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Discussion on Hydrogen Blending

5.20.26

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Background



Commissioner Rechtschaffen introduces discussion to consider standards and protocols for injecting renewable hydrogen into natural gas pipelines within the Biomethane OIR

Phase 4 Scoping Ruling ordered utilities to propose a preliminary injection standard using available technical information

1st Application for Demos

Joint Utilities stated that they did not yet have sufficient information to recommend an injection standard, and instead opted to file A.20-11-004, proposing H2 blending demonstration projects

UCR H2 Blending Impacts Study

UC Riverside Hydrogen Blending Impacts Study was produced, found that hydrogen blends of up to 5% are generally safe

CPUC invites comments on the study, incl. party recommendations for injection standard

Joint Utilities recommended first collecting data from real-world demonstration projects to inform a standard

D.22-12-057 is issued, directing development of blending pilot projects and providing additional guidance for the utilities to incorporate in their demonstrations

2nd Application for Demos

SoCalGas, SDG&E, and SWG file A.22-09-006

2025 H2 Blending Compendium Report

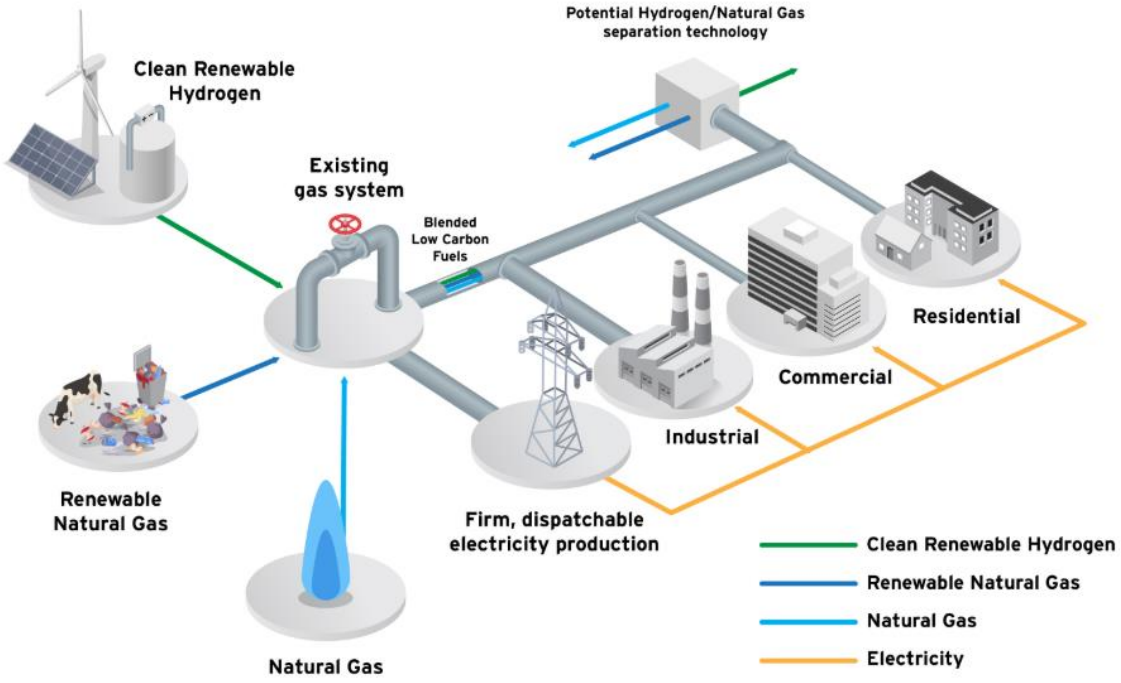
H2 Blending Compendium Report was issued, which included additional technical support for blending in the distribution system up to 5%

Amended Application

Joint Utilities amend A.22-09-006 to be consistent with D.22-12-057, proposing 5 unique demonstration projects (current pending Application)

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Hydrogen Blending Plays an Important Role in the California's Decarbonization Toolkit



- Hydrogen blending (up to approx. 20%) offers an opportunity to leverage the existing gas system and workforce to support the state's decarbonization goals
- The 2022 CARB Scoping Plan calls for blending up to 20% hydrogen by volume (7% by energy) in common carrier pipelines by 2030
  - Blending 20% by volume systemwide could reduce CO2 equivalent to removing ~1.5 million gasoline-powered passenger vehicles from the road

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A.22-09-006 was Amended Based on Guidance from D.22.12.057

7. Within two years from the issuance date of this decision, Pacific Gas and Electric Company, Southwest Gas Corporation, Southern California Gas Company, and San Diego Gas & Electric Company shall file a new application or amend an existing application in an appropriate proceeding proposing pilot to test hydrogen blending in natural gas at concentrations above the existing trigger level, as ordered in this decision, that…

> *7.d: Evaluates hydrogen injection at blends between 0.1 and five percent and five to twenty percent; such evaluations must adhere to approved monitoring, reporting, and long-term impact study in accordance with the approval of the pilot project application, and must include validation programs to confirm performance*

The Proposed Demonstration Projects are Complementary, are Intended to Inform a Future H2 Injection Standard, & are Designed to Comply with Requirements of D.22-12-057

Utility	Pilot Location	Pipeline Makeup	Blend %	End Use	Unique Attributes	Cost
SoCalGas	UC Irvine	Distribution, Mixed (Steel & Plastic)	5-20%	Anteater Recreation Center	Isolated pipeline system, Coastal climate, Mixed Material	~$26 Million
SoCalGas	City of Orange Cove	Distribution, Mixed (Steel & Plastic)	0.1-5%	Residential & Commercial	Simulate blending to broader distribution system in a controlled area, Mediterranean Climate, Mixed Material	~$54 Million
SDG&E	SDG&E's Kearny Mesa Facility	Distribution, Polyethylene plastic (PE)	5-20%	Fuel Cell System	Isolated pipeline system, Moderate Climate, PE Pipe	~$13.8 Million
Southwest Gas	Truckee, CA	Distribution, Polyethylene plastic (PE)	5-20%	Select End Users in Truckee	Isolated pipeline system, High elevation and extreme cold conditions, PE Pipe	~$10.2 Million
PG&E	Lodi, CA	Transmission, Steel	5-20%	N/A	Isolated transmission level blending	~$94 Million

Advances Since D.22-12-057: Global and Domestic Research, Demonstration, and Deployment of Hydrogen Blending Show Significant Technical Support of 5% Blends

- 2025 Hydrogen Blending Compendium Report (Technical Literature Review Prepared by UC Riverside):
  - Continues the work of the 2022 UC Riverside Hydrogen Blending Impacts Study
  - Evaluated the data available since their last study, they found that at a 5% blend:
    - Common appliances showcased compatibility
    - Current odorant standards remain effective
    - Hydrogen gas mixed with natural gas does not preferentially leak
- CSA Group recognizes acceptability of natural gas containing 5% hydrogen blend
- Utilities have performed hydrogen blending in live distribution systems across North America
- Several jurisdictions have adopted blending limits for their gas systems:

Country	Blending Limit	Adoption Year
New Zealand	10%	2025
Australia	10%	2025
Austria	10%	2023
Spain	5%	2024
U.S. – Oregon*	2.5%	2025

**Sets notification requirements at 2.5%. Actual blend limits may be higher*

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Proposal to Modify D.22-12-057 (Filed 2.3.2026)

- In light of developments since D.22-12-057, SDG&E, SoCalGas, and Southwest Gas seek to provide the Commission with an option that supports affordability and recommend a simple modification to the Decision to eliminate the requirement to demonstrate 0.1 – 5% blends.
- Proposed Decision modification shown below:

Dicta

Modify Section 3.2.4.2 (p. 27):

> Consistent with the UC Riverside Study, we find that pilot projects should be used to evaluate hydrogen injection at blends ~~**between 0.1 and five percent, and**~~ between five and twenty percent, as further specified in this decision. Any proposed pilot project should be designed to avoid hydrogen from reaching natural gas storage areas and electrical switching equipment directly or through leakage. Real-world pilot projects should be performed in either a closed system or in a mock-up of a real-world system using typical equipment and materials found in California gas infrastructure. Additionally, the pilot projects must be designed to evaluate whether hydrogen blending will pose minimal risk to distribution and transmission pipeline integrity and whether blending fuel use will result in end user appliance malfunctions. Pilot projects should focus on ensuring long-term safety of the California pipeline, hydrogen leakage, and hydrogen monitoring, as well as the dilution rate and other mechanical characteristics of hydrogen blends in the natural gas pipeline stream.

Conclusions of Law ("COL")

Modify COL 9 as follows:

> Proposed pilot projects should aim to evaluate hydrogen injection at blends between ~~**0.1 and five percent, and between**~~ five and twenty percent, as further specified in this decision.

Ordering Paragraphs ("OP")

Modify OP 7.d[59]:

> d. Evaluates hydrogen injection at blends between ~~**0.1 and five percent and**~~ five to twenty percent; such evaluations must adhere to approved monitoring, reporting, and long-term impact study in accordance with the approval of the pilot project application, and must include validation programs to confirm performance;

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More Details on the Petition for Modification

What the PFM Does:

- Removes the requirement to demonstrate blending up to 5% in the distribution system
- Creates a pathway for utilities to develop a proposal for a modest hydrogen blending standard (5% or lower) in the distribution system without first completing a demonstration

The PFM Does NOT:

- Set an injection standard or blending requirement
- Set parameters of any future potential injection standard
- Cancel the proposed demonstration in Orange Cove
- Limit other proposed demonstrations from blending 0.1 – 20%

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The Commission Has the Option to Grant the PFM and Approve All Demonstration Projects

SoCalGas's Projects Meet the Requirements of D.22-12-057 and are Designed to Build Technical and Operational Knowledge

SoCalGas's Projects will:

- Use clean renewable hydrogen
- Take place in controlled systems representative of the California distribution system
- Include a data collection plan includes appliance and leak testing
- Build knowledge on system operations in California-specific conditions

SoCalGas's Projects Continue to Keep Health and Safety at the Forefront

- Projects build upon extensive research and demonstration in areas including pipeline materials and appliance compatibility
- Once approved, demonstrations will undergo 3rd party safety reviews and independent data collection plan
- Design will follow existing NFPA codes and standards
- Plans include safety measures before, during, and after

SoCalGas is Committed to Ongoing, Robust Stakeholder Engagement at Each SoCalGas Project Location

- Examples of UCI Engagement: Governance structure established (student advisory committee and administrative advisory committee), ongoing briefings with first responders and UCI leadership
- Examples of Orange Cove Engagement: City council meetings, town hall style meetings, bilingual door-to-door outreach, community leader briefings, tours of SoCalGas's H2 Innovation Experience

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