

California Energy Commission
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California Energy Commission

DOCKETED
12-HYD-1

TN # 66584

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August 9th, 2012

Ref: Docket Number 12-HYD-1 Hydrogen and Transportation.

Dear Commissioner Peterman and CEC Staff,

Energy Independence Now appreciates the opportunity to provide input to the hydrogen funding framework of the AB118 program. We have been closely involved in the development of a strategy for hydrogen infrastructure in California for many years, and recognize the challenges involved in selecting and incentivizing the right mix of technology and stations to launch the commercial market.

We commend CEC on its ongoing investment in stations and the recent set of workshops to gather stakeholder input into improving the process. As a follow-up to those meetings, we would like to offer some suggested changes to the funding mechanism. These aim to:

- Provide a simpler, performance-oriented incentive system, to reduce the CEC's analytical burden, attract a greater diversity of developers, and encourage efficient use of resources.
- Help CEC provide more targeted support to reach its innovation and environmental objectives, separating these clearly from the main goal of building a consumer-serving network.
- Provide greater clarity on the priority regions, the number of stations sought in each, and the scoring metrics, to help developers prepare attractive proposals.

We also believe CEC will need the help of sister agencies to be able to stretch its limited funds, and have highlighted complementary financing tools that would help lower the incentive needed for each station.

Thank you for considering our input. We look forward to discussing these suggestions in greater detail.

Sincerely,



Tyson Eckerle
Executive Director



Remy Garderet
Policy Director

1. Change CEC incentive to one based on a station's performance, not its cost

We believe that CEC should change its current cost-share approach for future PONs. Instead of paying 60-70% of a station's costs, it should offer cash payments based on the *performance characteristics* of a winning proposal. Like a solar PV incentive, this would offer a fixed payment to a developer based on the capability of the station, unrelated to the actual costs the developer incurred.

We propose that the incentive be based on two key variables, which together can approximate the value of this station in terms of how many vehicles it can support.

1. **Daily Capacity:** how many kgs can it dispense in one day, as measured over a 12-hour period.
2. **Peak Fueling Throughput:** how many kgs can it dispense per hour, over 2 consecutive hours.

Key Complementary Features. For this incentive to work best, several elements are necessary:

- **Set lower minimum requirements for Connector stations than Clusters.** To ensure appropriate sizing, connector and destination stations should have lower minimum daily and peak performance requirements in the PON screening criteria.
- **Set upper limits to incentive payments, without penalizing design.** CEC can set upper limits to the funding it will offer for both daily and peak performance, without penalizing a developer who wants to develop a higher performing station.
- **Offer both expansion and new station funding.** A developer should be eligible to apply for an expansion of an existing station, and be offered the same incremental capacity and throughput payments as it would for the new station. This would prevent developers from oversizing their initial proposals.
- **Judge station design separately.** CEC should use its scoring system to judge if a station is well configured or more appropriately sized than a competitor for the same geographic market. It would no longer need to do a "cost-effectiveness" analysis as part of the scoring.
- **Incentivize renewables and innovation through a separate payment.** CEC's additional objectives beyond making hydrogen fuel available (e.g. incentivizing technology innovation & renewable fuel production) should be addressed through a separate incentive payment, discussed in Section 2 below.
- **Provide clear definitions.** CEC should work with OEMs to provide a clear definition of "daily capacity" and "peak throughput". We expect the definitions would use SAE TIR J2601 as a starting point. The existing definition of daily capacity (maximum that can be dispensed in a 12 hour period) seems reasonable. Since peak fueling throughput aims to meet a rush-hour need, we suggest a requirement that the peak rate be sustained over 2 hours.
- **Disburse cash over several years.** Rather than a single payment, CEC should consider offering the cash incentive in a 3-year declining disbursement (e.g. 60%, 30%, 10%), helping to cover both up front capital and O&M costs over the early years.

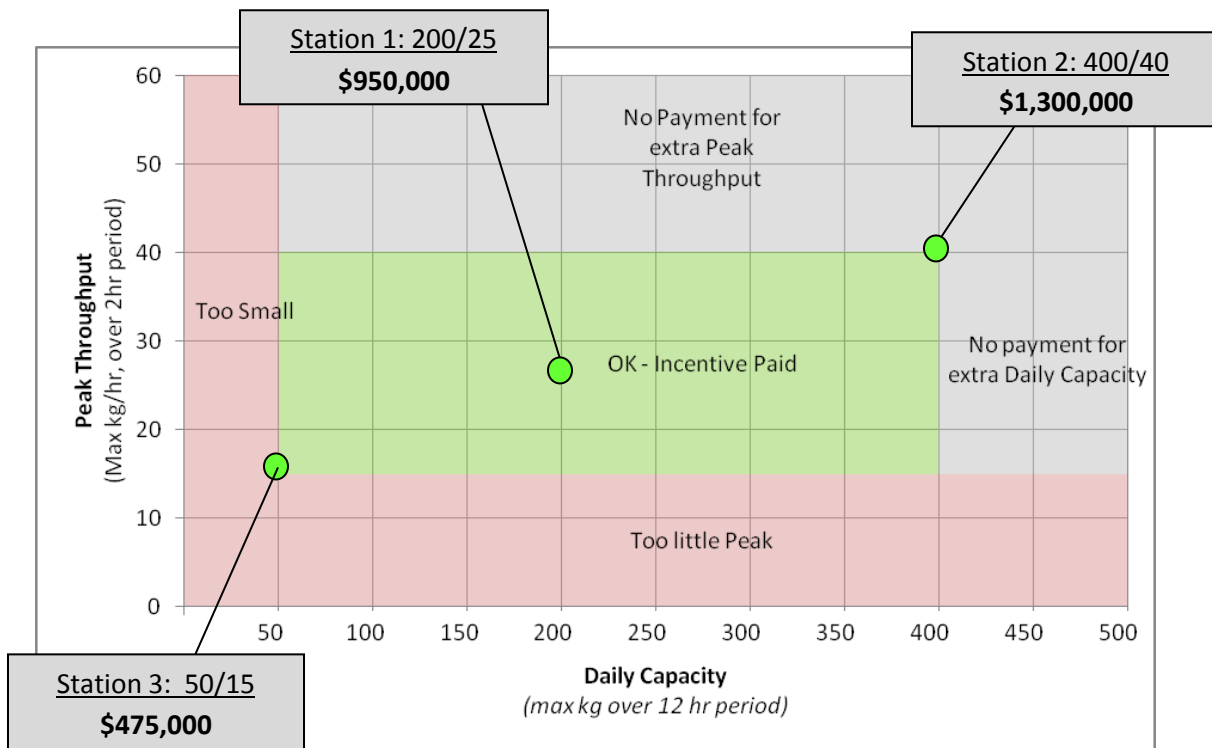
EXAMPLE OF PERFORMANCE-BASED INCENTIVE

We propose that CEC define the two performance criteria, the station ranges CEC will fund, and the amount paid. We suggest at least a two-tier incentive to account for the cost structures of equipment.

Performance Criteria	Measure	Range Paid for *	Incentive Payment in Tiers
Max Daily Capacity	Total kg that can be dispensed in a 12 hour period	50-400	\$5,000 for each of the first 100kg/day
			\$1,000 for each additional kg/day
			Total range: \$250k - \$800k
Peak Throughput	Max kg/hr, over a 2 hour period	15-40	\$15,000 for first 20 kg/hr
			\$10,000 for every additional kg/hr
			Total Range: \$225k - \$500k

* The minimum for each of should be set higher for a cluster station than a connector station.

With the above incentive structure, some sample station payments are illustrated below. Note that Station #3 would most likely not meet CEC minimum requirement for a Cluster solicitation, but might qualify for a low throughput Connector solicitation.



The main advantages of a performance-based incentive are:

1. **It significantly reduces the burden on CEC** to attempt to analyze and evaluate the cost structures of various designs. Once CEC establishes the incentive scheme and prospective applicants know it, there is no longer a need for each applicant to provide a detailed cost breakdown. The CEC can focus its efforts on getting a large number of optimally located stations, leaving the profitability and cost concerns to the developer. Only the company's financial state and balance sheet would need scrutiny.
2. **It provides a strong incentive for developers to reduce costs.** By decoupling the funding from costs, it eliminates the temptation for developers to inflate costs to receive more funding. On the contrary, developers should be encouraged to pocket any savings from their innovations. This will provide downward price pressure across the board, for installation, equipment purchase, O&M contracts, and fuel contracts, and will ease the future transition to an unsubsidized market.
3. **It increases the potential diversity of technologies and applicants.** Since any developer will receive the same funding for stations of equal performance, it opens up and levels the playing field beyond companies that may own an inherent fuel or equipment cost advantage. In other words, a performance-based incentive enables all qualified applicants to compete based on merit alone, and is neutral to any cost structure of their proposal.

EIN believes that this performance-based incentive would work best as a single mechanism for ALL station support. However CEC could consider trialing it in parallel to the current PON framework, focused on the first set of connector locations.

2. Offer additional, complementary, incentives to support other CEC objectives

In the context of the hydrogen-fuel program, we believe the CEC should pursue two critical objectives: 1) provide consumers with well-distributed access to hydrogen fuel, and 2) promote technology development and renewable hydrogen production. If the above incentive structure is put in place, CEC can support the latter objective through separate, complementary grants.

The advantage of a separate grant program is that it:

- Provides greater transparency on the CEC's objectives and weighing of priorities.
- Allows CEC to solicit work for a specific, targeted technology development, both from station developers and others.
- Provides developers with transparency on how much funding to dedicate to these other criteria.

Example of Funding Amounts. (NOTE: Figures are for illustration purposes only)

Objective	Funding Allocation	Focus
Establish Critical Network of Hydrogen Stations	90%	Incentive based on Performance Criteria (Daily Capacity & Peak Throughput)
Other Objectives	10%	Renewable H2 production - Grants of up to \$X
		Onsite Production - Grants of Up to \$Y
		New Equipment Development (e.g multi-fuel dispensers)
		Etc...

Some of the scoring criteria that are currently in the individual station evaluations but are more oriented to these innovation objectives (e.g. Market Transformation), could be used for these grant programs. They would no longer be needed for each station proposal.

We believe this separation could both streamline and bring greater clarity to the CEC's hydrogen solicitations, as well as encourage market diversity and technology demonstration.

3. Provide greater clarity on priority regions, numbers of stations & scoring

a) Provide upfront clarity on priority locations and number of awards for each

- **Reliance on California Fuel Cell Partnership (CaFCP).** Given that the success of the CEC hydrogen investment depends so directly on the OEM's market knowledge, we urge CEC to base the next solicitation on the priorities developed by the CaFCP's OEM Working Group, together with UC Irvine's National Fuel Cell Research Center.
- **Early notification of regional priorities.** Station development requires much greater lead time than is possible within the solicitation period offered by CEC. We therefore also urge CEC to publish a list of priority regions *prior* to the solicitation, to guide station developers.
- **Notification of number of awards.** It is also critical that developers know how many stations are being sought in a given region. CEC should publish this goal alongside the early notification of regional priorities. This will require that CEC compare station proposals within a given region, rather than statewide, with greater competition in some areas than others.

b) Provide a clearer scoring system, with minimum thresholds within categories

- **Reliance on CaFCP input.** As with the location priorities, we urge CEC to incorporate the CaFCP work on Station Performance criteria to revise the weighting and scoring of station proposals.
- We believe the scoring should include sub-categories, to make it clear what is being sought.
- The scoring should not include factors that are common to all, or network-dependent. Based on this premise, scoring categories such as Market Transformation & Market Viability are not necessary.
- There should be additional screening with minimum thresholds within sub-categories that cannot be offset by higher achievement in other areas. This helps avoid funding a great station on a bad site.

Example of Scoring Sheet.... NOTE: The numbers are for illustration purposes only

Category (100 pts)	Sub-category	Scoring Criteria or system	Max Points	Min as Screen
Station (40)	Location	- Consumer oriented (OEMs can score) (5) - Network impact (STREET validation) (5) - Distance from other stations (5)	15	10
	Performance	- Appropriate Capacity (4) - Appropriate Peak throughput (4) - Proof of Expandability (4) - Equipment reliability (3)	15	10
	Innovation	- Renewables content (4) - Production-innovation (2) - Distribution-innovation (2) - Dispensing-innovation (2)	10	0
Applicant (30)	Direct or Related H2 Experience		15	10
	Financial Strength		15	10
Readiness (30)	Site/Technical	Technical feasibility	10	3
	Regulatory/Zoning	Checked for permit	10	3
	Community	Demonstration of support	10	3

4. Future Consideration: Seek Complementary Financing Instruments

The CEC's support for each station remains expensive for several reasons, including the need to compensate investor for the long timeframes until stations are profitable, and the overall market risks. Smaller station developers also have limited access to financing, and so have been reliant on the cost-share program to cover equipment costs.

CEC should work with the ARB, the State Treasury office and other agencies to see if financing packages can be developed to leverage the CEC incentive funding. These should focus on:

a) Long-term financing, with an interest-only period.

Our analysis shows cash flows to be highly sensitive to the term of the loan used to finance the capital investments. Discussions with industry indicate loans may be available, but maximum terms of 7 years likely, and only to investors providing full balance sheet backing. A longer period of up to 15 years would make the station a much profitable investment, and open to a wider range of players. Additionally, if an interest-only period of 2-3 years were offered, cash flows in the early years would be dramatically improved. Such long-term financing would allow CEC to lower the incentive funding need for each station, thereby allowing support for more stations.

b) Revenue Support in the case of slow market penetration

One of the risks that all stations face, regardless of size or location, is if vehicles do not appear on the road as planned. This risk may make it especially difficult to finance stations in the early years. An earmarked CEC fund, or separate pool of money could dramatically mitigate this risk, and be drawn down only if the vehicles are not brought to market as quickly as anticipated.

Our cash flow analysis indicates that stations will need about \$2/kg gross margin to pay for their capital, O&M and other costs. If we assume that their business plans are based around this, combined with the forecasted aggregate vehicle sales, the revenue support could be as follows.

Statewide Example - 2016	
Projected vehicles on road by end of 2016:	21,036 cars
(-) Actual vehicles on Road at end of 2016:	<u>10,000 cars</u>
= Vehicle Shortfall:	11,036 cars
Demand shortfall (with 0.7kg/d/car)	7,725 kg/day
Gross Margin shortfall (@\$2 / kg)	\$15,450 / day
Annual Shortfall in Gross Margins	\$5.6m /yr

Individual Station's share, for year 2017	
Total Installed Capacity	20,000 kg/d
A 500 kg station (2.5% of total) receives	\$141,000
A 250kg station (1.25% of total) receives	\$70,500