MEMORANDUM OF UNDERSTANDING

By and Between

UNIVERSITY OF CALIFORNIA SAN DIEGO ("UCSD")
and
SAN DIEGO GAS & ELECTRIC COMPANY ("SDG&E")

RECITALS

WHEREAS University of California San Diego is an internationally recognized leading public research university;

WHEREAS UCSD CAMPUS is a "living laboratory" incubating numerous clean energy initiatives and technologies that contribute to future decarbonized energy systems;

WHEREAS clean hydrogen is a promising carbon-free fuel that will be critical to supporting California's clean energy transition on the electric and natural gas systems;

WHEREAS the California Public Utilities Commission ("CPUC") has asked investor-owned gas utilities including SDG&E to inform on a safe hydrogen injection and blending standard for California's natural gas pipeline system;

WHEREAS SDG&E seeks to demonstrate safe hydrogen injection and blending in a polyethylene distribution system with domestic gas-powered equipment before informing on a standard;

NOW, THEREFORE, UCSD and SDG&E enter into this non-binding memorandum of understanding ("MOU") effective as of August 19, 2022.

I. PURPOSE

UCSD and SDGE enter into this non-binding memorandum of understanding ("MOU") to collaborate on a proposed multi-year pilot demonstration program to inject and blend hydrogen in the natural gas distribution system on a portion of the One Miramar Street Apartments on UCSD's campus as further described in Exhibit A attached hereto (the "Project"). This non-binding MOU summarizes principal terms of a proposed collaboration to be set forth in a future, definitive joint demonstration agreement (the "Joint Demonstration Agreement").

This proposed Project is part of a joint investor-owned gas utility CPUC application to study the impacts of hydrogen on California's natural gas infrastructure. Research is intended to be developed between gas utilities and University of California (UC) system

campuses, including UCSD, UC Irvine, and potentially others. The Project requires and is dependent upon approval by the CPUC.

II. GENERAL CONSIDERATIONS:

1. This MOU does not supersede other existing agreements and/or memorandums of understanding between either of the parties.
2. Each party will retain its primary responsibility for meeting all legal and regulatory requirements pertaining to it and its property.
3. Participation in any phase of the MOU is voluntary. Nothing contained in this MOU shall obligate any party to continue participating in any phase of the MOU and any party may terminate its participation in any phase of the MOU at any time for any reason or no reason.
4. This MOU is not a contract but merely a non-binding memorandum of the understanding of the parties to coordinate their efforts with respect to establishing the basis for the proposed Project. Neither party shall be bound with respect to any of the matters set forth in this MOU. This MOU does not create a partnership, joint venture or relationship of trust or agency between SDG&E and UCSD. Neither party shall be authorized to act on behalf of the other party, or to make representations or commitments of any kind on behalf of the other party.
5. Amendments to this MOU may be made by notification of the proposed changes to the other party and will become effective upon execution by both parties, which may occur in counterparts.
6. This MOU may be terminated by delivering written notice to the other party, effective thirty (30) calendar days following the date of delivery of such written notification.
7. This MOU shall be included as an Exhibit in SDG&E's testimony to the CPUC.

III. THE PARTIES SHALL ENDEAVOR TO:

1. Collaborate to establish Project plan and terms and conditions, including construction, siting, deployment, and removal of associated equipment and utilities and reasonable timelines;
2. Collaborate to determine communications, education, safety, and fire safety protocols with campus staff and residents who may be affected by the Project, including residents at One Miramar Street Apartments;
3. Seek to find research collaboration areas to support student and faculty research.

IV. SDG&E SHALL ENDEAVOR TO:

1. Add state-of-the-art polyethylene pipe beginning at the relevant portion of the USCD gas system to the hydrogen blending skid where blended gas is introduced to the UCSD gas distribution system.
2. Ensure that project adheres to the applicable code level for noise in a sensitive area;
3. Manage construction, procurement and temporary siting on campus of related hydrogen equipment, additional meters, fencing, and an electrolyzer and blending skid;

4. Test hydrogen injection and blending on the system in increments from 0% to 20% by volume over the course of the Project;
5. Remove certain Project equipment following the end of the Project;
6. Provide customer services to support the UCSD community throughout the duration of the program; and
7. Seek rate recovery for the Project from the CPUC.

V. UCSD SHALL ENDEAVOR TO:

1. Provide easements (and/or temporary license) and site access sufficient to install, operate, maintain and remove the Project equipment;
2. Provide facility access to test end use equipment as necessary for both common areas and in-unit, within reason;
3. Provide access to test and verify system performance
4. Encourage faculty and student engagement to further the achievement of Project goals, for example in the areas of environmental engineering, behavioral sciences, and environmental education, among others.

VI. MISCELLANEOUS:

This non-binding MOU is not a contract or an agreement for a contract, but an expression of the intention of the parties to negotiate toward a binding and definitive Joint Demonstration Agreement and such other transaction documents based on the understandings contained herein and such additional or different terms as may be mutually acceptable to the parties. Neither party shall have any obligation to commence or continue negotiations and may terminate negotiations at any time for any reason or no reason whatsoever. Neither of the parties shall be bound with respect to any of the matters set forth in this MOU, except to the extent such matters are contained in separate binding and definitive transaction documents executed by both parties. Any such definitive transaction documents will contain usual and customary provisions for transactions of the types contemplated therein with due regard for applicable tax, financial and regulatory requirements.

IN WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the last date written below:

UNIVERSITY OF CALIFORNIA SAN DIEGO

By Gary C. Matthews Date 8/18/2022
Title: Vice Chancellor, Resource Management and Planning, UCSD

and

SAN DIEGO GAS & ELECTRIC COMPANY

By Miguel Romero Date 8/19/2022
Title: Vice President, Energy Innovation, SDG&E

EXHIBIT A

The purpose of the San Diego Gas & Electric Hydrogen Blending and Injection demonstration "Project" on the University of California San Diego campus is to specifically provide operational, live blending data for blending up to 20% hydrogen gas by volume in an isolated portion of a polyethylene pipeline distribution medium pressure natural gas system. The Project will inform the feasibility of developing a state-wide hydrogen blending standard for polyethylene pipe gas distribution systems that serve existing customers and equipment in the State of California.

The Project will be located at UCSD's main campus at the One Miramar Street Apartments , 1 Miramar St., La Jolla, CA 92092. The Project goal is to safely blend hydrogen into an isolated section of the medium pressure natural gas distribution pipeline system supplying four buildings approximately 403 housing units and common spaces. New meters will be installed to test the integrity of the meter and verify the volume and flow of blended gas. The pipe will be new, state of the art polyethylene pipe. The Project will begin by observing 100% natural gas in the new pipeline system. Once that baseline is established, SDG&E plans to blend and inject hydrogen into the system, starting at 5% hydrogen by volume and up to 20% by volume over time. The blend volume will be gradually increased based on safety and technical feasibility validated with testing throughout the project duration, including evaluating key impacts on safety, odorant, pipes, valves, meters, and unmodified common appliances that will receive the blended gas, such as hydronic heating boilers, domestic water heaters, dryers.

The project will be divided into four chronological phases. The Phases are briefly summarized in the table below; certain phases overlap. Decommissioning, equipment removal, and site restoration is anticipated to complete in Q3 2026. Timing and duration of the project phases are estimated and subject to change.

PHASE & ACTIVITY	DESCRIPTION	DURATION
1. Planning, Design, Construction and Commissioning	Hydrogen production and blending equipment is procured; system is designed, constructed, permitted, and commissioned on campus; PE pipe and meters installed, inspections and any necessary remediation are conducted; stakeholder engagement commences.	18 months
2. Testing and Demonstration	Hydrogen is blended in system on a testing schedule; data is collected; periodic inspection of equipment and pipelines; samples of pipelines and components are collected.	24 months (18 months live blending, + 6 months asset inspection & validation)
3. Decommissioning & Equipment Removal, and System Restoration	Hydrogen equipment is removed from campus and campus restored.	5 months
4. Knowledge Sharing	Data from pilot is interpreted and disseminated; a public report will be released.	9 months

Figures 1 and 2 show the Project site layout and plot plan for the proposed blending site on the UCSD campus.

Figure 1: SDG&E Hydrogen Blending Demonstration Site Layout on UCSD campus

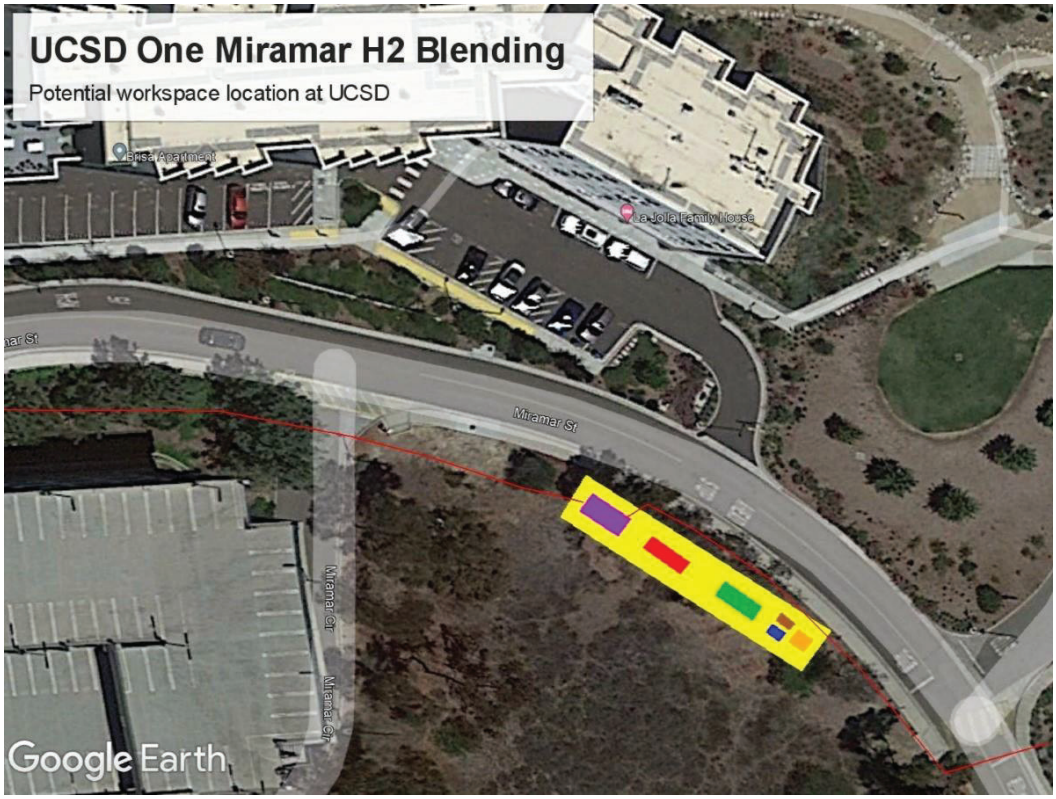

Figure 2: Preliminary project Plot Plan of Major Hydrogen Equipment at One Miramar, UCSD Campus