

## Docket Optical System - Comments on Advanced Generation IEPR Workshop - Docket No. 09-IEP-1M

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**From:** Jack Brouwer <jb@apep.uci.edu>  
**To:** <docket@energy.state.ca.us>  
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**Subject:** Comments on Advanced Generation IEPR Workshop - Docket No. 09-IEP-1M  
**CC:** "Scott Samuelson" <gss@apep.uci.edu>

<b>DOCKET</b>	
<b>09-IEP-1M</b>	
DATE	AUG 21 2009
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RE: Docket No. 09-IEP-1M

To Whom It May Concern,

Please consider the following comments, all concerning the Draft Consultant Report (by Navigant Consulting) and their corresponding presentation at the workshop:

### Overall Concerns:

- (1) The consultants have generally done a good job identifying the major technologies that should be considered.
- (2) There are too many "primary focus" technologies, priorities amongst these technologies that consider criteria pollutant emissions, energy saving potential, GHG reduction potential, energy security potential, and other California policy goals should be applied to prioritize the list.
- (3) Why do gas turbine cycles have their own category (in addition to two categories within the DG/CHP section), and why does the category label include the word "cycle?" First, any viable advanced generation technology should be considered for investment at both the distributed generation and larger scale. Second, there is much more than "cycle" work identified in this category.

### Specific Concerns:

- (1) Rule 21 has not removed all interconnection barriers to DG – technical developments to enable provision of ancillary services and rates that could account for such (e.g., feed-in tariffs for local power and/or ancillary services) are required
- (2) The focus on plug-in electric vehicles should not deter interest and investment in transportation fuel cells – which remain the only technology capable of zero tailpipe emissions coupled with the consumer requirements for long range and short refueling times
- (3) Recent investments in solid oxide fuel cell technology by the U.S. DOE have led several industrial teams to project high volume production costs of less than \$1,000/kW. Energy Commission investment in this area of stationary power generation, which would be highly leveraged by DOE investments, could significantly address the major cost barrier identified
- (4) The initial high cost of hybrid fuel cell gas turbine systems identified in the document is unfounded. This cost number (>\$5,000/kW) is not based upon future projected costs, but, rather upon a guess that costs will be significantly higher than stand-alone fuel cell systems. In fact, major studies by Siemens, Rolls Royce, FuelCell Energy, the University of California, Irvine, Genoa University, and others have concluded that hybrid fuel cell gas turbine systems may cost less than the corresponding atmospheric pressure fuel cell systems. This is due to the fact that fuel cell waste heat is converted to electricity in the turbine (a lower cost component) and the fact that the same amount of fuel cell surface area produces more power at the same voltage when operated at pressure (more power / unit of fuel cell stack) in a hybrid system.
- (5) A large investment in reciprocating engine technologies, which are unable to consistently meet criteria pollutant emissions standards in several air basins (e.g., SoCAB, SJV) even with extensive after-

treatment, is not wise.

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