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PG&E Comments on Proposed NG Initiatives FY 20-21

Additional submitted attachment is included below.
January 31, 2020

California Energy Commission
Docket Unit, MS-4
Re: Docket No. 19-ERDD-01
1516 Ninth Street
Sacramento, California 95814-5512

Re: Pacific Gas and Electric Company Comments on Proposed Natural Gas Research Initiatives for Fiscal Year 2020-2021

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to comment in response to the California Energy Commission (CEC) January 21, 2020 Workshop on Proposed Natural Gas Research Initiatives for Fiscal year 2020-2021. PG&E appreciates the CEC’s attention to the need for a strategic plan to guide the future of the natural gas system in California and possess a shared interest in ensuring an equitable, affordable, safe pathway to building decarbonization. PG&E supports the inclusion of hydrogen, renewable natural gas, and biomethane research alongside strategic asset decommissioning, which reflects PG&E’s belief that deep decarbonization in the near- and longer-term will require a suite of approaches and technologies. To that end, PG&E submits the following comments:

Renewable Energy & Advanced Generation

- Emerging Gas Cleanup and Upgrading for Biomethane
  - PG&E recommends including small scale cleanup process solutions for removing hydrogen sulfide, often found in dairies. The smaller scale processes need to be cost competitive. For example, membranes are a promising solution, however, membranes may be poisoned by hydrogen sulfide. Having an upgrading system that can handle hydrogen sulfide directly would be more cost effective and efficient.
- Questions for Stakeholders
  - Consider adding woody biomass, especially forest waste as a source of biomethane thorough gasification and methanation.
  - Consider pairing emerging methods for removal of siloxane with the technology development for an online siloxane analyzer. Specifically, the online analyzer could be installed at an upgrading site as a field test. The data can be compared to traditional methods of siloxane analysis.
  - Geothermal heat pump system should not be included in Natural Gas Research priorities. Developing and demonstrating decarbonization solutions such as hydrogen, biomethane and Renewable Natural Gas should be put first.

Natural Gas Infrastructure Safety & Integrity

- Pilot Test and Demonstration of Hydrogen Blending to the Existing California Natural Gas Infrastructure
  - PG&E is interested in partnering on this initiative. The pilot test could be using a portion of the natural gas system or designing a new system for the test.
• Technologies for Microbiologically Influenced Corrosion Prevention of Natural Gas Pipelines and Storage Facilities
  o The largest gap pertains to our limited understanding of the relationship between Cathodic Protection and Microbiologically Influenced Corrosion. PG&E recommends focusing on this aspect.

• Questions for Stakeholders: Hydrogen Blending
  o Challenges/limitations to demonstrating hydrogen blending in the existing CA natural gas system:
    ▪ Consider a section that could be isolated and controlled so that the data is clear on direct impacts from hydrogen (no outside influences)
    ▪ Consider a sufficiently representative infrastructure in the demonstration (i.e. range of pipeline materials, assets and end user equipment)
    ▪ Consider a control group with duplicate infrastructure and operating conditions with only natural gas
  o Recommendations on Research Approach(es)
    ▪ PG&E recommends a connection with the HyDeploy\(^1\) project in the UK to learn about how the team is implementing their pilot demonstration. The California demonstration may be able to use the same or a similar approach.

**Energy Efficiency**

• Questions for Stakeholders: Hydrogen Blending
  o Consider testing hydrogen blending on CNG engines. Heavy duty trucking is a promising end-use for natural gas going forward and knowing the impact of hydrogen blending on truck engines would be valuable.

**Conclusion**

PG&E continues to support the CEC’s research efforts and appreciates the opportunity to provide feedback on the research priorities for increasing the resilience of the natural gas sector in California.

Sincerely,

/s/

Jessica M Melton

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\(^1\) HyDeploy Hydrogen Energy Project: [https://hydeploy.co.uk/](https://hydeploy.co.uk/)