Date: 6/11/19

To: Jack Kitowski
Tony Brasil
Craig Duehring
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Cc: Richard Corey
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Transmitted Via e-mail

From: Advanced Clean Truck Coalition (See member organizations below)

Re: Comments on Proposed Clean Truck Rule

Dear Mr. Kitowski,

Thank you for considering these comments on the latest proposal for the Clean Truck Rule. We are encouraged by the strengthened targets outlined at the April 2, 2019 workshop. In preparing these comments we have assessed these proposed targets from a "top-down" perspective (i.e., what transition to zero-emission trucks is needed to meet air quality standards and climate targets), and from a "bottom-up" perspective (i.e., what are the numbers of trucks that are primed

for transition to zero-emission technologies). Under either approach – looking at need or looking at feasibility – the available analyses all support higher targets and earlier action.

We understand that staff see this rule as an initial step with future mandates being strengthened further. But getting technology-forcing mandates in place now is necessary not only to address the critical emission reduction needs in this state, but also to ensure the success of this rule by driving the earliest possible investment in production and thereby bringing down costs with economies of scale. Since the workshop, original equipment manufacturers ("OEMs") have continued to make announcements regarding commitments to zero-emission trucks. This rule needs to secure those commitments and support the related investment sooner rather than later.

I. Why this Rule is So Important – The Air Quality Imperative

CARB has estimated the human costs of the freight movement industry, which communities pay for in the form of medical purchases, hospital visits, missed work days, and school absences—among other things.[1] Heavy-duty trucks are the largest source of smog-forming nitrogen oxides (NOx) in California, and emit nearly 40 percent of the State's diesel particulate matter.[2] Diesel particulate matter alone is responsible for about 70 percent of cancer risk related to air toxics.[3]

The uneven distribution of harm from the freight sector is one of California's starkest forms of environmental injustice. Freight hubs and corridors concentrate air pollution in zip codes where the median income is far lower, and the percent of people of color is far higher, than the State average.[4] The pollution burden from cars and trucks is 43 and 39 percent higher for African Americans and Latinos, respectively,[5] than for white Californians. In West Oakland, where CARB attributes 71 percent of air pollution risk to truck traffic,[6] residents have average life expectances as much as 24 years shorter than their neighbors in the Oakland Hills.[7] These are compounding injustices—at West Oakland Middle School, where nearly 25 percent of students have asthma or breathing problems,[8] health surveys show that 64 percent of children do not have

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[1] CARB, *Quantification of the Health Impacts and Economic Valuation of Air Pollution from Ports and Goods Movement in California*, at A-5 (Mar. 21, 2006) https://www.arb.ca.gov/planning/gmerp/plan/appendix_a.pdf.

[2] Sara Chandler et al, *Delivering Opportunity How Electric Buses and Trucks Can Create Jobs and Improve Public Health in California*, at 1 https://www.ucsusa.org/sites/default/files/attach/2016/10/UCS-Electric-Buses-Report.pdf?_ga=2.125755594.1304636358.1556579591-407924482.1546641954.

[3] CARB, *Overview: Diesel Exhaust & Health* https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health.

[4] *See, e.g.* Pacific Institute, *Paying with Our Health: The Real Cost of Freight Transport in California*, at 13 (Nov. 2006) https://pacinst.org/wp-content/uploads/2013/02/paying-with-our-health-full-report.pdf.

[5] Union of Concerned Scientists, *Inequitable Exposure to Air Pollution from Vehicles in California Who Bears the Burden?* at 1 (Feb 2019) https://www.ucsusa.org/sites/default/files/attach/2019/02/cv-air-pollution-CA-web.pdf.

[6] CARB, *Diesel Particulate Matter Health Risk Assessment for the West Oakland Community*, at 3 (Dec. 2008) https://www.arb.ca.gov/ch/communities/ra/westoakland/documents/westoaklandreport.pdf.

[7] Virginia Commonwealth University, *Neighborhood-Level Determinants of Life Expectancy in Oakland, CA*, (Sept. 2012) at 20 https://societyhealth.vcu.edu/media/society-health/pdf/PMReport_Alameda.pdf.

[8] Dr. Ananya Roy, *Traffic Pollution Causes 1 in 5 Cases of Kids' Asthma in Major Cities: How Data Can Help*, (Apr. 29, 2019) http://blogs.edf.org/health/2019/04/29/traffic-pollution-causes-1-in-5-new-cases-of-kids-asthma-in-major-cities-how-data-can-help/.

a regular place to go for medical care.[9] This story will sound familiar to communities in Wilmington, Shafter, Fresno, Commerce, North Richmond, rural Riverside, and many of the other predominantly low-income communities and communities of color that live near freight hubs and truck corridors.[10]

To address these harms and protect communities near freight facilities, CARB has recognized the urgent need to accelerate the heavy-duty vehicle market toward zero-emissions.[11] Yet its proposed compliance schedule is likely to be far outpaced by the rapid growth in truck freight transportation. In the five-year period from 2019 to 2024, before this proposed rule is to take effect, truck volumes are expected to grow 2.3 percent per year.[12] The American Association of State Highway and Transportation Officials forecasts that for every two trucks on the road today, by 2030 there will be one more additional truck.[13] Crucially, this means that CARB's proposed compliance schedule will effectively allow increases in the total number of polluting trucks sold each year, well into the next decade. Unless CARB proposes higher targets on a faster timeline, the absolute growth in combustion truck volumes will overwhelm relatively low zero-emission gains.

From a climate perspective, the facts are no better. The transportation sector's greenhouse gas emissions are rising, and freight movement's share of those emissions is increasing. While the transportation sector is projected to increase emissions 20 percent by 2050, freight movement emissions will rise 30 percent in the same time period—the fastest growth in greenhouse gas emissions of any sector.[14] By 2040, when truck freight transportation has expanded by 43 percent, 30,000 miles of the nation's busiest highways will be clogged on a daily basis.[15] Unless the market has fully transformed by then, these figures are likely to dash any chance of meeting California's urgent carbon-neutrality targets in 2045.[16] The environmental impacts go beyond greenhouse gases—black carbon, which comprises a large portion of diesel particulate matter, is darkening California's snow and ice. CARB notes that black carbon deposition is driving rapid disappearance of snowpack in the Sierra Nevada, a key water source for the State.[17]

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[9] Coalition for West Oakland Revitalization, *West Oakland Community Health Survey Results*, (Nov. 2004) https://www.pacinst.org/reports/health_survey/west_oakland_health_survey.pdf.

[10] Pacific Institute, *Paying with Our Health: The Real Cost of Freight Transport in California,* (Nov. 2006) https://pacinst.org/wp-content/uploads/2013/02/paying-with-our-health-full-report.pdf.

[11] CARB, *Concepts to Reduce the Community Health Impacts from Large Freight Facilities*, at slide 22 (Accessed May 10, 2019) https://www.arb.ca.gov/gmp/sfti/freight_facility_concepts_20180322_staff_informational_update_english.pdf.

[12] HDT Trucking Info, *ATA's Freight Forecast Projects Growth for Trucking* (Sept. 7, 2018) https://www.truckinginfo.com/312756/atas-freight-forecast-projects-growth-for-trucking.

[13] Andrew Goetz et al, *Urban Goods Movement and Local Climate Action, Assessing Strategies to Reduce Greenhouse Gas Emissions from Urban Freight Transport*, at 4 (April 2019) http://transweb.sjsu.edu/sites/default/files/1796_Goetz_Alexander_Urban-Goods-Movement-Greenhouse-Gas-Emissions.pdf.

[14] *Id.* at 3

[15] U.S. DOT, *Beyond Traffic 2045*, at 26 https://cms.dot.gov/sites/dot.gov/files/docs/TheBluePaper.pdf.

[16] Edmund G. Brown Jr., Executive Order B-55-18 To Achieve Carbon Neutrality (Sept. 10, 2018)

[17] CARB, *Overview: Diesel Exhaust and Health*, (Accessed on May 5, 2019) https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health.

CARB is well aware of the problems created by heavy- and medium-duty truck emissions. The question to be answered is whether the scope of the proposed Clean Truck Rule is commensurate with any strategy to address these problems.

II. Top-Down Analyses Demonstrate that the Draft Proposal Does Not Do Enough to Address Truck Pollution

For the first part of this analysis we focus on need. What number of zero-emission trucks are needed to meet pollution reduction requirements? What number are needed to comply with various commitments made by CARB or its partners? Consistently, the numbers required by the proposed rule fall short.

A. Air Quality Plans

Every recent analysis that has looked at what is required to meet our greenhouse gas targets and our health-based air quality standards has recognized the need to drastically clean up medium- and heavy-duty trucks in California. CARB staff must explain how their limited proposal for the Clean Truck Rule is consistent with any realistic strategy to achieve the required air quality and greenhouse gas reduction requirements. Our review of these analyses suggests that this proposed rule will achieve roughly 84,000 zero-emission trucks or 5 percent of the total on-road heavy-duty vehicle population by 2030.[18] This is nowhere close to the number of zero-emission trucks that must be on the road by 2023 or 2031 to meet various commitments.

CARB, *Draft Vision for Clean Air*. CARB's own Vision analysis found that even under its "advanced technology" scenario, which assumed roughly 20 percent of heavy-duty truck sales are zero-emission by 2025 and nearly 40 percent are zero-emissions by 2030, the South Coast would not see the NOx reductions required to meet the 70 parts per billion (ppb) ozone standard until 2050 – almost 20 years beyond the statutory attainment date.[19] Yet staff proposes an even slower transition under the proposed Clean Truck Rule.

SCE, *Clean Power and Electrification Pathway*. Southern California Edison did its own pathway analysis of various scenarios and concluded that the most cost-effective strategy for achieving emission reduction targets was to electrify significant numbers of mobile sources and to provide that electricity from cleaner sources.[20] Edison's recommended pathway projected a need for 15 percent of medium-duty trucks and 6 percent of heavy-duty trucks *on the road* in California to be zero-emissions by 2030.[21] Edison's estimated need is roughly 23,000 heavy-duty trucks and 180,000 medium-duty trucks on the road, both numbers well above the zero-emission truck

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[18] https://blog.ucsusa.org/jimmy-odea/how-can-we-get-more-electric-trucks-on-the-road.

[19] CARB, *Scenario Assumptions and Results Appendix to Vision for Clean Air: A Framework for Air Quality and Climate Planning*, at 23 (Aug. 20, 2012) (available at: https://www.arb.ca.gov/planning/vision/docs/draft_scenario_assumptions_and_results_appendix.pdf).

[20] Southern California Edison, *The Clean Power and Electrification Pathway: Realizing California's Environmental Goals* (Nov. 2017) (available at: https://www.edison.com/content/dam/eix/documents/our-perspective/g17-pathway-to-2030-white-paper.pdf).

[21] *Id.* at 7.

populations that the proposal would achieve. Edison also projected the need for 7 million electric light-duty vehicles, including passenger vehicles, SUVs and pickup trucks.[22] The cumulative target for zero-emission trucks must be significantly higher in every category to achieve the levels that Edison projects are necessary.

CARB, *State Strategy for the State Implementation Plan (SIP)*. Even the State Strategy, which fails to include a concrete plan for achieving the national standards for ozone and particulate matter, includes commitments that are more aggressive than the proposed Clean Truck Rule. In other words, these commitments should be treated as minimum deployment targets because even at these numbers, further emission reductions are needed to attain the national standards.

The State Strategy for the State Implementation Plan identifies a shortfall of 113 tons per day of NOx emissions between what will result from existing programs and the reductions needed to attain the 75 ppb ozone standard in 2023 in the South Coast, and a 111 ton per day gap needed to meet the 70 ppb ozone standard in 2031.[23] CARB suggests that one-third of the 2023 gap will be addressed by "accelerat[ing] the penetration of near-zero and zero" heavy-duty trucks.[24] The proposed measure is to achieve deployment of 15,000 to 20,000 such trucks per year over a seven year period to reach the equivalent of 100,000 to 150,000 trucks at 0.02 g/bhp-hour of NOx by 2023. As a rough comparison (excluding upstream NOx benefits), this level of NOx reductions is equivalent to deploying 90,000 to 135,000 zero-emission trucks in South Coast alone by 2023. The proposed Clean Truck targets of fewer than 3,000 total zero-emission truck sales *statewide* by *2024* obviously come nowhere close to the deployment outlined in the SIP.

CARB has no plan for satisfying its commitment to take action on the defined measure nor to achieve the aggregate emission reductions by the specific dates.[25] Last year, CARB submitted for EPA approval its South Coast On-Road Heavy-Duty Vehicle Incentive Measure. That measure seeks SIP credit for incentives to replace a cumulative total of 1,316 trucks in South Coast by 2023 – nowhere near the 15,000 to 20,000 *annual* deployment of zero or near-zero trucks assumed in the SIP.[26] An honest assessment of the deployments to date and those that are likely to be achieved in the near-term would show a severe shortfall created by the current voluntary approach to achieving the emission reduction commitments in the State Strategy. The Clean Truck Rule is critical to achieving those deployments and related emission reductions. The failure to include strong targets in the Clean Truck Rule will doom the plan to failure, and more importantly doom the public to continued air pollution in excess of national standards. Staff need to explain how a weak 2024 target for zero-emission truck sales can be reconciled with the commitment to achieve significant emission reductions from the accelerated deployment of zero and near-zero heavy-duty trucks.

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[22] *Id.* at 6.

[23] CARB, *Revised Proposed State Strategy for the State Implementation Plan*, at 30 (Table 3) (Mar. 7, 2017) (available at: https://www.arb.ca.gov/planning/sip/2016sip/rev2016statesip.pdf) ("2016 State Strategy").

[24] *Id.* at 81.

[25] *See id.* at 26.

[26] *See* 84 Fed. Reg. 17365 (April 25, 2019).

The proposal also falls short of the SIP commitment for zero-emission last-mile delivery trucks.[27] The proposed last-mile delivery commitment would have begun in 2020 with an initial sales target of 2.5 percent, increasing to 20 percent by 2025. Using the local delivery and parcel truck sales data from CARB and EMA, this commitment would have resulted in over 3,300 zero-emission delivery trucks on the road by 2024.[28] This commitment is greater than the 2024 sales targets that staff have proposed for *all* trucks. Again, staff should explain how the low targets for 2024 can be reconciled with CARB's SIP commitments.

We have been unable to find any analysis that suggests these proposed targets will put us on a path to meet national air quality standards or greenhouse gas targets. The state and local agencies have fallen hopelessly behind in pursuing voluntary programs to replace dirty trucks. As such, stronger mandates are necessary. Staff should strengthen the proposed Clean Truck Rule to be consistent with the deployment levels necessary to meet emission reduction needs.

B. Other Commitments to Zero-Emission Trucks

In addition to these analyses that look at the transformation required to meet state and national standards, several plans have outlined the commitments that they need to meet more local goals. CARB has been a partner or stakeholder in these local efforts, yet the proposed rule targets consistently fall short of these commitments and threaten to undermine these efforts.

Transportation Electrification Partnership, *Zero Emissions 2028 Roadmap*. CARB contributed to this roadmap, which looked at the existing commitments to reduce greenhouse gases, and proposed targets to achieve an additional 25 percent reduction in greenhouse gas emissions and air pollution *by 2028*.[29] The roadmap calls for 10 to 40 percent of drayage trucks on the road to be zero-emissions, 5 to 25 percent of the heavy-duty long-haul trucks to be zero-emissions, and 25 to 50 percent of medium-duty delivery trucks to be zero-emissions.[30] The proposed sales targets in the Clean Truck Rule would not achieve the numbers of trucks on the road by 2028 that CARB endorsed as part of the Transportation Electrification Partnership.

San Pedro Bay Ports, *Clean Air Action Plan*. The Mayors of Los Angeles and Long Beach have directed their respective ports to transition to 100 percent zero-emission drayage trucks by 2035.[31] The San Pedro Bay Ports have developed a Clean Air Action plan to support that transition, but the success of that plan depends on the availability of zero-emission Class 7 and 8 trucks.[32] There are roughly 17,000 drayage trucks serving the San Pedro Bay ports.[33] The

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[27] 2016 State Strategy at 72.

[28] This estimate uses the roughly 12,000 in annual sales for the various delivery and parcel truck categories from the ARB/EMA spreadsheet, and assumes linear growth in the targets between 2020 and 2025.

[29] Transportation Electrification Partnership, "Zero Emissions 2028 Roadmap" (2018) (available at: https://roadmap.laci.org/wp-content/uploads/2019/02/LACI-ROADMAP-V7-FINAL-HI-FI-1-020819.T6J-2.pdf).

[30] *Id.* at 17.

[31] https://www.documentcloud.org/documents/3864912-Joint-declaration-of-L-A-Long-Beach-mayors-on.html.

[32] San Pedro Bay Port, *Final Clean Air Action Plan Update* (Nov. 2017) (available at: http://www.cleanairactionplan.org/documents/final-2017-clean-air-action-plan-update.pdf/).

[33] *Id.* at 46.

scenario used by the Ports to achieve 100 percent zero-emission trucks by 2036 assumed that by 2024, 14 percent of the trucks serving the ports would need to be zero-emissions (over 2,000 trucks).[34] By 2031, that number would grow to 44 percent (over 7,000 trucks) and beginning in a 2031 all truck replacements would be zero-emission trucks, equating to annual sales of roughly 2,000 zero-emission trucks just to serve the San Pedro Bay Ports.[35]

The proposed rule would not match any of these targets. No Class 7 or 8 zero-emission tractors would be required until 2027. The 9 percent initial sales mandate equates to fewer than 500 trucks, far short of the 2,000 target. The cumulative sales mandated would result in less than half of the numbers assumed at the Ports by 2031, and the annual 15 percent sales mandate going forward from 2030 (roughly 750 trucks per year) would be less than half of what is required for the Ports alone. Higher rule targets are necessary to provide meaningful support for the Ports' plan.

Finally, it is worth reminding staff that CARB has urged the Port of Oakland to adopt similar drayage truck commitments, meaning that the gap between the zero-emission tractor requirements of the proposed rule and what the agency has agreed is needed at the ports is even more substantial.[36] There seems to be a serious disconnect between the proposed rule and the recognized need.

III. Bottom-Up Analysis Demonstrates that Stronger Sales Mandates Are Reasonable

The good news is that stronger deployment mandates are feasible and greater emission reductions are achievable. The record before staff supports stronger and earlier mandates, which will enable higher cumulative deployment numbers.

Class 2b-3. CARB's proposal would delay any mandates for pickup trucks until 2027 and start with a small 3 percent sales mandate for the remaining trucks beginning in 2024. Neither of these decisions is reasonable.

Zero-emission pickup trucks will be available well before 2027. Just in the last month, General Motors and Ford have confirmed their intention to produce electric pickup trucks.[37] While these companies have not announced dates for the release of these trucks, these announcements are widely considered a competitive response to Rivian's announcement that it will start production of its R1T in 2020. There is no reason to remove pickup trucks from the 2b-3 targets in 2024. These vehicles will be available in that timeframe, and a clear market signal will accelerate the necessary investment in their production.

The initial sales targets for the 2b-3 category are unreasonably low. The 3 percent target for 2024 for the 2b-3 category excluding pickup trucks, represents a mandate for fewer than 900 zero-

[34] *See* San Pedro Bay Ports, "Potential Emission Reductions for Select Clean Air Action Plan Strategies" at 5-6 (Nov. 2017) (describing targets for Scenario 7, which achieves 100% ZE drayage by 2036) (available at: http://www.cleanairactionplan.org/documents/potential-emission-reductions.pdf/).

[35] *See id.*

[36] https://www.portofoakland.com/files/PDF/CARB%20Comment%20Letter.pdf

[37] *See, e.g.*, https://www.motor1.com/news/347308/gmc-electric-pickup-announcement/.

emission vehicles. By CARB's own assessment, there are over 1,200 of annual sales in 2b-3 vehicles that have a suitability ranking of 1 (i.e., fully suitable) for electrification. These vehicles include heavy-duty vans used as school buses and airport service vehicles. Vehicles ranked as a 2 for suitability include parcel delivery vans and shuttle vans. These represent an additional 2,000 annual vehicle sales. Collectively, these group 1 and 2 vehicles represent 15 percent of sales of the 2b-3 category (with pickups excluded).

CARB's proposal cannot be reconciled with what is already happening in the 2b-3 market. In June 2018, UPS ordered 1,000 delivery vans from Workhorse.[38] And in November 2018, FedEx said it was adding 1,000 Chanje delivery vans to its fleet.[39] In other words, we already have multiple single orders involving single OEMs that would exceed the entire annual target for all manufacturers of all 2b-3 vehicles five years from now. In addition, Motiv has announced a new partnership with Detroit Custom Chassis to use Motiv's chassis directly on the same assembly line with combustion F-59, which will allow much larger production volumes.[40] Add to all of this electric school buses from Lion and Blue Bird, other upfits from Motiv and Lightning Systems, and DHL purchases of Phoenix parcel trucks, and the 900-truck sales target for 2024 is absurd. These unreasonably low targets combined with early compliance credits would result in compliance for years without any participation by larger OEMs. Such a result will undermine the transition to zero-emissions that is required.

CARB should not defer inclusion of pickup trucks, and set a 2024 sales mandate of at least 15 percent. This would equate to an annual sales target of roughly 11,000 vehicles. This target will spur large OEM participation and ensure that investment in the largest category of pickup trucks moves forward quickly.

Class 4-8 Straight Trucks.

While we are pleased to see stronger mandates for the Class 4-8 category, the initial targets remain overly conservative. By CARB's own analysis, there are at least 14 categories of trucks that already have an electrification suitability of 1. The annual sales in these categories is roughly 18,000 trucks, which represents more than 40 percent of the total annual sales of Class 4-8 trucks. Yet the proposal would set a 2024 target of only 7 percent (fewer than 2,000 trucks). There is no justification for starting at such a low number.

Setting an initial target of at least 25 percent is critical for achieving production at scale, and there is little reason to think such production levels will not be achievable by 2024. Daimler has announced plans to start manufacturing production electric trucks in its Portland, Oregon, factory

[38] https://electrek.co/2018/06/15/ups-fleet-1000-electric-vans-workhorse/.

[39] https://www.trucks.com/2018/11/20/electric-van-maker-chanje-fedex-order/.

[40] https://www.motivps.com/motivps/pressreleases/motiv-power-system-all-electric-epic-chassis-to-be-assembled-by-detroit-custom-chassis/.

in 2021.[41] Volvo is already producing electric trucks in Europe with series production due to be scaled up in the second half of 2019, and deliveries to North America beginning in 2020.[42]

Class 7-8 Tractors

We are also pleased to see the inclusion of Class 8 tractors and support setting separate mandates for Class 7 and 8 tractors. That said, there is no reason to delay these mandates until 2027. The rule should begin with a 10 percent target in 2024 and increase those annual targets to 30 percent by 2030. Unlike the other categories, however, we think it might be appropriate to increase those targets in a non-linear fashion because over half of the annual sales are in the line-haul category, which we agree could require more time to electrify. Notwithstanding these challenges, earlier mandates, which will likely be met in other tractor segments, will assist in developing the technology for all use cases.

As noted above, just to satisfy the demand for electric drayage trucks at the ports will require annual sales of over 1,000 tractors in 2024 and over 2,000 tractors by 2031. Many of these sales will represent a growth in current sales volumes because these owners will need to buy new zero-emission trucks instead of buying used trucks. But even with a larger "denominator," it is clear that demand for zero-emission drayage trucks alone will support higher sales targets than provided in the proposed rule.

But even in the line-haul segment, CARB's proposed targets again, do not reflect announcements already coming from the market. For example, Daimler Trucks North America, the largest commercial heavy-duty truck maker in the United States, is already moving forward with the launch of their Freightliner eCascadia, a heavy duty highway tractor designed for local and regional distribution and drayage.

IV. Recommended Targets for Proposed Rule

Based on our own analysis of what is possible, CARB's current sales standard underestimates the amount of electric trucks that can be deployed and we recommend a standard that achieves at least 200,000 zero-emission vehicles, or 10 percent of the total truck population, by 2030. The standard proposed in April would result in just 5 percent zero-emission trucks. This low target comes at the expense of public health and climate action. In addition to increasing the sales percentages proposed in April, we recommend the exemption until 2027 for pickup trucks and Class 7 and 8 be removed. The former represent the largest class of truck sales,[43] and the latter represent the class with the greatest fuel consumption per vehicle.[44]

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[41] https://daimler-trucksnorthamerica.com/influence/press-room/PressDetail/dtna-ceo-declares-path-to-zero-emission-2019-04-24.

[42] https://www.electrive.com/2019/02/20/first-fully-electric-volvo-trucks-delivered/.

[43] CARB, *ACT Market Segment Analysis* (2019) (available at ww2.arb.ca.gov/sites/default/files/2019-02/190225actmarketanalysis.xlsx).

[44] Class 7 and 8 tractors represent an estimated 11 percent of the truck population in California, but consume 40 percent of truck fuel, based on an analysis of T6 (CAIRP heavy, OOS heavy) and T7 (CAIRP, NNOOS, NOOS, POAK, POLA, other port, tractor) truck categories for calendar year 2018 in EMFAC 2017.

CARB must analyze the feasibility of stronger sales standards. Below we have outlined two scenarios that are more in line with the transition needed to meet air quality standards and climate goals. The first eliminates the unnecessary delay of mandates for Class 2b-3 pickups and Class 7-8 tractors. The targets in this first scenario are still conservative and are meant to provide a bookend for CARB's analysis. The second scenario represents the stronger targets that better reflect what is achievable in the truck market.

These targets will provide a strong market signal for production at scale. Investment at these levels is imminently achievable and will support the long-term zero-emissions transition goals by supporting creation of production lines and bringing down costs. Finally, electrifying trucks can help generate high-quality jobs, skilled training opportunities and new investments in California's economy. For example, statewide training initiatives like the Electric Vehicle Infrastructure Training Program are already preparing California electricians for the shift to clean transportation technologies.

Scenario 1:

Model Year	Class 2b-3 (including pickup trucks)	Class 4-8 Vocational/Straight Trucks	Class 7-8 Tractors
2024	10%	25%	5%
2025	10%	25%	5%
2026	20%	35%	15%
2027	20%	35%	15%
2028	20%	35%	15%
2029	35%	50%	25%
2030	35%	50%	25%

Scenario 2:

Model Year	Class 2b-3 (including pickup trucks)	Class 4-8 Vocational/Straight Trucks	Class 7-8 Tractors
2024	15%	30%	10%
2025	23%	38%	13%
2026	30%	45%	17%
2027	38%	53%	20%
2028	45%	60%	23%
2029	53%	68%	27%
2030	60%	75%	30%

We estimate Scenario 1 would result in zero-emission vehicles comprising 10 percent of the total truck population by 2030 and 25 percent of cumulative truck sales between 2024 and 2031. Scenario 2 would result in 15 percent of the total truck population by 2030 and 35 percent of cumulative truck sales.

The zero-emission truck market has been advancing quickly, largely because of anticipated requirements in places like California, Europe and China. We believe the current Clean Truck Rule proposal poses a greater risk of leaving California communities under-protected rather than over-reaching on technical feasibility. Deliberately choosing to "low-ball" the mandates for this rule is not only unacceptable from a public health perspective, it is also counterproductive to the success of the rule itself because it will undercut the investment and innovation that have been made in anticipation of this rulemaking. At a minimum it will mean that more zero-emission trucks will go to other parts of the world than to California. CARB's goal should be to protect California. We urge staff to reconsider its proposal and adopt the targets recommended above.

Sincerely,

Earthjustice
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Staff Attorney

Union of Concerned Scientists
Jimmy O'Dea
Senior Vehicles Analyst

Sierra Club
Ray Pingle, CARB ACT Rulemaking Project
Katherine Garcia, Communications Associate & Policy Advocate

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