Docket		A.25-12-009
Exhibit Number	:	
Commissioner	:	Christine Harada
Admin. Law Judge	:	Camille Watts-Zagha
Public Advocates	:	
Project Mgr.	:	Christopher Myers
Public Advocates	:	Thomas Gariffo
Witnesses		Kayla Lutes

PUBLIC ADVOCATES OFFICE
CALIFORNIA PUBLIC UTILITIES COMMISSION

TESTIMONY
ON
SAN DIEGO GAS AND ELECTRIC COMPANY'S APPLICATION FOR THE PALOMAR DECARBONIZATION DEMONSTRATION PROJECT

San Francisco, California
August 21, 2026

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I. INTRODUCTION

This testimony presents the analysis of the Public Advocates Office at the California Public Utilities Commission (Cal Advocates) concerning the *Application of San Diego Gas & Electric Company for Approval of Palomar Decarbonization Demonstration Project* (Application) filed on December 16, 2025.[1] San Diego Gas & Electric Company (SDG&E) requests that the California Public Utilities Commission (Commission) approve the Palomar Decarbonization Demonstration Project (Project) and associated cost recovery.[2] SDG&E describes the Project as an "integrated hydrogen system at Palomar Energy Center (PEC), which consists of onsite hydrogen production, storage, blending into turbines, and fueling of hydrogen vehicles."[3] The Project is the same project that SDG&E requested in its 2024 Test Year General Rate Case (GRC) Application (A.22-05-016), which the Commission denied.[4] SDG&E files this Application because the Commission allowed SDG&E to pursue building the Project through a stand-alone application.[5] Cal Advocates recommends the Commission deny all cost recovery associated with the Project.

II. BACKGROUND

In its 2024 Test Year GRC Application, SDG&E, in part, requested that the Commission approve the Palomar Hydrogen Systems project.[6] There, SDG&E requested $17.502 million in capital expenditures in the years 2021-2024 for the Palomar Hydrogen

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[1] Application (A.) 25-12-009, *Application of San Diego Gas & Electric Company* (U 902 E) *for Approval of Palomar Decarbonization Demonstration Project* (Application), December 16, 2025.

[2] Application at 1.

[3] Application at 1, internal citation omitted.

[4] Decision (D.) 24-12-074, *Decision Addressing the 2024 Test Year General Rate Cases of Southern California Gas Company and San Diego Gas & Electric Company*, December 19, 2024, at 404; in A.22-05-014 *et al*.

[5] D.24-12-074 at 404.

[6] Exhibit (Exh.) SDG&E-15-R, Revised Prepared Direct Testimony of Fernando Valero (Clean Energy Innovations), served August 2022, at FV-31:9 to FV-32:25; in A.22-05-016.

Systems project.[7] SDG&E described the Palomar Hydrogen Systems project, in part, as follows:

> Hydrogen will be produced onsite at the Palomar Energy Center via electrolysis powered by renewable energy. This electrolytic hydrogen will be available for multiple onsite applications, including power generation, generator cooling, and as a clean transportation fuel. The hydrogen production system at Palomar includes a dedicated solar PV system to provide renewable sourced electricity to a hydrogen electrolyzer. A dedicated SDG&E fleet [Hydrogen Fueled Electric Vehicle] HFEV fueling pump will also be located at Palomar to fuel light-duty HFEVs used by plant operation personnel to visit remote generation sites managed out of Palomar, including SDG&E's numerous remote battery installations and microgrids.[8]

In D.24-12-074, the Commission denied SDG&E's request for the Palomar Hydrogen Systems project.[9] However, the Commission stated that "SDG&E may pursue building the hydrogen system at the Palomar Energy Center as a stand-alone application with more robust information, leveraging public funding sources and lowering ratepayer costs."[10]

SDG&E states that its Application is consistent with the Commission's permission for SDG&E to pursue building the hydrogen system at PEC in a stand-alone application.[11] SDG&E confirms that the Project requested in the Application is the same project as the Palomar Hydrogen Systems project requested in its 2024 Test Year General Rate Case application.[12] SDG&E seeks a total of $20 million in capital expenditures and operations and maintenance costs for the 2021-2024 period, as well as from 2025 through

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[7] Exh. SDG&E-14, Prepared Direct Testimony of Daniel S. Baerman (Electric Generation), served August 2022, Table DSB-5 (Capital Expenditures Summary of Costs) at DSB-15; in A.22-05-016.

[8] Exh. SDG&E-15-R at FV-32:3-10, internal citation omitted.

[9] D.24-12-074 at 404.

[10] D.24-12-074 at 404.

[11] Application at 4.

[12] Application at 2.

2036.[13] SDG&E's forecasted revenue requirement associated with the Project is $31.1 million.[14]

III. DISCUSSION

A. SDG&E Fails to Demonstrate the Value of Project Components for Ratepayers

SDG&E requests recovery of approximately $17.4 million in capital costs and future O&M expenses associated with the Project.[15] Components of the Project include, but are not limited to, the following: hydrogen storage system, electrolyzer, hydrogen compression system, hydrogen dispensing equipment, and fueling station.[16] The Commission should deny recovery of all costs associated with the Project.

In D.24-12-074, the Commission directed SDG&E to file a standalone application containing sufficient evidence to evaluate whether the Project's costs are justified by corresponding benefits to ratepayers.[17] However, in this Application, SDG&E merely describes the Project's equipment and its intended functions, rather than demonstrating the value of the project or the incremental value of each major project component. While SDG&E describes how the equipment operates, it fails to demonstrate how the Project serves the public interest, and therefore fails to demonstrate that it is reasonable for ratepayers to bear the costs of constructing and operating the Project.

SDG&E does not provide capital or O&M costs for the individual project components. Through discovery, SDG&E provides only aggregate capital and O&M costs for the Project and does not identify the costs associated with individual Project components.[18] SDG&E also attributes different operational purposes and public benefits

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[13] Application at 2.

[14] Application at 12.

[15] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-23, PK_KC-2.

[16] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts, Figure 2: Major Equipment at Palomar Energy Center, at PK_KC-5.

[17] D.24-12-074 at 394.

[18] SDG&E Response to DR 2, Question 3, at Attachments Final WP 1-Capital Costs, Final WP 2 – O&M Costs.

to different components of the Project, but requests recovery based on aggregate project costs. As a result, the information provided by SDG&E does not permit a meaningful comparison of the costs and benefits of individual Project components, such as the electrolyzer, compressor, storage, and fueling station. Without an allocation of costs by component, SDG&E fails to demonstrate that the benefits of each component justify the costs proposed for recovery. Thus, the Commission should deny all costs related to the Project.

1. The Project is Not in the Public Interest

The Commission should not approve SDG&E's request to recover the $31.1 million in costs. In D.24-12-074, the Commission denied SDG&E's cost recovery request for the Palomar Hydrogen system due to insufficient "evidentiary support on the projects full impact on ratepayers, including the true cost and scalability, and the limited learning opportunity due to the small scale of the pilot."[19] However, the Commission afforded SDG&E the opportunity to pursue the Project through a stand-alone application "with more robust information, leveraging public funding sources and lowering ratepayer costs."[20] In this proceeding, the Commission, in part, now also asks how the Project serves the public interest by generating data that is unique and necessary to inform California's pursuit of hydrogen as a clean energy resource strategy.[21] SDG&E does not provide evidence that the Project will provide information that is unique and necessary to further California's clean energy resource strategy. Therefore, SDG&E fails to demonstrate that it is reasonable for ratepayers to fund the Project.

SDG&E does not demonstrate that the Project yields unique information that would not arise from outside research and demonstrations. The Project does not specifically test novel technologies or industrial process. Rather, it co-locates several

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[19] D.24-12-074, Finding of Fact 145, at 985.

[20] D.24-12-074 at 404.

[21] Scoping Ruling at 4: "How does the Project serve the public interest? Is the Project designed to produce operational, safety, emissions, decarbonization, environmental, cost, and/or scalability information that is (a) unique from other research and pilots on this topic and (b) needed to evaluate whether renewable hydrogen can contribute to California's clean energy resource strategy?."

elements of electrolytic hydrogen production, compression, and storage at PEC in support of an existing 588 megawatt (MW) combined cycle gas turbine power generation plant that "has always required hydrogen for generator cooling."[22]

SDG&E claims that "[t]he testimony provided herewith documents extensive learnings – from integration engineering to combustion behavior to safety protocols – that can only be obtained by doing."[23] SDG&E argues that $31.1 million in ratepayer funding is necessary to experience "real-world operation in a California combined-cycle plant, under California permitting, safety, workforce and grid conditions."[24] However, SDG&E fails to demonstrate that these "learnings" will expand California's knowledge base or capability to decarbonize its energy needs, rather than unnecessarily duplicating work by other entities.

SDG&E asserts that the Project provides distinct areas of knowledge, yet the majority of these areas are not exclusive to California or SDG&E's service territory. SDG&E lists the following twelve categories of learning supported by the Project:

1. Engineering;
2. System design;
3. Codes and standards;
4. Controls Integration;
5. Valves;
6. Piping;
7. Venting;
8. Safety requirements;
9. Material specifications;
10. Metering;
11. Performance data; and

[22] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-3.

[23] Application at 5.

[24] Application at 5.

12. Best practices.[25]

Eight out of twelve of the above categories—engineering, codes and standards, valves, piping, venting, safety requirements, material specifications, and metering—represent general fields that are not innovative or novel to entities that already have experience working with hydrogen. In discovery, SDG&E acknowledges that the Project's "design was accomplished by consulting the third-party design and engineering firms where space constraints, operational constraints of power plant, major equipment upgrades considerations and storage configuration were part of the design process."[26] Further, O&M costs for the Project include equipment service contracts to "cover long-term service agreements for the electrolyzer, storage tanks, the fueling station module, and the fueling dispenser. These agreements enable the equipment to be properly maintained by their vendors."[27] These third-party engineers and vendors already possess the operational knowledge that SDG&E seeks to learn with the Project. As such, the Project will not generate new information in these areas that would otherwise be unavailable to promote public interest or California's energy goals.

The Project has potential to generate information regarding hydrogen blending at 2-5%, but SDG&E still fails to demonstrate why this information cannot be obtained from other sources. In demonstrating that the Project could potentially blend up to 5% hydrogen, SDG&E cites to another gas turbine of the same model in Hannibal, Ohio that has blended hydrogen since April of 2022.[28] SDG&E also cites an Environmental Protection Agency technical support document, which reports that the Los Angeles Department of Water and Power (LADWP) plans "to convert its 297-MW Scattergood Generating Station to a 346-MW combined cycle turbine capable of co-firing at least 30

[25] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-20 to PK_KC-22.

[26] SDG&E Response to DR 03, Question 3, at 3.

[27] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at Attachment B WP2-2.

[28] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-10.

percent by volume low-GHG hydrogen" by late 2029."[29] As such, the Project will not produce research that is unique to hydrogen blending in a gas turbine.

Finally, the Project does not appear to prioritize data gathering, which makes obtaining any unique or novel information all the more unlikely. Although the Project was designed in 2021 and has operated since 2024, SDG&E is still "collaborating with faculty at the University of California Irvine Combustion Laboratory to develop a data collection framework."[30] SDG&E also states that it does not currently meter several data points, including hydrogen used for cooling[31] and hydrogen leakage,[32] as well as the water consumption volume[33] and total power consumption[34] of the electrolyzer.

For these reasons, SDG&E has not demonstrated that the Project serves the public interest.

2. SDG&E does not demonstrate the reasonableness of the electrolyzer.

SDG&E requests recovery of costs associated with a proton exchange membrane (PEM) electrolyzer to produce hydrogen onsite.[35] SDG&E did not specify the capital or O&M costs associated with the electrolyzer, yet it is the principal component of the Project and represents the foundation upon which the remaining hydrogen infrastructure depends. Although SDG&E provides a detailed technical description of the electrolyzer

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[29] U.S. Environmental Protection Agency, Hydrogen in Combustion Turbine Electric Generating Units Technical Support Document (May 23, 2023) at 8. Accessible at: https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf

[30] As of December 2025. See Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-22.

[31] SDG&E Response to DR 01, Question 20, at 12.

[32] SDG&E Response to DR 01, Question 22, at 13.

[33] SDG&E Response to DR 01, Question 2h, at 3.

[34] SDG&E Response to DR 01, Question 2c, at 2-3.

[35] The electroylzer is a system that uses electricity to split water into hydrogen and oxygen through a process called electrolysis. Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-7.

and its operation,[36] it fails to demonstrate that onsite hydrogen production provides incremental benefits sufficient to justify the investment.

Prior to the Project, PEC obtained hydrogen for generator cooling through commercial suppliers.[37] Cal Advocates asked SDG&E to quantify and compare the costs associated with using hydrogen for generator cooling at PEC versus alternative cooling supply options, including continued procurement of trucked-in hydrogen.[38] SDG&E responded that the requested comparison "does not currently exist" and would require SDG&E to generate new analyses and studies.[39] SDG&E has not conducted the analysis necessary to determine whether replacing commercially supplied hydrogen with onsite hydrogen production represents a reasonable or cost-effective investment, and therefore SDG&E fails to demonstrate that constructing an onsite hydrogen production system is a prudent and reasonable investment for ratepayers.

Similarly, SDG&E provides no analysis demonstrating that onsite production improves plant reliability, reduces long-term operating costs, or otherwise provides measurable benefits that outweigh the significant capital investment required to install the electrolyzer. According to SDG&E, the Project provides operational experience with gas turbine combustion, heat rate impacts, emissions monitoring, and utility-scale power plant operations.[40] SDG&E does not demonstrate that the knowledge obtained from operating a single 1.25 MW electrolyzer at one combined-cycle generating station will materially advance California's clean energy strategy.

Furthermore, the only distinctive attribute that SDG&E identifies is that the Project is the first of its kind because it co-locates hydrogen production, storage, and multiple hydrogen end uses at a commercial-scale combined-cycle generating facility.[41]

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[36] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-7.

[37] Application at 3.

[38] SDG&E Response to DR 3, Question 8, at 9.

[39] SDG&E Response to DR 3, Question 8, at 9.

[40] SDG&E Response to DR 3, Question 2, at 2.

[41] SDG&E Response to DR 3, Question 2, at 2.

While co-location may distinguish the Project from other hydrogen demonstrations, SDG&E does not demonstrate that co-location itself provides measurable benefits to ratepayers. The fact that the Project is the first to combine multiple hydrogen applications at one site does not, by itself, establish that ratepayers should fund the Project. SDG&E does not demonstrate that locating hydrogen production and multiple use cases at a single site generates information that could not reasonably be obtained through less costly or more targeted demonstrations or through capitalizing on information produced from projects conducted by other entities. Accordingly, the Commission should deny recovery of all capital and operation and maintenance costs associated with the electrolyzer.

3. SDG&E does not demonstrate the reasonableness of the hydrogen storage system.

SDG&E requests recovery of costs associated with a hydrogen storage system consisting of ten American Society of Mechanical Engineers (ASME)-certified pressure vessels.[42] According to SDG&E, the storage system is capable of maintaining approximately six hours of operation at a 2% hydrogen blend.[43] Although hydrogen storage is an operational component of the Project, SDG&E does not demonstrate that the size, configuration, or capabilities of the storage system provide benefits to ratepayers sufficient to justify recovery of its costs. SDG&E also did not specify what capital or O&M costs were associated with the storage system.

SDG&E states that generator cooling requires approximately 1.8 kilograms of hydrogen per day during normal operations, with approximately 60 kilograms required following plant outages to refill the cooling system.[44] By comparison, the storage system holds approximately 250 kilograms of hydrogen.[45] This suggests that the storage system is substantially larger than what is necessary to satisfy the facility's existing operational

[42] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-9.

[43] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-9.

[44] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-9.

[45] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-4.

need for generator cooling. This indicates that the storage system was designed principally to facilitate the demonstration of hydrogen blending rather than to satisfy an existing operational requirement. However, SDG&E fails to show that using the storage for hydrogen blending is reasonable. SDG&E does not quantify how much additional public benefit is achieved by storing hydrogen for blending compared to maintaining only the amount necessary for generator cooling. Furthermore, the Project offers no additional insight towards hydrogen blending that cannot be learned at existing hydrogen blending facilities.[46] Without demonstrating any incremental benefit that could be achieved through the extra storage capability, SDG&E fails to establish that the incremental investment is reasonable.

Additionally, SDG&E states that increasing hydrogen blending beyond 2% would require additional storage capacity and potentially additional turbine modifications, which implies the need for additional capital investment.[47] Consequently, SDG&E does not show how information derived from a storage system of this scale materially advances the Commission's understanding of commercial-scale hydrogen deployment or provides benefits commensurate with the costs borne by ratepayers. Although SDG&E characterizes the Project as a demonstration intended to inform future hydrogen deployment,[48] it does not explain how operating a storage system capable of supporting only a limited-duration, 2% hydrogen blend provides insights sufficient to justify the substantial capital investment requested from ratepayers. Accordingly, the Commission should deny recovery of all capital and operation and maintenance costs associated with the hydrogen storage system.

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[46] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-10. U.S. Environmental Protection Agency, Hydrogen in Combustion Turbine Electric Generating Units Technical Support Document (May 23, 2023) at 8. Accessible at: https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf.

[47] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-10.

[48] Application at 7.

4. SDG&E does not demonstrate the reasonableness of the hydrogen compressor.

SDG&E requests recovery of costs associated with a two-stage diaphragm hydrogen compressor that increases hydrogen pressure from approximately 30 bar at the electrolyzer to 450 bar for storage.[49] Although hydrogen compression is necessary to operate SDG&E's chosen system configuration, SDG&E fails to show that the Project serves the public interest, and therefore fails to show that the compression system is necessary. The compressor's value is entirely dependent on the reasonableness of the other Project uses it supports, as it does not provide an independent public benefit. Further, SDG&E did not specify the capital or O&M costs associated with the compressor. Because SDG&E fails to demonstrate the value of the electrolyzer and the hydrogen storage system SDG&E fails to demonstrate that the compressor, which merely enables those Project components to operate, provides an independent public benefit or otherwise represents a just and reasonable investment.

SDG&E does not identify a specific knowledge gap concerning hydrogen compression that could be uniquely addressed by PEC or is otherwise unavailable through vendors or existing hydrogen facilities. SDG&E also does not explain how experience operating one compressor at one site is sufficiently transferable to future commercial-scale hydrogen projects to justify the cost imposed on ratepayers. Additionally, SDG&E neither explains how it selected the compressor's size, technology, or pressure capability, nor does SDG&E provide an analysis of smaller compressors, alternative compressor technologies, leased equipment, delivered compressed hydrogen, or other potentially lower-cost configurations. Accordingly, the Commission should deny recovery of all capital and operation and maintenance costs associated with the hydrogen compressor.

[49] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-8.

5. SDG&E does not demonstrate the reasonableness of the fueling station.

SDG&E requests cost recovery for a hydrogen fueling module and dispensing station.[50] In its testimony, SDG&E states that the purpose of the fueling module and dispensing station is to fuel hydrogen fuel cell electric vehicles (FCEVs).[51] According to SDG&E, two Toyota Mirai FCEVs that were already authorized in the GRC currently fuel at PEC.[52] However, the Commission has already considered and rejected recovery of these costs. The Commission explicitly denied the capital costs to construct a hydrogen fueling station and O&M costs associated with the station, finding SDG&E could fuel its hydrogen-powered vehicles at public stations.[53] The Commission also acknowledged that SDG&E is able to fuel its vehicles at public stations using the $15,000 fuel cards provided by Toyota with each Mirai.[54] SDG&E does not identify any material change in circumstances that would warrant a different outcome from D.24-12-074. SDG&E also does not specify the capital or O&M costs associated with the PEC fueling station. The Application contains no evidence that public hydrogen fueling infrastructure is no longer available, that public fueling stations are operationally inadequate, or that offsite fueling imposes unreasonable costs or reliability concerns.

SDG&E fails to demonstrate how the Project advances operational, safety, emissions, decarbonization, cost, and scalability information that is, "(a) unique from other research and pilots on this topic and (b) needed to evaluate whether renewable hydrogen can contribute to California's clean energy resource strategy."[55] While vehicle fueling may support SDG&E's fleet operations, SDG&E does not explain how constructing a dedicated hydrogen fueling station generates unique operational

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[50] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-11.

[51] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-11.

[52] Prepared Direct Testimony of Pooyan Kabir and Kevin Counts at PK_KC-12.

[53] Scoping Memo at 2.

[54] D.24-12-074 at 394.

[55] Scoping Memo at 4.

knowledge unavailable through publicly accessible fueling infrastructure or why that knowledge warrants recovery from ratepayers. Furthermore, SDG&E fails to quantify the incremental costs, operational benefits, or reliability improvements associated with constructing and operating the PEC onsite fueling station instead of utilizing existing public infrastructure. Accordingly, the Commission should deny recovery of all capital and operation and maintenance costs associated with the hydrogen fueling module and dispensing station.

B. SDG&E Fails to Seek External Private Funding for the Project as Directed in D.24-12-074

In D.24-12-074, the Commission directed SDG&E to offset ratepayer costs for the Project by seeking public-private partnerships or other external funding sources.[56] SDG&E has not demonstrated that it fulfilled the Commissions directive. In response to Cal Advocate's data request, SDG&E identified three revenue offsets associated with the Project: Investment Tac Credit (ITC), Low Carbon Fuel Standard (LCFS) credits, and Renewable Energy Certificate (REC) revenue.[57] Unlike the ITC or LCFS revenues, the RECs generated by the Project do not constitute external financial support. Rather, SDG&E explains that the RECs generated by the onsite photovoltaic system are retired to satisfy the Internal Revenue Service's annual matching requirements associated with the Section 45V hydrogen production tax credit.[58] In the absence of those RECs, SDG&E would instead purchase eligible RECs from the market to satisfy the same requirement. Thus, the RECs function primarily as an avoided operating expense rather than an independent source of third-party funding.

The ITC and LCFS revenues do not demonstrate that SDG&E actively sought to minimize ratepayer costs through additional external funding opportunities. Rather, these are existing financial incentives already available to qualifying projects once constructed

[56] D.24-12-074 at 406.

[57] SDG&E's Response to DR 2, Question 4, at 3-4.

[58] SDG&E's Direct Testimony of Ari Beer, at AB-3.

and operated. Receipt of generally available tax incentives is not equivalent to affirmatively pursuing competitive grants, cost-sharing arrangements, research partnerships, or other third-party funding mechanisms designed to offset capital expenditures.

SDG&E fails to show that it sought funding through federal hydrogen demonstration programs, Department of Energy grant opportunities, California Energy Commission programs, California's Greenhouse Gas Reduction Fund, public-private partnerships, industry collaborations, or other state and federal funding sources that support hydrogen research, development, and demonstration projects. As such, SDG&E fails to demonstrate it satisfies the Commission's directive to leverage external funding to reduce the financial burden on ratepayers. Accordingly, the Commission should deny recovery of costs that SDG&E has failed to demonstrate could not reasonably have been offset through additional public or private funding opportunities.

IV. CONCLUSION

The proposed Project does not provide sufficient benefits to ratepayers or the public interest of California to justify the recovery of $31.1 million in costs. While the Project will provide limited hydrogen operational experience to SDG&E, SDG&E's claims that the Project will advance California's energy goals are dubious. The Project, as proposed in this Application, is largely unchanged from the one the Commission previously denied in D.24-12-074. Although the Commission allowed SDG&E to "reconsider this proposal with a fresh perspective to take advantage of private institutions that want to test their technology and other public funding sources to reduce costs to ratepayers"[59]…and offer "a stand-alone application with more robust information, leveraging public funding sources and lowering ratepayer costs,"[60] SDG&E has failed to do so. Accordingly, the Commission should deny recovery of all costs associated with the Project.

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[59] D.24-12-074 at 406.

[60] D.24-12-074 at 404.

APPENDIX A

Qualifications of Witnesses

QUALIFICATIONS AND PREPARED TESTIMONY
OF
THOMAS GARIFFO

Q.1 Please state your name and address.

A.1 My name is Thomas Gariffo. My business address is 505 Van Ness Avenue, San Francisco, California, 94102-3298.

Q.2 By whom are you employed and what is your job title?

A.2 I am employed by the California Public Utilities Commission as a Public Utilities Regulatory Analyst in the Public Advocates' Office Electricity Planning and Policy Branch.

Q.3 Please describe your educational and professional experience.

A.3 I have a Master of Arts degree in Public Policy from the Luskin School of Public Affairs at the University of California, Los Angeles. I also have a Bachelor of Arts degree in Political Science with a minor in Public Policy from the University of California, Berkeley. I have worked as a greenhouse gas policy subject matter expert in the Climate Change Initiatives section of Cal Advocates for over ten years, and have provided analysis for policies in proceedings regarding transportation electrification, Low Carbon Fuel Standards (LCFS), the Electric Program Investment Charge (EPIC), California's Renewable Portfolio Standards (RPS), biofuels, and hydrogen.

Q.4 What is your area of responsibility in this proceeding?

A.4 I reviewed the application and testimony regarding hydrogen policy as well as costs and benefits to ratepayers, and am co-author of this testimony.

Q.5 Does that complete your prepared testimony?

A.5 Yes it does.

QUALIFICATIONS AND PREPARED TESTIMONY
OF
KAYLA LUTES

Q.1 Please state your name and business address.

A.1 My name is Kayla Lutes. My business address is My business address is 320 W 4th Street, Los Angeles, California.

Q.2 By whom are you employed and in what capacity?

A.2 I am employed by the Public Advocates Office at the California Public Utilities Commission (Cal Advocates) as a Public Utilities Regulatory Analyst I in the Electricity Planning and Policy branch.

Q.3 Briefly state your educational background and experience.

A.3 I hold a Master's degree in Public Policy from the University of California San Diego. I received my Bachelor of Arts in Political Science from California Polytechnic State University San Luis Obispo. Since joining Cal Advocate's, I have sponsored testimony in A. 24-05-020, Bear Valley Electric Service, Inc.'s application to acquire, own, and operate the Bear Valley Solar Energy and Battery Storage. I've also sponsored testimony in A. 25-04-015, SDG&E's application to establish a ratemaking mechanism for energization projects pursuant to Senate Bill 410, and A. 25-08-009, SoCalGas's application for reasonableness review and recovery of dairy biomethane pilot project costs. Finally, I've submitted testimony in SCE's 2024 Energy Resource Recovery Account (ERRA) Compliance Application.

Q.4 What is the scope of your responsibility in this proceeding?

A.4 I reviewed the application and testimony as well as costs and benefits to ratepayers, and am co-author of this testimony.

Q.5 Does this complete your testimony at this time?

A.5 Yes, it does.

APPENDIX B

ATTACHMENTS

THE PUBLIC ADVOCATES OFFICE DATA REQUEST 01
PALOMAR DECARBONIZATION DEMONSTRATION – A.25-12-009
SDG&E RESPONSE
DATE RECEIVED: MARCH 12, 2026
DATE RESPONDED: APRIL 2, 2026

Question 1
Provide the following performance metrics, as rated by the manufacturer, for the electrolyzer system used at the Project. Specify the conditions under which the rated performance is expected (e.g. at max production).

a) Specific energy consumption [kWh/ kg H2 produced] for the following components/ systems:
    i) Electrolyzer Stack
    ii) Balance of Plant, including:
        (1) Power supply system
        (2) Demineralized/ de-ionized water system
        (3) Lye preparation and recirculation system
        (4) Heat exchanger
        (5) Safety systems and gas analyzer
    iii) Total for entire electrolyzer system [kWh AC input/ kg H2 produced], including Balance of Plant and Stack.
b) Does the electrolyzer system require any energy input (either as electricity or heat) due to any additional components or systems not specified in Question 1.a? If so, list additional components or systems and provide rated specific energy consumption [kWh/ kg H2 produced] for each.

SDG&E Response:
SDG&E objects to this Request to the extent it calls for SDG&E trade secret, proprietary, and critical infrastructure information, or vendor trade secret and proprietary information protected by contract from disclosure. SDG&E further objects on the basis that this Request is overly burdensome, calls for information that is not in SDG&E's possession and/or does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) SDG&E does not have the information requested available for all the components. The yearly average energy consumption for the electrolyzer stack in 2025 was 54.38 kWh/ Kg H2.
b) The electrolyzer includes pumps, fans, HVAC, and other low voltage systems that are not individually metered.

Question 2
Provide averages (based on actual operational data for the electrolyzer system used at the Project, from Project commissioning in 2023 until present) for the following performance metrics:

a) Specify the start date and end date of the operational data used to calculate

the metrics provided.

b) Provide the date that the Project electrolyzer began operations.
c) Specific energy consumption [kWh/ kg H2 produced] for the following components/ systems:
    i) Electrolyzer Stack
    ii) Balance of Plant, including:
        (1) Power supply system
        (2) Demineralized/ de-ionized water system
        (3) Lye preparation and recirculation system
        (4) Heat Exchanger
        (5) Safety Systems and Gas analyzer
d) Total for entire electrolyzer system ([kWh AC input/ kg H2 produced], including Balance of Plant and Stack.
e) Does the electrolyzer system require any energy input (either as electricity or heat) due to any additional components or systems not specified in Question 1.a? If so, list additional components or systems and provide actual average energy consumption for each.
f) Total hydrogen produced [kg]
g) Temperature and pressure of hydrogen produced
h) Volume of water required for hydrogen production. Provide as total volume consumed since project commissioning (same timeframe specified in response to Q2.a) [liters], and as specific water consumption [liters water/ kg H2 produced], specifying the following:
    i) Volume of reclaimed water input to demineralization/ de-ionization system(s)
    ii) Volume of demineralized/ de-ionized water input to electrolyzer
    iii) Volume of water used for process cooling in electrolyzer system

SDG&E Response:
SDG&E objects to this Request on the basis that this Request is overly burdensome, calls for information that does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) Please refer to Working Paper 2 to see the dates related to each part of the system.
b) Electrolyzer became operational in November of 2023.
c) Based on the spec sheet from NEL, the average power consumption at stack per mass is 50.4 kWh/kg of hydrogen. The yearly average energy consumption for

the electrolyzer stack in 2025 was 54.38 kWh/ Kg H2. Individual components for the electrolyzer are not metered, and the operational data does not exist for subcomponents.

d) Please see the response to Question 2.C.

e) Please see the response to Question 1.

f) Please see table below:

November 2023: 184.47 Kg

December 2023: 422.37 Kg

Year	Month	Hydrogen Produced (Kg)	Year	Month	Hydrogen Produced (Kg)
2024	January	259.68	2025	January	187.70
2024	February	0.00	2025	February	101.85
2024	March	245.98	2025	March	23.68
2024	April	13.20	2025	April	127.61
2024	May	0.00	2025	May	439.50
2024	June	0.00	2025	June	449.47
2024	July	57.35	2025	July	513.84
2024	August	77.22	2025	August	513.84
2024	September	368.16	2025	September	478.03
2024	October	135.35	2025	October	165.23
2024	November	145.51	2025	November	578.39
2024	December	440.38	2025	December	524.84

g) Hydrogen pressure at the delivery point of electrolyzer is 30 barg. Temperature is not measured or specified at the point of delivery.

h) Data based on the spec sheet from NEL. 354 liter/hour. Please see Nel electrolyzer spec sheet for MC250.

Question 3

The testimony of Kabir & Counts ("Testimony") refers to both demineralized and de-ionized water. Are the terms demineralized and de-ionized used interchangeably in the Testimony? Is the water used in the electrolyzer at the Project demineralized and de-ionized in separate systems?

SDG&E Response:

These two terms—demineralized and de-ionized—are used interchangeably in Testimony.

Question 4

Regarding the two-stage diaphragm compressor used to compress hydrogen for storage in the hydrogen storage tank:

a) Provide the following metrics:
   i) Average or typical pressure and temperature of hydrogen at compressor inlet
   ii) Average or typical pressure and temperature of hydrogen at compressor outlet
   iii) Compressor efficiency
   iv) Rated and actual Specific energy consumption [kWh/ kg H2 compressed] of compressor
b) Is additional energy input required for cooling? If so, provide the specific energy consumption [kWh/ kg H2 compressed] required for cooling.

SDG&E Response:

SDG&E objects to this Request on the basis that this Request is overly burdensome, calls for information that does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies. SDG&E further objects to this Request as vague and ambiguous as to the term "Compressor efficiency." Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a)

i) Suction pressure: 30 barg, intermediate pressure 1: 110 barg,
ii) Discharge pressure 400 barg.
iii) The question is not specific on what the definition of efficiency is considered (Overall compression efficiency, Isentropic, etc). However, the two-stage hydrogen compressor typically achieves approximately 70% overall efficiency.
iv) Power demand of the compressor package is 35 kW. The compressor package at PEC is not individually metered.

b) Intercooling happens before the second stage of compression. Data specific to the cooling system is not metered. Based on the power demand of the compressor package (with compression work and cooling system), electricity consumption for two stage compression is estimated at 1.6 kWh/ kg H2.

Question 5

Regarding the set of integral compressors and chiller used to compress and chill hydrogen for delivery to the fueling module:

a) Provide the following metrics:
   i) Average or typical pressure and temperature of hydrogen at compressor inlet

ii) Average or typical pressure and temperature of hydrogen at compressor outlet
iii) Compressor efficiency
iv) Rated and actual Specific energy consumption [kWh/ kg H2 compressed] of compressor
v) Rated and actual Specific energy consumption [kWh/ kg H2 compressed] of chiller

SDG&E Response:

SDG&E objects to this Request on the basis that this Request is not relevant or reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a)

i) 200-450 bar inlet pressure, gas inlet pressure is around ambient temperature
ii) 750-900 bar outlet pressure, outlet temperature after heat exchanger is usually around ambient+10°C, maximum absolute of 60°C.
iii) Depending on inlet pressure and speed, it is between 60% and 70%.
iv) Rated 1.4 kWh/Kg at 200 bar inlet and 900 bar outlet pressure.
v) Rated 0.15 kWh/Kg at 20°C ambient.

Question 6

Is 100% of the hydrogen produced on-site compressed for storage prior to end uses? If not, how much of the hydrogen [kg] specified in response to Q.2.d was compressed for storage?

SDG&E Response:

Yes. All the hydrogen produced on-site is compressed into the storage tanks prior to use.

Question 7

Where does the cooling hydrogen gas go after it cools the turbines? Provide answers both for historical PEC operations prior to the Project, and PEC operations during the Project.

a) Is the cooling hydrogen recirculated to be used as cooling gas again?
b) Is the cooling hydrogen reused for another end use such as blending into natural gas?
c) Is the cooling hydrogen vented or flared?

SDG&E Response:

During normal operation, hydrogen is not consumed and rather circulates in a closed system. Gas purity monitors continuously measure hydrogen concentration. Hydrogen is not burned, reacted, or transformed during cooling.

Question 8

Are Project electrolyzer operational data (such as energy consumption [kWh] and hydrogen output [kg]) recorded? If so:

a) Which data are recorded?
b) At what temporal granularity (i.e. time interval) are operational data recorded?
c) Provide operational data, including energy consumption [kWh] and hydrogen output [kg], with date and time, in excel format for the time period specified in response to Question 2.a, at the highest temporal granularity (i.e. smallest time intervals) available.

SDG&E Response:

SDG&E objects to this Request as overly burdensome to the extent it seeks operational data "at the highest temporal granularity (i.e. smallest time intervals) available." Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) Both energy consumption and hydrogen output are recorded.
b) Recorded data is based on 1 second interval.
c) Operation data, energy consumption (MWH), and hydrogen production (kg) are provided with daily time intervals in spreadsheet format. Please see, produced herewith, CAL ADVOCATES 01 Question 08 and 09- Daily H2 and PV data 2025.xlsx. One-second data is not appropriate for the range of time requested.

Question 9

Is output from the solar photovoltaic ("PV") system included in the Project (including DC output from solar array [kWh] and AC output from PV system inverter [kWh]) recorded? If so:

a) At what temporal granularity (i.e. time interval) is PV system output recorded?
b) Provide PV system output data, including DC output from solar array [kWh] and AC output from PV system inverter [kWh], with date and time, in excel format for the time period specified in response to Question 2.a, at the highest temporal granularity (i.e. smallest time intervals) available. If DC output from solar array data is available but not AC output from PV system inverter data, or if AC output from PV system inverter data is available but not DC output from solar array data, provide whichever output data is available and specify whether it refers to DC output from the solar array or AC output from the PV system inverter.

SDG&E Response:

SDG&E objects to this Request as overly burdensome to the extent it seeks operational data "at the highest temporal granularity (i.e. smallest time intervals) available." Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) PV data are recorded at 1 second interval.
b) PV AC output (MWH) data is available. Please see, produced herewith, CAL ADVOCATES 01 Question 08 and 09- Daily H2 and PV data 2025.xlsx. Operation data is provided with daily time intervals in spreadsheet format. One-second data is not appropriate for the range of time requested.

Question 10
For each month of 2020 until present (most recent available), provide the following data for each of the three turbines at PEC in excel format. Specify which turbine receives a natural gas-hydrogen blend as part of the Project. Specify whether energy content of fuels refers to their higher heating value or lower heating value.

a) Net Generation [MWh]
b) Total quantity of natural gas consumed [Mcf, MMBtu]
c) Total quantity of hydrogen consumed [Mcf, MMBtu]
d) NOx emissions rate [ppm]

SDG&E Response:
Please see the excel spreadsheet with the requested data produced herewith, CAL ADVOCATES 01 Question 10. CTG#2 can receive hydrogen blends of up to 2% by volume.

Question 11
When hydrogen is combusted at PEC, is the latent heat of vaporization of that hydrogen converted to electricity or other useful energy?

SDG&E Response:
The latent heat associated with hydrogen combustion (from water vapor condensation) is normally not converted to electricity and instead lost in the exhaust. Hydrogen itself is a gas under combustion conditions, so it does not have a latent heat of vaporization during combustion. The formation of water vapor due to combustion of hydrogen will not be realized to produce electricity.

Question 12
What percentage of PEC operations are in combined cycle mode?

a) What percentage of operating hours is PEC operating as a combined cycle?
b) What percentage of PEC net generation [MWh] is generated while PEC is operating as a combined cycle?

SDG&E Response:

PEC does not have the capability of operating as a simple cycle plant. 100% of its operating hours are a combined cycle. 100% of net generation is generated while operating as a combined cycle power plant.

Question 13

Provide the heat rate [Btu/kWh] and efficiency for PEC under the following conditions. Specify whether the values provided are based on the lower heating value or higher heating value of the fuel.

a) Operating as a simple cycle
    i) Fueled by 100% natural gas
    ii) Fueled by a 2% hydrogen by volume blend
b) Operating as a combined cycle
    i) Fueled by 100% natural gas
    ii) Fueled by a 2% hydrogen by volume blend

SDG&E Response:

a) The plant does not have a representative net heat rate for simple-cycle operation because it is not dispatched in that configuration. Any simple-cycle operation would be abnormal and not representative of normal plant performance.
b) For combined-cycle operation, PEC's net heat rate is not a single fixed value and varies based on plant load, ambient conditions, and other operating factors.
    i) In 2025, Palomar Energy's average net heat rate was 7.136 MMBtu/MWh (HHV), inclusive of startup and shutdown events.
    ii) Blending 2% hydrogen by volume with natural gas would result in a negligible change to PEC's net heat rate.

Question 14

Clarify the calculations explained in the Testimony of Kabir & Counts at PK_KC-17, footnote 17. Do the calculations assume fuel is displaced on an equivalent volume basis or an equivalent energy content basis?

a) In the calculations, is the displaced natural gas (4095.6 cubic feet per hour) assumed to be displaced by 4095.6 cubic feet per hour of hydrogen?
b) In the calculations, is the displaced natural gas (4095.6 cubic feet per hour) assumed to be displaced by a quantity of hydrogen with a lower heating value equivalent to that of 4095.6 cubic feet per hour of natural gas (approximately 12,411 cubic feet per hour)?

SDG&E Response:
The calculations assume fuel is displaced on an equivalent energy content basis.

Question 15
Regarding the 176 MW GE Frame 7FA CTG fueled by a blend of natural gas and hydrogen ("Turbine"):

a) While being fueled by 100% natural gas,
   i) What is the Turbine's maximum power output (nominal and actual/ historical) [MW]?
   ii) What is the Turbine's fuel intake at maximum power output [scf/hour, MMBtu/hour]?
b) While being fueled by a blend of natural gas with 2% hydrogen by volume,
   i) What is the Turbine's maximum power output (nominal and actual/ historical)
   [MW]?
   ii) What is the Turbine's fuel intake at maximum power output [scf/hour, MMBtu/hour]?

SDG&E Response:
a) On 100% natural gas sample point 7/6/2025 19:00)
   i) Turbine output: 177.127 MW (historical)
   ii) Fuel input: 19.189 lb/sec (historical)
b.) Blending natural gas with hydrogen sample point 7/6/2025 21:04)
   i) Turbine output: 177.135 MW (historical)
   ii) Combined fuel input: 19.326 lb/sec (historical)

Question 16
Is it correct that annual PEC hydrogen consumption for turbine cooling is approximately 800 kg, both prior to and during the Project? If not, explain why.

SDG&E Response:
As mentioned in section II.A.5 of PK_KC (page 9), the estimate total hydrogen demand for cooling is 1.8 Kg per day for daily operation and 60 kg of hydrogen in total for line maintenance. 800 Kg is a reasonable estimate for these consumptions.

Question 17
The Testimony of Kabir and Counts at PK_KC-17, footnote 17 calculates annual CO2 emission reductions, assuming 400 kg H2 per month is blended into a PEC CTG at 87.66 kg H2 per hour for 4.56 hours per month. Based on this calculation, is it correct that during the Project, the

expected annual PEC hydrogen consumption for blending is 4800 kg H2 (400 kg/ month * 12 months = 4800 kg H2) and that H2 is expected to be blended into one CGT at 87.66 kg H2 per hour for 4.56 hours per month?

a) If not, explain why.
b) For each month in the time period specified in response to Question 2.a, provide the hydrogen consumption for blending [kg] and the amount of time during which hydrogen was blended into a CTG [hours].

SDG&E Response:
SDG&E objects on the basis that this Request is overly burdensome, calls for information that does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

a) As mentioned in page PK_KC-17 the goal for blending hydrogen into the gas turbine is 400 Kg per month. Blending started in May of 2025. Please see timeline for different part of the project in Table WP2-A, Page 1 of Working Paper 2. The blending amounts for 2025 is shown in the table below. Each time blending takes between 2-4 hours depending on the operation of the power plant, hydrogen availability, hydrogen blend percentage, and plant constraints. There is no easy way to provide hours blended for these reasons.
b) See amount of hydrogen blended in the CTG#2 in 2025:

Month	Hydrogen for Blending (Kg)
January 2025	N/A
February 2025	N/A
March 2025	N/A
April 2025	N/A
May 2025	302.37
June 2025	400.01
July 2025	400.01
August 2025	400.81
September 2025	400.17
October 2025	121.98
November 2025	400.29
December 2025	400.57

Question 18

THE PUBLIC ADVOCATES OFFICE DATA REQUEST 01
PALOMAR DECARBONIZATION DEMONSTRATION – A.25-12-009
SDG&E RESPONSE
DATE RECEIVED: MARCH 12, 2026
DATE RESPONDED: APRIL 2, 2026

Regarding the fueling of hydrogen vehicles as part of the Project:

a) Provide a list of vehicles that have been fueled by hydrogen produced at PEC. For each vehicle listed, provide its estimated fuel consumption rate [kg H2/ mile].
b) For each month in the time period specified in response to Question 2.a, provide the amount of hydrogen dispensed to fuel hydrogen vehicles [kg] as part of the Project.
c) Does SDG&E expect any changes to the fleet of hydrogen vehicles fueled by hydrogen produced at PEC (e.g. acquisition of additional vehicles or retirement of existing vehicles) during the Project duration?
d) Is monthly H2 offtake for fueling of hydrogen vehicles for the remainder of the Project expected to be similar to those provided in response to Question18.b? If not, provide expected monthly H2 offtake for fueling of hydrogen vehicles [kg].

SDG&E Response:

a) SDG&E operates two hydrogen fuel cell electric vehicles (HFCEV). The first Mirai entered service in December 2022. The second Mirai entered service in July 2025.
b) See the table below for the Hydrogen used for Fleet.

Year	Month	Hydrogen Used for Fleet (Kg)	Year	Month	Hydrogen Used for Fleet (Kg)
2024	January	0	2025	January	37.074
2024	February	0	2025	February	9.96
2024	March	49.35	2025	March	0
2024	April	17.041	2025	April	3.643
2024	May	9.288	2025	May	23.01
2024	June	18.398	2025	June	15.534
2024	July	13.888	2025	July	20.758
2024	August	21.092	2025	August	32.801
2024	September	24.269	2025	September	23.42
2024	October	40.59	2025	October	48.634
2024	November	34.737	2025	November	20.199
2024	December	24.498	2025	December	21.002

c) SDG&E does not anticipate changes to the number of HFCEVs at this time.
d) SDG&E objects to this Request on the grounds that it calls for speculation. Subject to and without waiving the foregoing objection, SDG&E responds as follows:
The amount of hydrogen consumed in relation to the HFCEVs depends on the number of miles driven for each vehicle and number of times operators are dispatched to sites. Currently, SDG&E does not anticipate that its future operation of the project

would differ significantly from its current operations.

Question 19

Is it correct that no hydrogen produced at PEC has been exported to support research, development, and demonstration ("RD&D") as part of the Project?

a) If not, explain why.
b) How much hydrogen produced at PEC is expected to be exported to support RD&D as part of the Project [kg]?

SDG&E Response:

a) Correct. To date, SDG&E has not utilized hydrogen produced by the Project for R&D.
b) Not applicable.

Question 20

For each month in the time period specified in response to Question 2.a, provide the total hydrogen consumption [kg] for all end uses as part of the Project. If any hydrogen consumption or end use is not included in Questions 16-19, provide the end use and associated monthly hydrogen consumption [kg].

SDG&E Response:

The data here shows the hydrogen production and consumption for 2025:

Month	Hydrogen Production (Kg)	Hydrogen for Fleet (Kg)	Hydrogen for Blending (Kg)	Hydrogen for Generator Cooling (Kg)*
January 2025	187.70	37.07	N/A	150.63
February 2025	101.85	9.96	N/A	91.89
March 2025	23.68	0	N/A	23.68
April 2025	127.61	3.64	N/A	123.97
May 2025	439.50	23.01	302.37	114.12
June 2025	449.47	15.53	400.01	33.93
July 2025	513.84	20.76	400.01	93.07
August 2025	513.84	32.80	400.81	80.23
September 2025	478.03	23.42	400.17	54.44
October 2025	165.23	48.63	121.98	-5.38
November 2025	578.39	20.20	400.29	157.9
December 2025	524.84	21.00	400.57	103.27

*This is just calculated by subtracting hydrogen produced in a month used in the same month by all different use cases. Currently, the hydrogen used for cooling is not metered.

Question 21
Provide expected total annual hydrogen consumption [kg/ year] for all end uses as part of the Project for the remainder of the project duration. If any hydrogen consumption or end use is not included in Questions 16-19, provide the end use and associated expected annual hydrogen consumption [kg/ year].

SDG&E Response:
SDG&E objects to this Request on the grounds it calls for speculation. Subject to and without waving this objection, SDG&E responds as follows:

The table below shows the hydrogen production, hydrogen fueling station, and other use cases for 2025. SDG&E expects similar annual hydrogen consumption for the remainder of the Project duration.

Hydrogen Production (Kg/Year)	Hydrogen Blending (Kg/year)	Hydrogen Fueling Station (Kg/year)	Hydrogen Cooling for Generator* (Kg/Year)
4279.3	2826.4	256.0	1196.9

- Hydrogen cooling is calculated based on hydrogen produced and other use cases. Assuming all the hydrogen produced is used within the same year.

Question 22
Is hydrogen leakage from the Project measured? If so, provide Project hydrogen leakage [kg] for each month in the time period specified in response to Question 2.a. If not, provide an estimate of Project hydrogen leakage [kg/month].

SDG&E Response:
Hydrogen leaks from the project are not measured; however, the system incorporates pressure monitoring to quickly identify and isolate leaks.

Question 23
Regarding the decision to use hydrogen to cool PEC turbines:

a) Was a cost-benefit analysis conducted to assess the costs and benefits of hydrogen cooling relative to other cooling methods? If so, provide the inputs, assumptions, and results of the cost-benefit analysis.
b) Is hydrogen used to cool CGTs at other SDG&E facilities? If so, provide a list of all SDG&E facilities at which hydrogen is used to cool CGTs. For each facility, provide the type, model, and nominal power rating of each

turbine and the annual hydrogen consumption for cooling [kg/year].

c) Provide the number of power plants in the US that use hydrogen for cooling and their combined nominal power rating [GW].

SDG&E Response:

a) As mentioned in PK_KC_3: "Since its original construction, PEC has always relied on hydrogen gas to cool the CTGs and the STG. SDG&E identified PEC as a candidate for the demonstration with co-located hydrogen production and storage in part because the plant staff already had experience working with hydrogen and the facility has an established operational need. The plant cannot operate without a reliable supply of hydrogen. Prior to this Project, SDG&E trucked-in "gray" hydrogen produced by steam methane reforming from a third party."
b) None, all other generators are air cooled.
c) SDG&E objects to this Request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is reasonably calculated to lead to the discovery of admissible evidence. SDG&E further objects to this Request on the grounds it is overly burdensome, seeks information that is not readily available, and would require SDG&E to conduct extensive research.

Question 24

The Testimony of Kabir and Counts at PK_KC-17-18 estimates the annual CO2 emission reduction of each of the two hydrogen fuel cell electric vehicles ("FCEVs") at PEC to be 6 MT of CO2 and attributes these emission reductions (12 MT total for the FCEV fleet) to the Project. The Testimony assumes a fossil fuel car emitting 400 grams of CO2 per mile is replaced by a vehicle with zero emissions. The Testimony also states that the two FCEVs that fuel at PEC were procured outside of the Project.

a) Where did the FCEVs fuel prior to the Project?
b) Where would the FCEVs fuel if hydrogen were not produced onsite at PEC?
c) What would be the estimated CO2 emission reduction [MT] of each FCEV assuming the same FCEV is switching from grey hydrogen to zero-carbon green hydrogen, rather than assuming a fossil fuel car is replaced by a FCEV fueled by zero-carbon green hydrogen?

SDG&E Response:

a) The first Mirai entered service in December 2022. The vehicle was issued a Hydrogen Fuel Debit Card with an initial balance of $15,000. Although the hydrogen electrolyzer become operational in 2023, SDG&E continued to utilize the Hydrogen Fuel Debit Card to purchase fuel. The card remains available to use to refuel when hydrogen is needed outside the Palomar Energy Center, or in emergency situations when the electrolyzer or fueling station is out of service. The second Mirai entered service in July 2025. Currently,

there is only one station operational in San Diego. TrueZero- Hydrogen Fuel Station at 5494 Mission Center Rd, San Diego, CA 92108.

b) They would have to fuel at TrueZero- Hydrogen Fuel Station at 5494 Mission Center Rd, San Diego, CA 92108.

c) SDG&E wants to clarify an operational difference between the two scenarios. The HFCEVs are located at PEC. If the car location and the fueling station are different the car needs to be driven to the Mission Center Rd, round trip mileage needs to be added to this calculation. The distance between PEC and Mission Center Road is around 29 miles.

To simplify this calculation, we ignore the additional commute aspect. Grey hydrogen is mostly made by steam methane reforming. The carbon intensity of hydrogen with this process is 13 Kg CO2/Kg H2. [1] Using fuel economy data on the 2024 Toyota Mirai (1.6 Kg H2 per 100 miles), then the CO2 equivalent per mile of grey hydrogen is

CO_2 equivalent (grams/mile)= (13 Kg CO2/ kg H2*1.6 Kg H2/100 miles)*1000 grams/ 1Kg= 208 grams CO_2/mile
Based on this calculation, the estimated CO2 savings is 6.3MT.

END OF REQUEST

[1] The-Colors-of-Hydrogen-Production-Fact-Sheet.pdf

THE PUBLIC ADVOCATES OFFICE DATA REQUEST 02
PALOMAR DECARBONIZATION DEMONSTRATION – A.25-12-009
SDG&E RESPONSE
DATE RECEIVED: MAY 6, 2026
DATE RESPONDED: MAY 21, 2026

Question 1
Provide all workpapers referenced in Prepared Direct Testimony of Pooyan Kabir and Kevin Counts on Behalf of San Diego Gas & Electric Company Chapter 2- Operations.

SDG&E Response 1:
Please see the following, produced herewith:

- Final WP 1-Capital Costs.docx
- Final WP 2 – O&M Costs.docx

Question 2:
Provide all vendor contracts, bids, and procurement evaluations for major cost components (including but not limited to: electrolyzer, compression, storage, photovoltaic (PV) system, blending skid).

SDG&E Response 2:
Please note that the attachments referenced in this response contain "Protected Materials" (i.e., trade secret, market sensitive, or other confidential and/or proprietary information) as determined by SDG&E in accordance with the provisions of D. 06-06-066 and subsequent decisions and subject to a Nondisclosure Agreement. The confidentiality declaration of Ari Beer is provided herewith.

SDG&E objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks information that is neither relevant to the subject matter involved in the pending proceeding nor reasonably calculated to lead to the discovery of admissible evidence. SDG&E further reasserts objections to this request on the grounds that it calls for the production of highly sensitive information, including but not limited to Critical Energy Infrastructure Information, that is protected from disclosure, and/or contractual information that is confidential (i.e., contains market sensitive, trade secrets, or other confidential and/or proprietary information) and protected from disclosure. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

Please see the following, produced herewith:

- CONFIDENTIAL PSM quote for H2 Project_Redacted
- CONFIDENTIAL SDGE Hydrogen RECs 2023 - (SDGE executed).docx
- CONFIDENTIAL PSM-07 PEC H2 System Eng_Manuf_ Inst_Comm REV-03 SIGNED.pdf
- CONFIDENTIAL Signed 6-948
- CONFIDENTIAL Supplier Signed.pdf
- CONFIDENTIAL 20-6028R2-KCP SDGE_Palomar_Energy_Center_ V_System_Project_SEI_Job_Scope_Letter

- CONFIDENTIAL Baker_Electric_Proposal_-_SDGE_PEC_PV_System_FINAL_1

Question 3:
As referenced in Prepared Direct Testimony of Michael R. Woodruff on Behalf of San Diego Gas & Electric Company Chapter 3- Revenue Requirement, Tables 1 and 2 provide a yearly breakdown of direct and total loaded capital and operation and maintenance (O&M) costs.

Question 3a:
Provide a line-item breakdown, both for capital and O&M costs, including the direct and total loaded costs. Provide invoices and workpapers.

SDG&E Response 3a:
SDG&E objects to this request to the extent it seeks invoices for capital costs, on the basis that the request is overly broad and unduly burdensome, and not reasonably calculated to lead to the discovery of admissible evidence, as capital costs for the Project include more than 50 vendors and more than 3,000 invoices. Subject to and without waiving the foregoing objection, SDG&E responds as follows:

Please see the attached workpaper titled Final WP 1-Capital Costs. Table WP1-B provides the Capital Cost-Actual Direct for different years. Table WP1-C provides Capital Cost Details (Unloaded) for the project.

Please see the attached workpaper titled Final WP 2 – O&M Costs. This document provides details on the actual and forecasted O&M cost for the Palomar Decarbonization Demonstration Project by year. Table WP2B provides Direct O&M Costs (Unloaded) for different years. Table WP2-C: O&M Cost Details (Unloaded) provides cost details on O&M by category and item detail.

Please see Table 1 and 2 of Woodruff's testimony for direct capital and O&M costs (including escalation, overheads, AFUDC, and capitalized property tax) and total loaded costs for the project.

Question 3b:
Explain if any capital costs are escalated for inflation.

SDG&E Response 3b:
Capital costs are actual spend, and there is no escalation for inflation on the capital costs.

Question 3c:
Provide a detailed breakdown of the escalated nominal values accounting for inflation on O&M costs.

SDG&E Response 3c:

The escalation factors are adopted based on S&P Global Quarter 2025 Power Planner utility cost forecast (published in July 2025). Table below illustrates the Direct O&M and Escalation for 2025-2036. Year 2024 costs are actual costs for O&M.

Table 1. Direct O&M Costs (Unloaded) and Escalation for 2025-2036 (in Thousands of Dollars)

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Direct O&M	219	219	182	182	193	193	193	193	193	193	193	193
Escalation	0	2	3	4	3	4	5	6	7	8	9	10

Question 4:

Identify and quantify all revenue offsets associated with the Project, including but not limited to: Federal tax credits (e.g., Investment Tax Credit (ITC), hydrogen production credits), Low Carbon Fuel Standard (LCFS) credits, Renewable Energy Certificate (REC) revenues, and any other state, federal, or third-party incentives.

Question 4a:

For each, provide the annual forecast (2023–2036).

SDG&E Response 4a:

Please note that the attachments referenced in this response contain "Protected Materials" (i.e., trade secret, market sensitive, or other confidential and/or proprietary information) as determined by SDG&E in accordance with the provisions of D. 06-06-066 and subsequent decisions and subject to a Nondisclosure Agreement. The confidentiality declaration of Ari Beer is provided herewith.

I. Investment Tax Credit (ITC):
As discussed in detail in Saket's testimony, in 2023 the Project qualified for $3,876,319 in investment tax credits (ITC), which included a solar tax credit in the amount of $487,709, an energy storage tax credit in the amount of $1,248,318, and a hydrogen tax credit in the amount of $2,140,292.

Change in annual revenue requirement by year for the project due to the federal tax credit is responded to in question 7 of TURN-DR02.

Please see tables below:

Annual Revenue Requirement Values ($M):

	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Total Revenue Requirement Inclusive of ITC Benefit	$31.1	$0.1	$2.6	$2.8	$3.4	$3.2	$3.1	$2.9	$2.7	$2.5	$2.3	$2.2	$1.9	$1.2	$0.1

Annual Revenue Requirement Values ($M)*:

	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
ITC Impact (Included in Revenue Requirement Testimony Figures)	($4.9)	($0.2)	($1.2)	($1.0)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.2)	($0.3)

*Negative values indicate ITCs resulted in reduced revenue requirement

II. Low Carbon Fuel Standard (LCFS)

Low Carbon Fuels Standard (LCFS) credits are estimated based on several operational assumptions and system capacities. The estimated credit amounts and revenues are produced herewith: :

- 4b-Confidential- 2025 LD-MD Hydrogen LCFS Calculator_PEC 2025.xlsx
- 4b-Confidential-LCFS Methodology- PEC.docx

III. Renewable Energy Certificate

As mentioned in Beer's testimony (AB-31), SDG&E generates RECs for every MWh of solar it produces at PEC. On an annual basis, SDG&E evaluates how much total electricity the electrolyzer has used, and retires an equivalent amount of the RECs it produced. Should SDG&E generate more RECs than was required to offset the electrolyzer for a given year, SDG&E can either use those RECs in future years toward its overall RPS obligations, or sell them on the market to generate revenues. SDG&E cannot bank leftover RECs to offset future use of the electrolyzer as the IRS has an annual matching requirement. Had SDG&E not registered the PV into WREGIS, SDG&E would have had to buy 45V eligible RECs on the market, despite having installed the custom solar. The market price benchmark to purchase RPS eligible RECS for 2025 are forecast at $71.24.[1] 1 Therefore, registering the solar as a generating unit and retiring its own RECs enables SDG&E to save nearly $24,000 annually in operating costs should the electrolyzer use equal solar production.(Calculation: Assume 335 MWh solar/year*$71.24=$23,869.)

[1] CPUC, Market Price Benchmark 2024 Errata, available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/community-choice-aggregation-and-direct-access/2024-market-price-benchmarks--errata-20241005.pd

Question 4b:
Provide all workpapers supporting the calculation of each revenue offset.

SDG&E Response 4b:
Please see section VII. Affordability Considerations in Beer's testimony (AB-28-AB35) for explanation of different cost savings.

I. Investment Tax Credit (ITC)
Please see response to question 4a.

II. Low Fuel Carbon Standard (LCFS)
Please see response to question 4a.

III. Renewable Energy Certificate
Please see response to question 4a.

Question 4c:
Explain whether offsets are netted against costs in the Hydrogen 2 Balancing Account (H2BA), or how each offset is recorded.

SDG&E Response 4c:
Yes, SDG&E will offset any credits directly to the balancing account.

Question 5:
As the Project serves multiple use cases (generator cooling, blending, fueling, research, development, and demonstration (RD&D)), provide:

Question 5a:
allocation of costs by use case.

SDG&E Response 5a:
SDG&E's Palomar Decarbonization Demonstration Project consists of onsite hydrogen production, storage, piping, and auxiliary equipment that is used for all the use cases. Thus, there is no meaningful way to allocate cost by the use case. SDG&E does not have allocation of costs by use case.

Question 5b:
allocation of revenue offsets by use case.

SDG&E Response 5b:
Please see response to 5a.

Question 6:
Regarding Cal Advocates DR 1 ("CalPA-DR-01_SDGE Response_Palomar.pdf"), SDG&E's response to question 20:

Question 6a:
In October 2025 SDG&E demonstrates -5.38Kg of hydrogen consumption for generator cooling. Confirm that this indicates SDG&E's hydrogen needs at the PEC facility exceeded production in October 2025.

SDG&E Response 6a:
No. The reported value of -5.38 kg does not indicate that SDG&E's hydrogen needs at the PEC facility exceeded production in October 2025. As explained in DR01-CALPA, this value is derived from a simplified accounting calculation, in which monthly hydrogen production is netted against known use cases. Because there is no direct measurement or reliable method to quantify hydrogen consumption, specifically for generator cooling, this figure represents a residual balancing value rather than an actual metered consumption. Accordingly, a negative value does not reflect a physical deficit or excess demand over production, but rather the limitations of the calculation methodology used to allocate hydrogen usage among categories.

Question 6b:
Except for October 2025, SDG&E demonstrates an average monthly hydrogen production of 499.7Kg of hydrogen between May and December 2025. What caused hydrogen production in October 2025 to be 165.23Kg?

SDG&E Response 6b:
SDG&E blended less hydrogen in CTG#2 in October 2025 and hence produced less hydrogen that month. Please see response to 17b in CalPA-DR-01.

Question 6c:
SDG&E states that "[c]urrently, the hydrogen used for cooling is not metered." In its Application, SDG&E stated that "PEC has always used hydrogen gas as part of its generator cooling system… PEC relied on trucked-in hydrogen which was purchased from a third party that produced it via steam methane reformation of natural gas."[2]

i. Did SDG&E use hydrogen produced by a third party to supplement PEC's hydrogen cooling demand in

[2] Application at 3.

October 2025?

ii. Provide all records/receipts/invoices for hydrogen purchased from third parties for PEC's hydrogen needs in 2025. Include whether or not the hydrogen was produced with steam methane reformation, hydrolysis, or some other method for each instance.

iii. Prior to installing the Project in 2023, was coolant hydrogen metered to track usage, demand, and/or procurement needs?

SDG&E Response 6c:

i: No, SDG&E did not use any hydrogen produced by a third party to supplement PEC's hydrogen cooling demand.

ii: No hydrogen from a third-party was purchased in 2025.

iii. Hydrogen cooling for generator was not metered at the facility. However, the total amount of hydrogen used each year was based on the delivery of hydrogen to the site. Please see response to Turn-DR-01 Question 10 a&b.

Question 6d:

The table SDG&E provides in response to question 20 seems to indicate that hydrogen produced by the Project only goes to a single end use, is this accurate? If so, explain why hydrogen used for generator cooling could not subsequently be used for other end uses.

SDG&E Response 6d:

SDG&E illustrates the data for the hydrogen production, hydrogen used for fleet, hydrogen for blending, and calculated hydrogen for generator cooling (estimate for generator cooling). These are three use cases, and the fourth use case for RD&D has not yet been commissioned.

Question 6e:

SDG&E's response to question 21 demonstrates annual hydrogen production and consumption for the Project for 2025. The annual statistics provided for consumption by Blending and Fueling Station are equivalent to the sum of months demonstrated in response to Question 20. However, the 2025 annual statistics for hydrogen production and consumption by cooling for generator are 175kg greater than the 2025 sum of months demonstrated in response to question 20. Explain this discrepancy.

SDG&E Response 6e:

SDG&E made an error carrying the data to the Table in Question 20 of DR01 of CalPA. The corrected version is as follows. Highlighted values show the updated values. SDG&E will also be

serving revised responses to Cal Advocates Data Request 01 to address the above-referenced omission/typo.

The data here shows the hydrogen production and consumption for 2025:

Month	Hydrogen Production (Kg)	Hydrogen for fleet (Kg)	Hydrogen for Blending (Kg)	Hydrogen for Generator Cooling (Kg)*
January 2025	187.70	37.07	N/A	150.63
February 2025	101.85	9.96	N/A	91.89
March 2025	23.68	0	N/A	23.68
April 2025	127.61	3.64	N/A	123.97
May 2025	439.50	23.01	302.37	114.12
June 2025	449.47	15.53	400.01	33.93
July 2025	513.84	20.76	400.01	93.07
August 2025	689.18	32.80	400.81	255.57
September 2025	478.03	23.42	400.17	54.44
October 2025	165.23	48.63	121.98	-5.38
November 2025	578.39	20.20	400.29	157.9
December 2025	524.84	21.00	400.57	103.27

*This is just calculated by subtracting hydrogen produced in a month used in the same month by all different use cases. Currently, the hydrogen used for cooling is not metered.

END OF REQUEST

THE PUBLIC ADVOCATES OFFICE DATA REQUEST 03
PALOMAR DECARBONIZATION DEMONSTRATION – A.25-12-009
SDG&E RESPONSE
DATE RECEIVED: JUNE 24, 2026
DATE RESPONDED: JULY 13, 2026

Question 1

Identify every operational, safety, emissions, and combustion-related learning that SDG&E states could only be obtained through the Project rather than existing industry research, Original Equipment Manufacturer (OEM) testing, Department of Energy (DOE) demonstrations, or projects conducted by other utilities.

SDG&E Response 1:

SDG&E objects to this request to the extent it seeks "every...learning," on the grounds it is overly burdensome and vague and ambiguous as to the level of detail sought. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

Specific learnings from the project, include but are not limited to:

1. Multi-use hydrogen system improves asset utilization: Hydrogen economics improve when a single electrolyzer serves multiple use cases simultaneously, i.e. power generation, generator cooling, and vehicle fueling rather than being dedicated exclusively to turbine combustion.
2. Flexible operation: Hydrogen production and consumption varies with plant dispatch, storage inventory, and operational needs.
3. Utilities need hands-on operating experience: Staff to develop standard operation procedures for hydrogen production, hydrogen storage, compression and blending.
4. The project demonstrates that existing natural gas combined-cycle facilities can accommodate low-percentage hydrogen blending on a continuous basis.
5. Design, operation, maintenance, and performance of an electrolyzer to calculate round-trip efficiency of these systems.
6. Hydrogen system reliability: Long-term operational behavior of the production, compression, storage, and dispensing systems.
7. Commissioning and deployment best practices including startup procedures, leak testing, and integration with existing plant operations.
8. Pressure management and pressure testing practices, emergency shutdown system effectiveness, leak detection system performance, and integration of hydrogen safety systems into an operating power plant environment.
9. Ongoing verification and validation of emissions performance including NOx, CO2.

SDG&E does not represent that the above list of learnings is complete or that it represents each and every lesson obtained from the Project. SDG&E further notes that it anticipates additional, yet-unidentified learnings will be obtained as operations continue.

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SDG&E RESPONSE
DATE RECEIVED: JUNE 24, 2026
DATE RESPONDED: JULY 13, 2026

Question 2:
Explain specifically how the Project differs from other hydrogen blending demonstrations nationwide and identify what information the Project uniquely contributes.

SDG&E Response 2:
SDG&E objects to this Request on the basis that this Request is overly burdensome, calls for information that does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

As mentioned in Beer's testimony, the project is the first of its kind in the United States and demonstrates co-located hydrogen production and use, shows multiple use cases, deploying electrolytic hydrogen on site, and the project size and scale. The end use of the system is power generation and not gas distribution system, where the blending projects will mostly focus on pipeline performance with hydrogen blended gas. Most national blending projects inject hydrogen into natural gas distribution systems and primarily evaluate effects on pipelines, meters, regulators, appliances and customer equipment. A majority of these projects also focus on only one application, whereas PEC was designed to demonstrate multiple hydrogen use cases at a single operating power plant. The Palomar Decarbonization Demonstration Project illustrates hydrogen use at a commercial-scale combined-cycle generating facility that serves California's electric grid. The project provides operational experience with gas turbine combustion, heat rate impacts, emissions monitoring, and utility-scale power plant operations.

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Question 3:
Identify all other California or western U.S. hydrogen blending demonstration projects known to SDG&E. Did knowledge of these inform the Project's design regarding the following metrics:

a) Blend percentages;
b) Electrolyzer size;
c) Storage configuration;
d) Emissions testing;
e) Turbine configuration; and
f) Operational objectives.

If so, provide a side-by-side comparison.

SDG&E Response 3:
SDG&E objects to this request on Rule 10.1 grounds to the extent it seeks identification of hydrogen demonstration blending projects that are neither relevant to this proceeding nor likely to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SDG&E responds as follows:

In 2023, SDG&E successfully completed the installation and commissioning of the project. It was among the first in California or western U.S. at the time of design and construction for a multi-use case in an operating power plant. The project includes hydrogen generation, storage, blending, turbine combustion, hydrogen fueling station, and research and development. The design was accomplished by consulting the third-party design and engineering firms where space constraints, operational constraints of power plant, major equipment upgrades considerations and storage configuration were part of the design process.

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Question 4a:
Explain why SDG&E built a hydrogen fueling station despite Commission Decision (D.) 24-12-074, in which the Commission denied recovery of two similar hydrogen fueling station costs.[1] Explain whether SDG&E seeks recovery of costs associated with the fueling station in the Application.

SDG&E Response 4a:
SDG&E objects to this Request as irrelevant and to the extent it seeks information that is not within SDG&E's knowledge or control on the basis that this Request is regarding information related to a SoCal Gas Project, which does not belong to and is not operated by SDG&E. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

As stated in Beer's testimony, the Commission approved Decision D.24-12-074, "Decision Addressing the 2024 Test Year General Rate Cases of Southern California Gas Company and San Diego Gas & Electric Company" ("2024 GRC Decision"), which did not authorize funding for the "Palomar Hydrogen Systems." In the 2024 GRC Decision, the Commission acknowledged the potential for hydrogen blending with natural gas to support the transition to carbon-free electricity, finding: "Without knowing the actual cost to ratepayers, we cannot accurately judge whether the costs and scale of this pilot are just and reasonable." The Commission also stated, "SDG&E may pursue building the hydrogen systems at the Palomar Energy Center as a stand-alone application with more robust information, leveraging public funding sources and lowering ratepayer costs." As directed in the 2024 GRC Decision, this standalone application provides a robust description and explanation of the system and its operations, describes the actual costs, and explains how SDG&E successfully leveraged federal and state funding, lowered costs, and provided benefits through the Project.

SDG&E seeks recovery for the full project inclusive of the hydrogen fueling station as stated in the GRC 2024 application and Palomar Decarbonization Demonstration Project.

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Question 4b:
Demonstrate how the hydrogen fueling station infrastructure proposed by the Project differs significantly from that of the Pico Rivera or Honor Rancho facilities discussed in D.24-12-074, and how this difference correlates to greater ratepayer benefit.

SDG&E Response 4b:
SDG&E objects to this Request as irrelevant and to the extent it seeks information that is not within SDG&E's knowledge or control on the basis that this Request is regarding information related to a SoCal Gas Project. Subject to and without waiving the foregoing objections, SDG&E responds as follows:

In Decision 24-12-074, the Commission approved funding related to SDG&E hydrogen fueling infrastructure at the Kearny Construction & Operations Center. In addition, the decision approved SDG&E to procure up to three hydrogen fuel cell electric vehicles (HFCEVs) for light-duty use and up to three medium duty HFCEVs.

SDG&E's fueling station at Palomar Energy Center is a private station, used for fleet vehicles, where it can provide reliable hydrogen for the hydrogen fuel cell electric vehicles used as fleet vehicles. Ratepayer benefits were discussed in Beer's testimony page AB-2 and Ab-29.

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Question 5:
Quantify the actual contribution of the Project to clean firm capacity.

SDG&E Response 5:
SDG&E objects to this request on the basis it calls for speculation. Subject to and without waiving the foregoing objection, SDG&E responds as follows:

Actual contribution of the project to clean firm capacity depends on what percentage of hydrogen the project runs at, however, here is a calculation that shows the approximate number.

Assuming 2% hydrogen blend by volume on one 176MW gas turbine is around 62.3 Kg/hr, using lower heating value of hydrogen 120MJ/Kg, we have 62.3 kg/hr*120 MJ/kg= 7,476 MJ/hr converts to 2.08 MWh (2.08 MW in one hour). Assuming turbine efficiency at 49% results to around 1MWe of carbon-free generation capacity.

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Question 6:

Identify and describe all public funding, incentives, grants, tax credits, rebates, loans, or other financial support SDG&E has sought, applied for, received, expects to receive, or may become eligible to receive in connection with the Project. For each source of funding or financial support, provide:

a. Program name and administering agency;
b. Amount requested;
c. Amount awarded or expected;
d. Status of the request (e.g., awarded, pending, denied, withdrawn);
e. Date(s) of application and award;
f. Any conditions, restrictions, reporting obligations, or matching fund requirements associated with the funding; and
g. Whether and how the benefits will flow to ratepayers.

SDG&E Response 6:

Please see responses to Q4 of CALPA-DR-02.

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Question 7:
Quantify the percentage of total hydrogen production capacity that is required to meet generator cooling needs as compared to:

a) Turbine blending;
b) Hydrogen vehicle fueling; and
c) RD&D activities.

SDG&E Response 7:
SDG&E objects to this Request on the grounds it calls for speculation. Subject to and without waving this objection, SDG&E responds as follows:

The amount of hydrogen consumed in the Palomar Energy Center depends on a variety of factors, including the power plant's overall operations as well as number of miles driven by the fleet of vehicles. On average, PEC consumed 642 Kg of hydrogen for generator cooling on a yearly basis (based on data from 2019-2023). In 2025, SDG&E produced 4279.3 Kg on a yearly basis. That ratio is 15%. Currently, there is no hydrogen consumption for RD&D activities. Please see the response to CAlPA-DR01-Question 21 for additional information.

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Question 8:

Quantify and compare the costs associated with using hydrogen for generator cooling at PEC versus alternative cooling supply options, including continued procurement of trucked-in hydrogen and any other feasible cooling alternatives considered by SDG&E. For each alternative, provide:

a) Capital costs;
b) Annual O&M costs;
c) Transportation and delivery costs;
d) Infrastructure modification costs;
e) Reliability and operational impacts;
f) Greenhouse gas and emissions impacts; and
g) All analyses, studies, assumptions, and calculations supporting SDG&E's evaluation.

SDG&E Response 8:

SDG&E objects on the basis that this Request is overly burdensome, calls for information that does not currently exist, and would require SDG&E to generate data and conduct analysis, measurements, and studies.

END OF REQUEST

Workpaper 1 – Direct Capital Cost Details

This document provides detail on the actual direct capital costs of the Palomar Decarbonization Demonstration Project by year, explains and categorizes the actual direct costs, and compares them to the forecast from the SDG&E 2024 General Rate Case application.

Project Activity Chronology

The capital project began in 2021 and was completed in September 2025. Certain key equipment, including the electrolyzer, was placed into service at the end of 2023. Other equipment was not placed into service until later. Table WP1-A describes project capital activity by year.

Table WP1-A: Project Capital Activity by Year

Year	Capital Activities
2021	• Pilot design, preliminary engineering, and solar equipment procurement
2022	• Project detailed design, equipment procurement, construction
2023	• Project detailed design, equipment procurement, construction continues • Electrolyzer commissioning completed • Solar, electrolyzer, and storage placed “in service” by year end
2024	• Blending skid installed and commissioned • Fueling station placed into service
2025	• Meters installed to support third party verification and test plan

Table WP1-B is repeated from Chapter 2.

Table WP1-B: Capital Cost- Actual Direct (in Millions of Dollars)

Direct Costs	2021	2022	2023	2024	2025	Total
Direct Capital Cost	$1.22	$6.24	$9.19	$0.71	$0.13	$17.49

Table WP1-C provides cost details on actual direct costs by category and item detail.

Table WP1-C: Capital Cost Details (Unloaded) (in Millions of Dollars)

Category	Item	Cost	Total Cost By Category
Major Equipment	Solar System Package	$1.63	$9.06
	H2 Vendor Package: Electrolyzer, Storage, Fueling Station, and Compressor	$6.14	
	Blending Skid and Analyzer	$1.10	
	Switchgear	$0.18	
Other Services and Materials	Government Payments and Permits	$0.01	$8.24
	Service Vehicle & Equipment Rental	$0.02	
	Services- Engineering	$1.40	
	Services-Construction	$2.64	
	Services- Contractors	$2.00	
	Services-Consultants	$0.79	
	Services- Other	$0.31	
	Materials	$1.07	
Management and Non-Union Labor	Management and Non-Union Labor	$0.25	$0.25
Miscellaneous & Adjustments	Accounting Adjustment, Discounts, etc.	$(0.06)	$(0.06)
Total		$17.49	$17.49

There are non-direct incremental costs and Allowable Funds Used During Construction for this project.

GRC Capital Cost Comparison

The figure below presents the estimated capital costs submitted as part of SDG&E's Test Year 2024 General Rate Case (GRC), Application No. 22-05-016. These estimates were documented in Exhibit SDG&E-14CWP-E and reflect projected costs for Group 210390. These represent the original project budget forecast.

Figure 1: GRC Supplemental Workpapers for Group 210390.[1]

			Notes	Estimate (2021 - July 2023)	2021	1.02 2022	2023
CPUC	Mgmt & Non-Union Labor		Internal Labor - $1500 in directs per month for entire project	$ 42,997	$ 12,456	$ 19,838	$ 10,703
	Union Labor				$ -	$ -	$ -
	Material Issuances				$ -	$ -	$ -
		Nel Contract	Nel Hydrogen - Compensation Schedule, freight included in the Feb 2023 amount (S	$ 4,995,000	$ -	$ 3,496,500	$ 1,498,500
		PSM Hydrogen Gas Train	PSM - Blending Skid Proposal	$ 610,000	$ -	$ 183,000	$ 427,000
		Remaining Materials	B&V Cost Estimate - Materials	$ 4,079,080	$ -	$ 1,000,000	$ 3,079,080
	Material Other Total		B&V Cost Estimate - Mechanical Equiopment, Piping, Electrical	$ 9,684,080	$ -	$ 4,679,500	$ 5,004,580
		Services - Baker	Baker Electric Estimate - PEC PV System Project	$ 1,488,639	$ 595,456	$ 893,183	$ -
		Services B&V	B&V Cost Esimate - Services Engineering	$ 1,348,000	$ 303,308	$ 807,691	$ 237,001
		Services - Burns & McDonnell	B&M forecast based on project 3-month burn rate	$ 30,898	$ 11,699	$ 12,066	$ 7,133
		Pride Resource	Pride forecast based on project 3-month burn rate	$ 94,037	$ 16,920	$ 48,585	$ 28,533
		Estimate Services	B&V Cost Estimate - Total Union Labor directs, subcontractor indirects, and CM/CI total	$ 3,834,000	$ -	$ 1,643,143	$ 2,190,857
		Additional Construction Services	B&V Cost Estimate - additional services using total union labor as estimate	$ 657,000	$ -	$ 292,000	$ 365,000
		No Vendor	Additional vendors not included in above services	$ 30,212	$ 22,730	$ 7,482	$ -
	Services Total			$ 7,743,157	$ 1,210,484	$ 3,704,150	$ 2,828,524
	CIAC				$ -	$ -	$ -
	All Other			$ (812)	$ (770)	$ (42)	$ -
	Adjustments				$ -	$ -	$ -
	Vehicle Utilization				$ -	$ -	$ -
	All Direct Costs			$ 17,469,422	$ 1,222,170	$ 8,403,446	$ 7,843,807

	$ 9,684,080	Materials - includes $1.3M in contingency & $277k in freight	
	$ 1,348,000	Services Engineering	
	$ 2,520,000	Services / Construction	
	$ 1,508,000	Services	
	$ 1,289,000	Contingency Services - built into services forecast	
Cost Estimate Total	$ 16,349,080	$ -	
Internal Labor	$ 42,997	Labor	
	$ 16,392,077		
Additional Contingnecy	$ 1,077,345.00	built into Services forecast	
Directs Total	$ 17,469,422		

Total Directs		
2021	$	1,222,170
2022	$	8,403,446
2023	$	7,843,807
	$	17,469,422

[1] Capital Workpaper to Application No. 22-05-016, Exhibit No: SDG&E-14CWP-E, available at: SDGE-14-CWP-E_Daniel S Baerman_EGEN.pdf

Workpaper 2 – Operations & Maintenance (O&M) Cost Summary

This document provides detail on the actual and forecasted O&M costs of the Palomar Decarbonization Demonstration Project by year, explains and categorizes the costs, and compares them to the forecast from the SDG&E 2024 General Rate Case application.

Project Activity Chronology

The capital project began in 2021 and was completed in September 2025. Certain key equipment, including the electrolyzer, solar, and hydrogen storage was placed into service by the end of 2023. Other equipment was not placed into service until later. O&M for the electrolyzer, solar, and hydrogen storage, and fueling system began in 2024. Actual O&M costs are reported for 2024, and O&M forecasts are provided for 2025 through 2036, which is the end of the book life of the plant.

Table WP2-A: Project Capital and O&M Activity by Year

Year	Capital Activities	O&M
2021	• Pilot design, preliminary engineering, and solar equipment procurement	N/A
2022	• Project detailed design, equipment procurement, construction	N/A
2023	• Project detailed design, equipment procurement, construction continues • Electrolyzer Commissioning completed • Solar, electrolyzer, and storage placed “in service” by year end	N/A
2024	• Blending skid installed and commissioned • Fueling station placed into service	• Maintenance and operations of electrolyzer, compressor, storage, and fueling • Third party tax credit verification
2025 (Jan – Sept)	• Meters installed to support third party verification and test plan	• Maintenance and operations of electrolyzer, compressor, storage, fueling and blending

		• Third party tax credit verification
Oct 2025-2027		• Maintenance and operations of electrolyzer, compressor, storage, fueling and blending • Third party tax credit verification (through 2028 only).

Table WP2-B is repeated from Chapter 2:

Table WP2-B: Direct O&M Costs (Unloaded) (in Millions of Dollars)

	Actual O&M	**Forecasted O&M**				
Year	2024	2025	2026	2027	2028	2029-2036
Total	$0.23	$0.22	$0.22	$0.18	$0.18	$0.19

Table WP2-C provides cost details on O&M by category and item detail.

Table WP2-C: O&M Cost Details (Unloaded) (in Thousands of Dollars)

	Actual	**Forecast**				
Item	**2024**	**2025**	**2026**	**2027**	**2028**	**2029 - 2036 (per year)**
Equipment Service	$198	$159	$159	$122	$122	$163
Tax Credit Verification	$30	$30	$30	$30	$30	0
Materials	$3	$10	$10	$10	$10	$10
Internal Labor	-	$10	$10	$10	$10	$10
Indirect Labor	-	$10	$10	$10	$10	$10
Annual Total:	$231	$219	$219	$182	$182	$193

Equipment Service: Equipment service contracts cover long-term service agreements for the electrolyzer, storage tanks, the fueling station module, and the fueling dispenser. These agreements enable the equipment to be properly maintained by their vendors. Covered activities include scheduled maintenance, repairs, remote monitoring and

support services for the equipment. Maintenance and service costs from 2024-2028 are contracted on a graduated payment schedule with SDG&E frontloading payments in 2024 and with lower payments in the following four years and are valid through 2028. For the years 2029 and beyond, SDG&E is using the average annual cost of current agreements in today's dollars to support its forecast.

Tax Credit Verification: The third-party verification for the income tax election on the federal hydrogen production tax credit (45V) is required by the US Department of Treasury for the first five years the hydrogen production system is in service. The verification payments lag the tax credit by one year. Therefore, SDG&E paid for verification services starting in 2024 for the 2023 tax year. SDG&E's final verification payment will take place in 2028 and is not applicable for 2029-2036.

Materials: Equipment not covered under service contracts includes the compressor, blending skid, export panel, pipes, valves, and control systems. The "materials" category is a zero-based forecast for the annual cost for the parts needed to maintain the system over its useful life. Over time, more materials will need to be repaired and replaced. In 2024, SDG&E spent $3000 on tools and tool storage compartment. In the future, SDG&E assumed material costs would increase and that $10,000/year was a reasonable estimate.

Labor- Internal: Labor includes zero based estimate for direct costs for SDG&E staff time for operating the system, managing contractors, and maintenance performed on the system.

Labor- Non-Direct: Labor includes zero based estimate for direct costs for contractor labor and services to perform maintenance on equipment not covered under service contracts.

GRC O&M Forecast

In 2024, SDG&E adjusted its non-labor forecast to include maintenance and service costs for the Palomar Hydrogen Project. Figure 1 illustrates this adjustment as submitted in the Test Year 2024 General Rate Case.

Figure 1. O&M Cost Forecast Associated with the PEC Hydrogen Project[1]

San Diego Gas & Electric Company
2024 GRC - APP
Non-Shared Service Workpapers

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Category:	A. Generation Plant
Category-Sub:	1. Generation Plant Palomar
Workpaper:	1EG003.000 - Generation Plant Palomar

Year	Labor	NLbr	NSE	Total	FTE	Adj_Type
2024	0	270	0	270	0.0	1-Sided Adj

Explanation: Increased forecast to include Long Term Service Agreement (LTSA) costs associated with the Palomar Hydrogen Project.

[1] SDG&E 2024 General Rate Case, Exhibit SDG&E-14-WP, Workpapers to Direct Testimony of Daniel Baerman – Electric Generation, p. 8. Available at: https://www.sdge.com/sdge-2024-general-rate-case