



DATE: July 6, 2016
TO: California Air Resources Board
FROM: Ryan Schuchard, Policy Director, CALSTART
RE: Sustainable Freight Transportation Action Plan

CALSTART appreciates this opportunity to comment on the Sustainable Freight Action Plan (“Plan”).¹

**Clean Transportation
Technologies and Solutions**

www.calstart.org

Board of Directors

Mr. John Boesel
CALSTART

Mr. Michael Britt
United Parcel Service

Mr. Jack Broadbent
Bay Area Air Quality
Management District

Ms. Caroline Choi
Southern California Edison

Ms. Donna DeMartino
San Joaquin Valley Regional
Transit District

Mr. Frank De Rosa
SunEdison

Ms. Karen Hamberg
Westport Innovations

Mr. Brian Olson
QUANTUM Technologies
World Wide Inc.

Mr. Puon Penn
Wells Fargo Bank

Dr. Jeffrey Reed
Southern California Gas
Company

Mr. Pasquale Romano
ChargePoint

Mr. Dipender Saluja
Capricorn Investment Group

Mr. Chris Stoddart
New Flyer Industries Limited

Mr. George Survant
Time Warner Cable

Mr. Stephen Trichka
BAE Systems

Overall we support the Plan framework and in particular applaud the State’s leadership to undertake it. It is a good first step on what is a longer path to creating a sophisticated, interconnected and functional Sustainable Freight System. The Plan has a sound basic vision and initial strategy based on applying the best and correct technology depending on application. We think it is wise to develop and deploy zero-emission (ZE) medium- and heavy-duty (MHD) technology when and where possible, while recognizing that there is not always an effective fit and also utilizing appropriate reduced emission and near-ZE technologies and renewable fuels in cases where ZE options will not be available in the near future.¹

In line with this approach, we would strongly encourage that as it adds detail, the Plan identify and recommend the most effective deployment locations and use applications to best leverage its targeted ZE investments, such as around high volume port and multi-modal facilities and last mile delivery, and heavily leverage first actions in the transit sector. In parallel, a policy of encouraging tech flexibility around achieving specific energy and emissions reduction goals (perhaps using a capped and steadily declining ton-mile of energy and emissions basis) can encourage significant innovation from industry. CALSTART has developed such an approach for individual fleets via the NAFA Sustainable Fleet Accreditation Program; such a framework might apply more broadly as a foundational structure for freight.

We think the Plan does contain an appropriately broad portfolio of activities across the spectrum of commercialization stages.

Generally, we also find the pilot projects to be worthwhile and aligned with existing state and commercial activities. We do note, however, that it would be useful to allow some flexibility of structure in the pilots. For instance, the renewable natural gas freight truck pilot is highly worthwhile, but might benefit from greater flexibility to allow inclusion and combinations of additional feedstocks and centralized digester partners, and not simply prescribe only one source. Such flexibility is shown in the framework for advanced technology for truck corridors, and this is appropriate.

Given the scale of the Plan, we will confine our main comments to mostly focus on State Agency Actions (“Actions”) in Appendix C, and specifically, activities surrounding core technology development:

- MHD Vehicle Charging and Hydrogen Fueling Infrastructure (Action 3A);
- MHD Greenhouse Gas Emissions Standards Phase 2 (Action 4B);
- Low-Carbon Vehicle-Fuel Systems (Action 4D);

¹ Zero Emissions (ZE) vehicles include battery-electric and fuel-cell vehicles.



- Vehicle Grid Integration (Action 4E)
- Heavy-Duty Zero Emission Fueling (Action 4F); and
- Last Mile Delivery (Action 4H1)

Additionally, we discuss opportunities for Stakeholder Convening (Action 6), which is an essential area of activity for ensuring that the Plan's full potential for economic development is understood and realized.

I. MHD Vehicle Charging and Hydrogen Fueling Infrastructure (Action 3A).

One of the most critical success factors for the Plan overall is the rapid development of freight corridors that have robust networks for access to renewable fuels, specifically charging and hydrogen fueling. The mix of activities currently included in the Plan do support this. However, we would like to emphasize a few special issues.

Electric Charging Infrastructure for Parked Trucks (Action 3A1). Identifying the value of shutting off idling engines at rest or work sites is a meaningful step. Electric infrastructure can be one of the options. However, it is worth noting that an alternative or parallel option, already taking shape in the commercial truck world, is electric APU/HVAC powered by on-board batteries. Similarly, in commercial vocational vehicles options now exist for greater engine off time at work site and rest intervals with on-board battery systems, some of which allow work to be performed. It will be useful for the State to consider a balance of State-funded infrastructure installation and siting, mixed with encouragement of on-vehicle solutions that may be more flexible. That said, providing such infrastructure at freight terminals, loading docks and transshipment facilities can extend the reach of such systems, whether on or off-board.

Transportation Electrification Planning (Action 3A2). One of the pioneers in MHD ZE vehicle deployment, transit agencies, which are now collectively operating over 100 ZE buses throughout the state, reveal that even after a fleet has made the decision to go ahead with ZE buses, challenges stand in the way of siting electrification assets. Challenges include difficulty liaising with multiple municipalities, managing zoning issues, acquiring new property, and coordinating with utilities and other service providers. In light of these challenges, the Plan should more explicitly emphasize a unified interagency mechanism to fast-track development of on-route and in-depot chargers in targeted MHD corridors. It will be important to work closely with the California Public Utilities Commission (CPUC), which we note is listed as a supporting, but not lead, agency.

Hydrogen Fueling Infrastructure (Action 3A4). We strongly support development of an intelligent strategy for supporting medium- and heavy-duty hydrogen vehicles. For instance, in the last-mile goods delivery sector, range-extended electric trucks, utilizing smaller fuel cells to augment range and power, show real promise to allow full duty cycle operation of ZE solutions. However, none of the publicly-funded hydrogen fueling stations are designed to accommodate medium or heavy duty truck access. We need to learn the lessons from the early natural gas deployments and make sure State-funded hydrogen stations, or some targeted sub set of them, can accommodate a mixed use of consumer and commercial vehicle. This applies to access driveways and turn-around space as well as on-site hydrogen capacity. More attention to locations that can benefit freight and delivery use as well as consumer use needs to be considered. There are serious potential applications for heavy-duty regional ZE drayage trucks in key state



regions that could also make use of range extended electric architectures that use fuel cells; the State must include these emerging uses in their hydrogen fueling plans.

Electric Charging Infrastructure Incentives (Action 3A5). Charging infrastructure cost is one of the unseen “gotchas” for fleet early adopters of ZE vehicles. Development of an effective electric charging network is key to the success of the Plan. Infrastructure is a factor, but it is only one of several related factors. Two other factors include electricity rates (including demand charges) and demand management technologies and strategies (including storage). The relative importance of these factors, and the measures that each call for, vary by individual fleets’ operating plans. Therefore, this action should include development of a thorough understanding of the business case, actual challenges on the ground, and development of roadmap to that supports, and is supported by, forthcoming CPUC rulemaking. While the CPUC may eventually allow greater utility involvement in making truck facilities ready for charging, there is also a need for sub-regional planning for public or sharing infrastructure, as well. We also note that additional research is needed, and therefore, this action could be supported by the “Research Efforts” action (3C).

II. MHD Greenhouse Gas Emissions Standards Phase 2 (Action 4B)

Our comments in this section remain more high level, and we also note that several of the sub elements in 4B are aligned. We strongly support the Innovative Technology Certification Flexibility process and the leadership CARB is providing by acknowledging that existing regulation is geared to the high-volume status quo technologies. Our caution is that staff be mindful of not swapping one complicated and expensive process for another. There are concerns innovators have raised over the limited volumes of vehicles allowed at different tiers of the proposed approach that may simply be too low to be adequate or useful. On the Phase 2 standards, achieving a national rule is a prime consideration for industry and for agency success, though California has numerous opportunities to encourage faster action in key segments through fleet or other rules. Besides aerodynamics, where the state was an early leader, greater requirement or encouragement of engine shut-off and worksite idle reduction systems would benefit the State, drive its core technology investment and reduce emissions and carbon beyond the national rule. On the ultra-low NOx engine standards, it will again benefit the State to seek a national rule rather than just a State one, and some engine manufacturers have signaled a reduced NOx standard, even for diesel, is achievable even considering GHG reductions. Fleet rules and/or targeted incentives for early reductions provide the State flexibility to augment a national standard.

III. Low-Carbon Vehicle-Fuel Systems (Action 4D)

We have already seen many advances in bringing ZE technologies to freight, including the electrification of many off-road port vehicles, and the deployment of electric Class 8 trucks in short-haul vocations. However, even as ZE technologies are phased into larger payloads and longer-distance applications, we expect a long tail of continued reliance on internally-combusted liquid and gas fuels, especially for line-haul trucks. Hence, further development of biofuels—renewable natural gas and low carbon liquids—and their integration into vehicle systems, will be crucial to the success of the Plan.

Natural Gas Vehicle (NGV) Roadmap (Action 4D2). The NGV industry stands to make important contributions for sustainable freight with the recent commercialization of an



engine that reduces NOx by 90%. Indeed, this was a specific technology recommendation and step called for by the CalHEAT Truck Roadmap. What is needed now is significant development of cost effective capture and distribution of Renewable Natural Gas (RNG), standards and strategies for pipeline injection, development of a robust California RNG production capability and a network of RNG fueling in key corridors through the state. The plan should also maintain a premium on developing more effective on-board vehicle storage of natural gas to enable longer ranges.

Low-Emissions Renewable Diesel Requirement (Action 4D5). Although most trucks can accept up to 20% biodiesel (B20), biodiesel represents only 5% of California’s diesel fuel pool, in large part because of the increasing stringency of NOx regulations. New forms of advanced fuel, and strategies for deploying biodiesel (e.g. through the use of additives that reduce NOx), need to be developed. The cost-effective development of a drop-in fuel for a larger share of liquid fuels that has low GHG and criteria pollutants, is a key to ensuring progress with the vehicles that continue to rely on conventional diesel engines.

IV. Vehicle-Grid Integration (Action 4E)

We support this action area as it can leverage investments being made in large scale energy storage and transit deployments to add resiliency and capability to the transportation-grid interface. We increasingly are finding fleet operators looking at their total facility energy management, including their vehicle assets, and this vehicle-grid interface will become increasingly important. In addition to storing or using mid-day renewable energy, we strongly encourage you to look at the enhanced vehicle capabilities inherent to greater energy storage and two-way transfer systems. Several state utilities are becoming leaders in the use of vehicle based energy back to the grid for disaster and resiliency purposes, and the US military via our HTUF program has placed a strong premium on vehicles with export power and two-way power transfer capabilities. We encourage the State to find and invest in these points of connection as cost-effective development areas.

V. Heavy-Duty Zero Emission Vehicle Fueling Infrastructure (Action 4F)

As noted in comments to Action 3A, the development of a robust recharging and refueling system for zero emission medium- and heavy duty vehicles is a critical area of shortfall for this emerging sector. This applies to the inadequate templates for siting such recharging, the cost of the equipment, smart systems to better integrate the equipment with the grid and facility energy needs, and basic standards for domicile and route charging connectors and equipment. This lack of standards and activities to streamline the infrastructure deployment and use process could stall HD ZE deployments. The transit industry is on the leading edge of this issue and would be a prime partner for State program focus, together with the involvement of last mile delivery and demonstration stage port drayage and service vehicles. The State can play a critical role in applying funding and development focus to this issue immediately.

VI. Last Mile Delivery (Action 4H1).

With over 100 MHD electric buses being deployed around the state, last mile delivery vehicles—which can borrow from bus technologies—are ready for electrification.



Nonetheless, more development and investment on reducing cost and increasing range for suburban and rural routes will make these vehicles more effective and accepted by fleets operating multiple locations. We encourage the Plan to provide meaningful early incentives (e.g. via HVIP) for doing so, along with a phase-in schedule that starts with urban vocations.

VII. Stakeholder Convening (Action 6)

Our final substantive comments addresses stakeholder convening, which is an essential area of activity for making the plan realize its full potential for economic development.

Competitiveness Data Development (Action 6A). The Plan sets out a vision for developing the world’s most advanced freight system, so it is appropriate to measure freight competitiveness, one of the main benefits. An additional benefit that deserves attention is advancement of California’s clean transportation technology industry. If the Plan is successful, it will meaningfully contribute to the development a national and international center of freight technology providing new California-based jobs, revenues, and exports business. Therefore, data development should include study on the Plan’s contribution to developing the clean transportation technology industry.

Marketing Campaign (Action 6B). In light of our previous recommendation to measure the benefits of clean transportation technology industry development, we encourage the marketing campaign to include a focus on encouraging other freight-focused states and countries to follow California’s example. This could have two positive effects. The first is to create a “race to the top” among regions that have major freight networks, which could multiply the progress California is making towards GHG emissions reduction. The second is to raise awareness about California as a producer of clean technologies, and to promote California’s exports to other markets.

Fleet Manager “Best Practices” Development. (Action Not Specified in Plan). Despite many technology improvements having been made by fleets to date, there remains no standard framework that describes overall best practices for sustainable fleets that include an appropriate focus on and measurement of accelerating deployment of the lowest-emission vehicle and fuel technologies. We recommend that the Plan include an effort to develop such a framework, building on efforts such as the NAFA-CALSTART “LEED for Fleets” Sustainable Fleet Accreditation initiative, and explore opportunities for giving fleets incentives for leadership.

Retailer and Brand Engagement (Action Not Specified in Plan). Influential stakeholders in the freight network include retailers and branded manufacturers (“brands”) that start the chain of goods movement by placing orders. Retailers and brands have the power to direct shipping and logistics strategies, and many are actively designating sustainability requirements to suppliers and logistics providers. We believe there are many unexplored opportunities to both learn from retailers and brands about strategies for encouraging sustainable freight choices, and to provide retailers and brands incentives that could accelerate progress of the Plan.

V. Conclusions



Success of the Plan is highly dependent on related policy activities, including extension of AB32 and the Low Carbon Fuel Standard, and development of stronger and more stable sources of commercialization incentive funding. Also, the Plan is limited by the same challenge facing other transportation policies and programs: The lack of an effective price on carbon. Even with California's numerous climate policies, only a minor share of the price of a gallon of diesel that is borne by society (e.g. GHG impacts, air pollution, and security risks) are paid at the pump. We encourage the Plan's council to do its utmost to educate policymakers about these interdependencies.

Freight is extraordinarily complex. Overall, the Plan is a good first step: it highlights and connects the tasks of advancing a range of vehicle and fuel systems in different stages of evolution, and involving many communities and stakeholder groups. We thank the council for its development of the first stage of this thoughtful Plan, and hope and encourage that it is the first of many steps to creating over time an increasingly sophisticated and effective plan to achieve sustainable freight.

¹ From

http://www.casustainablefreight.org/files/managed/Document/175/CSFAP_Main%20Document_DRAFT_05_0216%20v2.pdf.