DOCKETED	
Docket Number:	16-PIER-01
Project Title:	Natural Gas Program
TN #:	243471
Document Title:	Presentation - Item 10 - Advancing Cost and Efficiency Improvements for Low Carbon Hydrogen Production
Description:	The goal of this solicitation and the projects recommended today is to advance emerging hydrogen production technologies to produce low-carbon hydrogen that achieves cost-competitiveness with fossil-based steam methane reforming pathways. Low-carbon hydrogen displaces the use of fossil gas, and instead relies on biomass feedstock such as biogas, and provide significantly lower carbon intensity compared to conventional fossil-derived hydrogen.
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Organization:	California Energy Commission
Submitter Role:	Commission Staff
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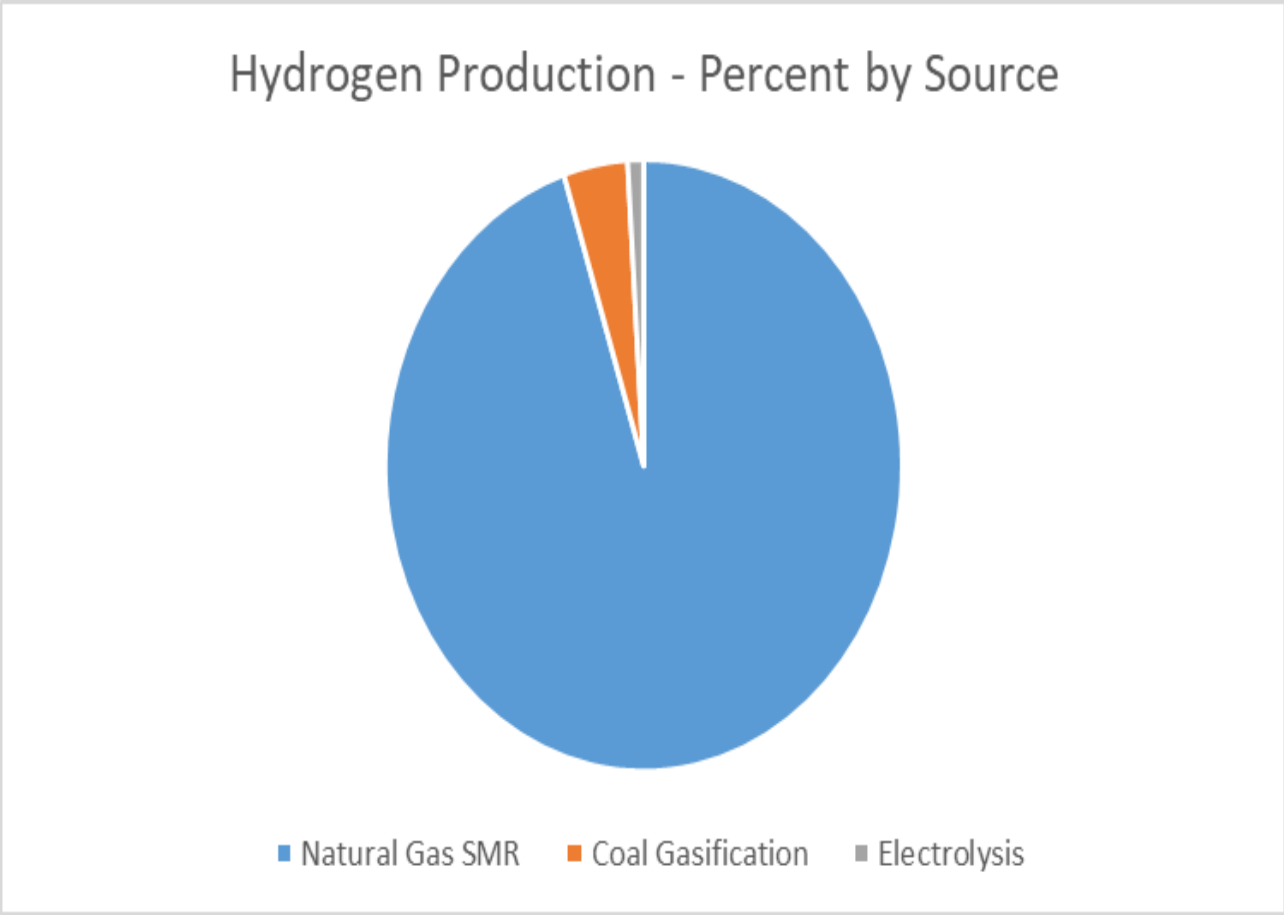
Item 10: Advancing Cost and Efficiency Improvements for Low Carbon Hydrogen Production (GFO-21-502)

June 8, 2022 Business Meeting

Baldomero Lasam, Mechanical Engineer
Energy Research and Development Division
Energy Generation Research Office

Benefits to Californians



Source: U.S. Department of Energy. 2020.

https://www.energy.gov/fecm/downloads/hydrogen-strategy-enabling-low-carbon-economy

- Reduce GHG emissions
- Improve economics and increase adoption
- Inform future deployment strategies

Southern California Gas Company (SoCalGas)

Biogas to Low-Carbon Hydrogen Conversion Project

- Advance catalytic non-thermal plasma reactor
- Simplifies biogas to H2 conversion
- Lower process temperatures compared to SMR
- Scalable approach that reduces GHG and costs

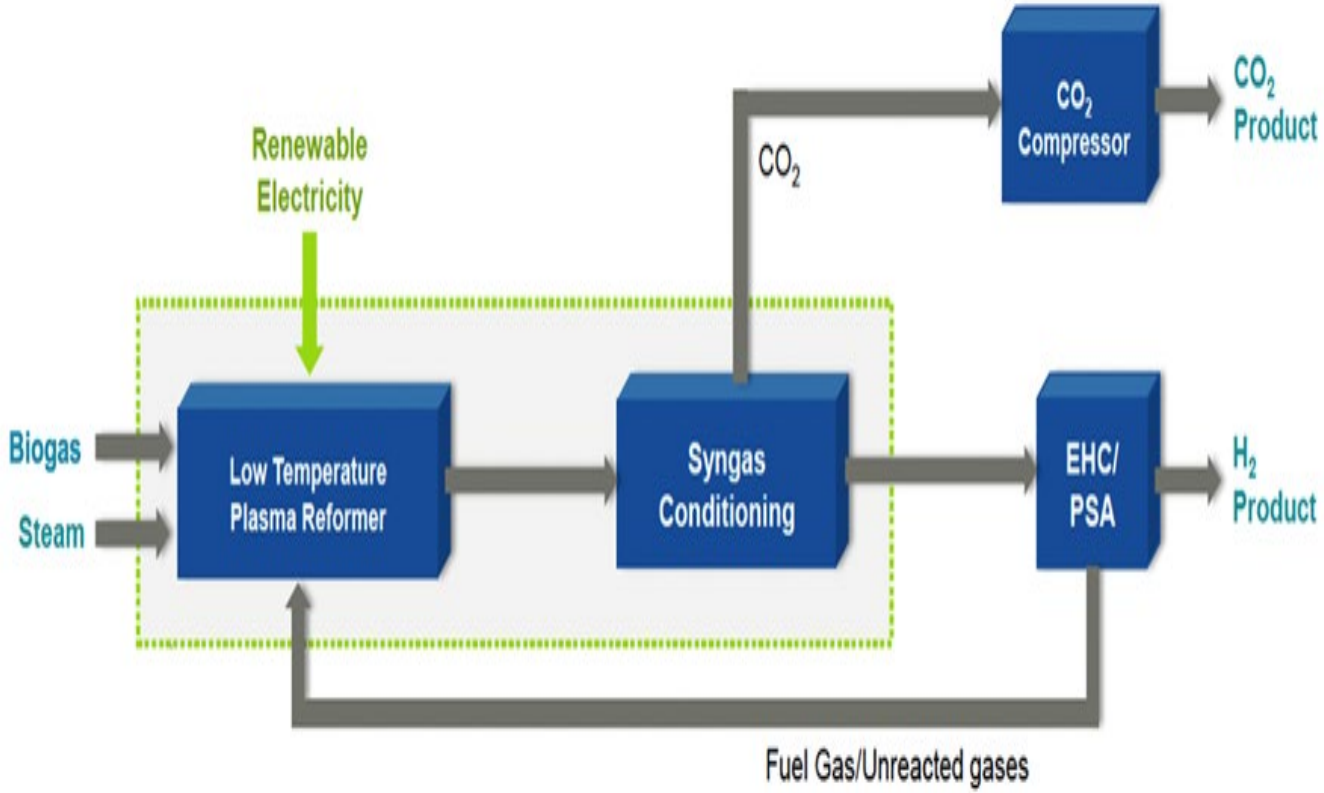


Figure: Catalytic Non-Thermal Plasma Reactor Process

Electro-Active Technologies, Inc.

Low Carbon Hydrogen Conversion through Microbial Electrolysis Process

- Develop bench-scale low carbon H2 production system
- Uses MEC process to convert waste stream into low carbon H2
- High hydrogen purity and reduces GHG emissions
- Reduces electricity, divert food wastes, and produce low carbon H2

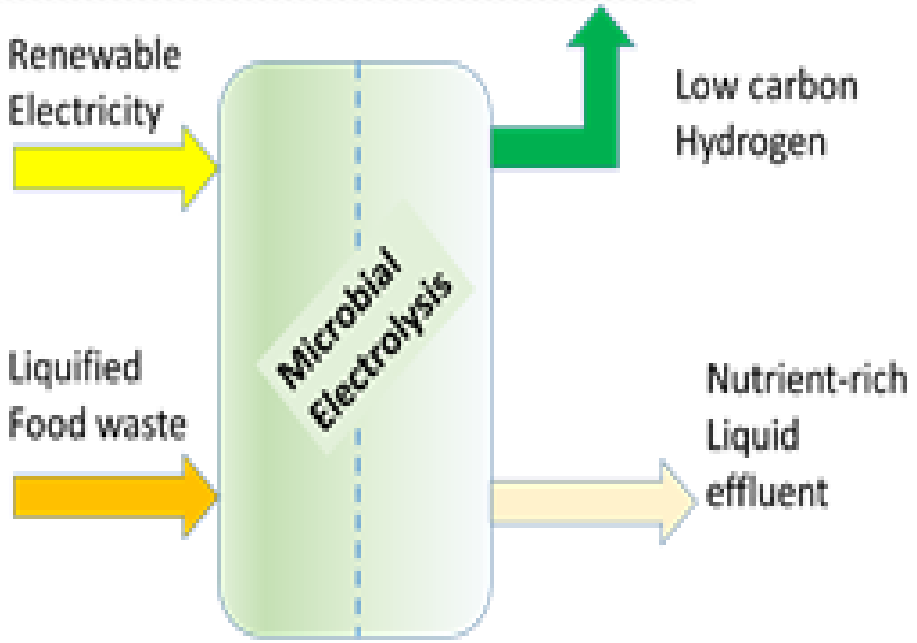


Figure: Microbial Electrolysis Process

Staff Recommendation

- Approve grant agreements
- Adopt staff's determination that projects are exempt from CEQA