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Notice of Funding Opportunity

Title: California Energy Commission – Targeted Hydrogen Blending in Existing Gas Network for Decarbonization
Website: https://www.energy.ca.gov/solicitations/2022-01/gfo-21-507-targeted-hydrogen-blending-existing-gas-network-decarbonization
Funding: Total: $5,658,042. Maximum awards: $4M-$5,658,042, depending on technology.
Dates: Pre-Application Workshop: February 11, 2022 at 10AM
Deadline for Written Questions: February 15, 2022
Deadline to Submit Full Applications: April 29, 2022

Summary: The purpose of the solicitation is to fund research that helps to shape and develop the safety practices of blending hydrogen into natural gas pipeline system by identifying the requirements, steps, and procedures involved.

Project Topic Areas:
Group 1: Targeted Hydrogen Blending in Existing Gas Network for Decarbonization
This solicitation will focus on the best candidates in the power and industrial sectors to be decarbonized with blended hydrogen, assess the possibility of repurposing targeted pipelines for various hydrogen blends up to 100 percent, and examine different pipeline upgrade options and associated costs for selected use cases. The research from this solicitation will investigate the impact of hydrogen on pipelines and pipeline components and identify how to de-risk the conversion to hydrogen, ensure that hydrogen can be introduced into segments of the existing pipeline network safely and cost-efficiently, and achieve 100 percent hydrogen conversion in targeted use cases while meeting operational needs and maintaining performance. More specifically, the research will identify potential risks introduced by hydrogen for the proposed applications and use cases; collect data to better understand the condition of existing pipeline assets and to conduct a gap analysis; perform literature search, experimental testing, and field measurements to close the knowledge gap; quantify potential safety risks; update integrity management practices to ensure risks can be managed and controlled; conduct a hydrogen readiness assessment; and develop deployment strategies for pilot demonstrations.

Funding:
There is up to $5,658,042 available for grants awarded under this solicitation. The minimum funding amount for each project is $4,000,000. The maximum funding amount is $5,658,042. Match funding is required in the amount of at least 20% of the requested project funds.

Available Funding	Minimum Award Amount	Maximum Award Amount	Minimum Match Funding (% of Natural Gas Funds Requested)
$5,658,042	$4,000,000	$5,658,042	20%

Project Requirements:
This solicitation will require applicants to work with gas IOUs, gas customers, and other stakeholders and develop competitive applications for blending hydrogen with pipeline gas using the existing gas network within the gas IOU service territories. The project does not require testing or demonstration of hydrogen blending in live pipelines due to the lack of a pipeline hydrogen injection standard in California. Lab testing will be required, simulating conditions as similar to actual operating conditions as possible. The proposed research will focus on pipeline decarbonization for two major energy sectors: power plant and industrial applications. Hydrogen blending up to 100 percent in the power generation sector has the potential to provide dispatchable electricity with low carbon emissions. As the share of the power supply from intermittent renewable sources increases, the need for dispatchable electricity to meet peak demand rises. Additionally, many industrial applications require high temperatures typically achieved through gas combustion and remain difficult to electrify. Hydrogen blending up to 100 percent offers a potential solution for decarbonizing these applications. The gas network, or system, for hydrogen blending in this

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solicitation is defined as connected pipeline components from the hydrogen injection point through existing gas pipelines to the end use facilities.

The proposed research should address at least one use case in the power generation sector and at least one use case in the industrial sector, with the aim to lay the foundation for general applicability and scalability of targeted hydrogen blending for similar applications. The application must include support letters from facility owners or operators of the targeted use cases. There will be no hydrogen blending in the live pipelines of the facilities and no impact on the end-use equipment. However, the participation and support from facility owners or operators are critical to understanding the operational parameters for hydrogen conversion, and help to prepare them towards potential early adopters for hydrogen blending. The proposed research must address to what extent segments of the gas network is feasible for delivery of various hydrogen-methane blends or pure hydrogen, based on analysis of gas system components and specifications of necessary system modifications.

The research must illustrate a comprehensive integrity management approach for the targeted use cases to convert certain segments of the existing gas network for transporting various concentrations of blended hydrogen and pure hydrogen. The research must conduct gap analysis and close the knowledge gap with data and information through literature search, laboratory tests, and measurement of the selected segments of the gas system and components. The project will summarize the potential risks to pipeline safety, develop a strategic experimentation and test program, conduct quantitative risk analysis to evaluate the conversion to hydrogen blending, and identify the changes to existing integrity management practices.

Eligible Applicants:
This solicitation is open to all public and private entities. Demonstration projects in this solicitation must be located in the service territory of a California natural gas Investor Owned Utility (NG IOU), which includes Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Gas Company. All projects in this solicitation must benefit natural gas IOU ratepayers.