GLADSTEIN, NEANDROSS & ASSOCIATES

CLEAN TRANSPORTATION & ENERGY CONSULTANTS

October 29, 2021

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

RE: Comments on the Advanced Clean Fleets Regulation Concepts – Flexibility Options to Accommodate Early-Year Implementation Challenges

Dear Mr. Brasil:

Thank you for the opportunity to provide comments on the California Air Resources Board's (CARB) proposed Advanced Clean Fleets (ACF) regulation. GNA is a leading environmental consulting firm with more than 25 years of experience in low-emission and low-carbon technology adoption for the commercial fleet sector, including extensive electrification and hydrogen project implementation. GNA is involved in more medium- and heavy-duty zero-emission truck projects than anyone in the industry. Our clients are at the forefront of the transition to zero-emission medium- and heavy-duty vehicles and include public and private fleets, nearly every major electric OEM, utilities, infrastructure providers, public agencies, and community partners. We have successfully developed California's largest and most high profile zero-emission truck projects including: the Daimler Trucks North America Innovation and CX Fleet projects; the Frito Lay ZANZEFF project in Modesto, CA; the Volvo LIGHTS project; the JETSI project; and many others. GNA's team excels at helping clients across the zero-emission ecosystem accelerate adoption, including: identifying technology rollout plans, grant funding, technology procurement, LCFS credit management, marketing and customer engagement, and program management of large-scale ZEV pilot and deployment programs.

Our focus on identifying and overcoming large- and small-scale barriers to ZEV adoption has given us unique and extensive perspective into the opportunities and challenges facing the state of California as we move to a fully zero-emission transportation system. We support dozens of progressive fleets working to move aggressively into the commercial electric truck space. We also host the annual ACT Expo, which is a one-stop-shop educational forum (conference and trade show) attended by thousands of medium- and heavy-duty fleets looking to learn about today's array of zero-emission truck and infrastructure technologies. We also created and manage the ACT Fleet Forum, an educational network of the industry's most innovative commercial fleets working to share best practices and evaluate opportunities to successfully deploy the latest advanced clean transportation technologies. Our comprehensive clean fleet services also include proactive regulatory planning and ongoing compliance management efforts for numerous clients. We hope our experience as ZEV project and regulatory compliance consultants provides an important perspective on strategies CARB can utilize to improve the ACF rulemaking, so we can achieve our shared goal of a large-scale, near-term transition to zero-emissions.

In addition to our proactive technology adoption work, we are also experienced with helping those same clients navigate the myriad reporting requirements required by California's grant and regulatory programs. We have seen the ways that important policy goals and entities' genuine progress still often face administrative barriers associated with recordkeeping and reporting systems. The following comments therefore emphasize potential approaches to streamline reporting and efficiently manage expected early-

year implementation challenges, while still enabling us to meet our critical long-term air quality and carbon targets.

Flexibility to Accommodate Early-Year Implementation Challenges

At the outset of the ACF workshops, CARB staff indicated they were considering the inclusion of exemption language based on the approved Innovative Clean Transit (ICT) zero-emission rule and requested stakeholder feedback around language for manufacturer delays, commercial feasibility challenges, and infrastructure delays. Instead, the draft version of the rule narrowed and largely eliminated exemptions, aside from backup vehicles, mileage-based exemptions, and limited emergency use exemptions. In effect, this approach means many fleets actively working on ZEV rollouts could be non-compliant, due to well-established procurement timelines and limitations.

Given the scope of this market-transformation rule and the real-world availability from manufacturers during early year ramp ups, there is a high probability that potential delays could overwhelm CARB staff with requests for exemptions. Market clarity and streamlined, equitable processes are vital to success in this rollout, and we ask CARB to broaden its exemptions and centralize/streamline the process across operationally similar vehicle types and use cases.

Vehicle Manufacturer Delays

In the absence of supply chain and semiconductor availability issues, class 2b-3 electric van and pickup trucks have an order-to-delivery timeline of approximately one (1) year, while standard straight trucks and tractors can take 18 months, or more. Vehicles with specialty bodies, such as step vans, refuse trucks, or cement mixers, just to name a few, must go through an additional "upfit" or body integration process that could delay timelines well beyond 18 months. However, these long timeframes are now exacerbated by the current global auto industry supply chain delays and projected lack of semiconductor availability for the next 12-24 months. Even once the manufacturing and distribution networks recover, there is no current clarity into how a two-year order backlog may impact deliveries over the coming years.

GNA proposes that vehicles with a valid purchase order prior to the deadlines below could reasonably receive an "Interim Compliance" certification for manufacturer delays, which would not disqualify fleets from being hired for transportation services, based on the following timelines:

- Group 1 vehicles: must have a purchase order 12 months prior to a compliance date (i.e., Dec 31, 2023 for the first deadline of December 31, 2024) to be eligible for an approved manufacturer delay
- Group 2 vehicles: must have a purchase order 18 months prior to a compliance date (i.e., June 30, 2025 for the first deadline of December 31, 2026) to be eligible for an approved manufacturer delay
- Drayage Truck Vehicles: Can operate a temporary vehicle within its California useful life until arrival of an ordered ZE vehicle, so long as purchase was made 18 months prior to anticipated need in CA DTR operation.

Streamlined Commercial Feasibility Procedures

The current ACF language allows each individual fleet to request exemptions based on daily mileage, "if ZEVs are [not] commercially available to meet the primary intended function of the vehicle and there are no commercially available NZEVs." In addition to expanding the criteria to a "energy-based" exemption, as described in the next section, fleets need clarity about how CARB will determine commercial availability, as well as a centralized database that clearly lists exempted vehicles, based on lack of commercial availability.

Streamlined Exemption Options: Individual fleet vehicle exemption requests, from thousands of fleets, could both a) overwhelm CARB staffing resources for review and b) create unnecessary redundancies among numerous fleets that share the same operational and vehicle profile challenges. Under the current language, each fleet will need to: a) complete a comprehensive bid for ZEVs *and* NZEVs to show none meet their requirements, b) show no other commercially available ZEVs can meet their needs, c) submit mileage and energy documentation for all of the same vehicle types, and d) submit route information. This is likely duplicative for entire classes of vocational vehicles that may simply not yet exist for commercial needs in the marketplace (i.e., a cement mixer for the 1/1/27 deadline).

Instead, GNA recommends a CARB-hosted centralized list of the vehicle types that are not yet commercially available. This list would be developed based on fleet exemption requests, OEM submittals, and associated findings from a Technical Review Committee. This approach would be similar to the South Coast AQMD procedure under the alternative fuel 1190 fleet rules, for which the agency regularly updated a website list of vehicle types that qualified for an exemption, due to lack of commercial availability. CARB's list could be updated regularly to account for changes in technology, and information would be posted by January 1 of each compliance year to enable planning. Fleets with vehicles meeting these criteria would simply select those specific exemptions in the ACF reporting system, versus individual exemption submittals. Vehicles could be verified by VIN and additional body or PTO data, as needed. This would significantly streamline decisions, greatly enhance program efficiency, and reduce the potential for error and variability across ACF implementation.

Standardized Metrics for Individual Exemption Assessment: While commercial availability continues to expand, vocational fleet needs are highly customized, and therefore the existence of ZEV-certified products in a specific body-type configuration is not enough to meet many real-world fleet needs. For example, a MY 2024 ZEV-certified day cab with a stated range of 200 miles will not reliably achieve that range, or that vehicle's wheelbase may be incompatible with existing warehouse and store delivery dock. Given this reality, fleets need explicit clarity around what CARB and a Technical Review Committee are utilizing as baselines to define commercial feasibility. As an example, using the manufacturer's stated range is not an accurate determinant of real-world range, with significant impacts on any findings of commercial feasibility. GNA recently collected data and feedback from eleven ZE fleets that participate in our ACT Fleet Forum. Based on their real-world pilot experience, on average, these fleets experience real-world battery electric truck range at 60% of their manufacturers' advertised range. *At this 60% figure, the real-world range of all currently available tractors falls well below the 200 mile, and even the 150 mile mark, even without accounting for additional energy impacts or the loss in battery capacity over time.* While upfront battery capacity and range will likely improve over time, the advertised range is not the metric fleets use to assess technology viability. The industry needs clear benchmarks from CARB that align with real-world operations, to help with fleet planning and expectations for purchasing. These metrics could be determined by the Technical Review Committee and similarly published on the ACF exemption website, enabling fleets to better understand the benchmarks associated with CARB-defined commercialization.

Energy-Based Individual Fleet Exemption Requests

The current ACF language allows an exemption request based on daily mileage, without accounting for the many non-mileage energy impacts of hours of operation, cargo weight, body upfit weight, TRU energy, PTO or other auxiliary equipment use, duty cycle, etc. GNA strongly recommends that

this exemption focus on the complete energy needs for any particular vehicle, and not the just on the mileage.

The variability of commercial and vocational vehicles further means that body type is not the only determinant of energy use for a particular application. CARB's current exemption language requires that fleets must "submit a daily mileage *report for each vehicle of the same body type* in the existing fleet. The mileage report must include daily vehicle mileage traveled for a period of at least 30 consecutive days using telemetry data or other daily tracking method." Instead, fleets should be able to submit holistic energy data for subcategories of vehicles under these body types that are more representative of the specific operational requirement of these vehicles, i.e., all TRU-equipped box trucks, or all daycabs conducting long-haul operations, or all automatic side loaders operating at full weight. If the non-propulsion energy needs of a fleet's required vehicle fleet exceed the capabilities of commercially available ZEVs, the fleet should receive an exemption.

Given the long procurement timelines, we also recommend additional clarity about the required data format, timeline for submission, timeline for CARB review, timelines for any appeals, and metrics CARB will use to determine exemption eligibility. The following timelines for an energy exemption request would align with the proposed manufacturer delay exemption proposal listed above:

- Group 1 vehicles:
  - CARB: Exemption template available by February 28, 2023
  - FLEET: Submit exemption request to CARB by May 31, 2023
  - CARB: Issue initial finding to fleet by August 31, 2023
  - FLEET: Submit appeal by September 30, 2023
  - CARB: Final finding by October 31, 2023
  - FLEET: able to finalize specs and purchase order prior to December 31, 2023 deadline to be eligible for manufacturer delay
- Group 2 vehicles:
  - FLEET: Submit exemption request to CARB by September 30, 2024
  - CARB: Issue initial finding to fleet by December 31, 2024
  - FLEET: Submit appeal by February 28, 2025
  - CARB: Final finding by April 30, 2025
  - FLEET: able to finalize specs and purchase order prior to June 30, 2025 deadline to be eligible for manufacturer delay
- Group 3 vehicles:
  - FLEET: Submit exemption request to CARB by September 30, 2027
  - CARB: Issue initial finding to fleet by December 31, 2027
  - FLEET: Submit appeal by January 31, 2028
  - CARB: Final finding by April 30, 2028
  - FLEET: able to finalize specs and purchase order prior to June 30, 2028 deadline to be eligible for manufacturer delay

Managing Infrastructure Delays

The commercial fleet industry is increasingly realizing that the major limiting factor in adoption is not vehicles, but infrastructure. Pilot sites are intentionally chosen with infrastructure access in mind, selecting for site ownership, site power availability, and physical footprint capacity. In these cases, GNA's clients have achieved infrastructure plus vehicle project implementation in as little as 20-24 months. The schedule below

is a representative example of our clients' average timelines across investor-owned utility SB350 funding programs.

Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Infrastructure Planning (Avg Timeline), As Aligned with Existing CA Utility Programs	Internal Charging Needs Analysis		Engage with Utility, Prelim Design and Project Scoping		Utility Funding and Project Approval		Finalize Design, EV and EVSE Purchase Contracts		Permitting, Design, Build										Rebate Issued		*(Awaiting Truck Delivery)*	

This timeline assumes:

- Fleet has completed an extensive EV suitability planning prior to this site-specific charging needs analysis
- Site owned by fleet
- 1-2 MW project
- No onsite battery storage or renewable power installation
- Site footprint enables appropriate charging setup without impacting fleet operational needs
- Power available from utility onsite without grid upgrades
- New utility service and transformer
- 480v supply
- Existing utility right of way
- Limited to no building load integration
- Project design doesn't undergo significant modifications/revisions with utility

While the above schedule aligns with ACF deadlines, an industry-wide transition scenario will significantly extend these timelines. Fleets will not be able to focus on the sites with favorable infrastructure baselines, but instead need to fully assess and implement plans statewide. Therefore, the ACF compliance deadlines or extensions need to account for the real-world timelines and delays associated with high-power charging site needs.

The following fleet charging infrastructure timelines are based on Black & Veatch's public summary of its transit and high-power fleet charging experience at over 1,000 sites, in addition to GNA's California-specific fleet and utility application experiences:

1. Initial Fleet ZEV Plan: 1-2 years
2. Real Estate Acquisition: 1-2 years
3. Infrastructure Project Implementation: 1.5-5 years
    - 0-2 MW projects: 1.5-2 years (no significant grid upgrades needed)
    - 3-5 MW projects: 3-4 years (grid upgrades needed)
    - 5-10 MW projects: 4-5 years (new feeder and/or substation needed)
    - 10+ MW projects: 4-5 years (new substation needed)

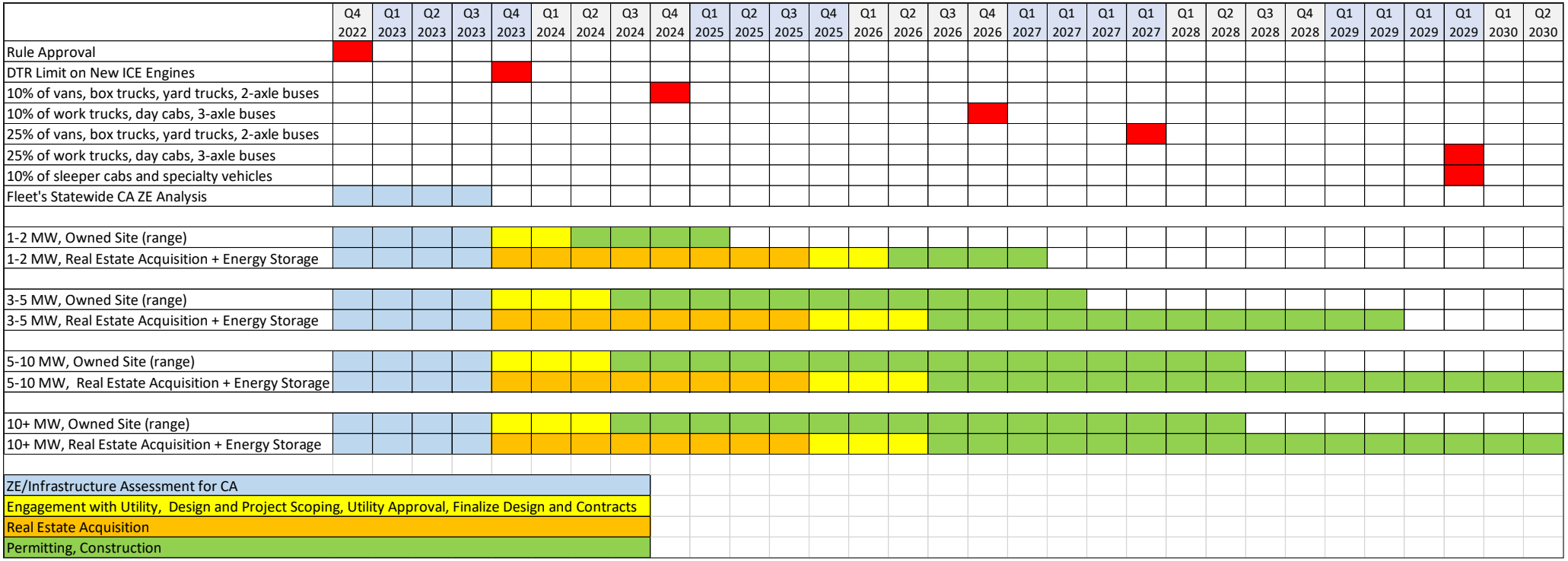
Real estate challenges for fleets are substantial and can **add an additional two years to the project timelines** noted above, especially in real-estate constrained California. Where fleets own facilities, existing lots may not have the physical footprint to accommodate fleet-scale charging, necessitating a new site search. In addition, the transportation industry has a current reliance on leases, where owners have shown minimal appetite for onsite charging, even when the fleet agrees to absorb the entire expense. GNA's recent survey of nine (9)

commercial fleet clients with 430 truck facilities statewide showed that 54% of their facilities are currently leased, underscoring the scope of the impending real estate challenge in California for fleet electrification.

The chart on the following page outlines a range of real-world infrastructure timelines, as aligned with initial implementation targets for the ACF rule. The schedules clearly demonstrate that many fleets will face compliance challenges in the early years of the proposed rule, due only to the standard timelines for fleet-scale infrastructure projects. For fleets that depend on retail fueling, the same infrastructure timeline challenges apply. Neither the onsite nor current retail energy marketplace is ready to meet the needs of drayage and other commercial fleet vehicles in the early-year timelines of the rule.

Given these fundamental project development challenges, GNA requests the inclusion of an allowable compliance delay for fleets with in-progress infrastructure projects, including owned sites, shared sites, and contracted-agreement retail sites. Fleets making good-faith efforts to implement a complex energy transition plan with numerous unknowns at the site, utility, and vendor levels should not be categorized as Non-Compliant if they cannot meet the ACF compliance benchmarks. The lack of a compliance certificate not only puts them at risk of fines or Enforcement negotiations, but also makes them ineligible for hire by any entity seeing transportation services in the state of California. ***Without ACF deadline flexibility that accounts for infrastructure realities, the California supply chain will face significant capacity and economic constraints, even for entities making the fastest progress possible on their infrastructure rollouts.***

Advanced Clean Fleets Proposed Implementation Deadlines
Alignment with Fleet-Scale Charging Infrastructure Project Development Timeline



Similar to the current ICT rule, GNA believes that ACF compliance could reasonably include a high-level infrastructure planning document from each regulated fleet demonstrating their: turnover plans, real estate or retail vendor contract, vendor and utility contracts, permitting engagement, anticipated timelines, and project progress. These plans could be reviewed and verified by CARB. Fleets making progress on approved plans would be able to achieve "Interim Compliance" in any given year, even if they haven't yet been able to achieve the ultimate rollout targets of any particular year due to delays. This Interim Compliance would not put contracts and business arrangements at risk, and fleets would still be required to make continual progress on fleet-wide ZEV turnover.

CARB could further help align purchases and infrastructure under this approach, which would minimize the potential impact from stranded vehicle assets. ZEVs cost hundreds of thousands of dollars apiece, and fleets cannot afford for them to sit unused for months and years because ACF deployment deadlines don't match infrastructure project timelines. Fleets with approved infrastructure plans could be allowed to make VIN-specific turnover and replacement decisions based on actual infrastructure availability.

Infrastructure and Exemption Reporting Concept

GNA has mapped out a conceptual calendar that could account for real-world infrastructure and vehicle delays, as well as vehicle exemption requests. This calendar is an example that could be further refined, but our goal was to map clear mechanisms that enable fleets to plan and implement technically feasible projects while also giving CARB clarity and oversight into real-world progress and actions on ZEV turnover targets.

Year One (From 2022 Approval – December 31, 2023)

- Goals: Develop high-level ACF transition plan and initial exemption request (if applicable)
- June 30, 2023:
    - Exemption Request for any Group 1 vehicles
    - Temporary Delay Report for any required ZE Drayage vehicles due to manufacturer or infrastructure delay
- December 31, 2023: Report
    - Report all VINS, locations, and body designations
    - Note all locations' lease/ownership information
    - Identify vehicles for retirement to achieve Group 1 and 2 benchmarks for 10% ZEV target.
        - Include drayage vehicle targets
    - Identify number of new ZEV purchases planned to achieve Group 1 and 2 10% benchmarks.
    - Identify sites initially planned for infrastructure and, if already known, whether they are onsite, shared offsite, or retail.
    - Note any confirmed vendor or utility contracts for infrastructure
    - Note any purchase orders submitted (# by vehicle type) and expected deliveries.
    - Note any exemption requests submitted for Group 1 (by VIN and type) and planned for Group 2 request
- December 31, 2023: Purchase Deadline for Group 1
    - Vehicles without exemptions in Group 1 must gave a valid purchase order by this date to be eligible CARB approvals of any unforeseen manufacturer delays.

Year Two: Interim Planning Reports and Findings (2024)

- Goal: Submit progress report, finalize approved delays
- June 30, 2024:
    - Fleet Progress Report, including contracts, timelines, other related agreements:

        - Real estate search and/or contract documents
        - Vendor RFP, contract, delivery documentation
        - Utility application, analysis, approval, contract, construction, and implementation documentation
        - Retail fuel/charging RFP, contract, implementation documentation
        - Estimated timeline updates for each site and purchase orders anticipated
    - Temporary Delay Report for any required ZE Drayage vehicles due to manufacturer or infrastructure delay
- August 31, 2024: CARB EO approval of Group 1 infrastructure and manufacturer exemptions

Year 3: Initial Group 1 Compliance Date (2025)

- January 1, 2025: Implementation, wherever feasible
- March 1, 2025:
    - Compliance report on all vehicles/infrastructure received by 12/31/24 target and/or progress timing
    - Report on verified motor carrier and brokerage agreements
- June 30, 2025:
    - Purchase Deadline for Group 2
        - Vehicles without exemptions in Group 2 must gave a valid purchase order by this date to be eligible CARB approvals of any unforeseen manufacturer or infrastructure delays.
    - Temporary Delay Report for any required ZE Drayage vehicles due to manufacturer or infrastructure delay

Year 4: Interim Compliance Check In (2026)

- March 1, 2026
    - Update on all vehicle and infrastructure progress
- June 30, 2026:
    - Temporary Delay Report for any required ZE Drayage vehicles due to manufacturer or infrastructure delay

Year 5: Initial Group 2 Compliance Date (2027)

- January 1, 2027: Implementation, wherever feasible
- March 1, 2027:
    - Compliance report on all vehicles/infrastructure received by 12/31/26 target and/or progress timing
    - Report on verified motor carrier and brokerage agreements
- June 30, 2027:
    - Temporary Delay Report for any required ZE Drayage vehicles due to manufacturer or infrastructure delay

GNA further recommends that CARB assess real-world regulatory implementation progress and technology development in Year 5 (Calendar Year 2027). This date will allow CARB to reassess moving-forward goals and procedures for the rule, after reviewing multiple years of industry reporting and project data. Early-year planning, project experience, and manufacturing iteration will shape and pave the way for changes to technology availability, infrastructure plans, and administrative knowledge.

CA Fleet Definition

CARB's current draft language requires all vehicles that enter the state of California to be registered and counted as part of a fleet's total compliance obligation. In past diesel rules, registration in CARB's TRUCRS system was not required for vehicles meeting the engine model year standards, enabling broad flexibility for interstate fleets to operate in California with compliant diesel engines. However, under the percent-of-total ACF concept, even transitory interstate vehicles would be included in a fleet's total, thereby changing the denominator associated with fleet percentage turnover targets.

This approach places an outsized burden for compliance reporting and zero-emission turnover targets on interstate fleets, due to vehicles which are a) predominantly non-California vehicles and b) the least able to electrify for the near- and medium-term timelines based on mileage profiles and gaps in long-haul infrastructure across state lines.

However, the interstate, DOT-registered fleets that operate across state lines should still have to fairly account for the impact of their California-domiciled and majority-California operations under ZEV planning. Accordingly, we propose the following approach to accounting and planning for ZEV turnover for interstate fleets:

- CARB should utilize the existing "three-day exemption" language from the Truck & Bus rule to allow one-time access to California roads without the need to register in the CARB system. This could be verified from GPS mileage data, dispatch data, and other available records, that demonstrate a truck's short-term and transitory operations in the state of California.
- For vehicles with less than 50% of their annual operation in the state of California, these vehicles would be excluded from the California fleet and marked as "not applicable" in the CARB reporting system, with no additional information required beyond basic vehicle/engine reporting and activity data, as described below.
- For vehicles with 50-75% of their annual operation in the state of California, these vehicles would be included in the California fleet count, and as part of the total fleet targeted for turnover. However, given the operational realities of these cross-state vehicles, they could be added into Group 3 as a new category of "designated long-haul vehicles," regardless of day cab or sleeper configuration.
- Interstate vehicles with 76-100% of their annual operation in the state of California would automatically fall under the correct body category designation and all the standard requirements associated with ZEV turnover and exemptions.
- CARB can utilize existing California-based use records of either energy or mileage from third-party verified International Fuel Tax Association (IFTA) mileage and fuel records. In an ideal reporting scenario, CARB's ACF system would accept a simple integrated upload of the IFTA quarterly report into the ACF reporting portal for all interstate vehicles. This approach provides verifiable, streamlined reporting options for CARB and fleets to accurately identify the true emissions burden in California, and the applicable California fleet of any interstate motor carrier.
    - The current IFTA reporting system simplifies the hassle of reporting multi-state fuel tax for trucking companies (including owner-operators) who operate across IFTA jurisdictions (lower 48 states and Canadian provinces). At the end of each quarter, motor carriers must submit an IFTA report that lists the miles driven and the gallons purchased, which determines either the amount of tax still owed or the refunds due, based on a vehicle's real state-by-state transportation impact.
- Reports would be submitted quarterly, and CARB's ACF reporting system could have streamlined upload capabilities that match standard IFTA recordkeeping and attach to CARB VINs.

- Annual California utilization data would define vehicle categories (Not Applicable/Group 3/Standard Body Designation) and required reporting. For vehicles that fall outside of the California fleet category, there would not be additional required reporting associated with sale or removals, as these would not apply to these vehicle categories.

Integrated Reporting Systems

Given the scope and breadth of California's emission requirements and associated reporting systems, GNA hopes that CARB will develop an integrated reporting system that accommodates data across all on-road rules. Reporting the same VIN-specific data, odometer, sale information, and corporate information could be simplified and immediately verified and populated across regulation reporting systems including the ARBER Drayage Truck Registry, ACF Reporting, HDVI/M reporting, TRU, and legacy Truck & Bus systems.

Hiring Fleet Verification System

One key aspect of the ACF rule is the requirement for all motor carriers, brokers, and other entities to only hire compliant fleets. Hiring entities must implement compliance *verification* procedures that include annual review of ACF compliance certificates. Based on GNA's experience managing CARB rule compliance and implementing compliance verification protocols for motor carrier, brokerage, and hiring entity clients, we request that CARB's implementation of ACF include an in-house comprehensive annual database, searchable by CA Carrier and DOT number, consisting of:

- All ACF compliant fleets
- All fleets that are excluded from ACF compliance (i.e., those under 50 vehicles/$50 million in revenue)
- All fleets that may have "Interim Compliance" due to manufacturer or infrastructure delays.

Our motor carrier and brokerage clients have robust onboarding procedures for potentially thousands of motor carrier providers, including annual review of insurance, safety, and emissions compliance. The majority of our clients utilize onboarding vendors or in-house teams who access and cross-check the public FMCSA database for all insurance and safety verifications. In contrast, CARB's databases do *not* provide comprehensive compliance/non-compliance designations for emissions rules, due largely to the complexity of current rules' compliance pathways, creating significant challenges for hiring entities trying to comply with CARB's rules.

For Truck & Bus, fleets can either comply by a) reporting all compliant vehicles in TRUCRS and receiving a certificate of compliance or b) simply maintaining a compliant fleet (no reporting necessary). Compliance verification for motor carriers that request TRUCRS certificates is therefore manageable and in line with FMCSA procedures. However, verification for motor carriers that do not report to CARB must include a certified letter and comprehensive fleet list, and additional compliance verification for contracted brokers must include certified letters attesting to their own motor carrier verification procedures. This typically takes thousands of staff hours *each year* to manually request, follow up, and individually verify compliance. This process is then repeated at every hiring entity throughout California, essentially duplicating compliance verification work that could be standardized and centralized at CARB.

ACF will create even more complexity than Truck & Bus. While all ACF fleets will need to report and request annual compliance certificates, *not all fleets will be ACF fleets, most notably small operators with less than 50 vehicles or $50 million in revenue*. Individual hiring entities would have to a) verify rule applicability for each individual vendor, b) verify Truck & Bus compliance for fleets that may not be registered in TRUCRS and c) verify ACF compliance, if applicable. This process would then be repeated every year, at literally thousands of entities across California, for literally thousands of vendors.

This is an immense and duplicative administrative burden that could be centralized and managed by CARB, similar to FMCSA. At this time, GNA does not know of any automated verification entity that is prepared to support this service, and such a service would likely be costly to implement, with concurrent vendor charges. There is a likelihood that smaller motor carriers that do not fall under ACF would simply be excluded from any contract opportunities, due to the administrative challenges of verification. We therefore hope that CARB would consider a more robust centralized compliance database so that California entities can easily and efficiently ensure ongoing compliance and supply chain continuity.

Conclusion

In addition to the comments above, we have also attached a previous comment letter, submitted by GNA on behalf of members of the ACT Fleet Forum on May 27, 2020. These comments related to the cost assumptions in the Advanced Clean Truck (ACT) rulemaking. The ACT rule cost assumptions have largely carried over to the current ACF regulatory analysis, and therefore the cost examples provided by Fleet Forum members remain salient for all ongoing conversations related to the ACF rulemaking.

Thank you again for the opportunity to comment on this rule and work with the entire team at CARB on zero-emission progress. This is the most ambitious and important fleet rulemaking in our lifetimes, and much depends on getting it right. While we can't afford to wait on zero-emissions, we also can't afford to get it wrong. California has long been a national ZEV leader, and GNA and our clients have been implementing, iterating, and learning vital lessons that we hope can inform and improve details in the ACF language to better achieve this energy transition.

If you have any further questions on GNA's ZEV fleet implementation experiences, we would be happy to host members of the CARB board and/or staff to discuss additional details. GNA and our clients are eager to provide insight that can help CARB prepare a successful and effective zero-emission pathway for the State of California.

Sincerely,

Rebecca Schenker
Senior Director, Policy and Programs
Rebecca.schenker@gladstein.org

CC: Lianne Randolph, Chair, California Air Resources Board
Clerk of the Board, California Air Resources Board
Richard Corey, Executive Director, California Air Resources Board

ATTACHMENT: ACT Fleet Forum Comment Letter on Proposed Advanced Clean Truck Regulation (May 27, 2020)

May 27, 2020

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

RE: Comments on the Proposed Advanced Clean Truck Regulation – Real World Heavy-Duty Zero-Emission Fleet Experiences

Dear Mr. Brasil:

Thank you for the opportunity to provide comments on the California Air Resources Board's (CARB) proposed Advanced Clean Truck Regulation on behalf of members of the Advanced Clean Technology (ACT) Fleet Forum (www.ACTFleetForum.com). The ACT Fleet Forum is an educational network for North America's most progressive commercial fleet operators that are working to deploy advanced, clean technologies. Several members of the group have significant experience at the leading edge of commercial electric truck deployment and operations. Given the educational focus of the organization, members with electric truck experience wished to aggregate and share with CARB their real-world project data and information as part of the Advanced Clean Truck rulemaking process.

Over the last few years, several fleets in the ACT Fleet Forum have been working to test pilot stage technologies, prototypes, and early stage commercial zero-emission truck technologies across a wide variety of routes, vocations, and on- and off-road operations. These fleets are testing and working to deploy electric and fuel cell trucks from nearly all major technology developers and leading OEMs, including products from Freightliner, Volvo, Peterbilt, Kenworth, Kalmar, BYD, Tesla and others. Additionally, several of the ACT Fleet Forum members have experience with prior generations of electric trucks from companies such as Navistar, Smith EV, and others. Members of the ACT Fleet Forum are utilizing charging infrastructure from a wide variety of heavy-duty EV charging infrastructure providers, including ABB, Siemens, BTC Power, EVgo, Greenlots, Tesla, BYD, and others, and are simultaneously working with several of California's electric utilities, including SCE, PG&E, SDG&E, and several municipal utility districts. With a dozen different projects now being implemented at individual fleet site locations throughout California – and with each project operating between 3 to 5 electric trucks at a site, to as many as 20 units – the depth and breadth of electric truck experience represented within the ACT Fleet Forum is unmatched.

This comment letter provides additional details on where the data from ACT Fleet Forum member's electric truck projects both confirm and conflict with CARB's assumptions in the development of the Advanced Clean Truck rule. Information from ACT Fleet Forum members with electric truck experience and data has been aggregated and provided below. It is hoped that the collective experiences of large commercial fleets with real-world, project-based insight will help CARB better refine cost models and market assumptions so that its rulemaking efforts are developed with the best data on environmental and economic sustainability metrics.

Fleets join the ACT Fleet Forum with the express purpose of refining and growing their clean technology operations, and these fleets want to see ongoing growth and opportunity for electric truck adoption. However, members of the ACT Fleet Forum have a core responsibility to maintain fleetwide benchmarks for operations and costs, and have experience with the challenges that result when current technology is not ready for broad adoption, either based on service or cost metrics. The members of the ACT Fleet Forum want electrification to succeed and believe it is imperative that CARB's forward-thinking emissions goals are calibrated to account for the real-world economics and operations experiences from early electric truck adoption.

Near-Term Zero-Emissions Opportunities

ACT Fleet Forum members have reviewed and compared the current cost models and adoption targets in the proposed Advanced Clean Truck regulation against their current zero emission vehicle technology projects, and were able to identify electric vehicle operations that validate some of CARB's regulatory provisions. The following section provides specific examples of the current and near-term electrification opportunities from current real-world fleet operations.

The data from members of the ACT Fleet Forum with experience with Class 2b-3 and class 4-5 electric vehicles, infrastructure, and charging costs largely aligns with the information outlined in CARB's Initial Statement of Reasons (ISOR) and the updated April analysis. The ACT Fleet Forum members that operate last-mile delivery fleets are taking delivery of vehicles in the U.S. and Europe with costs that are nearly in line with the $15,000 to $20,000 incremental cost benchmarks noted by CARB for Class 2b-3 in 2024. These vehicles also fit the operational profile for electrification, allowing fleets the opportunity to take advantage of lower-cost, lower-kW charging equipment and optimal electric charging times. Some fleets are seeing EV charging infrastructure installation costs of approximately $1,000 per kW for Level 2 fleet charging, which include equipment and installation (and appears to hold true for larger chargers); these costs are generally in line with CARB's $25,000 cost estimate for Class 2b-5 EV charging infrastructure for 19 kW. Overnight charging also allows fleets to take advantage of the lowest off-peak electricity costs identified by CARB for utilities throughout the state. Each of these factors are critical to achieving a positive Total Cost of Ownership (TCO) that supports large-scale adoption.

Some ACT Fleet Forum members project that Class 3 electric delivery operations will be cost-neutral without incentive funding in the 2024 timelines targeted by this regulation, inclusive of vehicles, chargers with infrastructure upgrades amortized over the lifetime of multiple trucks, and a managed overnight depot charging strategy. The medium-duty EV fleet experiences are broadly in line with CARB's TCO analysis included in the ISOR, which relies on the following medium-duty last-mile-delivery assumptions:

- 20 Class 4-5 trucks
- 19kW EVSE
- Overnight depot charging
- Low-cost off-peak EV charging rates
- LCFS credits
- 12-year amortization

ACT Fleet Forum member project data show that this Class 3 last-mile-delivery operational profile is *the* key factor for economic feasibility in the near-term, up to and beyond 2024.

In addition to this Class 3 example, members of the ACT Fleet Forum with regional short-haul distribution Class 7-8 tractor operations do see potential opportunities for fleet electrification, but only with clear caveats regarding vehicle costs and availability, grants and incentives, and ideal charging operations. A member of the ACT Fleet Forum working to deploy 20 electric tractors in a delivery application has modeled a long-term

positive TCO. This has resulted from a very aggressive price on the Class 8 electric truck (which is not yet commercially available), combined with a favorable operational profile which includes:

- A daily range under 200 miles;
- Single-shift daytime operations; and,
- The ability to park and charge the truck overnight in a centralized, owned, depot.

These factors enabled the fleet to:

- Utilize 100kW chargers due to the available charging window;
- Access the lowest-cost utility EV rates due to overnight charging; and,
- Access LCFS credits at proprietary depot charging to offset overall project costs.

Given the real estate availability and site characteristics, the fleet is integrating charging and battery storage, at installed costs of approximately $90,000 per 100kW, which is less expensive than CARB's estimates for Class 7/8 truck charging of $110,000 per installed charger.

While this Class 8 delivery truck project was able to access a significant grant to offset portions of the project costs, even without the incentive being applied, the combination of low truck costs and an ideal charging and site scenario demonstrates early potential for similar electrification efforts.

The positive TCO model developed by CARB therefore matches the experiences and projections of fleet members with last-mile Class 7-8 operations and last-mile Class 3 operations, under specific circumstances. This provides some insight into the early commercial potential for certain transportation sectors; however, it is important to note that these fleets' positive TCO scenarios are dependent on the applicability of a) overnight, lower-kW, depot fueling and b) vehicle incremental costs in line with CARB's MY 2024 projections. As detailed in the following section, the medium- and heavy-duty transportation sector is exceptionally varied, with charging and vehicle needs that currently fall outside these positive TCO parameters for non-delivery applications.

Real-World Challenges in Zero-Emission Project Implementation

Multiple members of the ACT Fleet Forum are aggressively pursuing extensive and varied electric truck pilot projects, some at multiple sites, to determine the best business cases and technologies for fleet electrification. The technological and operational needs of drayage, regional haul, vocational, food distribution, retail distribution, last mile, public fleet and other types of medium- and heavy-duty truck applications vary tremendously. There is no one size fits all approach. Dramatically different vehicle types, charging infrastructure, charging rate strategies, technologies and other factors are critical for success, as measured on an individual basis.

The members of the ACT Fleet Forum, collectively, represent the largest collection of heavy-duty electric truck operators in the nation. Their industry-leading pilot projects are still early in their implementation; thus, the data from these projects is still very limited and should therefore be used judiciously to make large conclusions about the overall truck market. However, it is one of the largest data sets actually available on the (moderately) scaled deployments of heavy-duty trucks. It is therefore being provided to CARB to assist in its modeling of the rule and future electric truck policy initiatives.

Below, data from ACT Fleet Forum members has been provided to clarify real-world costs around electrifying vehicles and operations outside of the positive TCO use cases listed in the section above.

Charging Times and Costs

CARB's analysis proposes scenarios for each Vehicle Group where electric truck charging takes place overnight in a depot with lower-kW, lower-cost EV chargers that can utilize low-cost off-peak charging rates. As demonstrated in real-world delivery applications, this model has significant opportunities for positive TCO, dependent on truck costs and other factors. However, the reality is that many fleets have real-world operations that deviate significantly from this model, and these electric truck projects are currently incurring significant incremental costs from more expensive charging equipment, electrical service, and electrical rates.

A member of the ACT Fleet Forum has provided an example from their existing electric truck project where several of the electric trucks leave the depot at 3:00am on their first route and continue to operate (via multiple drivers) up to 20 hours in a given day. For commercial trucking operations, increased asset utilization is at the heart of financial viability. A truck at rest is a truck not making money, and commercial trucks are – ideally – operated as much as possible each day, precluding lower-kW, slower charging strategies. These vehicles are also typically dispatched during off-peak hours – i.e. period of the day when traffic is minimized but also the period of the day when electric rates are lowest. These operations eliminate the opportunity for overnight charging and require the use of high-powered on-demand charging, with one fleet noting that more than 50% of its the charging takes place during on-peak hours.

EV Charger Capacity, Costs and Standards

CARB's analysis assumes that 80kW chargers for Class 7-8 tractors are suitable to sufficiently charge electric tractors used in regional delivery operations. This is inconsistent with the experiences of the ACT Fleet Forum members, where, universally, 150kW chargers are being used to charge their over-the-road Class 7 and 8 electric tractors. Even where overnight charging is practical, 150kW chargers are considered to be the minimum size suitable to support these electric powered regional delivery operations. Further, fleets and their OEM partners are already all actively examining emerging 350kW options for subsequent deployments (and even 1MW and 3MW fast charging). Given the extremely early stages of the electric truck market, it is anticipated that higher capacity EV chargers will become more standardized in the near-term.

As an example, one vehicle demo project recently installed two (2) 150kW charge cabinets fitted with two (2) dispensers each to support four (4) trucks running single shifts as a demonstration project (in a fleet where trucks typically run several shifts). The total cost for the hardware, design, and installation was $590,000, equating to approximately $148,000 per truck or just under $2,000 per kW. Another fleet with 10 trucks recently installed five (5) 150kW chargers with dual dispensers, spending $100,000 per truck. While one of these demo-stage infrastructure costs are broadly in line with CARB's estimate of $105,000 per Class 8 tractor, both these fleets note that 150kW charging cabinets are proving infeasible to support the fueling windows needed for multi-shift operations, and they are actively looking into 350kW chargers. Recent quotes for these higher rate chargers currently range from $350,000 to $400,000 per unit (around $1,000 per kW), before any necessary site and electrical service infrastructure upgrade costs. These fleets are also anticipating a rise in engineering costs to accommodate space constraints or new real estate costs to support adequate infrastructure to support at scale.

Beyond the initial costs of EVSE, ACT Fleet Forum members have also often been surprised by the ongoing networking and management costs required to operate their charging systems. Additional annual costs incurred have ranged from $25,000 per site, to over $200,000 for a single site.

Related to medium and heavy-duty commercial electric truck charging, it is important to point out that there are currently no universally accepted standards by which electric truck charging can follow. The charging receptacles for Freightliner, Volvo, Peterbilt, Tesla, Fuso, and BYD trucks are all different, meaning that individual chargers are required for each brand of truck. While work is ongoing to address such issues, including

some member fleets that insist their next vehicle deliveries be CCS1-compliant, this creates significant challenges for commercial fleet operators who often operate diverse fleet vehicles, or at least buy from multiple OEMs. Successfully scaling up commercial trucking to meet early regulatory targets requires increased standardization of EV charging to ensure that foundational investments in electrification continue to add value and do not require costly new hardware or infrastructure replacement as the market evolves.

Members of the ACT Fleet Forum recommend CARB consider gathering additional real-world data on the higher-rate electric truck charging for more nuanced charging cost models that incorporate the most recent heavy-duty fleet data. It would also be helpful to see sales targets and market growth timelines account for the need for charger standardization prior to large-scale, sunk-cost investments.

Truck to Charger Ratios

CARB's analysis assumes that all Class 8 electric truck charging can take place using a ratio of one (1) EV charger for every one (1) electric truck, using individual 80kW chargers. This may be an aggressive assumption given the initial electric truck and charger demonstrations now taking place, and the fact that ACT Fleet Forum members now using electric trucks see 150kW chargers as the minimum required to support their operations.

Given the approximate $140,000 cost for even a 150kW EV charger, on top of the significantly more expensive truck (compared to a baseline diesel), project financial performance is dependent on improving infrastructure asset utilization. Several fleets are examining how to use one (1) charger to support two (2) or more electric trucks. These efforts, however, are adding new labor expense categories to manage the movement of trucks among the chargers, as well as the daily charger-truck communication and software challenges in an emerging technology space with multiple technologies. The experiences of the members of the ACT Fleet Forum operating electric trucks have shown that dedicated electric vehicle charging labor is currently averaging 1 FTE (full time equivalent) per site that should be considered in future cost models, at least until such time as it is demonstrated that such daily management is not required.

Electricity Costs

CARB has assumed a $0.16/kWh cost of electricity in its ISOR as a weighted statewide average for Class 7-8 tractor operations, $0.18 for Class 8, and $0.21/kWh for Class 2b-3 This is consistent with the data collected by ACT Fleet Forum members where overnight charging does occur. In these cases, these fleet have seen SCE rates average between $0.14 and $0.18/kWh. While there is no data yet from charging on the PG&E system, CARB's assumed rates appear consistent with PG&E's new EV rate structure.

However, ACT Fleet Forum members with over-the-road trucking operations are regularly not able to take advantage of the lowest-cost off-peak EV charging rates presented in the ISOR, with some fleets seeing over 50% of their charging during on-peak hours. And while new EV rates from some utilities can help mitigate peak charging rates, only two (2) of California's more than 50 electric utilities currently offer specialized commercial EV rates to assist in lowering the costs of on-peak charging.

Given the inability for fleets to always charge overnight, combined with some fleet sites and charging occurring in utility service districts without special EV rates, the average cost of electricity being paid by ACT Fleet Forum members charging electric trucks is significantly higher than $0.16-0.21/kWh costs assumed by CARB in its analysis. In a recent sampling of five (5) ACT Fleet Forum member sites located in the service territories of SCE, SDG&E and a municipal utility, the average electricity costs for charging electric trucks at these sites between May 11, 2020 and May 17, 2020 was $0.41/kWh (individual average electricity costs at each site during this period were: $0.17/kWh, $0.23/kWh, $0.68/kWh, $0.20/kWh, and $0.77/kWh). Using a weighted average approach (weighted for the amount of electricity used at each site), the cost of electricity at all five (5) of these sites for the sample period was $0.45/kWh. For these same five (5) sites, if the data is expanded to look at the

weighted average cost of electricity over a six (6) month period (November 2019 – April 2020), the average cost remains $0.41/kWh.

It is important to note that the above cost information is net of any LCFS credit value, which is assumed to be roughly $0.25/kWh at current market values. With LCFS credit values included, the net cost of electricity to the fleet operator is thus $0.16/kWh to $0.20/kWh, which is closer, yet still above CARB's assumption. However, it is also recognized that as the market matures and public access infrastructure becomes one of the strategies employed to charge electric trucks, it becomes much more difficult for the fleet end-user to capture the value of the LCFS credits.

Beyond on-peak charging rates, demand charges are a significant concern to fleets currently running or considering electric trucks. While utilities such as SCE do offer a demand charge waiver, this waiver is only in place for a few more years and, when it expires, preliminary estimates of one ACT Fleet Forum member are that charging costs will increase from an average of $0.15/kWh to approximately $0.50/kWh (more than a 300% increase) based upon current operations. As a vast majority of electric utilities in California do not offer demand charge waivers, these issues must be carefully and properly managed to avoid large price spikes impacting the financial performance of an electric fleet operation

In addition to demand charge mitigation programs offered by large utilities such as PG&E and SCE, special commercial EV fleet rates meant to mitigate the impacts of on-peak charging are currently offered by less than 5% of California's utilities. Many of the existing and future potential electric truck operations for members of the ACT Fleet Forum fall outside of the service territories which offer special commercial EV rate programs. For example, members of the ACT Fleet Forum are running, or considering deployment of electric trucks in the service territories of the Anaheim Public Utilities Department, Los Angeles Department of Water & Power (LADWP), Modesto Irrigation District, Port of Oakland, Riverside Public Utilities Department, San Diego Gas & Electric (SDG&E), Vernon Gas & Electric Department and others. Fleets operating electric trucks and EV chargers have found that the costs for electricity across different utilities can vary quite dramatically. In some more extreme cases, one member of the ACT Fleet Forum has reported average costs of approximately $1.00 to $2.00/kWh across a fleet of electric trucks at one site located in a municipal utility district, thus causing them to stop charging trucks at this site to the greatest extent possible.

Fleets recognize that more sophisticated managed charging solutions, careful planning, and other strategies can be employed to ensure cost-effective fueling of their fleets. However, given the lack of long-term data or effective over-the-road charging cost mitigation approaches at the present time, ACT Fleet Forum members are concerned that CARB's cost model is premature. Member fleets anticipate better data will emerge as these early projects continue to mature and release long-term results, which will in turn shape more effective regulations. To scale electric truck purchases and deployments beyond current pilot and testing programs, it is critical that the state and its businesses better understand proven charging strategies that result in a positive TCO.

Lastly, it is worth noting that California already has some of the highest electricity rates in the country. Given the state's aggressive efforts to move to 100% renewable energy, significant investments will be required in new generation, transmission, and distribution infrastructure. Such investments are traditionally passed back to the ratepayer. Additionally, transitioning the state's transportation fleet to 100% electrical power will roughly double the amount of electricity required on the grid, thus driving significant additional investment in even more renewable energy generation, transmission, and distribution infrastructure. Further, there are growing efforts throughout the state to replace stationary uses of natural gas with electricity, which will place even more demand on the electrical supply grid and likely costs for electrical ratepayers. And lastly, the costs of additional wildfire mitigation by the state's electric utilities are likely to also increase in the near-term. With

so many parallel efforts requiring substantial investment in the generation and distribution of electricity in the state, it is hard to see how CARB's future electricity cost projects can be maintained as such low levels (which are below those seen today). CARB must carefully consider the impacts on future electric rates to end-user customers such as commercial electric truck fleet operators.

Truck Costs & Availability

CARB has assumed a $71,000 incremental cost for a Class 7/8 electric tractor in 2024. Based upon ongoing conversations that all ACT Fleet Forum members are having with the leading truck manufacturers, there is concern that CARB's cost estimate projection may be overly reliant on information being provided by a single supplier (that currently does not produce trucks or have the associated manufacturing lines or service infrastructure to support those trucks) and is therefore inappropriate to apply across all manufacturers.

Few members of the ACT Fleet Forum have been able to secure *actual quotes* from any existing or future potential truck manufacturer. Only one OEM has provided a quote that is consistent with CARB's cost projection for a Class 7/8 electric tractor in 2024. It is worth noting, however, that this quote is from a company that does not currently manufacture trucks. Quotes that members of the Forum have been able to secure for battery electric trucks from traditional OEMs, as well as new entrants into the market, range 3x to 5x current diesel tractor prices (which is in the low $100K range). For fuel cell vehicles, Forum members have been unable to secure firm quotes, with manufacturers indicating early commercial vehicles may be 3-5 years away. If some of the largest commercial trucking operations in North America have not been able to secure validating quotes from the manufacturers from whom they buy tens of thousands of trucks from per year, there is concern about the reliability of the information underpinning the market adoption assumptions.

While Tesla announced pricing on their Semi in 2017, since this time, most members of the ACT Fleet Forum have been unable to secure current quotes to confirm such pricing. However, research conducted by Forum members does indicate that Tesla's battery pack costs for its Model 3 may be "in the ballpark" of what would be required for Tesla to be able to sell its Semi at the previously advertised prices. Of course, this assumes that Tesla is ultimately able to deliver on its 2017 pricing commitment. With Tesla's recent April 2020 announcement of another year delay on its Semi deliveries, questions about this product certainly remain. Member fleets are excited to continue exploring the electrification potential posed by market disruptors, but are concerned that a cost model based on preliminary estimates from emerging manufacturers will underestimate the true costs of the incremental operations needed to support large-scale electric truck deployments industry-wide.

The ultra-experienced members of the ACT Fleet Forum – who collectively purchase tens of thousands of new trucks per year – also know that up-front truck costs include elements of ongoing support and warranty coverage for that truck, which is carried out via extensive dealer, parts distribution, and service networks. While cost estimates for electric trucks from traditional manufacturers tend to be higher than quotes from newer market players, traditional truck manufacturers have institutional data to estimate the long-term expenses to support future warranty, service and support costs for trucks that are expected to run 1.0 million miles or more. As members of the ACT Fleet Forum have seen in their long-standing real-world procurement of advanced technologies, efforts to quickly scale clean vehicle technologies can very quickly falter via out-of-service product and ballooning costs when manufacturers underestimate long-term service, support and warranty costs. Such issues have been a primary reason why many of the nation's first electric truck manufacturers are no longer in business. For the long-term success of the electric truck market, CARB must not underestimate the critical importance of after-sales support and service networks.

Members of the ACT Fleet Forum are also concerned that the gaps in heavy-duty electric vehicle product availability - outside the delivery and tractor segments - are not fully reflected in CARB's cost models. In

particular, there is a notable market gap in the costs for vocational vehicles that require extensive body modifications. Such vocational vehicles are typically built upon the chassis of a Class 6 truck platform, with extensive body modifications required to deliver a fully integrated truck to a customer. Given the infancy of the overall market, and with only one Class 6 electric truck available for sale today from traditional truck OEMs, fleets have been unable to determine the true costs and operational assessments required to support electric project implementation in these vocational segments. As CARB continues to refine its cost models and timelines, vocational fleets need a more nuanced approach that accounts for the current market status and the time required to complete the engineering, integration and total pricing activities required by suppliers.

Need for Incentive Funding to Reach 2024 Regulatory Targets

The recent EV projects now being implemented by ACT Fleet Forum members were only possible due to availability of multiple local, state and federal incentives, including a combination of direct vehicle incentives and LCFS credits. Forum members have utilized funding sources such as HVIP, ZANZEFF, EPA Air Shed, Prop 1B, Charge Ready, and other incentive programs to participate in the pilots that are now leading to true commercial readiness in key vehicle technologies and operations. Current vehicle prices for Class 6-8 vehicles, which are 3x to 5x traditional vehicle costs, are simply not economically feasible without incentives, regardless of whether a fleet has an ideal charging profile and access to special EV fleet charging rates.

Outside of some select applications and opportunities, it is difficult to achieve a positive TCO in a majority of the heavy-duty electric truck market without incentives. When asked about their electric truck projects if funding were reduced in the near-term, one ACT Fleet Forum member quickly confirmed that it would mean the termination of their electric truck program. Getting to an economically self-sustaining marketplace will require significant grant-funded deployments to help develop, demonstrate, and deploy cost-competitive technologies and charging models.

The budgetary impacts from COVID-19 are only just emerging and could have profound impacts on the availability of near-term funding and LCFS revenues that enable the early technology and charging projects that build the foundations of economically feasible technology markets. Limited incentive access due to a rapid-onset recession, which has also impacted demand for the conventional energy markets that drive LCFS credits, could shift the market adoption projections of technology adoption and cost reduction curves that underlie the 2024 regulatory start date. CARB and the Board should therefore prioritize robust ongoing funding levels and ongoing market assessments to ensure the 2024 implementation dates remain reasonable and the Advanced Clean Truck regulation is successful in achieving its goal of stimulating technology development and improved EV market options.

Building a Sustainable Electric Truck Future

Thank you for the opportunity to share with you the collective electric truck implementation experiences of the ACT Fleet Forum members as they relate to the proposed Advanced Clean Truck regulation. It is understood that the Large Fleet Reporting requirements of this regulation will provide CARB with insight about existing fleets' characteristics. In the interim, the members of the ACT Fleet Forum wanted to provide additional insight about specific electric vehicle project considerations and costs to better inform the current rule and any cost models that carry forward for the fleet rule regulatory procedure. As noted at the top of this letter, it is important that CARB "get it right" to ensure the successful implementation of this rule, and thus the successful development of the market for electric trucks. Ensuring that electric trucks can be both economically sustainable in addition to environmentally sustainable will be the ultimately key to success.

Based on these data already collected by ACT Fleet Forum members, it appears that zero-emission trucks have the potential to be cost-effective in certain applications in the near-term, while helping to provide a pathway to future viability for others. For operational and technology profiles that are more challenging, the members

of the ACT Fleet Forum hope to work with CARB on more nuanced cost models that can then help inform sales targets and future fleet rule timelines.

If you have any further questions about any of these EV fleet implementation experiences, the ACT Fleet Forum would be happy to host members of the CARB board and/or staff to discuss additional details. The fleets that joined the ACT Fleet Forum to better implement innovative technology programs are eager to provide insight that can help CARB prepare a successful and effective zero-emission pathway forward for the State of California. To follow up, please contact the ACT Fleet Forum's designated representative, Nate Springer, at (310) 279-7760 or via email at Nate.Springer@Gladstein.org.

Sincerely,

ACT Fleet Forum

CC: Mary Nichols, Chair, California Air Resources Board
Clerk of the Board, California Air Resources Board
Richard Corey, Executive Director, California Air Resources Board

The ACT Fleet Forum brings together best-in-class commercial fleet operators in North America working to deploy advanced, clean technologies to share lessons and learn from leading solutions providers via web discussions and workshops. It is an educational initiative that gives participating fleets, technology providers, OEMs, and fuel suppliers an opportunity to understand best practices on adopting clean transportation technologies. Facilitated by clean transportation consulting firm Gladstein, Neandross & Associates (GNA), the ACT Fleet Forum is an extension of the Advanced Clean Transportation (ACT) Expo, North America's largest advanced transportation technology and clean fleet event. Fleets in the ACT Fleet Forum include Ability Tri-Modal Transportation Services, C&S Wholesale Grocers, EVO Transportation & Energy, J.B. Hunt Transport, Matheson, NFI Industries, Penske Transportation Solutions, PepsiCo, Ruan Transportation Management Systems, Schneider National, Sysco, Total Transportation Services Inc., Walmart, and Waste Management.