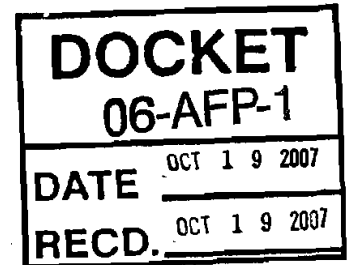


CEC Draft Alternative Fuels Plan Storylines
Docket #06-AFP-1
Comments of Catherine Dunwoody
Executive Director, California Fuel Cell Partnership



October 19, 2007

Thank you for the opportunity to comment on the CEC Draft Alternative Fuels Plan Storylines document dated October 14, 2007. 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. The time allowed for review was too short to develop substantive comments on the quantitative results presented in the storylines.

General comments:

1. This was my first opportunity to see the storylines associated with alternative fuels other than hydrogen. I was surprised to see that CEC staff used inconsistent approaches among the different alternative fuels. The hydrogen fuel cell vehicle storyline derives future hydrogen fuel use and associated GHG benefits from projections of vehicle sales based on technology readiness, vehicle manufacturers' stated plans, and potential implementation scenarios examined by the U.S. Department of Energy. Other storylines appear to derive future vehicle populations from projections of fuel availability, regardless (in some cases) of vehicle technology readiness, auto manufacturers' stated plans or consideration of potential vehicle implementation scenarios. The storylines should be consistent in their approach.
2. The CEC staff should avoid using subjective evaluations of alternative fuel vehicle technology. Such subjective evaluations are used inconsistently among the various alternative fuels. For example, the first paragraph of the hydrogen

fuel cell storyline states that “At present there exist numerous technical barriers....” All alternative fuels have challenges, yet these are not mentioned in the overview for any of the other alternative fuels.

3. The U.S. Department of Energy submitted extensive comments on September 12, 2007. I notice these have not been incorporated into the hydrogen storyline.
4. The CEC staff appear to misunderstand the U.S. DOE Scenario Analysis project. The report refers to this activity with words such as “proposed”, “comply”, “used as the basis for...”, “specified”, “projections” and others, all of which are inappropriate to use when referring to this project. Please refer to the U.S. DOE comments of September 12, 2007 for specific edits to correct these errors.
5. The storyline should include fuel cell forklifts, and should more heavily emphasize the benefits of fuel cell transit buses. Fuel cell forklifts are currently available, and there are highly successful transit bus validation programs underway in California. Both applications 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).

Specific comments:

6. Page 2, Overview: This section should state 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.
7. Page 6, Hydrogen Production and Infrastructure: It is unclear whether the statement that “...adding 2,000 million gallons of gasoline equivalent (GGE) of

hydrogen production capacity...requires only a 22 percent increase over present U.S. capacity” refers to a 22 percent increase over present hydrogen production capacity. As well, a more interesting comparison would be to state the amount of natural gas or electricity, as a percent of current consumption, would be needed to provide this amount of hydrogen. As I understand, it is a small fraction of total resources currently used. Other commenters could quantify this amount.

8. Page 10, Figure 7: The figure title is inconsistent with the y-axis.
9. Page 10: The comment that “Many original equipment manufacturers (OEMs) are investing hundreds of millions of dollars in FCV development...” should be re-worded to state “All OEMs have significant FCV development programs, and have collectively invested billions of dollars in FCV development....”
10. Page 11: On the list of FCV features that will be attractive to customers, the first one on the list should be excellent performance, including quick acceleration, quiet and smooth operation, plenty of on-board power and quick refueling. This section should also point out that FCVs do not use engine oil, which is a benefit to consumers and the environment (reduced water pollution and ground contamination).
11. Page 13, Present deployment: At this stage of development, numbers of vehicles on the road is not an accurate indicator of technology progress. The current deployment is a typical pre-commercial validation stage on the path to an early commercial market.
12. Page 14, Penetration scenarios: The first paragraph inappropriately characterizes the projected penetration of FCVs as more speculative than similar projections for other alternative fuel vehicles. The negative tone of this section may cause the reader to immediately dismiss the following projections of vehicle penetration rates. Penetration rates for all alternative fuels are speculative at this point, yet similar statements are not made in other alternative fuel chapters.
13. Page 16: The first paragraph states that the ZEV report projects global sales of FCVs at 100,000 vehicles in 2025. Actually, the ZEV independent expert panel concluded that sales would be in the “100,000’s” in this time frame. Thus, CEC’s

statement takes an overly pessimistic view of the ZEV independent expert panel's findings.

14. Page 21, Hydrogen infrastructure: The statement "In California there exist 11 hydrogen fueling stations that are generally private facilities used for RD&D purposes" is incorrect. There are currently 25 hydrogen stations in California, with 10 additional stations in the planning phase. With only a couple of exceptions, these are not "private facilities used for RD&D purposes." These stations provide fuel for the over 100 fleet passenger cars and buses that are operated by businesses and individuals each day to meet their regular driving needs. This is real-world implementation learning, not RD&D.
15. Page 24, Efficiency benefits: The words describing how a fuel cell works are awkward and overly technical for the layperson to understand. See our website at http://www.caftp.org/faq.html#fct_2 for straightforward language on how a fuel cell works.
16. Page 25, Figure 14: the EER for BEV/PHEV should be removed from this chart. There are too many assumptions associated with this EER that cannot be adequately explained in a chapter on hydrogen fuel cell vehicles. The text below Figure 14 is inadequate to explain that the BEV/PHEV EER only applies to PHEVs that would be operated in all-battery mode all the time, an unrealistic assumption given that a significant potential consumer appeal of a PHEV is the extended range using gasoline.
17. Page 25, Multiple feedstocks: This paragraph states "Hydrogen is more synonymous with electricity since both are produced, transported and consumed at the point of use." This paragraph should point out that unlike electricity, hydrogen can be easily stored, e.g. as a liquid, gas or in a solid storage medium.
18. Page 28, Figure 14: The title of this figure should spell out "Well-to-Tank" as many readers will not know the meaning of "WTT." The paragraph under Figure 15 seems to be misplaced and should be replaced with text such as "Although some methods of producing hydrogen yield higher well-to-tank emissions than gasoline, the superior efficiency of the fuel cell vehicle (as illustrated in Figure 14) results

in significantly lower overall well-to-wheels emissions of greenhouse gases compared to gasoline vehicles.”

19. Page 28, Vehicle attributes: The paragraph enumerating favorable vehicle attributes must include the favorable customer performance of FCVs, including excellent acceleration, quiet and smooth operation, lots of on-board power, quick refueling time. Alternative fuel vehicles must appeal to consumers on a mass scale in order to yield significant energy and environmental benefits.
20. Page 37, Actions needed: please see my comment #7, submitted on October 12, 2007, on the Draft Alternative Fuels Plan. The same suggested changes should be applied here.

Thank you again for the opportunity to comment.