

DOCKETED

Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	237414
Document Title:	PG&E comments on proposed research for hydrogen blending
Description:	N/A
Filer:	System
Organization:	PG&E
Submitter Role:	Public
Submission Date:	4/9/2021 4:51:26 PM
Docketed Date:	4/9/2021

*Comment Received From: PG&E
Submitted On: 4/9/2021
Docket Number: 19-ERDD-01*

PG&E comments on proposed research for hydrogen blending

Additional submitted attachment is included below.



Licha Lopez
CEC Liaison
State Agency Relations

1415 L Street, Suite 280
Sacramento, CA 95814
(202)903 4533
Elizabeth.LopezGonzalez@pge.com

April 2, 2021

California Energy Commission
Energy Research and Development Division, Natural Gas Program
Renewable Energy Division
Fuels and Transportation Division
Efficiency Division
(Docket No. 19-ERDD-01)
1516 9th Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company Comments on Scoping Workshop on the Upcoming Solicitation Regarding Pilot test and Demonstration of Hydrogen Blending into Existing California Natural Gas System (Docket No. 19-ERDD-01)

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide feedback on the March 18 workshop on the research initiative on hydrogen blending from the 2020-2021 Natural Gas Research and Development (R&D) Program Budget Plan. PG&E also appreciates the CEC's invitation to present at this workshop.

The CEC's 2020-2021 natural gas R&D program budget plan identified an initiative under natural gas infrastructure safety and integrity titled "Pilot test and demonstration of hydrogen blending into existing California natural gas pipelines." PG&E supports the CEC goal to determine how their funding could facilitate successful technology demonstration projects through the future Grant Funding Opportunity (GFO).

PG&E offers the following responses to some of the questions posed by the CEC at the March 18 workshop:

- *Due to limited funding, should certain applications or scale of demonstration projects be prioritized over others for demonstrating hydrogen blending?*

Under the testimony from California's joint IOUs in chapter four under the preliminary standards for injection of renewable hydrogen into gas pipelines, it was stated that "research indicates that hydrogen-natural gas blends may be compatible now or in the near term (approximately within five years) with portions of existing polyethylene natural gas distribution systems, depending on the types of appurtenances, end user equipment, and varying system conditions. Successful completion of the demonstration projects outlined in chapter three may accelerate the estimated five-year time for hydrogen injection into controlled and isolated portions of the existing natural gas system.

Additional research is warranted to comprehensively evaluate system configurations, components, construction methodologies, and materials of construction to encompass the variety and categories of piping systems for each utility. Several research projects and initiatives are underway around the world, which can help to further study the impact of hydrogen-natural gas blends in the U.S. Department of Transportation defined transmission systems. Multiple international research initiatives are underway to further evaluate and mitigate risks associated with material compatibility, compression, processing, storage, measurement, regulation, and use of hydrogen-natural gas blends at higher pressures where it has been observed that risks may increase. Therefore, the joint utilities recommend prioritizing blending in polyethylene distribution systems and conducting further research on new and existing steel systems in California's natural gas infrastructure."

In short, the transmission system is complex with a lot of knowledge gaps, whereas the distribution system is less complex with some portions of it possibly being already compatible with hydrogen blending. Therefore, it's recommended to focus an initial demonstration on an isolated polyethylene distribution system.

- *What are the key challenges that must be addressed for demonstrating hydrogen blending? How should the technical tasks regarding planning, siting, safety, and measurement verification be approached?*

Key challenges associated with demonstration on a distribution system include the requirement to test and verify all downstream components beforehand that will see hydrogen. This is especially important for our customer appliances. We don't know if all appliances will be compatible with hydrogen blends. If we blend hydrogen into an older section of our system, it is possible that customers would need to replace some appliances. If that's a possibility, implementation would require some sort of phase-in period and financial assistance for these customers. In addition, another challenge is that this demonstration would be considered a new development and need to follow the various standards and regulations associated with that.

- *What are the expected outcomes of these demonstration projects? What are the specific performance metrics that should be measured or compared against to evaluate the viability of blending for the demonstration projects?*

The demonstration should provide data on:

- Efficiency of hydrogen production and utilization of technologies
 - Amount of energy that can be moved or stored
 - Air quality (for example from utilization in customer appliances)
 - Safety & reliability including risks, degradation, and system capacity
 - Economics including impact on rates
 - Scalability to the actual gas system
- *What other considerations or requirements should be incorporated into the future GFO?*

Considerations for future GFOs include collaboration with industry, including within the sectors of the CEC and having a Technical Advisory Committee with a diversity of individuals from the industry.

PG&E appreciates the time and effort that the CEC took to organize the March 18 workshop. PG&E also appreciates the opportunity to comment on the development of these important research initiatives testing and demonstrating hydrogen blending into existing California natural gas system. Please do not hesitate to contact me if you have any questions.

Sincerely,

Licha Lopez