. Top-Down Analysis Demonstrates the Need to Strengthen 2030 Targets.

The overall goal of achieving carbon neutrality through ZE trucks everywhere feasible by 2045 demands a significant strengthening of the targets across the board. We have already shown that emission reductions necessary to meet CARB's *State Strategy for State Implementation* and its *Draft Vision for Clean Air* are completely out of reach under the initial proposal's sales requirements,⁵ and we suspected this would similarly doom our chances of meeting the State's climate targets. Now, analysis by Lawrence Berkeley National Laboratory ("LBNL") has quantified the shortfall in CARB's prior proposal.

As we feared, growth in the vehicle population would overwhelm any modest progress under CARB's initial proposal. LBNL's assessment finds that in 2045, under CARB's proposal roughly 1.2 million ICE trucks would remain on the road, and carbon emissions from trucking would remain 82 percent of what they are today—a mere 18 percent reduction over 25 years. To achieve California's carbon neutrality goals, LBNL's model estimates that roughly 400,000—or 21 percent—of the trucks on the road must be zero-emissions by 2030.

This is in line with other recent scenario exercises. Between its 2017 *Clean Power and Electrification Pathway* and its recent *Pathway 2045* report, Southern California Edison revised upward the level of medium- and heavy-duty vehicle electrification. They now indicate that 280,000 medium duty vehicles (23 percent of trucks on the road) and 23,000 heavy-duty vehicles (6 percent of trucks on the road) must be ZEVs.⁶ The 303,000 medium- and heavy-duty trucks they forecast as needed on the road in 2030 does not include any of the 7.5 million electric light-duty vehicles (including SUVs and pickup trucks) that SCE projects are necessary.⁷

CARB must strengthen sales mandates for each class to achieve air quality and climate goals.

A. Aligning Class 7-8 Sales with the ZE Drayage Fleet Goal Requires Significant Earlier Deployment

Class 7-8 tractors have the highest total emissions of all truck categories, and they are concentrated in communities of color and low-income communities that live near ports and warehouses.⁸ Their electrification is an urgent environmental justice imperative, and both the Board and CARB executive staff have reiterated their commitment to achieving 100 percent ZE drayage fleet by 2035.

⁴ Includes NZE vehicles with ZE capability for utility and government fleets.

⁵ Paul Cort et al, Letter to Jack Kitowski Re: Comments on Proposed Clean Truck Rule, (June 11, 2019).

⁶ SCE, *Pathway 2045 – Appendices*, (Nov. 2019) at 5

<https://www.edison.com/content/dam/eix/documents/our-perspective/201911-pathway-to-2045-white-paper-appendices.pdf>

⁷ *Id.*

⁸ CARB, *Zero-Emission Fleet Rule Workshop Advanced Clean Truck Fleets* (Feb. 12, 2020) at 73

https://ww2.arb.ca.gov/sites/default/files/2020-02/200212presentation_ADA_1.pdf at 46

Staff’s initial proposal for Class 7-8 tractors started at 3 percent of sales in 2024 and topped out at 15 percent in 2030, resulting in under 4,000 cumulative tractor sales.⁹ Clearly, this is nowhere near the more than 23,000 drayage trucks that CARB estimates are currently on the road.¹⁰

Port drayage trucks count for only a portion of Class 7-8 tractor sales, but the targets for this category must, at a minimum, achieve 23,000 cumulative sales by 2035 to align with the drayage fleet goals. The schedule should also match the pace of fleet turnover at the Ports. To achieve a 100% ZE fleet by 2036 (17,000 trucks), the San Pedro Bay Ports forecast that 14% of trucks would need to be ZE by 2023, and 20% of new trucks entering the fleet would need to be ZE starting the same year.¹¹ According to this study, all new trucks entering the fleet must be zero emissions starting in 2031. Tracking these percentages equates to more than 2,000 ZE trucks in the fleet before 2023, roughly 400 new ZE trucks starting in 2023, and almost 2,000 new ZE trucks by 2031.

It is unclear how the Ports will meet their goals if CARB’s sales percentages fail to match these benchmarks. These figures do not even include sales to cover the more than 6,000 drayage trucks at the Port of Oakland, or the anticipated growth in the population. Moreover, sales in the early years do not reflect fluctuation in yearly turnover. The scenario above is based on the Ports’ projection that 45 to 95% of the entire fleet would need to turnover between 2031 and 2036—an undesirable scenario that not only delays emission reductions but results in the need for two sharp fleet transitions in less than 15 years.¹² A large spike in turnover related to the State Truck and Bus Regulation in 2022 creates a window for stronger early progress. Therefore, CARB should set higher *initial* sales targets, and avoid a schedule that back-loads necessary deployment.

In the table below, we offer a potential scenario for achieving sales in the range necessary for meeting the need at the State’s ports and railyards, based on sales numbers from the Engine Manufacturers Association (EMA).¹³ CARB should perform its own estimate of drayage sales consistent with the 2035 goals and set corresponding targets in the Class 7-8 category.

| Model Year | Class 7-8 Tractors Sales¹⁴ | Tractors on Road |
|-------------------|--|-------------------------|
| 2024 | 12% (729) | 729 |
| 2025 | 15% (911) | 1,640 |
| 2026 | 20% (1,215) | 2,855 |
| 2027 | 25% (1,519) | 4,374 |
| 2028 | 30% (1,823) | 6,197 |
| 2029 | 35% (2,126) | 8,323 |
| 2030 | 40% (2,430) | 10,753 |
| 2031 | 45% (2,734) | 13,487 |

⁹ Early crediting and near-zero-emission vehicle credits may alter total cumulative sales. The impact is likely to be minimal given the low volume of annual Class 7-8 tractor sales.

¹⁰ CARB, Zero-Emission Fleet Rule Workshop Advanced Clean Truck Fleets (Feb. 12, 2020) https://ww2.arb.ca.gov/sites/default/files/2020-02/200212presentation_ADA_1.pdf at 73

¹¹ San Pedro Bay Ports Clean Air Action Plan 2017, Potential Emission Reductions for Select Clean Air Action Plan Strategies, (Nov. 2017) at 2

¹² https://innovation.luskin.ucla.edu/wp-content/uploads/2019/08/Zero-Emission_Drayage_Trucks.pdf at 34

¹³ CARB, Appendix E – Zero Emission Truck Market Assessment (Feb. 2019) <https://ww3.arb.ca.gov/regact/2019/act2019/appe.pdf>

¹⁴ Only Class 7-8 tractor credits satisfy Class 7-8 tractor deficits; therefore, ZEV sales percentages are actual minimum sales.

| | | |
|------|-------------|--------|
| 2032 | 50% (3,038) | 16,525 |
| 2033 | 60% (3,645) | 20,170 |
| 2034 | 70% (4,235) | 24,405 |
| 2035 | 80% (4,860) | 29,265 |

B. Aligning Overall Sales to Match 2040 Fleet Goals

CARB must also strengthen its initial proposal to align with the 2040 fleet goals. CARB estimates initial populations for vehicles in the 2040 fleet goals as follows:

- 80,000 first and list mile delivery and service trucks
- 25,000 buses and shuttles beyond those covered in the Innovative Clean Transit and Airport Shuttle Bus rules.
- 16,000 Refuse trucks
- 100,000 Public Fleet Vehicles¹⁵

In sum, these goals equate to 221,000 ZE trucks by 2040, not accounting for anticipated growth. Since CARB’s current proposal results in roughly 75,000 cumulative truck sales by 2030, deployment would need to almost triple in 10 years just to satisfy these 2040 targets (i.e., not including the goals for drayage, utilities, and all other truck segments).

To strengthen the rule, CARB should work backwards from the 2040 goal, identify the point at which sales of ICE vehicles must end, and set percentages that can supply 100 percent ZE sales by that date. For example, assuming an average first-owner life of 7 years,¹⁶ no new ICE urban delivery trucks should be sold after 2033. Thus, CARB’s sales mandates should be high enough to supply 100 percent of last-mile delivery sales no later than 2033 (we estimate that there are roughly 11,000 annual sales of these delivery trucks¹⁷). While vehicle lifetimes and turnover rates will vary, summing sales numbers for each of the segments with fleet goals provides a basic sense of the floor that CARB’s revised sales percentages should meet.

2. Bottom-Up Analyses Give Us High Confidence in the Feasibility of a Climate-Consistent Rule.

The scale of change we are calling for—while mandated by State goals and the urgency of the crises we face—is considerable. Yet the rapidly shifting advancements in zero-emission technology gives us even greater confidence that the targets are eminently feasible.

According to a recent report from Navigant Research, plug-in electric vehicles are expected to make up 12 percent of global commercial fleets by 2030.¹⁸ This is three times stronger than CARB’s initial

¹⁵ CARB, Zero-Emission Fleet Rule Workshop Advanced Clean Truck Fleets (Feb. 12, 2020) https://ww2.arb.ca.gov/sites/default/files/2020-02/200212presentation_ADA_1.pdf at 72-75

¹⁶ ICF, Comparison of Medium- and Heavy-Duty Technologies in California, (Dec 2019) <https://caletc.com/comparison-of-medium-and-heavy-duty-technologies-in-california/> at 25

¹⁷ (EMA sales estimates for step-van parcel delivery: 1,985; box truck pickup & delivery: 3,075; straight truck pickup & delivery: 1,069; HD Van Parcel Delivery: 951; HD Van Parcel Delivery Class 4-8: 1,985; box truck pickup & delivery medium load: 1,538; box truck pickup & delivery heavy load: 1,538)

¹⁸ Navigant Research, “Plug-In Electric Vehicle Fleets Are Expected to Make up 12% of the Fleet Vehicle Population by 2030,” (Jan 22, 2019)

proposal. Given our significant policy directives and technological capacity, California is positioned to achieve even higher percentages than the global average. Recent purchase commitments should assuage concerns about the feasibility of a 20 percent target for trucks on the road by 2030. California's share of Amazon's 100,000 ZE trucks from Rivian¹⁹ could likely supply all of the 18,000 trucks needed in 2024 *for all truck classes* under our straw proposal. Interact Analysis forecasts that cost benefits of electric trucks will lead to just under 2 million electric light-duty trucks being registered across Europe and North America between 2019 and 2025.²⁰ In the past few months, 6 new companies have made announcements about their electric pick-up trucks slated for production by 2021, with some already reaching 500,000 pre-orders.

In the first few weeks of 2020, the momentum around zero-emission trucks continues to build. UPS announced it has ordered 10,000 electric delivery trucks from Arrival, which will be deployed starting later this year through 2024, with the possibility to purchase another 10,000 after that.²¹ LA Sanitation became the first municipality to commit to an all-electric fleet of 1,500 trucks by 2035, and strengthened its earlier announcements with a new commitment to 100 percent electric procurement within the next two years.²² The Los Angeles Mayor then expanded that procurement policy to all municipal fleets.²³ Ceres has just announced the launch of its Corporate Electric Vehicle Alliance, which will boost the electric vehicle market by signaling "the breadth and scale of corporate demand for electric vehicles." Members such as Ikea, ClifBar, DHL, Genentech, and AT&T have committed to leveraging their own fleets to accelerate the transition to commercial electric vehicles.

As they move into the hands of fleet owners, order numbers for zero-emission trucks are increasing. Anheuser-Busch, which recently received its 100th battery-electric truck, noted that the BYD 8TT exceeds their performance requirements and receives very positive feedback from drivers.²⁴

3. The Remaining Barriers are not Economic or Technical, but Logistical

Cost declines continue to beat prior projections. The most recent Bloomberg New Energy Finance Battery Pack survey shows prices dropped another 13% this year. They are on track to hit \$100/kWh before 2023. Public investment in charging infrastructure, just from first round applications by investor-owned utilities, is already able to support most of the initial deployments needed to stay on track with a climate-consistent scenario. Now the CEC has also allocated \$30 million for a single fiscal year of its annual Clean Transportation Fund toward MD/HD charging infrastructure. Our coalition has attached a document to this letter detailing the breadth of activities underway to support infrastructure for medium- and heavy-

<https://www.navigantresearch.com/news-and-views/plugin-electric-vehicle-fleets-are-expected-to-make-up-12-of-the-fleet-vehicle-population-by-2030>

¹⁹ Given that these trucks will operate like the Mercedes Sprinter Vans (GVWR 8,550 or 11,000) we suspect they fall in either Class 2b or 3.

²⁰ Rueben Scriven, Incumbent OEMs Should Be Worried About Arrival's 10,000 Electric Truck Order from UPS, (Jan. 30, 2020) <https://www.interactanalysis.com/incumbent-oems-should-be-worried-about-arrivals-10000-electric-truck-order-from-ups/>

²¹ Steve Hanley, UPS Orders 10,000 Electric Delivery Vans From Arrival, (Jan. 29th, 2020) <https://cleantechnica.com/2020/01/29/ups-orders-10000-electric-delivery-vans-from-arrival/>

²² Adam Redling, LA Sanitation Commits to 100 Percent Electric Fleet by 2035

²³ Mayor Eric Garcetti, Executive Directive No. 25 – L.A.'s Green New Deal: Leading By Example, (Feb. 10, 2020) at 2 <https://www.lamayor.org/sites/g/files/wph446/f/article/files/ED25.pdf>

²⁴ Anheuser-Busch Receives BYD's 100th Battery-Electric Truck (Jan. 8, 2020)

<https://www.truckinginfo.com/348215/anheuser-busch-receives-byds-100th-battery-electric-truck>

duty truck electrification, and highlighting the strength of the existing electrical workforce to meet the challenge of accelerated installation.

As the business case and the technological suitability of truck electrification shift from barrier to enabler, the remaining challenges to widespread freight electrification are more to do with planning and policy. Far from being a pre-condition to higher targets, these challenges will best be handled if the manufacturers' sales targets are sufficiently strong.

Fleet managers are less concerned by the barriers that typically influence individual car owners. While individuals focus more on sticker price, companies are far more focused on lifetime vehicle costs. And while an individual's unpredictable driving patterns can induce range anxiety, fleet operators have more certainty about how far their trucks go in a day—and two-thirds of all freight is shipped less than 100 miles. Further, 63% of Class 7-8 tractor mileage is less than 200 miles/day.²⁵

Instead, the obstacle they consistently point to is that there is not yet mass-production of vehicles entering the market, and there is a lack of options.²⁶ Fleets need major truck manufacturers to accelerate their involvement in the ZE space so they have confidence that there are broad dealer networks and deliveries will be fulfilled. EVSE installation companies need a robust reporting requirement to gain a clear understanding of the vehicle specifications and order numbers that fleets will see in order to proactively coordinate with utilities on needed grid upgrades.

Importantly, these challenges do not vanish if CARB defers strong regulatory mandates. Indeed, they will only become more substantial. Reaching our 2045 targets, as the SCE Pathway 2045 notes, “is significantly more difficult if interim 2030 goals have not been met.” The scale and pace of the transition required is formidable, but CARB's role is to enable it. A strong manufacturer rule can unleash self-reinforcing, positive feedback loops which drive the broader transportation sector to transition at an exponential rate.

The key now is to design the regulation to mobilize OEMs to act as partners in the undertaking at hand. We look forward to working with Staff to ensure that the final rule aligns with CARB's fleet goals. In order to prioritize these benefits in disadvantaged communities, we further encourage CARB to meaningfully involve representatives of environmental justice communities in the process of revising and implementing the regulation.

Sincerely,

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Center for Community Action and Environmental Justice

²⁵ CARB, Zero-Emission Fleet Rule Workshop Advanced Clean Truck Fleets (Feb. 12, 2020) https://ww2.arb.ca.gov/sites/default/files/2020-02/200212presentation_ADA_1.pdf Slide 42

²⁶ Camila Domonoske, From Delivery Trucks to Scooter-Moving Vans, Fleets are Going Electric, (Feb 7, 2019) “ ‘It's only a small handful [of electric options] and the supply is actually quite constrained’ says [Andrew] Savage of Lime.”

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