CEC Draft Alternative Fuels Plan
Docket #06-AFP-1
Comments of Catherine Dunwoody
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Thank you for the opportunity to comment on the CEC Draft Alternative Fuels Plan. The following comments are my own as an individual and do not necessarily represent a consensus opinion of the California Fuel Cell Partnership members. You may also hear from CaFCP members individually.

My comments focus on the text of the document rather than the quantitative results. Without background materials describing the assumptions and models used, it is impossible to provide meaningful comments on the cost and vehicle population estimates or the example scenarios.

In general, CEC should recognize in the report that fuel cell vehicles are the only technology that can give consumers the performance they want (e.g. power, acceleration, range, quick refill time) along with zero tailpipe emissions, no petroleum fuels and significant reductions in criteria pollutants and greenhouse gases on a total fuel cycle basis. Customer satisfaction on a mass market scale is critical to achieve the dramatic emissions and petroleum use reductions needed to meet the State's challenging long-range goals.

Specific comments:

1. Page ES-7 and page 10: the statement that "except for ethanol and hydrogen, all other alternative fuels are less costly today than gasoline and diesel on a fuel use, cents per mile basis" is not true. One can purchase hydrogen in volume at the plant gate for $3.50 to $6.00 per kg today, and when one factors in the superior efficiency of the fuel cell drive train, the cost per mile is less than gasoline. As with other

alternative fuels, the added cost is largely due to the capital investments needed to build a vehicle fueling infrastructure.

2. Page 12: Under recommended government actions for the California Air Resources Board, bullet three should include hydrogen fuel cell vehicles. Utilities will provide feedstock fuels for producing hydrogen, and they should receive similar credits and incentives for providing this feedstock fuel for hydrogen as they do for providing electricity and natural gas for direct fuel use.
3. Page 12: Recommended government actions for the California Public Utilities Commission;
    a. the first bullet should state "Encourage/allow preferential or special (for example, off-peak) rates for electricity and natural gas transportation fuels and as feedstock fuel for producing hydrogen."
    b. the second bullet should include home hydrogen refueling systems.
    c. the third bullet should include hydrogen fuel cell vehicles.
4. Page 17: Electric Transportation Technologies – Immediate Term Actions;
    a. #3 should state "...electricity charging and use for PHEVs and hydrogen generation for FCVs"
    b. #14 and #18 also apply to hydrogen FCVs
5. Page 18: Natural Gas Vehicles – Immediate Term Actions;
    a. #1 add "...and as a renewable feedstock for hydrogen production"
    b. #8 add "and ensure they are designed to accommodate future hydrogen fueling"
6. Page 19: Under Hydrogen Actions, the report characterizes the challenges associated with hydrogen as "deep challenges". Please remove the word "deep." All alternative fuels have challenges, and it is unfair to subjectively characterize hydrogen's challenges as "deep."
7. Page 19: Hydrogen – Immediate Term Actions; is this list intended to be for State action? Industry action? Federal government? Others? There are many actions that need to be taken by multiple parties, so depending on the intent this list should be longer or shorter.
    a. #1 should add "and support demonstration of...".

b. #2, #6 and #8 are clearly industry actions.
c. #3 should be two separate bullets, with the second part being "support development of up to...." assuming that this list is intended to be actions for government.
d. The first part of #3 would be better characterized as "support implementation of high-volume, retail-oriented hydrogen fuel stations strategically located to serve early market vehicles." Also, this should be #1 on the list, as it is currently the most important action the state can take to promote success for hydrogen fuel cell vehicles.
e. Add a recommendation that CalOSHA should approve light-weight composite tanks for hydrogen storage at fuel stations in anticipation of ASME certification of these tanks for stationary use.
f. #4 is not needed once you change #3 to reflect my comment in 7b, above.
g. #5 should change "conduct research and development" to "support demonstrations of...."
h. #7 would be nice, but probably not a wise use of state resources. Better to promote development of supply chain industries that can build from the State's expertise in electronics and other high-tech components.
i. #8 DOE is already investing heavily in hydrogen storage R&D. State involvement should be "value added."
j. #9 would be better worded as "Facilitate mixed-use hydrogen fuel infrastructure to support both transit buses and other applications (e.g. forklifts) as well as light-duty vehicle fleets"
k. #10 GHG emission reduction credits must be appropriately assigned between the LCFS, vehicle emission regulations and other requirements (e.g. SB 1505). This must be carefully designed to provide the proper credits and incentives and avoid holding hydrogen to a higher standard than other fuels and technologies.
l. #11 Does this mean "support state and local government purchase of hydrogen vehicles to help move automakers beyond the threshold business case...."?

m. #14 and #15 are duplicative

n. Add "establish a State expert to support hydrogen station permitting and provide guidance to local government and industry"

o. Add "fund a State training program for fire professionals"

8. Page 24: Energy Input, GHG Emissions and Sustainability, the 5th bullet must include hydrogen FCVs. FCVs show a 50% or greater GHG emission reduction due to the naturally high efficiency of electric drive technology.
9. Page 35: Light-Duty Vehicle Market, paragraph 3; the statements in this paragraph should reflect a common reference point. If you are going to state that "stakeholders have projected that lithium ion battery technology will enter the marketplace around 2012...." then you should use a comparable statement for FCVs, rather than talking about when fuel cell technology will be "cost-competitive." If you want to talk about "cost-competitive" then do the same for battery technology.
10. Page 38: Heavy-Duty Vehicle Market, paragraph 4; You must mention fuel cell buses in this paragraph. There are highly successful transit bus validation programs underway in California, and buses promise to be a successful early market application for fuel cells. The CEC's WTW analysis did not properly reflect the benefits of using hydrogen fuel cells in transit because the fuel economy data used to generate the EER was erroneously skewed (NREL has subsequently corrected this but CEC staff were unwilling to use unpublished bus fuel economy data – we assume they will make the adjustment as soon as published data is available).

Thank you again for the opportunity to comment.