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TO: California Energy Commission Commissioners and Staff

FROM: John Boesel, President and CEO

RE: Docket No. 12-ALT-2, 2013-2014 Investment Plan

California Energy Commission

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**Clean Transportation
Technologies and Solutions**

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CALSTART appreciates the opportunity to provide input on the California Energy Commission's (CEC) FY 2013-2014 AB 118 Investment Plan. As a fuel- and technology-neutral nonprofit organization with members throughout the clean transportation technologies industry, CALSTART is uniquely positioned to help inform investment priorities and strategies. In this document, we outline several high priority areas that can provide a significant return on investment for the CEC in the form of technology advancement, emissions reduction, and improved energy security.

In developing this list of priorities, we looked for opportunities that would yield significant "bang for the buck." We recommend focusing on areas that will have a particularly large impact because of total emission reductions, technology advancement, and visibility. We also recommend focusing on sectors and technologies that need government intervention. The investments outlined below meet these criteria and should be high priorities for the state.

MEDIUM AND HEAVY DUTY VEHICLES

Medium and heavy duty vehicles, including trucks, buses, and off-road equipment, represent a major opportunity for technology advancement and emissions reduction in California. These vehicles have account for almost 20% of all the fuel consumed by California fleets and the CEC projects that they could account for nearly 42% by 2030. Furthermore, these vehicles generally use diesel fuel as their primary energy source and their baseline emissions are therefore quite high, meaning that even incremental improvements yield meaningful air quality benefits. Moreover, emissions from medium and heavy duty vehicles are disproportionately concentrated in Environmental Justice communities, including ports and major goods movement corridors. Below are three recommendations for investments in the medium and heavy duty vehicle space.

Medium- and Heavy-Duty Technology Planning and Research

As outlined in the recently released "Vision for Clean Air" report from the Air Resources Board together with the South Coast and San Joaquin Valley air districts, there is a clear and compelling need to move to near- and zero-emission transportation by the mid-2020's in order to meet national health standards. The need for progress is particularly urgent in the medium and heavy duty commercial vehicle vector. Hard-hit areas such as the South Coast Basin and the San Joaquin Valley are in need of greatly accelerated development of advanced technologies. Collaboration, planning, and research activities have an important role to play in driving progress and ensuring that we are supporting the most promising advanced technologies.

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The FY 2012-2013 Investment Plan set aside \$3 million for Centers for Alternative Fuels and Advanced Vehicle Technology. We strongly recommend that this funding, both in FY 2012-2013 and future years, be supportive of “virtual centers” that can connect organizations, agencies, and companies for the advancement of the industry. One such center that is already up and running, but in need of ongoing support, is the California Hybrid, Efficient and Advanced Truck (CalHEAT) Research Center.

CalHEAT is a California-based resource center for research, development, demonstration and commercialization of advanced, efficient truck technologies and systems. The Center works as a partnership of diverse stakeholder groups developing and implementing an overall research and a market transformation plan to inform manufacturers and suppliers on clean truck technology status, gaps, and needs for commercialization as well as guide state investment and funding for hybrid, efficient and advanced truck technologies. Its virtual participants include forty-five industry wide Technology Advisors and more than twenty-four state policy makers and national experts as it relates to truck policies and technologies.

We strongly recommend allowing existing virtual centers such as CalHEAT to compete for AB 118 funds. With additional resources, the CalHEAT Research Center could continue to operate through 2015 to assure industry collaboration with respect to the technology solutions necessary to meet California’s longer term energy and emissions goals.

Medium- and Heavy-Duty Technology Development and Demonstration

To ensure California’s emissions and air quality targets are met requires steady and higher rates of development today so that needed technology sets are validated and prepared to ramp up in this time frame. Based on an assessment from the CalHEAT research center, we will need to both (a) develop new advanced, low-emitting vehicle technology, and (b) spur deployment volumes approaching multiple tens of thousands of vehicles in the next ten to twenty years to meet the state’s multiple goals. There is a clear need for both development and deployment funding in this area.

The FY2012-2013 Investment Plan allocated \$6 million for advanced truck demonstrations. This one year of investments is necessary but not sufficient, both because additional resources are needed and because the FY 2012-2013 plan focused only on pre-production prototypes. We recommend that the Commission continue funding for this category at least \$10 million for this investment plan in order to accelerate technology advancement in the goods movement sector. Moreover, we recommend opening this category up to include earlier stage technology development investments in addition to late stage demonstrations.

Zero Emission Bus Development and Deployment

Transit and school bus fleets are an ideal platform for the adoption of zero and near zero emission vehicle technologies. These fleets are often centrally fueled, operated by professional drivers, and maintained by trained technicians. These factors mitigate the



infrastructure, fueling, operations and maintenance issues that generally act as barriers to the introduction of new transportation technologies. Transit applications are highly visible, which encourages widespread acceptance of new and little known technologies. In time, technologies that are proven in bus applications make their way to on-road trucks and eventually to construction equipment and other off-road applications.

The State has been attempting to regulate the use of zero emission buses through the Zero Emission Bus (ZEB) rule. However, incentives are still needed as a complementary policy to support the development and deployment of these vehicles. Larger deployments will allow the technologies to reach their price/commercialization trigger points. Significant investment and advances have been made in this field and the industry has been asking for larger purchase volumes to bring down the cost.

MAP-21, the continuation of the federal transportation bill, authorizes \$45 million per year for zero and near zero emission transit buses. California should work to leverage these funds and assure that the earliest adoption of these buses occur here. This will benefit air quality in hard-hit areas where buses are often deployed. It should also benefit our economy, particularly in light of the fact that California is home to two of the largest bus makers in the nation.

In order to take advantage of this opportunity, we recommend providing \$10 million for the development and deployment of zero- emission transit buses as well as zero- and near-zero emission school buses in California.

Renewable Natural Gas Vehicles

Biomethane (aka Renewable Natural Gas, or RNG) is natural gas that is made from waste materials from landfills, dairies, and municipal solid waste facilities. RNG has one of the lowest carbon intensities of any fuel measured by CARB for purposes of the Low Carbon Fuel Standard (LCFS). Moreover, RNG can be used with existing natural gas vehicles and infrastructure, so the barriers to entry for this fuel are lower than they are for some of the other alternatives. In the medium- and heavy-duty sector, RNG is one of the most promising near-term options for emissions reduction.

While some truck fleets are voluntarily moving toward natural gas vehicles based purely on cost concerns, there is no compelling economic argument for these fleets to use RNG over fossil natural gas. In order to overcome this barrier, we recommend allocating up to \$5 million for fleets to fund vehicle purchase costs if fleets commit to some specified level of RNG use. For example, if fleets can commit to using at least 50% RNG, they may qualify for vehicle purchase incentives.

LIGHT DUTY VEHICLES

By volume, light duty passenger vehicles and light trucks represent the largest share of the state's vehicle population. California has several policies in place that are intended to



transform the state's light duty vehicle fleet from gasoline-powered internal combustion engines to zero- and near-zero emission plug in hybrid, battery electric, and fuel cell vehicles. However, these programs and regulations are only one piece of the puzzle. Additional incentives and investments are needed to address market barriers, including high incremental costs of these vehicles, questions over consumer acceptance, and a lack of readily available refueling infrastructure. Below are suggestions for targeted investments to support the transformation of California's light duty vehicle fleet.

Zero Emission Vehicle Purchase Incentives

California's Zero Emission Vehicle mandate calls for more than 15% of new vehicle sales to be Zero Emission Vehicles (ZEVs) and Plug in Hybrid Vehicles (PHEVs) by 2025. This is an ambitious target and we believe that there is a clear need for financial incentives to drive the purchase of these vehicles, which have purchase prices that are significantly higher than conventional vehicles. In the absence of incentives, there is a real danger that we may fall short of targets.

The AB 118-funded Clean Vehicle Rebate Project (CVRP) provides financial incentives for the purchase of ZEVs and PHEVs. However, this program is severely oversubscribed. The CEC's FY2012-2013 Investment Plan included \$5 million for light duty vehicle incentives through the CVRP to try to keep up with demand. As demand grows, we recommend that CEC be prepared to provide up \$10 million in additional funding to support the CVRP until such time as additional revenues are secured to support it. At the same time, the state should be actively pursuing funds to ensure there is sufficient funding to meet the existing incentives for both ZEV's and PHEV's. A portion of the cap and trade allowances should be allocated for this purpose, and the state should actively look for other funding sources as well.

Workplace Charging

After purchase price, charging infrastructure and range anxiety are probably the next most important barriers to the widespread deployment of ZEVs and PHEVs. Charging infrastructure in the home an obvious place to start, but there is a need to look beyond this. Workplace charging is a very important part of the solution, for several reasons:

- Employees will more readily adopt PHEVs and EVs for their daily commute when they can charge at work.
- Charging at the workplace extends EV range and reduces "range anxiety."
- Workplace locations can become "EV showrooms," helping to disseminate information about EVs and generate greater interest among potential EV drivers

We recommend allocating up to \$4 million to support deployment of electric vehicle charging infrastructure at the workplace. We also note that there should not be a requirement that electric vehicle supply equipment (EVSE, or EV chargers) deployed at a workplace be available to the public. Our understanding is that the CEC does place this requirement on all or most EVSE funded with CEC dollars. While that is generally a good policy, many employers, including CALSTART, run into problems with this requirement.



Many employers cannot simply allow anyone to come and go from their property as they please. Moreover, some employers choose to offer free charging as an employee benefit. Opening this up to the general public could create parking/charging shortages and would tie the hands of companies considering options for the deployment of charging infrastructure.

Finally, we recommend that both current and future CEC EVSE workplace charging funding should allow for statewide efforts to facilitate employer learning and expansion of workplace charging programs. There is clear value in disseminating information on best practices, early experiences, etc.

STATE FLEET LEADERSHIP

As noted in the California Secure Transportation Energy Partnership (CalSTEP) report released in 2011, it is incredibly important for the state to lead by example when it comes to advanced vehicles and technologies. This is important to create early markets for advanced technologies, to showcase new vehicles and help raise awareness, and to ensure that state regulators have credibility in the eyes of industry when enacting regulations that call for increased use of clean vehicles and fuels by private fleets and manufacturers.

We recommend that at least \$10 million should be set aside for state agencies to transition to clean, alternative fuel vehicles. CEC should ensure that the funding can be used to address multiple needs, including vehicle purchase, infrastructure installation, and relevant planning and analysis activities. Different alternative fuel vehicles make sense in different situations, so careful analysis and planning are needed. However, it is clear that there are many opportunities for the deployment of advanced technologies in the state fleet, particularly if financial assistance is available to cover capital costs.

Thank you for the opportunity to provide input into the CEC's AB 118 investment plan process. We look forward to working with you to ensure that the program continues to drive change in California's transportation sector.