

**DOCKETED**

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<b>Project Title:</b>	2018-2019 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program
<b>TN #:</b>	223651
<b>Document Title:</b>	Allocation of ARFVTP H2 Infrastructure Funds to Renewable Hydrogen Production
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<b>Organization:</b>	Tim Sasseen
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*Comment Received From: Tim Sasseen*  
*Submitted On: 6/4/2018*  
*Docket Number: 17-ALT-01*

**Allocation of ARFVTP H2 Infrastructure Funds to Renewable Hydrogen Production**

*Additional submitted attachment is included below.*

To: The Honorable Commissioner Janea Scott, California Energy Commission  
From: Tim Sasseen, Ballard Power Systems, on Behalf of Hydrogen and Heavy Duty Fuel Cell Electric Vehicle Component Manufacturers  
Date: May 11, 2018  
Re: Please Allocate at Least 30% of ARFVTP Hydrogen Refueling Infrastructure Funding to Renewable Hydrogen Production

Dear Commissioner Scott,

We, the undersigned manufacturers and distributors of hydrogen and heavy/medium duty fuel cell electric vehicles (FCEV) and components, respectfully ask you to allocate a significant share of funding in the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) Investment Plan for 2018-2019 to renewable hydrogen production to meet the demands of a significant deployment of medium and heavy duty FCEV's, in addition to the needs of light duty FCEV's.

**Specifically, we request an investment of at least \$30 million, or about 1/3 of the total allocation from the total proposed budget for hydrogen refueling infrastructure of \$92 million for FY 2018-19, for the production and distribution of renewable hydrogen for all classes of FCEV's, at significant scale, in multiple regions of California.**

#### **California Needs Heavy Duty Fuel Cell Vehicles for Zero Emission Goals...**

Trucks and buses produce over 20% of California's GHG emissions, and that means California's strategy for zero emission transportation must address medium and heavy duty vehicles. Many of these vehicles cannot be electrified by pure battery approaches due to long range operation, short refueling time requirements and weight limitations. Fuel cell electric vehicles provide zero emission solutions to satisfy these demanding needs, and can achieve the competitive cost targets of transit agencies and fleet operators. Deploying these vehicles requires renewable hydrogen at cost-effective prices.

#### **But, Demand for Renewable Hydrogen in CA Could Triple (or More)**

Deploying medium and heavy duty fuel cell vehicles will have a rapid and dramatic effect on demand for renewable hydrogen. Passenger car demand for hydrogen in California could reach nearly **5,000 kg/day** this year for about 7,000 vehicles. A modest heavy/medium duty fleet deployment of 100 vehicles each of delivery vans, port trucks and transit buses would require up to **9,000 kg/day**, almost tripling demand for clean fuel.

#### **Scaling Production is Needed to Reduce Fuel Cost**

Renewable hydrogen is best produced through electrolysis from dedicated or excess renewables, or from reforming of biogas or renewable natural gas. Electrolyser manufacturers can achieve commercially viable cost targets only through large scale deployments to leverage economies of scale. The same is true of reformers, and there are numerous biogas sources currently being developed to support hydrogen production. Furthermore, placing the stations in close proximity to medium and heavy duty truck fleets will contribute to high station through-put and utilization, thereby driving hydrogen costs down while having dramatic impacts on criteria air pollutant emissions.

**The Goal: 10 tons of New Renewable Hydrogen per Day, to Reach \$4/kg**

We are therefore requesting at least **\$30M of the ARFVTP funds** be spent on the infrastructure for renewable hydrogen production. This along with **another \$30M in funding** from supplemental sources will help to achieve renewable hydrogen production approaching **10,000 kg/day**, and drive fuel prices from present day \$9/kg to \$15/kg towards a commercially attractive price of **\$4/kg**. This will be enough to satisfy deployment of a modest number of medium and heavy duty vehicles in 2019/2020, provide passenger car drivers with affordable, renewable hydrogen, and allow hydrogen production technology to achieve cost savings for commercial production.

We thank you for your continued leadership and support.

Sincerely,

Tim Sasseen, Ballard Power Systems

Mike Simon, TransPower

Steve Jones, ITM Power

Mike Hart, Sierra Energy

Tim Reeser, Lightning Systems