

## DOCKETED

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*Comment Received From: William Barrett*

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**American Lung Association/Union of Concerned Scientists Comment**

*Additional submitted attachment is included below.*



November 17, 2017

Jacob Orenberg  
ARFVTP Investment Plan Update Project Manager  
Fuels and Transportation Division  
California Energy Commission

**2018-19 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program**

Dear Mr. Orenberg:

We are writing to express our general support for the recommendations in the 2018 AB 118 Investment Plan and particularly the strong recommendations for investment of funding in the electric charging infrastructure, hydrogen refueling infrastructure, and advanced freight and fleet technologies categories as well as renewable hydrogen. We believe that investment in these project categories and fuels is critical to promoting the transformation of the state's transportation sector away from fossil fuel and combustion technologies and towards the cleanest technologies that provide air quality and health benefits.

We also recommend changes in the document to increase support for the cleanest available technologies. Advances in vehicle electrification have occurred rapidly over the past several years particularly in the heavy-duty vehicle market. For example, electric transit buses are rapidly growing in number with several manufacturers offering commercial product, while recent product and demonstration announcements by Toyota, Cummins, Tesla, and others show the potential for electric heavy-duty trucks, including fuel cell vehicles in the near future. CEC should avoid over investing in fossil fuel and combustion vehicle deployment given the need for widespread electrification in the transportation sector to achieve the state's air quality and climate goals<sup>1</sup>, the state's commitment to deploying 100,000 electric heavy-duty vehicles by 2030 included in the Sustainable Freight Action Plan,<sup>2</sup> the significant funding available for low-NOx trucks from current GGRF funding, and the limited sources of biomethane compared to overall natural gas use.

Specifically, we recommend the following:

**1) *Identify heavy duty vehicle categories where electrification should be prioritized.***

Given the rapid progress and maturation of electric technologies in the heavy-duty sector and limited supplies of biomethane, there are specific projects that should be dedicated to electrification. These specific project categories include: transit buses, delivery trucks and other short and medium range vehicle applications. Recognizing the limited quantities of bio-methane

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<sup>1</sup> See Air Resources Board [2016 Mobile Source Strategy](#)

<sup>2</sup> <http://www.casustainablefreight.org/>

resources in California, CEC should avoid incentivizing natural gas vehicle deployment in these applications where they compete with heavy-duty vehicle electrification. UCS analysis shows that, based on recent assessments of sources of fugitive methane emissions (wastewater treatment facilities, landfills, and manure) in California, capturing all available methane from these sources would amount to approximately 3 percent of current natural gas use in California.<sup>3</sup>

Where the investment plan does include investment in biomethane projects, the emphasis is correctly placed on projects to capture fugitive methane emissions that address a significant source of high-GWP emissions. In some cases, the Low Carbon Fuel Standard pathways for biomethane have very low or negative carbon intensity values resulting from the accounting of currently uncontrolled methane emissions from these sources. It should be noted by the CEC in their evaluation that these very low or negative carbon intensities are result of failing to control methane emissions at the source. In the future, under SB 1383 and SLCP policies, fugitive methane emissions will be targeted by regulatory requirements resulting in an increase in the future life-cycle carbon emission intensities from these sources.

**2) Promote use of biomethane to produce hydrogen and electricity for fuel cell and electric technologies.**

The proposed focus of projects with on-site use of biomethane should include and encourage projects where onsite biomethane capture supports hydrogen and electricity production for fuel cell and electric trucks. The significant climate benefits from the use of biomethane in transportation captured from fugitive emissions sources are realized upstream – by avoiding methane emissions. Once captured, biomethane can be used in various transportation applications including directly in natural gas vehicles, converted to hydrogen and used in fuel cell vehicles, and converted to electricity to power electric vehicles. Because of the significantly improved efficiency of electric trucks compared to internal combustion vehicles (a factor of 5 according to updated figures from ARB)<sup>4</sup> results in the latter two pathways resulting in the lowest life-cycle carbon emissions. The attached chart illustrates this comparison based on use of biomethane from landfills in the three different transportation applications.

Thank you very much for your consideration of our comments.

Sincerely,

Bonnie Holmes-Gen  
Senior Director, Air Quality and Climate Change  
***American Lung Association in California***

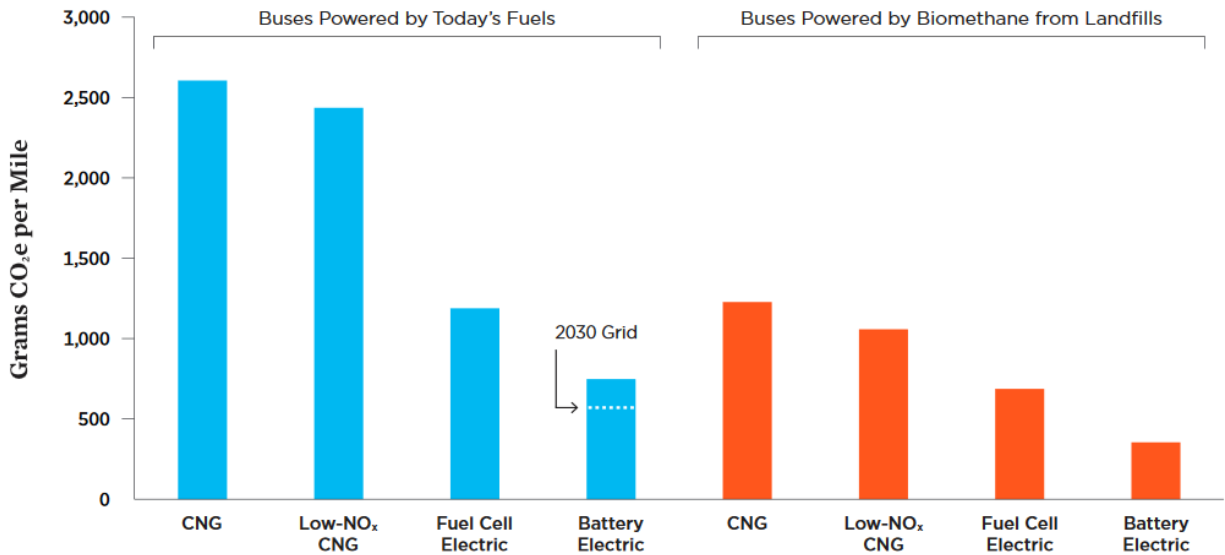
Don Anair  
Research and Deputy Director for the Clean Vehicles Program  
***Union of Concerned Scientists***

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<sup>3</sup> Union of Concerned Scientists, “[The Promises and Limits of Biomethane as a Transportation Fuel](http://www.ucsusa.org/biomethane-transportation),” 2017. Available at <http://www.ucsusa.org/biomethane-transportation>.

<sup>4</sup> See Air Resources Board EER Discussion Document, 2017. Available at <https://www.arb.ca.gov/msprog/actruck/mtg/170425eerdraftdocument.pdf>

FIGURE 3. Life Cycle Global Warming Emissions from Transit Buses, by Vehicle and Fuel Type



*Biomethane generates the lowest carbon emissions when used to produce electricity or hydrogen for battery and fuel cell electric vehicles. Battery electric vehicles on today's grid also have lower global warming emissions than low-NO<sub>x</sub> CNG vehicles fueled with biomethane.*

Notes: CO<sub>2</sub>e stands for carbon dioxide equivalent. Bus-related emissions are a representative example of emissions from other heavy-duty vehicles. Electricity emissions are based on the 2016 grid mix in California; hydrogen emissions assume 33 percent is generated using renewable energy (per Senate Bill 1505). Biomethane emissions are based on landfill gas, as it is the predominant source of biomethane consumed in California (CARB 2017b). The dashed line indicates emissions from a battery electric bus using an estimate of California's grid mix in 2030; it assumes 50 percent of electricity comes from renewable energy (per Senate Bill 350) and 50 percent of electricity comes from natural gas power plants. This represents a conservative estimate of California's future sources of electricity. Life cycle emissions include those from fuel production ("upstream") and fuel consumption ("tailpipe").

SOURCE: CHANDLER, ESPINO, AND O'DEA 2017.