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TO: **Interagency Partners: California State Transportation Agency, California Environmental Protection Agency, California Natural Resources Agency, California Air Resources Board, California Department of Transportation, California Energy Commission, Governor's Office of Business and Economic Development**

FROM: **Center for Sustainable Energy®**

RE: **California Sustainable Freight Action Plan – Discussion Document (Draft)**

Introduction

The Center for Sustainable Energy® (CSE) is pleased to provide these comments regarding the California Sustainable Freight Action Plan (CSFAP). As a mission-driven nonprofit organization, CSE is committed to accelerating the transition to a sustainable world powered by clean energy, including the diversification of transportation technologies focused on air quality improvements and greenhouse gas (GHG) emissions reductions.

CSE congratulates the CSFAP for its depth, coordination, and objectives targeted at meeting the goals of the Governor's Executive Order B-32-15 (Executive Order). To meet these goals, California must establish clear targets to improve freight efficiency, transition to zero-emission technologies, decarbonize the State's electricity sources, and increase competitiveness of California's freight system. CSE is confident that the CSFAP provides the initial policy framework for long-term collaboration around meeting the goals of the Executive Order, and CSE provides the following recommendations to guide the CSFAP's initiatives.

1) Continue to prioritize incentives as an accelerant to technology adoption

CSE agrees with the CSFAP that the freight industry will continue to need incentives for early adopters of new technologies and to help accelerate the widespread transition to those technologies.[1] In this regard, CSE supports the Trade Corridors Improvement Fund (TCIF), Goods

[1] *California Sustainable Freight Action Plan (CSFAP), page 12.*

Movement Emission Reduction Program (GMERP), Heavy Duty Voucher Incentive Project (HVIP), as well as other programs and incentives that will provide this critical support.

CSE supports direct consumer rebates and similar incentives to encourage clean transportation technology adoption for both vehicles and plug-in electric vehicle (PEV) charging infrastructure. To date, CSE has distributed more than 150,000 rebates though the Clean Vehicle Rebate Project (CVRP) on behalf of the California Air Resources Board (ARB).[2] CSE's PEV Owner Survey results indicate that receiving an incentive significantly influenced adopters to install Level 2 charging stations, with approximately 60% indicating that this incentive was either "very influential" or "extremely influential".[3] CSE anticipates that such incentives will be needed especially for medium and heavy duty fleets, as these technologies continue to face high barriers due to infrastructure cost and complexity as compared to residential consumers, making both the incentives and technical support more important to encourage adoption. As such, CSE encourages this plan to prioritize a diverse range of end-user rebates and incentives to accelerate technology adoption in alignment with the CSFAP's goals.

2) Deploying over 100,000 ZEV freight vehicles is possible; however, further target design and coordination is warranted.

Given the widespread growth in the zero emission vehicle (ZEV) technology market, it is possible to deploy 100,000 freight vehicles and equipment capable of zero emission operation. However, it is likely that not all of these vehicles will be Class 8 freight trucks, and, in fact, there will be many different freight configurations that can — and should — be used to achieve the CSFAP's targets. Specific variants, such as refrigeration units,[4] ZEV cargo cranes, ZEV stackers, ZEV yard hostlers, and other ZEV equipment pivotal in the logistics and distribution process (as well as the plug-in infrastructure that will be required to support all these technologies) contribute significantly to increased system efficiency and GHG emissions reductions. Moreover, these vehicles are fundamentally consistent with the definition of transportation electrification in SB 350.[5] In addition, near-zero emission trucks, i.e., those powered by

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[2] *Center for Sustainable Energy (2016). California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics. Data last updated June 20, 2016. Retrieved from https://cleanvehiclerebate.org/rebate-statistics*

[3] *Center for Sustainable Energy; PEV Vehicle Owner Survey February 2014 Survey Report; Website Access: https://cleanvehiclerebate.org/eng/vehicle-owner-survey/feb-2014-survey*

[4] *CSFAP, Appendix C-56.*

[5] *Specifically, SB 350 (Stats. 2015; ch. 547) redefines Transportation Electrification (TE) (Public Utilities Code Section 237.5.); places TE as a third stand-alone category on equal footing with energy efficiency and renewables, (Public Utilities Code Section 701.1(a)(1); and establishes provisions through which utilities can be evaluated for expanded roles in TE though CPUC rulemaking.*

renewable natural gas and using ultra low NOx engines, may be a good alternative in classes where pure ZEV vehicles are not yet feasible.

In this regard, the CSFAP can be strengthened in two main ways. First, by setting class-specific targets for freight vehicle types eligible to qualify to meet the CSFAP's goals, and second, by ensuring uniformity between the TCIF, GMERP, and HVIP incentive packages to support the CSFAP targets. Moreover, the CSFAP should be coordinated with the California Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), which provides additional support for the deployment of ZEV technologies compatible with the CSFAP.[6] Through these policy adjustments, there would be a clearer path to meet — and even the potential to surpass — the 100,000 freight ZEVs goals established by the Executive Order.

3) Prioritize coordination with the State's disadvantaged communities (DACs) policies

There is only minor mention of DACs in the CSFAP. Yet, our State-driven policy framework already prioritizes the growth of ZEV fleets in DACs (e.g., Senate Bill 1275), and the linkage between State funds and DACs (e.g., Cap & Trade funding to DACs, per SB 535) is also quite strong. Most of the State's major ports and freight corridors are located within DACs. From CSE's perspective, it is critical to create CSFAP policy that leverages the existing DAC policy framework in order to ensure uniformity and to promote cross-collaborative efforts and inter-agency coordination. The CSFAP can be strengthened by adopting DAC-specific targets to evaluate the plan's success in these areas. To accomplish this, the CSFAP should reference and utilize the State's CalEnviroScreen[7] to establish DAC-specific targets, such as:

- Pilots in and around DACs;
- DAC-specific workforce development targets; and
- Freight facility projects located in DACs.

4) Prioritize data transparency as a tool to support the decision-making process to improve the CSFAP

To inform and develop the CSFAP, and to maximize learning from the program, aggregated and anonymized data should be made publicly available, easily accessible, and distributed as openly and widely as possible (while ensuring confidentiality and privacy). This type of data-sharing and transparency informs program evaluation and improvement as well as strategic decision-making. CSE can attest to the value of such data as administrators of the CVRP Rebate Statistics

[6] *http://www.energy.ca.gov/drive/*
[7] *http://oehha.ca.gov/calenviroscreen/report/calenviroscreen-version-20*

website[8] and EV Consumer Survey Dashboard.[9] These data-driven transparency tools are regularly utilized by stakeholders for various purposes and assist in a wide range of decision-making processes.

Specific to the CSFAP, data transparency becomes even more essential as phases of program deployment inform one another,[10] and as the plan prioritizes a performance-based criteria evaluation process.[11] As such, in order to maximize the learnings from the implementation of the CSFAP, CSE urges the stakeholders to continue to augment the data transparency and data-sharing components of the plan.

5) Substantial Marketing, Education, and Outreach will be required to support the CSFAP

CSE agrees with the need for a marketing campaign for California's freight transportation system.[12] GO-Biz has demonstrated great capacity to coordinate such efforts and is the ideal lead State agency. CSE also agrees with the proposed outreach and advocacy to increase awareness of advanced vehicle and equipment technologies and clean energy generation options for freight, and that the ideal implementing agencies would be the California Energy Commission and ARB.[13] Additionally, CSE recommends coordination with the California Public Utilities Commission (CPUC).

Moreover, CSE believes that a statewide industry-facing marketing, education and outreach (ME&O) effort will be necessary to meet the CSFAP's targets, and the objectives of SB 350 and the 2013 and 2015 ZEV Action Plans more broadly. CSE suggests that CSFAP stakeholders should evaluate utilizing Energy Upgrade California® for the statewide ME&O program.

Energy Upgrade California is the State's energy management brand funded by ratepayers. Energy Upgrade California educates, motivates, and activates residential and small business customers in all the investor-owned utility (IOU) service territories to take a broad range of

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[8] *Center for Sustainable Energy (2016). California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics. Data last updated May 02, 2016. Retrieved 5/9/2016 from https://cleanvehiclerebate.org/eng/rebate-statistics*

[9] *Center for Sustainable Energy (2016). California Air Resources Board Clean Vehicle Rebate Project, EV Consumer Survey Dashboard. Retrieved 5/9/2016 from https://cleanvehiclerebate.org/eng/survey-dashboard/ev*

[10] *Note that the CSFAP outlines a general plan for phase 1 programs to inform phase II programs; CSFAP, page 13.*

[11] *CSFAP, page 14.*

[12] *CSFAP, Appendix C-66.*

[13] *CSFAP, Appendix C-63.*

energy management actions, including PEV adoption. Energy Upgrade California features various topics directed and approved by CPUC staff and has existing consumer education channels. Energy Upgrade California's expertise and infrastructure will provide guidance with respect to CSFAP program costs as well as activities and actions, which are currently labeled as "unknowns" in the CSFAP.[14] Accordingly, CSE recommends incorporating the CSFAP's education and outreach efforts into existing statewide ME&O initiatives underway through Energy Upgrade California.

6) Establishing a sustainable freight think tank is timely and warranted

CSE agrees a sustainable freight think tank will be essential to CSFAP implementation.[15] This type of think tank will promote best practices, enhance information and idea sharing, and encourage resource sharing and collaboration among stakeholders while minimizing duplicative processes. This is critical given the diverse range of methods and innovative technologies outlined in the CSFAP.

This think tank should include traditional transportation freight stakeholders as well as individuals with subject matter expertise (SMEs) in renewable energy, distributed generation, PEVs, electric vehicle supply equipment, energy efficiency, building performance technology, grid management or load management, and other areas needed to accomplish the CSFAP sustainability targets. This includes but is not limited to specialists in the following areas related to PEVs:

- Codes, standards, and permitting;
- Rates and tariffs;
- Vehicle-to-grid integration (VGI);
- Solar PV; and
- Advanced energy storage (AES).

CSE also sees this think tank as consistent with the California Energy Commission's funding support for innovative e-mobility and suggests leveraging funds from the ARFVTP for implementing the CSFAP. Overall, ensuring a broad range of SME representation will support the CSFAP's ability to achieve its technology-focused objectives. CSE encourages the formation of this group.

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[14] *CSFAP notes: "[E]stimated Cost: Because these proposed activities consist of unknown future actions, estimated costs are not identified at this time." See Appendix C-66.*
[15] *CSFAP, page 18.*

7) Expanded involvement by the CPUC is necessary.

Fundamentally, to meet the objectives of the CSFAP, inter-agency collaboration is critical. For example, CSE supports coordination with the Governor's Office of Planning and Research and generally applauds the collaborative nature of the CSFAP.

CSE notes, however, that SB 350 (Stats. 2015; ch. 547) redefines Transportation Electrification (TE),[16] places TE as a third stand-alone category on equal footing with energy efficiency and renewables,[17] and establishes provisions through which utilities can be evaluated for expanded roles in TE though CPUC rulemaking.[18] This redefining of TE also encompasses the medium and heavy duty sector, and as such, there is an inherent overlap between the CSFAP and this CPUC rulemaking. The CPUC is tasked with Senate Bill (SB) 350 implementation yet the CPUC is noticeably absent from the CSFAP. Accordingly, CSE encourages the CSFAP to prioritize the involvement of the CPUC, as well as tap into the CPUC's specializations in rate and tariff structures that will inevitably impact the charging of medium and heavy duty ZEV fleets.

8) CSE agrees with the prioritized pilots, with some modifications.

CSE supports the dairy biogas for freight vehicles (San Joaquin Valley) pilot. Fundamentally, converting waste into transportation fuel presents an ideal use scenario and has the potential to yield GHG emissions reductions. Direct combustion of renewable natural gas in low NOx emission trucks offers great benefits. However, using it for the production of hydrogen, with heat and electricity as byproducts, offers even greater benefits.

Tri-Generation (Tri-Gen) is a proven approach to generating renewable hydrogen for transportation and industrial uses, with distributed production near point of use. Moreover, Tri-Gen is responsive to California mandates that direct one-third of all hydrogen for vehicles to come from renewable sources.[19] In addition to hydrogen vehicle fueling, Tri-Gen can provide onsite power and leverage both the State's Self-Generation Incentive Program (SGIP) and the Low Carbon Fuel Standard (LCFS) program. Tri-Gen systems have proven to be financially beneficial to the host in all scenarios. Fundamentally, renewable hydrogen production through Tri-Gen presents a "win-win-win" opportunity to pursue State policy initiatives, leverage

[16] *Public Utilities Code Section 237.5.*
[17] *Public Utilities Code Section 701.1(a)(1).*
[18] *Public Utilities Code Section 740.12(b).*
[19] *SB 1505, Chaptered September 30, 2006; ftp://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_1501-1550/sb_1505_bill_20060930_chaptered.html*

available State incentives, and accelerate renewable energy usage and in-state production. Therefore, CSE recommends that this pilot prioritize the use of Renewable Hydrogen Production through Tri-Gen.

CSE supports the Advanced Technology for Truck Corridors Southern California pilot. CSE agrees with the prioritization of this Advanced Technology for Truck Corridors Southern California pilot, including a focus on advanced traveler information systems, connected vehicle technology, and incentives.[20] The State's CalEnviroScreen indicates that Southern California communities and corridors — especially in areas surrounding its ports and in DACs — exhibit some of the worst air quality conditions in the State and nation. This pilot should also prioritize infrastructure deployment to support ZEV freight truck electrification as well as additional pilot projects that are holistic and innovative by providing crossover between energy production and transportation. Examples include solar on warehouse roofs and plug-in infrastructure at loading docks and other fixed locations. In addition, to strengthen this connectivity beyond fixed locations, CSE recommends two additional infrastructure technologies for consideration.

Specifically, we recommend that the CSFAP evaluate the deployment of corridor electrification [i.e., overheard catenary lines (OCLs) along highly-traveled freight corridors] and evaluate the feasibility of solar PV development in right-of-ways (ROWs). While California does have a pilot testing this OCL capability,[21] Sweden became the first country to offer OCLs publicly, with roughly 13 miles of road fitted with power lines overhead, providing electricity to hybrid trucks.[22] As for solar in ROWs, while certain feasibility matters require further analysis (e.g., glare, optimal siting, others), many State stakeholders have communicated an interest in testing pilot programs for solar in interstate ROWs,[23] which could be ideal to power OCL systems. CSE recommends that the CSFAP evaluate both OCL and ROW solar for the Advanced Technology for Truck Corridor pilot.

CSE supports the prioritization of a cross-border project. CSE also agrees that information technology management systems, innovative operation techniques, and enhanced traffic management technology should be included elements of this pilot.[24] This prioritization is

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[20] *CSFAP, Appendix D-3.*

[21] *http://www.aqmd.gov/docs/default-source/technology-research/clean-fuels-program/clean-fuels-program-advisory-group---january-29-2015/siemens-catenary-project-update---joe-impullitti.pdf?sfvrsn=7*

[22] *Sweden's First Electric Road: http://ecowatch.com/2016/06/23/sweden-first-electric-road/*

[23] *Federal Highway Administration; Alternative Uses of Highway Right-of-Way ; http://www.fhwa.dot.gov/real_estate/publications/alternative_uses_of_highway_right-of-way/rep03.cfm*

[24] *CSFAP, page 19.*

consistent with existing State policy, including the California Transportation Plan 2040, which includes a recommendation to enhance freight mobility, reliability, and global competitiveness, with a goal to improve California's key border crossings to reduce wait times and related environmental impacts.[25] Moreover, the project aligns with current policy, such as the Continental Energy Plan, through which the U.S. and Mexico are spearheading unprecedented collaborative efforts regarding cross-border transmission, strengthening and aligning efficiency standards, and making commitments to reducing GHG and air pollutant emissions from light- and heavy-duty vehicles, along with a plan to extend the EPA's green freight transportation program to Mexico.[26]

In addition, there is an opportunity to provide fueling and charging to freight fleets within the context of this pilot. As such, CSE encourages the CSFAP stakeholders to clarify the types of propulsion that will be offered to freight vehicles in and around the border areas in support of this pilot, and encourages the evaluation and prioritization of electrification, hydrogen fuel, and compressed natural gas (or a combination of all three) as fuel sources.

9) The CSFAP should prioritize green regional workforce development initiatives as an indicator of economic growth.

CSE encourages the CSFAP stakeholders to prioritize green workforce indicators. CSE agrees with the CSFAP's prioritization of regional workforce development initiatives because, as noted in the CSFAP, "one out of every seven jobs in the U.S. is transportation related".[27] Workforce development is absolutely critical.

The green job workforce nexus includes the transportation, renewable energy, and energy efficiency sectors — all of which will be critical to meet our transportation electrification goals and energy efficiency targets consistent with the CSFAP. There is already substantial growth of the green workforce sectors, with record growth in the solar industry,[28] a rapidly growing

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[25] *California Transportation Plan 2040, page 116. Website Access: http://www.dot.ca.gov/hq/tpp/californiatransportationplan2040/Final%20CTP/FINALCTP2040-Report-WebReady.pdf*

[26] *US, Canada, Mexico detail continent-wide clean energy plan; Website Access: http://thehill.com/policy/energy-environment/285979-us-canada-mexico-detail-continent-wide-clean-energy-plan?utm_source=&utm_medium=email&utm_campaign=2708 https://morningconsult.com/alert/north-american-leaders-want-50-percent-electricity-coming-from-renwables-by-2025/*

[27] *CSFAP, Appendix G-3.*

[28] *The solar sector has added 75,000 new employees in the 2016; Los Angeles Times: http://www.latimes.com/business/la-fi-solar-industry-job-growth-20160209-story.html*

energy storage market,[29] and the continued growth in ZEV companies seeking an expansion of California's automobile manufacturing capabilities.[30] In addition to manufacturing jobs, technician training for ongoing operations and maintenance is essential to ensure that deployed technologies can continue to operate reliably into the future.

Fundamentally, this expanded green workforce demand prompts expanded training and investment, consistent with both the 2013 and 2015 ZEV Action Plans. CSE supports green workforce development as a major element of the CSFAP.

10) Prioritize projects that utilize electricity with high renewable energy content

CSE applauds the targeted transition to zero and near-zero emission freight equipment powered by renewable energy sources.[31] GHG emissions reductions benefits have increased significantly due to expanding penetration and use of renewable energy on the electricity grid. Fundamentally, to meet the State's more aggressive, widespread, and long-term goals aimed at deeper GHG emissions reductions, the integration of electricity with high quantities of renewable energy is required.

CSFAP should adopt methods to evaluate the CSFAP's success against renewable energy-related criteria by prioritizing programs and activities that demonstrate electricity carbon intensity below set thresholds or State averages.[32] To ensure consistency and uniformity with the State's Renewables Portfolio Standard Program, CSE suggests that the "renewable energy source" language (as currently used in the CSFAP) should be modified to "eligible renewable energy resource", as defined by and consistent with the specific eligibility provisions of the California Renewables Portfolio Standard Program.[33]

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[29] *The energy storage market grew 243 percent in 2015 — the largest year on record; Green Tech Media: http://www.greentechmedia.com/articles/read/us-energy-storage-market-grew-243-in-2015-largest-year-on-record*

[30] *Business Insider: http://www.businessinsider.com/faraday-future-vallejo-second-factory-2016-5*

[31] *CSFAP, page 8.*

[32] *As Reported in Low Carbon Fuel Standard Regulation, Table 6, the average mixture for California Electricity is 105.16 gCO_2e/MJ); Website Access: http://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf*

[33] *Renewables Portfolio Standard Eligibility (includes sources such as biodiesel; biogas/biomethane; biomass; conduit hydroelectric; digester gas; fuel cells using renewable fuels; Geothermal; hydroelectric incremental generation from efficiency improvements; landfill gas; municipal solid waste; ocean wave, thermal and tidal current; photovoltaic; small hydroelectric; solar thermal electric; and wind. Source: California Energy Commission; Website Access: http://www.energy.ca.gov/2015publications/CEC-300-2015-001/CEC-300-2015-001-ED8-CMF.pdf*

Conclusion

CSE appreciates the opportunity to respond to the CSFAP. CSE reiterates its praise for the plan's depth, coordination, and ambitious objectives targeted at meeting the goals of the Governor's Executive Order B-32-15. It is through this plan, as well as its refinement and expanded goal-setting, that we will accelerate mass adoption of ZEVs in the freight sector.

Sincerely,

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