Application: A.23-01-XXX
Witness: Darren Hanway
Chapter: 1

SOUTHERN CALIFORNIA GAS COMPANY'S TESTIMONY IN SUPPORT OF ITS APPLICATION FOR APPROVAL OF ITS DEMAND RESPONSE PILOT PROGRAMS (CHAPTER 1: POLICY)

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

January 06, 2023

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CHAPTER 1
PREPARED DIRECT TESTIMONY OF DARREN HANWAY
(POLICY)

I. PURPOSE

Southern California Gas Company (SoCalGas) files this Application seeking California Public Utilities Commission's (Commission or CPUC) approval of its proposed gas Demand Response Pilots (DR Pilots or Pilots). SoCalGas's proposed Pilots build upon the previous SoCalGas demand response (DR) programs[1] and will provide valuable information to address the necessary showings required by Decision (D.) 20-02-043[2] for future DR programs. The Pilots will test the effectiveness of customer participation in DR programs to improve system reliability during weather-driven events and energy shortage periods through scheduled DR events. The Pilots will be supported by a technology evaluation of DR-enabled devices and applications that can inform future program design and delivery.[3] The learnings from the Pilots will help inform SoCalGas of whether future gas DR programs are feasible, effective, and appropriate for ratepayers to fund.

A total budget of $15 million will fund the four (4) proposed Pilots for the 2023-2024 and 2024-2025 winter seasons. SoCalGas and its partners have obtained a $2.5 million conditional grant from the U.S. Department of Energy (DOE) to help defray the cost to SoCalGas's ratepayers. SoCalGas requests the CPUC's approval for the remaining $12.5 million. To leverage the $2.5 million from the DOE, SoCalGas asks the CPUC to consider the regulatory proceeding schedule proposed by SoCalGas in this Application.

The purpose of this chapter is to provide the policy rationale for how gas DR may help activate customers to help address system constraints and energy shortages and the additional information and learnings that are needed to further inform effective design and implementation of gas DR programs for the State. For example, the Pilots will provide learnings and insight to understand the preferred DR program design, event durations, targeted customer groups, participant incentives, and potential system benefits and future costs. The results from the Pilots

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1 SoCalGas Advice Letter (AL) No. 5035, dated September 27, 2016, available at: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/submittals/GAS_5035.pdf.

2 D.20-02-043 at 56-57, Order Paragraphs (OP) 5, 6, and 7.

3 *Id.* at 57, OP 7.

will inform future gas DR program designs to advance system reliability and resiliency and provide significant benefits to ratepayers.

II. BACKGROUND

SoCalGas previously implemented residential gas DR pilots during the 2016-2019 winter seasons due to capacity constraints at the Aliso Canyon gas storage facility and ongoing maintenance on transmission pipelines.[4] SoCalGas called two DR events during the 2016-2017 winter season and issued mass market messaging to all core customers as well as targeted messaging for the pilot rebate programs. The first event was from December 18 through 20, 2016 and the second from January 23 through 26, 2017 for a total of seven days. The total amount of gas usage reduced was 792 therms.

In its 2017-2018 DR programs, SoCalGas continued implementation of the smart thermostat load control program first established as part of the 2016-2017 winter season DR programs. SoCalGas enrolled 9,267 customers and 10,798 smart thermostats into the program and called activations during the 2017-2018 winter season. The load impact evaluation results showed that, on average, each participant reduced their usage between 16-25% equating to 0.03-0.05 therms during the morning event period and between 10.7%-15.6% equating to 0.012-0.019 therms during the evening event period.

These initial pilots were limited to voluntary conservation signals and residential thermostat controls, which remotely lowered the temperature setpoint for four hours during a DR event with participating customers.[5]

In 2018, SoCalGas submitted an application to the CPUC to fund and implement a new $50 million demand response program beginning 2019 through 2022.[6] D.20-02-043 denied, without prejudice, SoCalGas's Application seeking authority to establish the gas DR programs citing a lack of evidence that the proposed DR programs would provide significant ratepayer benefits.[7] Instead, the CPUC ordered SoCalGas to hold a public workshop on the need for a DR

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[4] The Joint Agency Aliso Canyon Gas and Electric Reliability Winter Action Plan (2016), available at: https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/news_room/news_and_updates/aliso-canyon-action-plan-04-4-16-final-clean.pdf.

[5] SoCalGas AL No. 5035, dated September 27, 2016, available at: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/submittals/GAS_5035.pdf.

[6] Application (A.) 18-11-005, Application of Southern California Gas Company (U904G) to Establish a Demand Response Program.

[7] D.20-02-043 at 2, 55-56, OP 1-4.

program and consider other alternatives that could be more effective in addressing the natural gas curtailments and reliability issues that these DR programs aimed to address.[8] The CPUC also directed SoCalGas to hold at least one public workshop seeking public input and participation and develop needed information on the design and implementation of the Commercial and Industrial (C&I) Load Reduction Pilot before refiling an application of such a pilot. In compliance with these directives, SoCalGas held a public workshop on October 16, 2022, seeking public input on a potential C&I pilot and other potential pilots. On August 18, 2022, SoCalGas informed the CPUC's ED that it planned an application for a set of limited DR pilots.

SoCalGas's proposed $15 million DR Pilots are more targeted as compared to the prior application for a $50 million DR pilot program. The current proposed DR Pilots are intended to test the feasibility of DR programs and to provide additional learnings to inform future DR programs while limiting the cost to ratepayers. In 2021, the U.S. DOE conditionally awarded SoCalGas a $2.5 million grant[9] which can be used to subsidize the Pilot activities and further reduce the costs to California ratepayers. The DOE grant must be utilized by the winter of 2023, otherwise, California ratepayers will lose the opportunity to use this funding source. SoCalGas believes that it is important for the State to begin testing these types of programs now as it looks to alternatives to pipeline capacity in order to serve customers in the future.

III. A GAS DEMAND RESPONSE PILOT CAN INFORM WHAT PRICE SIGNALS ARE NEEDED FOR GAS LOAD SHEDDING FOR RELIABILITY AND EMISSIONS REDUCTIONS

As California rapidly deploys renewables to achieve a carbon-free energy system by 2045,[10] the reliability services and capabilities provided by the natural gas system are increasingly being called upon to support the electric grid. In September 2022, California experienced a long and record setting heatwave. This heatwave not only saw record high maximum daily temperatures, but also record high daily nighttime temperatures which continued to drive significant cooling load across the State and saw this heat persist for multiple days.[11]

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8 *Id.* at 57, OP 7.

9 U.S. Department of Energy, Funding Opportunity Announcement, Natural Gas Demand Response Pilot Program, Ref. No.: DE-FOA-0002519¸ CFDA Number: 81.089 Fossil Energy Research and Development, Issue Date: September 9, 2021.

10 Senate Bill (SB) 100 (De Leon, Ch. 312, 2018), available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100.

11 California ISO, Summer Market Performance Report September 2022 (2022), available at: http://www.caiso.com/Documents/SummerMarketPerformanceReportforSeptember2022.pdf.

Figure [1] below shows recorded hourly SoCalGas System gas send-out during the first period of September 2022.[12] The daily hourly profile peaks daily in the evening corresponding to reduced solar output and dips in the morning as solar is ramping up. The ability of gas-fired generators and natural gas to ramp-up and down as needed illustrates the critical role the gas system played in both meeting peak demand and providing flexibility to keep the electric grid in balance.

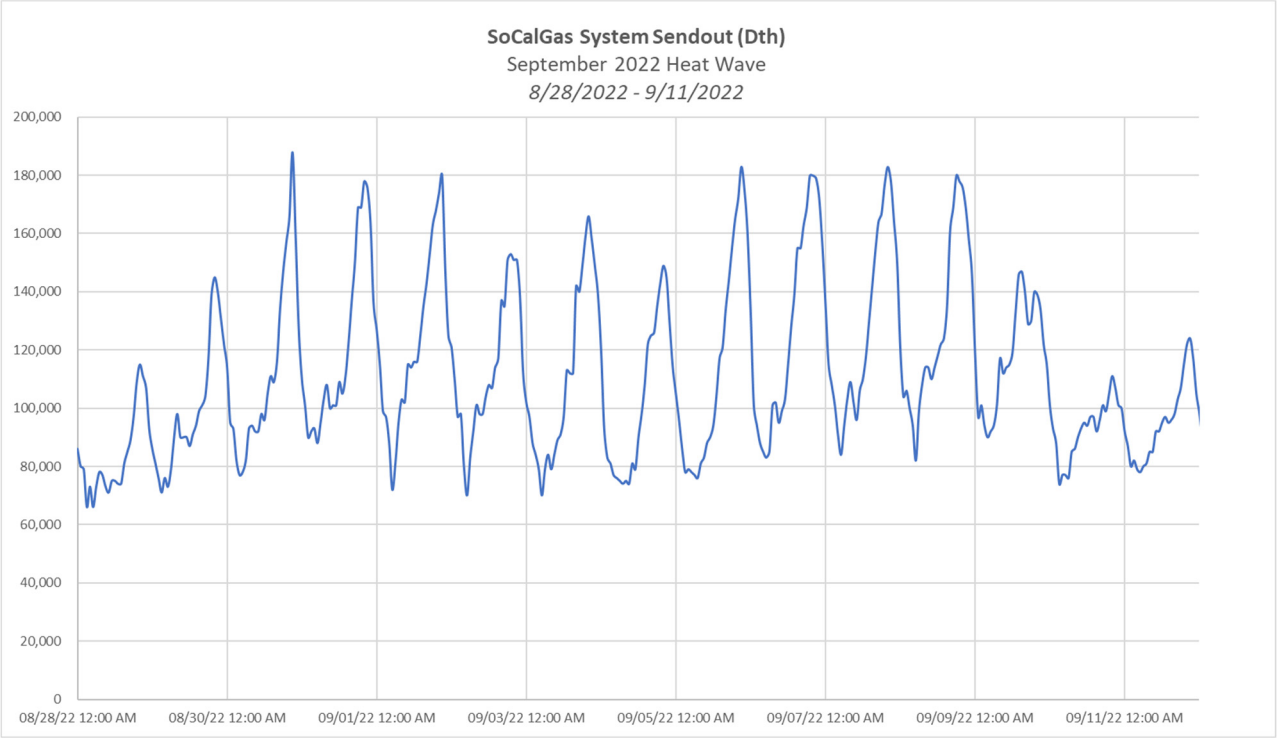

Figure 1 - SoCal Gas System Sendout Data for Aug 28, 2022 through Sep 11, 2022, depicting the September 2022 Heatwave.

The California Energy Commission (CEC) continues to state the greatest reliability concern is during net peak hours and estimates a potential shortfall of 7,000 MW in 2022, growing to 10,000 MW in 2025 if electric grid demand increases, procurement is delayed due to supply chain issues, and extreme heat, drought, and fires continue in the coming years.[13] As a result of greater renewable electric capacity deployment, climate change events, and the electrification of buildings and transport, more sustained peaking capacity from dispatchable electric generators (DEGs) in both summer and winter months could be needed for energy system reliability in the

[12] SoCalGas Envoy Archived Hourly Operations Data, available at: https://www.socalgasenvoy.com/#nav=/Public/ViewExternalArchive.showArchive%3FarchiveType%3Dhourly_operations%26rand%3D378.

[13] CEC, *Draft 2022 Integrated Energy Policy Report Update*, pg. 4, CEC Docket No. 22-IEPR-01, TN No. 2478338, available at: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update.

future. Increases in electrification are already underway. For example, in September 2022, the California Air Resources Board (CARB) adopted the 2022 State Implementation Plan that included a measure to initiate a rulemaking requiring 100 percent zero-emission space and water heating installations by 2030 statewide.[14] When assessing future local reliability impacts from CARB's proposed State Implementation Plan (SIP) measure, the CEC found that zero-emission space and water heating would add 24,123 GWh of additional electric load in 2035, with 12,698 from the residential sector alone.[15] As seen in Table 1 below, researchers at the GTI Energy have found that zero- emission space and water heating policies in California could increase winter peak electricity demand to 125 percent of future summer peak demand.[16] Therefore, as more buildings electrify and seasonal storage options continue to be explored, DEGs supported by a decarbonizing gas grid could be needed to meet both cooling loads in the summer and heating loads in the winter.

Table 1: State-Level Residential Gas and Electric Space Heating Energy Demand[17]

	Current Natural Gas January 2021 State Demand (MMkWh)	Current Electricity January 2021 State Demand (MMKWh)	Future Electricity January State Demand (MMkWh)	Future Electricity August 2021 State Demand (MMkWh)	Future Winter/Summer Peak Ratio
California	20,533	7,578	15,395	12,297	125%

[14] CARB, *California adopts comprehensive strategy to meet federal ozone standard over next 15 years*, available at: https://ww2.arb.ca.gov/news/california-adopts-comprehensive-strategy-meet-federal-ozone-standard-over-next-15-years; *see also* CEC, Energy Assessments Division, Advanced Electrification Analysis Branch, *Additional Achievable Energy Efficiency & Fuel Substitution (AAEE & AAFS)*, November 15, 2022, at Slide 3, available at: https://www.energy.ca.gov/sites/default/files/2022-11/DAWG_Additional_Achievable_Energy_Efficiency_and_Fuel_Substitution_2022-11-15_ADA.pdf.

[15] CEC, Energy Assessments Division, Advanced Electrification Analysis Branch, *Additional Achievable Energy Efficiency & Fuel Substitution (AAEE & AAFS)*, November 15, 2022, at Slides 13-14, available at: https://www.energy.ca.gov/sites/default/files/2022-11/DAWG_Additional_Achievable_Energy_Efficiency_and_Fuel_Substitution_2022-11-15_ADA.pdf.

[16] GTI Energy, *Seasonal Residential Space Heating Opportunities and Challenges* (2018), at p. 28, available at: gti.energy/wp-content/uploads/2022/05/21917-Topical-Report-Seasonal-Space-Heating-Opportunities-and-Challenges-w-Appx_05-2022-v2.pdf.

[17] Ibid.

Additionally, under SoCalGas's Tariff Rule 23[18] priority of service, DEGs are not guaranteed service and are among the first that would be subject to gas curtailment. The risk of gas DEG curtailment may negatively impact energy system reliability as more buildings decarbonize and greater strain is placed on the electric grid in both summer and winter. A SoCalGas Gas Demand Response Pilot would serve the public interest in a reliable energy system as it could help ascertain at which price point C&I customers would be incentivized to shed gas load to help reduce gas curtailments. All other gas customers, including DEGs, would benefit from reduced gas curtailments. More analysis would be needed to determine the price signals needed to encourage load shedding from heavy-use customers.

IV. THE ROLE OF GAS DEMAND RESPONSE IN CALIFORNIA

Traditional electric demand response programs react to stress to the electric generation, transmission, and distribution systems. The stress events that occur during normal operations are either planned (e.g., scheduled service or maintenance to the system) or unplanned (e.g., wildfires, downed power line accidents caused by human interaction). However, system constraints may also align with seasonal extremes, such as heat waves during the summer. On the supply side of the electricity system, the provision of electricity is mainly limited to the available generation capacity online (e.g., solar photovoltaics, combined-cycled plants, gas turbines, hydroelectric dams, and energy storage).

Gas demand response programs must respond similarly to stress events across the storage, transmission, and distribution systems. Like the electrical system, stress events during normal operation are either planned (e.g., scheduled service or maintenance to the system) or unplanned (e.g., line break accidents caused by human interaction). Like the electric distribution system, system constraints may also be caused by extreme seasonal events such as cold winter fronts.

However, the supply-side operations significantly differ between electric and gas systems. The reaction to capacity-related DR events for any utility (i.e., electricity, gas, or water) is to solve the supply issue. The solution is typically accomplished for electric utilities by bringing another generation source online. Though this can be costly financially and potentially

[18] SoCalGas Tariff Rule 23, available at: https://tariff.socalgas.com/regulatory/tariffs/tm2/pdf/23.pdf?_ga=2.240475207.555845995.1668560065-484918884.1635269616.

impact the environment, electric supply sources are mostly available.[19] The electricity demand forecast is performed to anticipate and plan for such events and to justify and motivate the securing of generation resources outside of the fixed resources under the direct oversight of the California Independent System Operator (CAISO).

The time required to transmit energy is the critical difference between electric and gas systems. In an electric system, the replenishment of electrons is nearly immediate. In contrast, natural gas travels very slowly, at about 20 to 30 miles per hour. Additionally, much of the natural gas used in California is imported from out-of-state and are often not enough to meet our customers' needs, and gas from local storage facilities is used to supplement the difference. The SoCalGas system relies on the ability to withdraw gas from its storage system and replenish that which was withdrawn. While electric DR programs ask customers to reduce their energy load for a few hours, DR gas events last much longer due to the distance and time it takes for gas to move through the gas system. A key objective of the proposed DR Pilots is to manage a gas DR event that could extend for longer periods (e.g., 24 hours) than typical electric DR event durations.

SoCalGas will deploy the DR Pilots across multiple customer groups to examine the customer's propensity to participate in longer DR events. The DR Pilots will target customers based on their energy usage and willingness to participate. SoCalGas will examine the DR Pilots' effect on the storage facility, transmission system, and distribution districts that experience the most significant stress. By examining these points along SoCalGas's gas system in a coordinated manner, the Pilots will help inform whether future DR program(s) can effectively help with mitigating the risk and magnitude of natural gas curtailments and system reliability.

V. U.S. DEPARTMENT OF ENERGY GRANT

With timely CPUC approval of these DR pilots, SoCalGas can access $2.5 million from a U.S. DOE grant[20] which was conditionally awarded to SoCalGas in May 2022. As part of the grant application process, the DOE explained that the gas industry is facing new challenges that

[19] California ISO, *2022 Summer Loads and Resources Assessment* (2022), at p. 9, available at: http://www.caiso.com/Documents/2022-Summer-Loads-and-Resources-Assessment.pdf.

[20] U.S. Department of Energy, Funding Opportunity Announcement, Natural Gas Demand Response Pilot Program, Ref. No.: DE-FOA-0002519, CFDA Number: 81.089 Fossil Energy Research and Development, Issue Date: September 9, 2021.

will likely make DR programs a valued resource.[21] The DOE acknowledged that the industry is evolving as utilities factor carbon mitigation into their system planning.[22] New climate goals will also impact customers' overall gas system throughput, including industrial and commercial processes.[23] The DOE recognizes that effectively managing this evolution to a clean energy future will be monumental as the industry balances gas system and pipeline safety while adopting carbon-neutral resources.[24]

SoCalGas proposes to leverage the DOE grant to investigate potential benefits of investing in DR programs. SoCalGas, and its partners, will leverage the DOE grant funds to analyze key areas, including:

- **DR program designs set short-term peak targets at lower levels but can produce long-term sustained gas reductions**. The effort will examine the distribution system and gas supply avoided costs that can drive effective DR deployment. The DR pilots will address snapback (i.e., customer significantly increasing usage above normal levels after participating in an event) for space and water heating gas use. The DR Pilots leverage best practices from the electric DR programs to address the customer snapback effect.
- **Uncover existing knowledge gaps and uncertainties in program impacts and cost-effectiveness**. For example, most distributed energy resource programs (e.g., energy efficiency, energy storage) include customer segments with different design parameters and participation rules. DR programs with a one-size-fits-all structure will not likely attract and retain adequate participants. For example, commercial and industrial customers may want to contract for different event periods, energy reductions, and performance incentives that best fit their operations. The pilots will test different call strategies considering these different event periods and reduction levels to produce the highest value-added resource.

Since the DOE funding is time-dependent on implementing DR Pilots in 2023, SoCalGas respectfully asks the CPUC to adopt the regulatory schedule submitted as part of this Application. The proposed DR Pilots are consistent with the DOE grant requirements to

[21] *Id.* at 7-8.
[22] *Id*. at 51, 59, 86.
[23] *Id*. at 10-12, 14, 16-17.
[24] *Id*. at 8-11.

examine specific DR pilot designs, including a nonresidential load reduction pilot and a space and water heating direct load control pilot.

The DOE grant efforts will also examine the benefits of resiliency and reliability and carbon and greenhouse gas (GHG) emission reductions resulting from the DR Pilots. These efforts will also capture the technology and measure data needed to assess the DR potential of the various pilots. The DOE grant will fund the development of gas DR-specific cost-effectiveness models. These models will be based on achieving flexibility across event periods that look at the unique aspects of gas systems in terms of locational and regional benefits and costs linked to energy system resiliency benefits across electric and gas systems while accounting for the important differences across electric and gas DR programs.

VI. GAS DEMAND RESPONSE POTENTIAL OUTCOMES

The DR Pilots will address the recommendations of the Commission's prior directives,[25] including collecting information about:

A. load reduction forecast, potential carbon emission reduction, and system benefits,

B. cost-benefit analysis,

C. snapback effect mitigation, and

D. Aliso Canyon usage reduction.

A. Load Reduction Forecast, Potential Carbon Emission Reduction, and System Benefits

The DR Pilots will test the effectiveness of enrollment strategies, participation rate, the actualization of gas demand load reductions, and carbon reduction potential during the colder winter days and low-system capacity events.[26] The primary focus is to identify effective program design models.[27] The estimated load reduction forecasts and carbon reduction potential will depend on each pilot's design and incentive budget. The various program designs will vary in their incentive amounts. As a result, SoCalGas expects the contribution of the actualized demand reduction to vary as well. The cost per therm reduced will be weighted toward the

[25] D.20-02-043 at 57, OP 7.

[26] Low-system capacity events are usually coincident with peak demand during cold weather. The use of this term is to generalize events to allow for noncoincidental events.

[27] One of the outcomes of the program implementation effectiveness evaluation is to identify scalability. This information will also identify more meaningful program-related demand reduction impacts and expectations in future program cycles.

largest contributing market segment's incentive rate (i.e., large Industrial customers). SoCalGas estimates the DR Pilots will provide about 850,000 therms reduced across all DR events during the pilot period (*see* Table V-1). These estimates have been developed based on initial conversations between SoCalGas's representatives and customer representatives and demand response industry experts to establish the incentive levels that may be effective in encouraging participation from customers from different market segments. SoCalGas expects these estimates to vary depending on actual customer participation levels, adjustments to incentive levels, and metered results across four events per winter season during the two-year period.

Table V-1. Energy Reduction Forecast by Pilot

Pilot	Therms Reduction Forecast
Industrial Load Reduction	562,500
FLEXmarket	250,000
Direct Load Control	22,000
Residential Smart Control	12,800
Total	847,300

SoCalGas will evaluate the effectiveness of the various program implementation strategies through disaggregate poor effectiveness causality (i.e., was this outcome unavoidable, or was poor program implementation the root cause?). These DR Pilots should provide valuable information to improve future program administration, incentive structures, implementation strategies, and other program design facets.

Program performance (actualized demand reduction) depends on enrollment and participation rates. By understanding customer enrollment and participation, SoCalGas may better understand the capabilities and limitations of future DR programs. The DR Pilots should provide data on the reliability, repeatability, and scalability of total reductions during DR events.

SoCalGas envisions the first year of the DR Pilots to evaluate the effectiveness of different implementation strategies by measuring:

- Enrollment Success
    - Measuring the number of customers enrolled within the different customer groups and pilot delivery models, and

- Measuring the effectiveness of those enrolled in contributing to the pilot's success.

- Participation Effectiveness
  - Tracking customer participation within each customer group and pilot delivery model, and
  - Analyzing customer participation (survey of customers by the pilot delivery model to identify the model's ability to deliver reduced usage from the customer during DR events).
- Actualized Gas Reduction and Carbon Reduction Success
  - Measuring actualized gas reduction against baseline and expected/estimated reduction,
  - Determining the corresponding carbon reduction,[28] and
  - Reporting on the customer group and pilot delivery model.

Based on lessons learned from the first year of implementation, SoCalGas plans to gain valuable insight on:

- Demand reduction strategies and customers' willingness and ability to implement them,
- Competency in measurement methodology, and
- Areas of further testing and development, such as marketing and outreach efforts.

SoCalGas will examine these findings to help inform potential DR programs in the future.

The DR Pilots will help SoCalGas to better understand the DR-related gas reductions relative to the overall operation of the SoCalGas infrastructure, effective design implementation schedules to reduce the spike in demand, and the costs of enabling DR capabilities to assess a meaningful load reduction forecast, carbon reduction potential, and system benefits.

B. Cost-Benefit Analysis

Similar to the impact of the more well-established electric DR program, SoCalGas expects the gas DR programs to provide load shifting from when gas has a very high market price to other times when the market price of gas is lower. The delta in prices translates into cost

[28] Carbon reduction is directly proportional to and is dependent on the demand reduction.

savings for SoCalGas's ratepayers representing the DR benefits and other avoided costs, such as the costs associated with storage, transmission, and distribution. For example, during the high demand for gas, such as the Winter Storm Uri,[29] gas spot prices increased significantly to as much as $1,250 per MMBtu in some regions. At the same time, the prices at the Henry Hub set a record of $23.81 per MMBtu, approximately fifteen times the price just days earlier. The deployment of a gas DR in times of extreme to very high gas price spikes will be a cost-effective method of managing gas demand and costs for SoCalGas's customers.

While the benefits of electric DR programs in California can be estimated using the Avoided Cost Calculator, the deployment of gas DR is still in a very early stage, so the CPUC Avoided Cost Calculator cannot model the costs and benefits associated with gas DR programs. In other jurisdictions, gas DR programs use modified cost-benefit calculators supplemented with internal data. For example, the National Grid of New York is developing a Non-Pipeline Alternative Benefit-Cost Analysis (BCA) Handbook. The Handbook will calculate the cost-benefit analysis for demand-side management programs that will become alternatives to capital projects involving new gas infrastructure. ConEdison of New York has filed with the State of New York Public Service Commission a framework to pursue non-pipeline alternatives to defer or eliminate capital investment in certain traditional gas distribution infrastructure.

To inform the cost-benefit analysis of future DR programs, SoCalGas proposes to draft a framework with the assistance of industry experts such as Recurve, GTI Energy, and Lumina that will be developed during these DR Pilots funded by the DOE grant.

The proposed DR Pilots budget is $15.0 million inclusive of the DOE's grant ($2.5 million), which will shift or shed demand about 850,000 therms producing an average levelized cost of $17.65/therm shifted or shed during the pilot phase. This cost per therm is expected to improve during the full deployment of gas DR in the future due to the reduced costs associated with research and development needed for this Pilot. The pricing of program incentives will be monitored throughout the Pilot period and adjusted as necessary to remain viable for participants and ratepayers.

[29] Winter Storm Uri was a major coast-to-coast storm that spread snowfall and damaging ice from the Northwest into the South, Midwest, and Northeast from February 12-16, 2021. The storm was followed by the coldest temperatures in decades in the southern and central United States.

C. Snapback Effect Mitigation

DR programs encourage a temporary reduction in energy consumption. The CPUC states that "DR traditionally involved customers reducing electricity consumption temporarily in response to economic or reliability signals. More recently, DR has evolved to encourage the customer to shift electricity consumption from hours of high demand relative to energy supply to hours where energy supply is plentiful relative to demand."[30] The recognition of "temporary" means that energy consumption returns to pre-event levels after the DR event. The context for DR is to help enhance reliability and resiliency while reducing the costs of meeting peak demands and helping to advance environmental objectives. Snapback is the increase in energy and demand in the period immediately following a DR event. If deferred consumption returns and creates a new peak demand for energy, then the temporary shift in consumption may not be as beneficial to the system.

The DR Pilots will test strategies to avoid creating a new peak immediately following a DR event. SoCalGas will work with the DR aggregator network to incorporate the latest strategies in mitigating the snapback post-event. The DR Pilots will also apply existing electric DR program strategies such as pre-heating a space for a few hours before the planned event, a more gradual return to pre-set temperatures after the end of the DR event, and/or phasing implementation to groups of participants to avoid an "on-off" effect of the entire participant population.

D. Aliso Canyon Usage Reduction

The CPUC initiated Investigation (I.) 17-02-002 to "determine the feasibility of minimizing or eliminating the use of Aliso Canyon Natural Gas Storage Facility while maintaining energy and electric reliability" [31] as required by Senate Bill 380. The third phase of the OII included assessing the infrastructure investment options to retire Aliso Canyon by 2027 or 2035 without reducing gas and electric reliability and the costs and benefits of those investments. The Phase 3 Report states, among other things, that various combinations of gas infrastructure, building electrification, energy efficiency, renewable energy and storage, and

[30] California Public Utilities Commission, *Demand Response (DR)*, available at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/demand-response-dr.

[31] I.17-02-002 at 14, OP 1.

electricity transmission, including gas DR, could successfully fill the energy shortfall left by closing Aliso Canyon by 2027 or 2035.

The proposed DR Pilots will further examine the viability of future DR programs' effectiveness in helping with potential constraints on SoCalGas's energy storage systems, including Aliso Canyon.

E. Greenhouse Gas Mitigation

Innovative actions like these gas DR Pilots are integral to the State's long-term carbon neutrality goals and SoCalGas achieving net-zero GHG emissions in its operations and energy delivery by 2045. The DR pilots can reduce gas usage, and GHG emissions, during system stress when demand is high, typically during the winter due to lower temperatures. Future DR programs could result in much higher GHG emission reductions, especially in the Los Angeles basin. To support higher GHG emission reductions, the Pilots will span different customer groups and locations to gauge customer participation willingness and the DR-related energy usage and emission reductions. The results of the DR Pilots will provide critical customer data and potential demand and emission reductions to inform future DR program designs.

F. Other Benefits

The DR Pilots will provide the critical data foundation required to fully leverage the SoCalGas AMI system to support innovative new DR programs implemented and/or evaluated by third parties. It is envisioned to provide long lasting benefits to SoCalGas customers by stimulating innovation amongst third-party providers of potential DR and EE technology programs that support timelier and energy-efficient use of natural gas.

SoCalGas will conduct a market assessment on gas DR and compile a whitepaper to develop a cost-effectiveness methodology looking at the benefits and costs associated with natural gas DR implementation. Load impact evaluations will evaluate and measure the gas usage reduced during DR events. Evaluations will utilize advanced meter hourly interval data to determine ex post load impacts. Load impacts will be compared against ex ante impacts.

Process evaluations will measure customer experience with the DR pilots. Surveys, interviews and/or focus groups of participants and non-participants will be utilized. Evaluation will also develop metrics that look at successes that may differ from load impacts.

SoCalGas will launch a study to develop a cost effectiveness methodology for gas DR and develop inputs. The methodology and inputs will be used to calculate the cost-effectiveness and GHG of the pilots at the end of the pilot period.

This concludes my prepared direct testimony.

VII. QUALIFICATIONS

My name is Darren M. Hanway. My business address is 555 West Fifth Street, Los Angeles, California, 90013-1011. SoCalGas currently employs me as the Energy Efficiency Program Operations Manager in the Customer Programs and Assistance Department.

I joined SoCalGas in October 2012 to lead the energy efficiency policy support team. In December 2015, I assumed my current position. My current responsibilities include the management of the Company's energy efficiency programs, including residential, commercial, industrial, agricultural, workforce education and training, and codes and standards offerings. I also oversee the Company's demand response and solar thermal programs.

Before joining SoCalGas, I held increasing responsibility at Southern California Edison, working on their demand-side program offerings. I received a Bachelor of Science degree in Business Administration and a Bachelor of Arts degree in International Relations from the University of Southern California in 2003.