C o n n e l l y & A s s o c i a t e s



17 September 2012

To: California Energy Commission
Dockets Office, MS-4
Re: Docket No. 12-HYD-1
1516 Ninth Street
Sacramento, CA 95814-5512

From: Tim Connelly, Principal (Connelly & Associates)

Subject: Comments re: the DRAFT Program Opportunity Notice (PON) Hydrogen and Transportation-DRAFT Solication Comment' - Alternative & Renewable Fuel &Vehicle Technology (ARFVT).

We are pleased to be given the opportunity to provide our comments below. The original CEC DRAFT PON TEXT is in Black, and Connelly & Associates (C&A) comments are in Green.

We have ten (10) comment items and a Conclusion that make up our complete set of comments below.

**ITEM #1:**

**B. Maximum Award Amount and Funding Cap**
Projects are eligible for up to 65% of the total project cost or $1.50 million, whichever is less

**COMMENT:** There were two additional incentive factors in the previous PON—renewable 10% bonus increment and the 5% bonus for early deployment. The removal of both of these incentive factors does not make sense to us. We strongly recommend that they be restored.

To promote market diversity, a single hydrogen fueling equipment (HFE) supplier is eligible for no more than 40% of the total funds awarded under this solicitation.

**COMMENT:** Limiting any qualified supplier to only 40% of the total funds will have several very negative consequences:

1) Major sub-system companies, such as electrolyzer manufacturers, will not be able to achieve a minimum order quantity that will allow a cost effective system to be produced.
2) The HFE supplier will have to focus all of their resources on just one region of the state. This will result in a fragmented overall infrastructure. One can look at this situation from a macro-economic view where, historically, it was necessary for the government to provide significant financial assistance for the building of the key infrastructure systems (e.g., railroads, highways, and the government granted monopoly in communications until 1984). Hydrogen refueling stations are the current example of where government support of a new infrastructure is critical. This government support in the form of the CEC cost sharing should not be done in a piece meal fashion! There was a reason the "Ma Bell" phone company (AT&T) was given government support for decades when the first initial telephone system infrastructure had to be built out. It is serious mistake to view the program of H2 refueling station infrastructure build out on a single station-by single station basis. That will be a formula for disaster.

3) In order for a HFE vendor to obtain competitive (low cost) electricity PPA contracts with wind farm operators, must have considerably more than 10 fueling stations at the 130 kg/day production level. By "artificially" reducing the size of the HFE vendor's potential number of stations in the critical early years, it will not be possible to achieve the targeted $0.07/kWh electricity cost that is critical to affordable & 'clean' H2 for California's fuel cell vehicle owners.
4) Bottom line: the most qualified renewable-energy HFE suppliers will be forced to No Bid on the PON if this 40% limit is not modified. We propose that it should be at least **80%.**

**ITEM #2**
**Renewable Hydrogen Set-Aside—**
Of the funding available, up to $3.00 million is designated for stations dispensing 100% renewable hydrogen fuel where hydrogen is generated from renewable sources, either on-site or off-site.

**COMMENT:** Having only a $3.0 million set-aside, just 10% of the total funding available, for renewable hydrogen is not sufficient to provide an incentive for the renewable-energy-based HFEs to provide competitive responses to the PON. Given the importance of clean air and thus clean hydrogen generation, this set-aside should be considerably greater than sixty to seventy (70%) percent of the total funding where the stations are dispensing 100% renewable hydrogen fuel from renewable sources.

**ITEM #3:**
- Dual Dispenser Pressure: The station described in the application to this solicitation shall be able to dispense fuel at both 350 bar and 700 bar

**COMMENT:** C&A wants to go on record that the requirement to also provide 700 bar H2 has the effect of adding about 25-30% to the initial system cost. In other words, if the FCEV manufacturers would agree to standardize on 350 bar, then the cost of refueling stations would be considerably less. Obviously, one effect of the difference in cost, is that 700 bar H2 will cost quite a bit more than 350 bar H2.

In the future, when next generation electrolyzers are available, it will become more economically affordable to add 700 bar fuel islands and associated booster compressors, etc.

**ITEM #4**

**Minimum Technical Requirements**
To be eligible under this solicitation, proposed hydrogen fueling stations must **at a minimum** include **each of the following technical requirements:**

- 50 kilogram (kg) Nominal Station Capacity: The station(s) / dispenser(s) shall be capable of dispensing hydrogen fuel, at a minimum amount of no less than 50 kg per day nominal capacity per station.

**COMMENT:** It doesn't make economic sense nor is there any justification to reduce the minimum capacity below 100-120 kg/day handicaps the program's chances of growth and commercial success for at least another decade, by creating just a worthless demonstration program. A commercialization program should not be a multiple set of "science fair" projects. It requires scalability to prove itself for widespread infrastructure development. While most HFEs could design and install such pilot systems—what good would a pilot system be for building out the infrastructure based on the targeted number of FCEVs expected in California. ***There would be no way to encourage adequate private investment (matching funds) for such uneconomic pilot systems.***

This requirement MUST be restored to the earlier figure from the February 2012 PON.

**ITEM #5**
**D. Multiple Applications**
Applicants may only propose one fueling station per application submitted in response to this solicitation. Applicants may submit multiple applications

**COMMENT:** For a serious HFE bidder, there is no way to economically justify providing bids for any number of stations less than approximately 12 to 15 stations. One straight forward reason--there would be no interest from the private investment sector and financial community in providing matching funds for the project, unless the economic projections are favorable. Therefore, any leading renewable-energy based HFE will be bidding on a program of multiple stations comprising at least 12 stations. It is our understanding that the main priority of the CEC's Hydrogen Refueling System funding support is to ensure that there will be enough 120+ kg/day stations to meet the demand from FCEV individual owners. In fact, there will need to be a viable upgrade path to 360 kg/day and 480 kg/day systems by the end of the decade. Achieving that goal will not be possible unless there is a concentration of funding on the most qualified HFE companies. The corporate overhead and design work is **not** done on a per station basis—it is done for the entire set of stations. All stations would have identical designs and specifications—which allows for considerable cost savings in both the system acquisition phase but also during the operational phases.

Let's look at the hard economics: C&A has invested over 200 hours in determining that the fixed Overhead costs that are associated with the pre-deployment work and independent of the number of stations will be about $2.5 million. This figure, of course, does not include the variable cost(s) associated with each independent station. If the qualified HFE is not able to amortize this $2.5 million fixed cost over at least 15 stations, then the overall economic attractiveness of the project will be such that no commercial third party financial entities will provide **any** matching funds – a mandatory requirement! (C&A does not believe that Federal DOE funding will be available in a timely fashion for this project). This would again force basically the most qualified renewable energy-based HFEs into a "No-Bid" situation.

**ITEM #6**
ELIGIBLE COSTS:
The Energy Commission will ***not*** reimburse for costs incurred before final execution of the grant agreement.

**COMMENT:** If the bidder is successful in winning the contract it should be able to obtain reimbursement for an adequate reimbursement amount of proposal development expenditures. We understand there is a ceiling on this reimbursement amount. However, without some type of cost coverage, the bid is favoring traditional 'big businesses' over smaller, but faster-emerging renewable energy businesses.

**ITEM #7**
**Match Funding Requirements and Disclosure**
The balance of the project cost beyond the Energy Commission cost share is the Applicant's required match share. Applicants must provide a minimum cost share ("match") of 35% of total project costs. For example, if a proposed project has a total project cost of $2,000,000, the minimum match funding requirement is $700,000 ($2,000,000 x 35%). Applications with a greater percentage of the total project costs in match funding will be scored higher than those with lower match funding shares. See Section XII for details on scoring. The following applies to match funding

**COMMENT:** Increasing the amount of matching funds required is likely to result in "No-Bid" from the best renewable-energy HFE suppliers, which results in discouraging counter-productive possibilities for clean air in California. The above change from February only works in favor of "big business" to the detriment of "small business."

The ramification of having "No-Bids" from renewable energy HFE suppliers is that only bidders supplying "dirty" $H_2$ will be getting CEC contract awards, as we have been seeing in prior-year award recipients. This is counter-productive to the intention of the "Clean Air" Assembly Bill.

**ITEM #8**
**V. Payment of Prevailing Wages**
**COMMENT:** The number of construction personnel that would be involved in the construction of the refueling systems is much too small to justify having a 'prevailing wages' requirement. Also, the bidders will be providing details on the purposed wages in the financials.

**ITEM #9**
**VI. General Statement on Method of Awarding**
6. Set-Aside Process: Proposals eligible for the set-aside(s) specified in this solicitation will initially compete separately from the proposals not eligible for the set-aside(s). Proposals will be scored, ranked and awarded. Once the set-aside funds have been awarded, the remaining unfunded proposals will compete for solicitation funding with all other proposals received under this solicitation

**COMMENT:** As stated earlier, renewable-energy sourced hydrogen refueling stations should be dramatically favored in the solicitation. That is not the case per the latest draft PON.

**ITEM # 10**
**IX. Application Format, Required Documents, Delivery, and Application Organization**
3. **Total Number of Pages:** The total number of pages for an application form and statement of work shall not exceed 50. This excludes appendices and resumes

**COMMENT:** C&A recommends that the Statement of Work section be allowable to 75 pages, and preferably allowable up to 100 pages maximum, for the purpose of adequate clarity.

**CONCLUSIONS: Based on detailed financial analysis of the projected costs to produce viable hydrogen refueling stations using renewable-energy, C&A strongly supports the objective of selecting the best HFE supplier from those candidates that can show that they have:**

1) **A minimum of 15 viable gas station locations that can meet more economical, affordable, practical & realistic (revised) PON station requirements;**
2) **Experienced candidates which can readily build systems able to produce and store at least 120 kg/day of hydrogen, and can easily expand capacity to 240 kg/day and/or 480 kg/day;**
3) **Candidates with a program designed to incorporate 100% renewable-based energy (electricity) generation and utilization from clean energy sources (hydro-electric, wind, solar, etc.);**
4) **Candidates with experienced key personnel that have been working with hydrogen refueling systems for a minimum of ten (10) years or more.**