

**From:** craig Wooster <woosteraquatic@live.com>  
**Sent:** Thursday, August 27, 2015 11:54 AM  
**To:** Energy - Docket Optical System  
**Subject:** Subj: 15-HYD-01 Draft Solicitation Comments, For Hydrogen Refueling Infrastructure

to: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Subj: 15-HYD-01 Draft Solicitation Comments, For Hydrogen Refueling Infrastructure

California Energy Commission

**DOCKETED**

**15-HYD-01**

**TN # 7611 €**

**AUG 27 2015**

My name is Craig Wooster, and I write on behalf of Wooster Engineering, which is leading the Stone Edge Farms Microgrid Project in Sonoma, CA. The Stone Edge Farms Microgrid Project is a privately-funded effort to represent, in real-world conditions as represented at an operating winery, the future of microgrid design including how the microgrid may be operated in concert with the utility to create financial and environmental benefits for its neighbors.

Sonoma County is outside the population-dense targeted zones for the hydrogen fueling program, but due to local pro-renewable energy sentiment among many of our landowners, Sonoma County could nevertheless be a fertile market for hydrogen vehicles. However, the population density may not support the same level of up-front investment in hydrogen fueling, which is why I would like to propose another project concept: The renewable hydrogen marketplace.

In the Renewable Hydrogen Marketplace concept, we look to the future of renewable energy in California, in which PV and wind installations may exceed the capacity of the distribution grid. The investor-owned utilities have stated in their Distributed Resource Plans that they would like the option to curtail excess solar via remote controls. Curtailed or excess installed renewable energy, instead of going to waste, could be switched to a separate circuit used exclusively to gather electricity for a small, rural- or residential-scale electrolysis-based hydrogen fueling plant. Alternatively, using a Public Utility Code 218 “Over-the-Fence” arrangement, the curtailed renewable energy circuit might gather curtailed electricity from multiple neighbors into a single electrolysis-based hydrogen fueling plant.

Such small fueling plants would be beneficial to the State in increasing the amount of installed PV that can be quickly curtailed, and in finding alternative uses for the power, thus improving the economics of controllable PV for private home owners. But to enable fuel stations too small to meet the minimum requirement of 150 kg of hydrogen per day, those stations might have to be able to start and stop service as neighborhood hydrogen is available. Vehicle owners would need an easy way to find nearby stations open to fuel them. Because private property owners may not be equipped to handle credit cards and other forms of payment and the payment process may involve security risk, the station-finding system would need to incorporate an affordable online payment system, for which many options exist today. They would also need either a streamlined Weights and Measures process that a private station could afford to maintain. That process might include a local contractor

certified by Weights and Measures to calibrate measurement equipment and approve gas purity. It might also include developing personal gas meters which might be incorporated into a hydrogen vehicle's fueling system to verify gas purity and volume. It might also include a feedback mechanism in the mobile marketplace by which customers could combine their awareness of seller quality and quickly alert marketplace managers to quality problems.

The project concept might allow for multiple individual project types:-

- An online mobile marketplace for peer-to-peer hydrogen fueling
- A streamlined system of weights and measures in concert with the County
- An affordable personal handheld or vehicle-attached hydrogen quality meter approved by the County
- A small hydrogen fueling station for a single property
- A multi-property gathering and hydrogen fueling station

Success in developing the marketplace described in this concept would empower private property owners to open vast rural markets in California to hydrogen vehicles with minimal further investment by the State, simultaneously promoting the State's goals of increasing the financial attractiveness of renewable energy installations and reducing greenhouse gas emissions by vehicles. Growth of a peer-to-peer hydrogen marketplace could ultimately lead to a market capable of supporting commercial-scale public hydrogen fueling throughout the lower-density regions of the state. Further, private investment in a peer-to-peer hydrogen marketplace could increase growth in services that gather and transport renewable hydrogen, possibly laying the groundwork for industrial hydrogen transmission as part of California's energy future.

Sustainably Yours

**Craig Wooster**

**Project Manager & General Contractor  
Stone Edge Farm MicoGrid Project  
Sonoma CA**

**Wooster Engineering Specialties**

"Where technology finds purpose"  
CA. and OR. Contractors Licenses  
General Engineering "A"  
General Electrical, C-10

HVAC , C-20  
#917526  
**707-367-0960**

**H2 hydrogen Generators**      **Combined Heat, Power & Cooling**  
**CapStone Micro-Turbines**      **Micro-Grid Development**  
**BUILDING CONTROL SYSTEMS**