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October 17, 2021

California Air Resources Board
1001 I Street
Sacramento, CA 95812

Ref: Western States Trucking Association Comments on Advanced Clean Fleets (ACF) Regulatory Proposal

Dear Air Resources Board:

The Western States Trucking Association (WSTA) is a non-profit organization with interstate and instate motor carrier members that are impacted by the ACF proposal. We have been extensively involved in the CARB zero emission vehicle (ZEV) planning process for trucking since it began in 2016. The ACF proposal would damage the trucking industry in general, and WSTA members specifically, by imposing a new unfunded mandate for which there is inadequate legal authority, financial resources, infrastructure and electric grid reliability identified by CARB.

Legal Authority

Many WSTA members operate trucks within the jurisdiction of the South Coast Air Quality Management District. From approximately 1999 through 2005, that local agency attempted to restrict the purchase of heavy-duty diesel trucks and engines by fleet operators. The local rules were challenged, and the Supreme Court of the United States ruled on the matter in 2004. As requested in our comment letters in 2021, CARB must identify its legal authority to prevent fleet owners from purchasing internal combustion engines.¹

CARB's Analysis of our Alternative 8 is Incorrect and Misleading

WSTA proposed an alternative that is discussed in the Environmental Assessment (EA) as Alternative 8. CARB is obligated to prepare an analysis of alternatives. CARB is aware that natural gas vehicles have been deployed in the construction, utility, and waste collection industries. In the analysis in the EA for this regulation, CARB makes the shocking announcement that natural gas vehicles are more polluting than diesel. WSTA is providing the attached Alternative 8 Technical Comments prepared by Ramboll, which disputes the "more polluting" conclusion as "incorrect and misleading" as well as shows where the CARB staff environmental analysis of Alternative 8 falls short. Ramboll concludes that, "CARB must formulate a revised Alternative 8, as originally suggested by stakeholders, and conduct a full CEQA comparison analysis that reflects the emission reduction potential of including low NOX NG trucks and the GHG emissions reduction potential of RNG-fueled NG trucks."

¹ See Engine Mfrs. Assn. v. South Coast Air Quality Management Dist. (02-1343) 541 U.S. 246 (2004) 309 f.3d 550 (2002)

INTEGRITY ◊ PROFESSIONALISM ◊ EDUCATION ◊ SAFETY

Regulated Entities & Controlling Parties

The Scope and Applicability applies the Regulation to the following entities,

“(c) Is a fleet owner or controlling party whose fleet in combination with other fleets operated under common ownership and control total 50 or more vehicles in the total fleet, excluding light-duty package delivery vehicles.”

““Controlling party” means the motor carrier, broker, or entity that directs or otherwise manages the day-to-day operation of one or more fleets under common ownership or control to serve its customers or clients.”

As written, neither section can be implemented in goods movement or construction trucking industries. The words “in combination,” “manages,” and “serves” lack the specificity needed for a potentially regulated party to determine what, if any, compliance requirements apply.

WSTA members that may contract with fleet owners or motor carriers have no practical way of determining the number of trucks over which the contracted party has “common ownership or control.” Privately-held businesses have no legal requirement that we are aware of that would compel them to divulge how many trucks they may have under “common ownership or control.” Furthermore, the words “directs or otherwise manages the day-to-day operation,” is unworkable in the context of today’s trucking industry. For example, a general contractor with ten trucks that hires the services of 40 or more dump trucks for a one-time job of two days or longer in any given year could arguably “direct” on a “day-to-day” basis other fleets so could be considered to be “in combination” and meet the ZEV Fleet Milestones for 50 trucks. However, it would appear that the Regulation would also compel the general contractor to investigate the ownership status and business holdings of the “directors, officers or managers” of each truck to determine if additional trucks could be operated under “common ownership or control” and if the general contractor could determine that then he/she would add those additional trucks to the 40 that were contracted and apply the ZEV Fleet Milestone to the new total. There is simply no practical way for a potentially regulated entity to reliably determine the truck ownership status, truck owner business status or a truck count to reliably implement a ZEV purchase for another business with whom he/she has only contracted for two days in any given year during the compliance period. CARB must identify the legal authority under which it can compel two separate businesses to be treated as one regulated party for the purpose of the ACF.

Commercial Availability of ZEVs

CARB staff have verbally indicated that there is no intention to compel the purchase of a truck or bus where there is not a “one-to-one replacement.” While we appreciate that CARB recognizes that many vocational truck segments are not currently suited to ZEVs (e.g. due to range and payload requirements), the proposed exemption process is not adequate. The paperwork burden is entirely on the fleet owner to document the lack of an adequate ZEV replacement truck. There is no definition of “commercially available” in the proposed language and it appears from CARB staff comments that the evidence of availability is when a manufacturer will take an order for a truck. There must be a self-executing exemption process in which the burden of proof is on the manufacturer to certify that its vehicle meets daily range and payload requirements rather than the fleet owner/end user being forced to compile voluminous information for an exemption.

Traffic Impacts of ZEV's

CARB staff has ignored the significant complications of ZEV's from both a highway safety and environmental perspective. While California law under AB 2061 permits a 2,000-pound allowance for any ZEV or near zero emissions vehicle, federal law does not.

Federal law only permits a 2,000-pound allowance for natural gas vehicles above the federal gross weight limitation of 80,000 pounds. Efforts are underway in Washington D.C. to legislatively force the Federal Highway Administration into permitting as much as an 8,000-pound allowance for electric trucks. However, this attempt is being fiercely opposed by certain stakeholders, especially highway safety advocates.

As the law stands right now, there is no legal ability for battery-electric trucks to operate on the federal highway network (including within California) above the federal maximum weight allowance. California's weight allowance will only be useable on state and local highways.

Class 7 - 8 electric trucks as currently designed weigh significantly more than their diesel counterparts, as much as 8,000-pounds. Without a federal increase (Federal Highway is constrained legislatively from being able to approve wholesale weight increases on the federal highway network) significantly more trucks will be required to haul the same tonnage as trucks carry today.

While not all trucks operate all the time at maximum allowable weight, a sufficient number do, especially in construction trucking where there is no such thing as a light load of rock, sand, or gravel.

There is a direct correlation between the number of trucks on-highway and car-truck crashes and/or fatalities. Increasing the number of required trucks as a direct result of

this rule will increase the overall vehicle miles travelled thus increasing crashes, injuries, and highway related fatalities. This is measurable statistically but ignored by staff. More trucks on-highway as a result of this mandate dramatically changes estimates related to the emissions lifecycle of ZEV's.

Concrete Pumps Should be Exempted from ACF

Chapter 13 of the California Department of Motor Vehicles (DMV) handbook defines a concrete pump and pumper boom as a mobile crane (see Section 13.070). A heavy crane is defined as a power-operated equipment that can hoist, lower, and horizontally move a suspended load, with a gross vehicle weight rating of 54,000 pounds or more, and is not designed to transport cargo. This definition also applies to a concrete pump for the following reasons:

- A concrete pump hoists, lowers, and horizontally moves a suspended load of concrete
- A concrete pump has a gross vehicle weight rating in excess of 54,000 pounds
- A concrete pump is not designed, nor is capable of transporting cargo

Additionally, a concrete pump's primary intended function requires operation exclusively off-road on an undeveloped parcel that has no fueling infrastructure. By the time the concrete pump reaches its jobsite, its power supply would have already been depleted rendering it inoperable and incapable of performing its primary intended function. Concrete pumps typically remain on a jobsite for the life of the project and do not typically return to home base. Even in the rare cases where a concrete pump would return to home base, its power supply would be depleted before reaching the jobsite or returning to home base to refuel or recharge. If this regulation requires an ICE concrete pump to be converted into a ZEV, there are also major safety concerns surrounding the operation of these heavy vehicles with suspended loads. If a concrete pump has no access to a fueling source, the suspended load of concrete can cause millions of dollars in damage as well as jeopardize the safety of its operator and other workers on the jobsite. For these reasons a concrete pump truck should be exempt from Title 13, CCR Section 2015.

Zero Emission Vehicles are not Zero Emissions

The United Nations reported that many of the impacts of global warming are now simply "irreversible", where near-term solutions of reducing short-lived climate pollutants, such as methane and black carbon, are the only tools left to bend the climate curve. CARB is banking on ZEVs to be carbon neutral by 2045. The Governor is proposing to invest \$10 billion over six years in ZEVs, with a focus on disadvantaged communities that are most impacted, while shorting the carbon-negative solutions of today. What CARB fails to recognize is that using ZEVs is not truly a zero-emission practice. Assembly Bill 32 requires CARB to minimize leakage, where CARB is picking ZEVs as the technology winner while exporting GHG emissions out of state. ZEVs have a carbon

intensity of 62 to 90 (gCO₂e/MJ) when combining the energy required to produce electricity to charge the battery and the manufacturing process of the battery. California's unstable electrical grid has a carbon intensity of 24 (gCO₂e/MJ). The range of emissions from battery manufacturing has a carbon intensity of 38 – 66 (gCO₂e/MJ) as presented by Edgar & Associates' report, 'Life Cycle Greenhouse Gas Impacts of Electric Vehicle Battery Manufacturing', submitted into the CARB docket on March 24, 2022. CARB is blinded by their tailpipe mentality, forgetting that the essence of the Low Carbon Fuel Standard is built upon credible life-cycle analyses by which ZEVs should also be evaluated.

Amnesty International and many other credible organizations have documented serious human rights violations linked to the extraction of the minerals used in lithium-ion ZEV batteries. Forced child labor for mining cobalt in the Democratic Republic of Congo remains unchecked. Many articles have been published about the assault of producing these bloody batteries on some of the poorest regions in the world. The European Parliament adopted a ZEV Battery Directive Resolution on March 10, 2022, where battery-makers will face assessment of their supply chains to ensure any environmental or human rights abuses are identified and addressed. Carbon emissions caused by battery production will need to be disclosed along with a responsible end-of-life recycling solution. CARB should provide truth in advertising about zero emissions. CARB and the Environmental Justice Advisory Committee (EJAC) are complicit in anointing ZEVs as the panacea in a future faraway world, while ignoring the human rights violations and the environmental degradation of mining today. CARB will be endorsing leakage of GHGs out of state and not considering credible European Parliament ZEV life-cycle analyses. CARB should promote environmental justice for all by considering the global impacts and life cycle analysis of the battery resource extraction, processing and needed recycling infrastructure

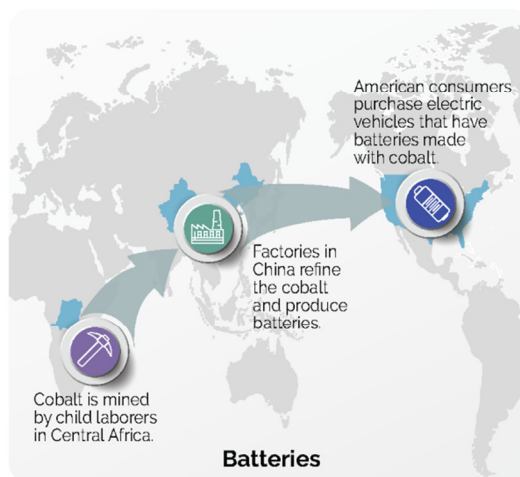
The European Batteries Directive, which is part of the European Green Deal, and the new Circular Economy Action Plan, proposes new regulations setting sustainability requirements for batteries to be placed on the EU market, including responsible sourcing of raw materials, hazardous substances, carbon footprint, mandatory level of recycled content and durability, reusability, and recyclability conditions; establishing objectives and measures to improve the collection, treatment and recycling of waste batteries and ensure materials recovery; establishing information and labeling requirements for both economic operators and end-users; modifying requirements for the implementation of extended producer responsibilities (EPR) obligations. The Directive has three objectives: strengthening the functioning of the internal market (including products, processes, waste batteries and recyclates), by ensuring a level playing field through a common set of rules; promoting a circular economy; and reducing environmental and social impacts throughout all stages of the battery life cycle.

ZEV batteries produced or sold in the European Union (EU) would need to comply with the proposed Battery Directive with new environmental standards, according to a Resolution adopted by the European Parliament on March 10, 2022, and check to see if their raw materials are responsibly sourced. Amnesty International and many other credible organizations have documented serious human rights violations linked to the extraction of the minerals used in lithium-ion batteries. Forced child labor is mining cobalt in the Democratic Republic of Congo for decades unchecked. Many articles have been published about the assault of these bloody batteries in some of the poorest and most vulnerable regions in the world.

European Parliament Battery Directive Circular Economy

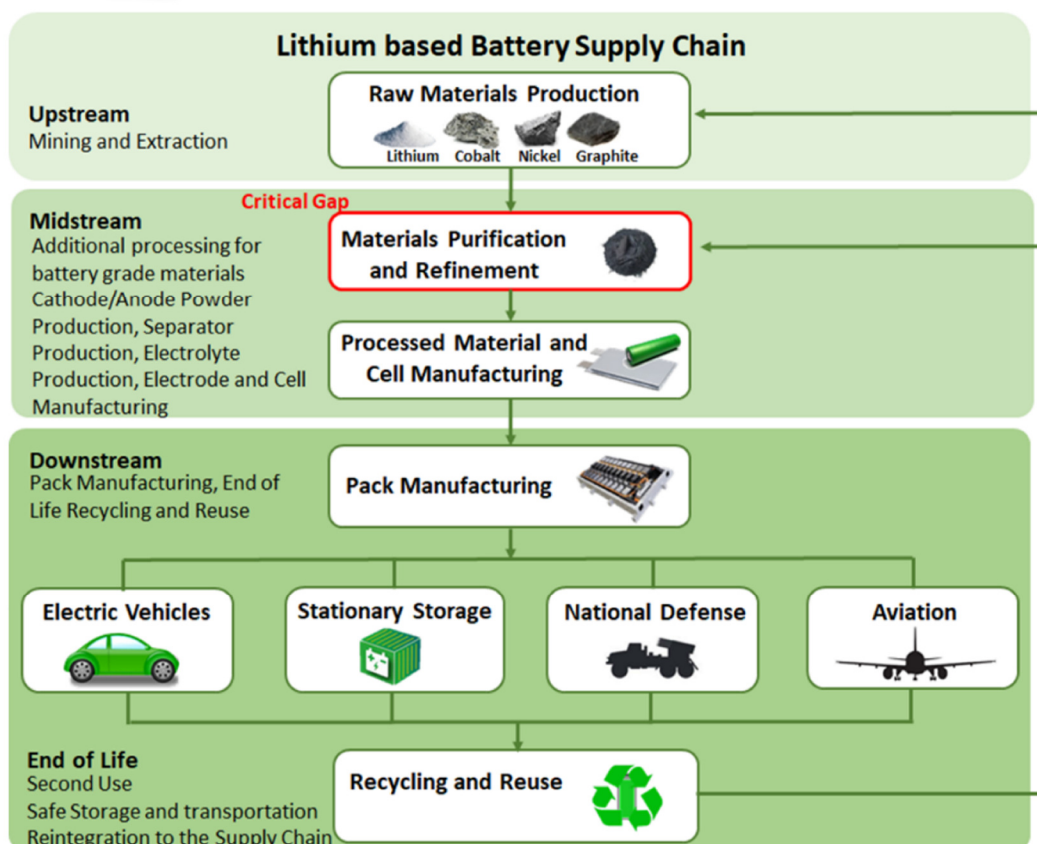


Supply Chain in a Linear Economy Congo to China to California



Source: U.S. Department of Labor

Under the EU Battery Directive, battery-makers will face checks on their supply chains to ensure any environmental or human rights abuses are identified and addressed. Limits on the carbon emissions caused by battery production will reduce their climate impact even further. Starting 2026, key raw materials will need to be recycled at the end of each battery's life: 90% of nickel, copper and cobalt used and 70% of lithium (up from the paltry 35% proposed by the Commission). This will help secure a critical domestic supply of battery metals and offset the need for new mining. But the rules still need to be signed off by EU governments, which want to delay the introduction of recycling targets and due diligence checks by battery-makers. It is surprising that California does not already have a Battery Directive to promote environmental justice for all!

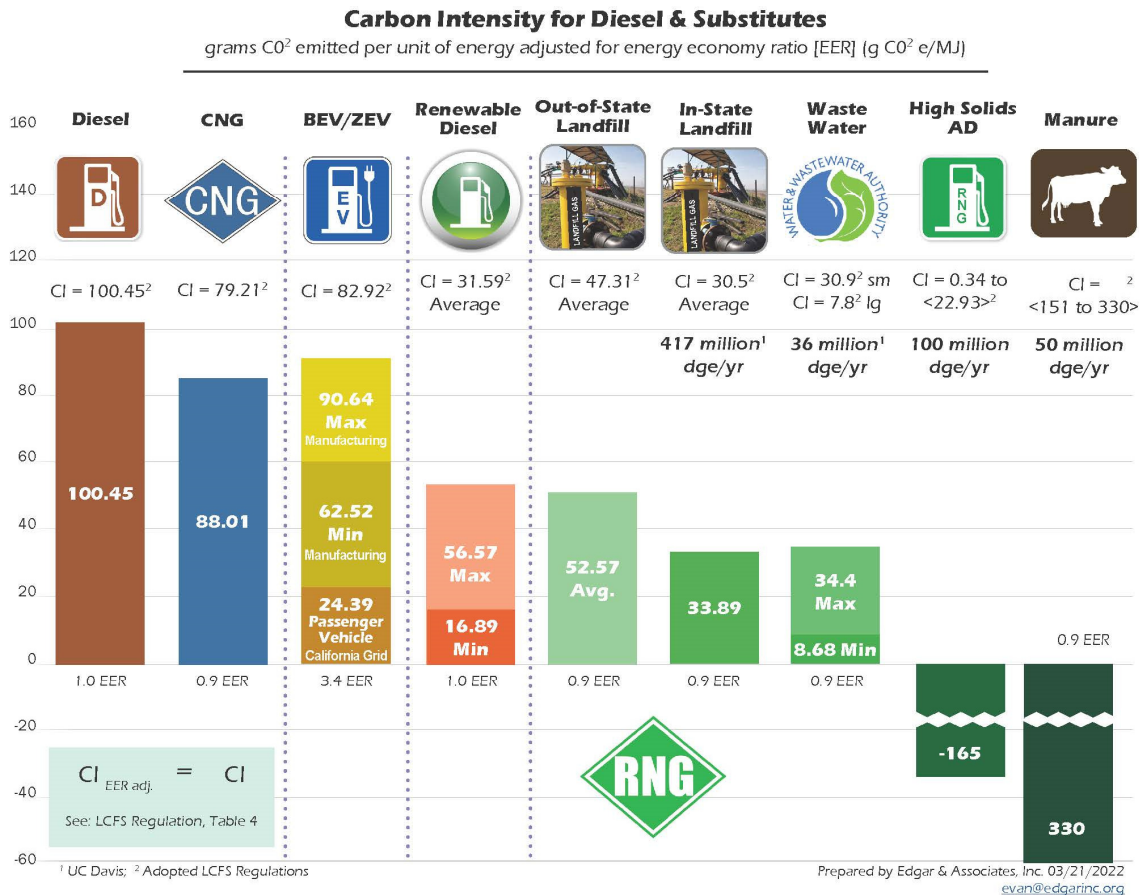


Source: DOE Vehicle Technologies Office (VTO)

According to the recent White House report on ZEV batteries, “The high-capacity battery supply chain consists of five main value chain steps including: 1) raw material production, 2) material refinement and processing, 3) battery material manufacturing and cell fabrication, 4) battery pack and end use product manufacturing, and 5) battery end-of-life and recycling. ***Coordinated government and private sector action is required across all five stages, as gaps can undermine efforts to secure the supply chain.*** For example, if the United States increases battery recycling rates and not processing capacity, recycled minerals will be exported for processing only to be re-imported at a later supply chain step.”² Mandates like ACF do little to encourage coordination with the private sector.

Because of CARB’s ZEV policies and rejection of WSTA’s Alternative 8, many fleets will be staying on diesel for the foreseeable future. However, there is adequate supply for fleets to utilize in-state renewable natural gas (RNG) now with in-state RNG production that is underway. RNG should be modeled with its life-cycle analysis being close to carbon neutral and some feedstocks and processes making carbon-negative RNG.

² <https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf>



Conclusion

For the reasons detailed herein, the ACF Regulation is nowhere near being ready for adoption, does not meet legal requirements and cannot be implemented by our members as it is proposed. The onus is on CARB, the governor, the legislature and electric utility providers to identify the timeline and sources of public funding to accomplish ZEV truck deployment by fleet owners on a voluntary basis. There is currently no business case, savings or cashflow model presented that maximizes ZEV deployment while ensuring that WSTA members that support goods movement, construction & demolition or waste removal can remain in business if the ACF is adopted by the Board as proposed. On the heels of the controversial, costly and litigated Truck & Bus Regulation should CARB staff and the Board choose to ignore our constructive suggestions it will only serve to leave a bad taste in the mouth of the very entities that CARB needs to “buy in” to what will be the most costly and difficult fleet mandate ever. Finally, WSTA is entitled to a complete response and CEQA analysis of our Alternative 8 especially in light of CARB’s own modeling that shows that the proposed ACF delivers very little emissions reductions in the South Coast and San

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Joaquin Valley where hundreds of our members live, work and strive to provide the public with the goods and services it needs.

I may be reached via electronic mail at LeeBrown@westrk.org

Sincerely,



Lee Brown
Executive Director
Western States Trucking Association

Attachment: "COMMENTS ON THE ALTERNATIVE 8 ANALYSIS IN THE DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED ADVANCED CLEAN FLEETS (ACF) REGULATION," RAMBOLL US CONSULTING

cc: WSTA Executive Committee
Construction Industry Air Quality Coalition
Ellison Wilson Advocacy, LLC

MEMORANDUM

To: Lee Brown
Western States Trucking Association

From: Varalakshmi Jayaram and Julia Lester
Ramboll US Consulting

Subject: **COMMENTS ON THE ALTERNATIVE 8 ANALYSIS IN THE DRAFT ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED ADVANCED CLEAN FLEETS (ACF) REGULATION**

ALTERNATIVE 8 TECHNICAL COMMENTS

Date: October 14, 2022

The Draft Environmental Assessment (Draft EA) for the Advanced Clean Fleets (ACF) regulation includes a number of alternatives that were considered by the California Air Resources Board (CARB) for the ACF regulation but were ultimately rejected. One of these alternatives, Alternative 8, would allow for natural gas (NG) vehicles to count the same as zero emission vehicles (ZEV) until the final fleet compliance date or 2040 when the proposed 100% ZEV sales requirement becomes effective. CARB's definition of this alternative attempted to address comments by Western States Trucking Association (WSTA) and CleanFleets.net members, but falls short for several reasons, including, but not limited to, failure to consider the optional low-NO_x emission standard, failure to analyze the potential for near-term criteria air pollutant and greenhouse gas emissions reductions associated with natural gas vehicles, and disregarding the maturity of existing natural gas infrastructure and its potential for fueling a fleet of NG trucks.

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Potential For Near-Term Reductions with the Optional Low-NO_x Engine Standard

CARB's Alternative 8 analysis did not consider the optional low-NO_x engine standard, but instead assumed that these NG vehicles would meet the exhaust emissions standards in the Heavy-Duty Omnibus regulation. This approach does not consider the potential near-term emissions benefits of allowing NG trucks that already meet the current optional low-NO_x standard of 0.02 gram per brake horsepower hour (g/bhp-hr) and can potentially meet the lower optional low-NO_x standard of 0.01 g/bhp-hr in the future. CARB has overlooked an opportunity to analyze an alternative that is more closely aligned with the project objectives, e.g., would result in greater near-term emissions in the California medium- and heavy-duty vehicle (M/HDV) fleet and allow for more flexibility in how fleets meet their obligations under the ACF regulation. As noted in the Ramboll 2021 heavy-heavy duty truck (HHDT) study titled "Multi-Technology Pathways to Achieve California's Air Quality and Greenhouse Gas Goals: Heavy-Heavy-Duty Truck Case Study", natural gas vehicles that meet the optional low-NO_x standards have the potential for achieving emissions reductions on par with the ACF

regulation.¹ Scenario 2 in Ramboll’s 2021 HHDT Study represents a transition of the California HHDT fleet to low-NO_x NG trucks and is similar to Alternative 8 but reflects the inclusion of commercially available and CARB-certified optional low-NO_x emission standard (0.02 g/bhp-hr) trucks,² and thus, provides greater emissions reductions than CARB’s Alternative 8. Scenario 1 in the same study presents the CARB long-term fleet mix, based on the 2020 MSS, which is closely aligned with the proposed ACF regulation. As seen in Figure 5-1 of the Ramboll 2021 HHDT Study, Scenario 2 and Scenario 1 have nearly identical NO_x tailpipe emissions from 2020 to 2037. After 2037, both scenarios still follow a similar path that leads to significant emissions reductions from the baseline by 2050, contrary to what CARB stated in the alternative analysis.

Allowing for NG trucks that meet the optional low-NO_x standard as well as ZEVs in this regulation could potentially reduce the number of exemptions required in earlier years of the ACF regulation. This technology is more mature, is commercially available today, relies upon existing fueling infrastructure, and is able to accommodate a number of duty cycles that BEVs still struggle to meet. CARB is sacrificing near-term NO_x emissions reductions by not allowing for low-NO_x NG trucks as well as ZEVs in the regulation milestones, and therefore sacrifices near-term reductions and progress in meeting federal air quality goals. In this respect, a revised Alternative 8 that allows a greater number of low-NO_x trucks could be environmentally superior to the proposed project.

Inclusion of low-NO_x natural gas vehicles (such as those commercially available and certified to a NO_x emission standard of 0.02 g/bhp-hr) in the ACF regulation has the potential for similar or greater emission reductions benefits compared to the currently written ACF regulation, and therefore a modified Alternative 8 should be considered that includes the optional low-NO_x emission standard of 0.02 g/bhp-hr or lower.

NO_x, Particulate Matter, and Greenhouse Gas Emissions Reduction Potential of Natural Gas Trucks

Within the Draft EA Alternative 8 discussion, CARB claimed that NG trucks are more polluting than diesel trucks and do not result in NO_x, particulate matter (PM), and greenhouse gas reductions (GHG) reductions, but this is incorrect and misleading. As noted in the previous paragraph, NO_x emission reductions are possible with NG vehicles equipped with a low-NO_x engine. CARB has certified numerous low-NO_x trucks, including 0.02 g/bhp-hr trucks. These CARB-certified low-NO_x trucks are commercially available and should have been included in Alternative 8 since they can achieve near-term NO_x reductions.³

Additionally, particulate matter emissions reductions are possible with NG trucks compared to battery-electric trucks (BETs). Diesel particulate matter emissions would be zero for NG trucks, reducing the amount of these highly toxic tailpipe emissions to the same extent as zero emission trucks. Assembly Bill (AB) 2061 (Frazier) allows for an extra weight allowance of 2,000 lbs for a near-zero-emission or zero-emission vehicles and natural gas vehicles. However, battery-electric trucks (BETs) are typically much higher in weight than their internal combustion engine truck (ICETs) counterparts, exceeding this 2,000 lbs allowance by up to 6 times. The Argonne National Laboratory’s

¹ Ramboll. 2021. “Multi-Technology Pathways to Achieve California’s Air Quality and Greenhouse Gas Goals: Heavy-Heavy-Duty Truck Case Study” February. Available here: <https://www.wspa.org/wp-content/uploads/Multi-technology-Truck-Emission-Reduction-Scenarios-White-Paper-FINAL.pdf>. Accessed: October 2022.

² CARB. “New Vehicle and Engine Certification: Executive Orders”. Available here: <https://ww2.arb.ca.gov/new-vehicle-and-engine-certification-executive-orders>. Accessed: October 2022.

³ Ibid.

vehicle inventory for the GREET model includes the weights of Class 6 and Class 8 vehicles; the weight of BETs for these vehicle classes are 2,193 lbs to 13,801 lbs greater than their ICET counterparts.⁴ This is higher than the weight allowance allowed by AB 2061; thus, BETs would have to carry less cargo weight and/or a new weight allowance for BEVs would be necessary to haul the same weight of cargo. A 2016 study titled “Non-Exhaust PM Emissions from Electric Vehicles” found that increased vehicle weight led to increased tire wear and entrained road dust emissions.⁵ This is consistent with CARB’s methodology⁶ for calculating entrained road dust emissions as a function of vehicle miles traveled and the average weight of vehicles traveling on the road. The additional weight (and/or increased trips if total weight is restricted) that BETs would introduce onto the road would increase entrained road dust and potentially tire wear as well and would lead to higher PM emissions compared to natural gas vehicles and conventional diesel vehicles. A CEQA analysis should compare total, not merely tailpipe emissions, so this must be considered in CARB’s analysis, and it is misleading of CARB to claim that natural gas trucks could not achieve particulate matter emissions reductions compared to battery-electric trucks, given the large disparity in the weight of BETs compared to ICETs.

Lastly, CARB has claimed that NG trucks do not allow for the same GHG emission reductions as ZEVs, but this is false. In 2021 97.7% of all natural gas consumed by California’s transportation sector was renewable natural gas (RNG), according to the Low Carbon Fuel Standard program data summary.⁷ The average carbon intensity of this NG in California in 2021 was -33.4 g CO₂e/MJ.⁸ The carbon intensity of natural gas has decreased over time due to carbon negative renewable feedstocks for RNG (e.g., dairy digester biomethane⁹). This carbon intensity outperforms the current California electric grid carbon intensity of 453.1 lbs CO₂e/MWh (57.09 g CO₂e/MJ) in 2020.¹⁰ The near-term GHG emissions reduction potential of RNG-fueled trucks must be considered by CARB in their Alternative 8 analysis. Additionally, a recent study¹¹ published in June 2022 showed that the use of RNG with a carbon intensity (CI) of -150-g CO₂e/km to -200 g CO₂e/km in ICEVs has the greatest potential for fuel lifecycle (well-to-wheel) GHG emissions reduction benefits; RNG with these CI values can be produced using municipal solid waste, sludge, and/or manure as a feedstock. CARB’s argument that RNG does not lead to GHG emissions reductions is unfounded and a reasonable alternative consistent with the project’s purpose and need should include low-NO_x trucks in fleets that are fueled by renewable natural gas or other lower carbon intensity fuels.

⁴ Argonne National Laboratory. 2021. “Vehicle-Cycle Inventory for Medium- and Heavy-Duty Vehicles”. November 1. Available here: https://greet.es.anl.gov/publication-mhdv_vc. Accessed: October 2022.

⁵ Victor R.J.H. Timmers, Peter A.J. Achten. 2016. “Non-exhaust PM emissions from electric vehicles”. Atmospheric Environment. June. Available here: <http://www.soliftec.com/NonExhaust%20PMs.pdf>. Accessed: October 2022.

⁶ CARB Entrained Road Travel, Paved Road Dust. March 2021. Available here: https://ww3.arb.ca.gov/ei/areasrc/fullpdf/2021_paved_roads_7_9.pdf. Accessed: October 2022.

⁷ CARB. 2022. Low Carbon Fuel Standard Quarterly Summary Data Spreadsheet. July 31. Available here: https://ww2.arb.ca.gov/sites/default/files/2022-08/quarterlysummary_073122_0.xlsx. Accessed: October 2022.

⁸ Ibid.

⁹ CARB. 2022. Low Carbon Fuel Standard Current Fuel Pathways. September 29. Available here: https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/fuelpathways/current-pathways_all.xlsx. Accessed: October 2022.

¹⁰ EPA. 2022. eGRID Summary Tables 2020. January 27. Available here: https://www.epa.gov/system/files/documents/2022-01/egrid2020_summary_tables.pdf. Accessed: October 2022.

¹¹ Cai, Hao et. al. 2022. Decarbonization potential of on-road fuels and powertrains in the European Union and the United States: a well-to-wheels assessment. September 1. Available here: <https://pubs.rsc.org/en/content/articlelanding/2022/se/d2se00411a>. Accessed: October 2022.

Maturity of Existing Natural Gas Infrastructure

As a part of the Advanced Clean Trucks regulation, CARB conducted a survey of large fleets that had more than \$50 million in revenues in 2019 and/or owned 50 or more vehicles (CARB Large Entity Fleet Reporting Survey). This survey concluded that affected fleet owners have already constructed 532 facilities that supply natural gas to their vehicles.¹² According to the U.S. Department of Energy's Alternative Fuels Data Center, there are another 168 publicly accessible compressed and liquid natural gas fueling stations across the state.¹³ Allowing for natural gas vehicles to earn credits under the ACF regulation would not result in stranded assets for fueling infrastructure; the infrastructure is already built. Rather, requiring a complete and immediate transition to ZEVs would strand the investments already made to transition heavy-duty vehicle (HDV) fleets from diesel and gasoline to cleaner natural gas.

The CARB Large Entity Fleet Reporting Survey¹⁴ shows that 90% of home base facilities do not have electric charging infrastructure. For the remaining 10% of home base facilities that have electric charging infrastructure, the survey results do not provide the number of chargers installed at the home base facilities, the ratio of chargers available relative to the total number of trucks housed at the home base facilities, or the rated energy capacity of these charging stations. So, it is impossible to determine what mix of vehicle classes the existing charging stations serve. Additionally, as stated in the ACF ISOR,¹⁵ CARB includes in this count Level 2 chargers (19 kW) for Class 2b through Class 5 trucks, despite the roughly 4 to 7 hours it would take to charge the 80 kWh and 135 kWh batteries estimated to be used for a Class 2b and Class 5 truck respectively.¹⁶ These stations cannot be utilized to charge larger trucks, which require charging outputs at 150 kW or higher in order to charge the 205 kWh through 1050 kWh batteries of Class 6 through Class 8 BEVs, unlike natural gas fueling stations, whose throughput capacity can be upgraded to meet expanding fleet demands at near negligible costs by comparison.

It is unreasonable to believe that the expansions required for electric charging infrastructure to meet the needs of the Proposed ACF regulation can be accomplished in the timeframe of the regulation. It has taken over 20 years for natural gas infrastructure to reach its current state, and it is reasonable to think that ZEV infrastructure will take equally long if not longer. The facility-side infrastructure costs associated with the ACF are estimated to be \$44 billion dollars,¹⁷ on top of the \$9.7 billion estimated for facility-side charging and infrastructure costs to support the ACT regulation.¹⁸ These costs do not even

¹² CARB Large Entity Fleet Reporting. Available here: https://ww2.arb.ca.gov/sites/default/files/2022-02/Large_Entity_Reporting_Aggregated_Data_ADA.pdf. Accessed: October 2022.

¹³ Alternative Fuels Data Center. 2022. Natural Gas Fueling Station Locations. Available here: https://afdc.energy.gov/fuels/natural_gas_locations.html#/analyze?fuel=CNG&fuel=LNG®ion=US-CA&country=US&cng_vehicle_class=MD&lng_vehicle_class=MD. Accessed: October 2022.

¹⁴ CARB Large Entity Fleet Reporting. Available here: https://ww2.arb.ca.gov/sites/default/files/2022-02/Large_Entity_Reporting_Aggregated_Data_ADA.pdf. Accessed: October 2022.

¹⁵ CARB. 2022. ACF Initial Statement of Reasons. August 30. Available here: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf>. Accessed: October 2022.

¹⁶ CARB. 2022. ACF Total Cost of Ownership Discussion Document. August 30. Available here: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appg.pdf>. Accessed: October 2022.

¹⁷ ACF Standardized Regulatory Impact Assessment. Available here: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appc.pdf>. Accessed: October 2022.

¹⁸ ACT 15-Day Notice Attachment C – Updated Costs and Benefits Estimations. Available here: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2019/act2019/30dayattc.pdf>. Accessed: October 2022.

consider utility-side upgrades to transmission and distribution infrastructure, which will also be significant.

The existing natural gas infrastructure provides ample fueling opportunities for existing and future natural gas vehicles, including low-NO_x trucks. A CEQA analysis of a revised low-NO_x truck Alternative 8 should note that extensive new power/fuel generation and distribution infrastructure needed for ZETs under the proposed ACF (whose environmental impacts should be analyzed) would not be needed (and thus have less than significant impacts) for a revised Alternative 8. CARB has missed an opportunity to find an alternative that can achieve the environmental goals of the project in a potentially environmentally superior fashion (including, but not limited to, significantly lower infrastructure construction impacts).

CARB should assess a feasible alternative that meets the environmental goals of the project (e.g., Alternative 8 with low-NO_x NG trucks and renewable fuels), which may actually be an environmentally superior alternative that could deliver NO_x and GHG reductions faster and more broadly in impacted communities/airsheds than the proposed ZEV-centric ACF regulation.

Although CARB cites the need for criteria pollutant and GHG emissions reductions consistent with the goals of the State Implementation Plan and Scoping Plan as the first objective of the regulation,¹⁹ they have failed to properly consider an alternative that could allow for the same or greater emissions reductions through NG vehicles equipped with low-NO_x technology and the use of renewable fuels (which the current ACF proposal would disincentivize). As noted above, a multi-technology/fuel approach as demonstrated in Ramboll's 2021 HHDT Study can achieve similar NO_x emission reductions to CARB's ACF plan. As noted in the 2021 SCAQMD comment letter, CARB must focus on immediate federal air quality standards which could be achieved with low-NO_x technology today that is already commercially available and more cost effective than comparable zero emission vehicles.²⁰ ZEV technology has potential for longer term NO_x and GHG benefits, but delayed and uncertain benefits over the next 10-15 years. BEVs rely on substantial technology and infrastructure investments outside CARB's control or ability to incentivize. CARB is sacrificing near-term emissions reductions by narrowly considering a ZEV-only approach to reach long-term goals. Additionally, as noted above, the GHG emissions reductions benefits possible with NG trucks fueled by RNG are even greater than the current emissions reductions possible with zero emissions vehicles powered by California grid electricity. A RNG transition in the truck sector could also help meet hard-to-electrify applications such as specific duty cycles and/or long-haul routes; BETs have yet to reach the range requirements needed for long-distance applications. Because of existing NG infrastructure, low-NO_x RNG trucks can reduce NO_x and GHG emissions today, which is desperately needed to meet 2031 and 2037 federal air quality standards. CARB must formulate a revised Alternative 8, as originally suggested by stakeholders, and conduct a full CEQA comparison analysis that reflects the emission reduction potential of including low-NO_x NG trucks and the GHG emissions reduction potential of RNG-fueled NG trucks.

¹⁹ CARB. 2022. ACF Initial Statement of Reasons. August 30. Available here: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf>. Accessed: October 2022.

²⁰ SCAQMD. 2021. Staff Comments on Proposed Advanced Clean Fleets Regulatory Concepts. April 2. Available here: <https://www.arb.ca.gov/lists/com-attach/25-acf-comments-ws-WiIRNAFhU3FWPQFI.pdf>. Accessed: October 2022.