



Aliso Canyon Demand-Side Management Impact Summary

I. Executive Summary

A major gas leak was discovered at the Southern California Gas Company's (SoCalGas) Aliso Canyon natural gas storage facility (Aliso Canyon) on October 23, 2015. On January 6, 2016, the governor ordered SoCalGas to maximize withdrawals from Aliso Canyon to reduce the pressure in the facility. The California Public Utilities Commission (CPUC) subsequently required SoCalGas to leave 15 Billion cubic feet (Bcf) of working gas in the facility that could be withdrawn in an emergency. On May 10, 2016, Senate Bill (SB) 380 was approved, which prohibited the reinjection of gas into the facility until a comprehensive safety review was completed.

Gas storage is used to meet peak daily and seasonal gas demand and to hedge against price volatility in natural gas commodity markets. The reduced availability of Aliso Canyon threatened gas and electric reliability in Southern California. In response, the CPUC enacted a series of policies to increase reliability by reducing demand for natural gas. The tables below quantify the impacts of those policies.

Note that the period of estimated impacts for Tables 1 and 2 varies depending on when each initiative was completed and on variability in the lag time for summary data for the different resources and contracted completion dates. However, all online dates for the different impacts are within two months of one another (between November 30, 2016, and January 31, 2017). Additional efforts are underway that are expected to come online beyond January 31, 2017 (e.g., a significant steam trap upgrade energy efficiency initiative for the industrial sector that is currently under development by SoCalGas but that will not be in place until March 2017).

Table 1 shows the impacts of policies that resulted in a reduction in the amount of energy that needed to be supplied to the system. If the reduced load was originally recorded in kilowatt hours, the impact was converted into therms to facilitate comparisons between programs.¹ A therm is a unit used to measure the energy content in natural gas; it is roughly equivalent to 100 cubic feet of natural gas.

On an average day, 26.5 million therms of natural gas are used in the SoCalGas service territory. To ensure reliability on peak days, the CPUC estimated that Aliso Canyon should be able to withdraw .836 billion cubic feet per day (Bcfd) in the winter and .906 Bcfd in the summer.² These figures convert to 8.36 and 9.06 million therms per day, respectively. Any reduction in the demand for natural gas, especially on peak days, reduces the amount of gas that is needed from Aliso.

Table 1: Impacts Quantifiable in Therms

Policy	Time Frame	Estimated Impact (therm equivalent)
Tightening Gas Balancing Rules	6/1/2016-11/30/2016	43,860,250
Reprioritizing Existing Energy Efficiency	5/1/2016-12/1/2016	5,221,897
Intensified Deployment of Energy Savings Assistance Program Measures	5/1/2016-11/30/2016	393,115
California Solar Initiative: Thermal Program Changes	3/17/2016-12/31/2016	230,655
Total		49,705,917

¹ Conversion factor: 1 kilowatt hour = 0.0341 therm.

² Aliso Canyon Working Gas Inventory, Production Capacity, Injection Capacity, and Well Availability for Reliability, issued January 17, 2017.

http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/AlisoGas1-9-715.pdf

Table 2 provides a summary of the amount of electric load that can be taken off the system when necessary in the Aliso-impacted area. During a peak summer day, electric demand in the Los Angeles basin can reach 18,890 MW.³

Table 2: Capacity Impacts

Policy	Time Frame	Estimated Impact (MW)
Marketing and Research	5/1/2016-12/31/2016	540
Accelerated Deployment of Electricity Storage	5/26/2016-1/31/2017	98.5
Demand Response	6/16/2016-11/30/2016	37.8
Total		676.3

³ One-in-10 year peak load in the Los Angeles basin, California Independent System Operator (CAISO) 2017 Local Capacity Technical Analysis.

<http://www.caiso.com/Documents/Final2017LocalCapacityTechnicalReportApril292016.pdf>

II. Gas Balancing Rules

Estimated Impacts

Total Estimated Savings to Date ⁴	43,860,250 Therms
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Background

While efforts to tighten gas balancing rules for SoCalGas' noncore customers predate the Aliso Canyon gas leak, these efforts were intensified due the unavailability of Aliso Canyon.

For natural gas pipeline systems to remain "in balance," they must operate within a set range of pressures. If there isn't enough gas in the system, the pressure falls and gas doesn't flow properly. If there is too much gas, the pressure rises, posing a risk to the structural integrity of the pipelines. SoCalGas is responsible for maintaining the system's balance, but it does not control all gas procurement. The utility purchases gas for the residential and small business customers known as core customers. The remainder of the gas is procured by noncore customers.

Noncore customers purchase their own gas and pay the utility to transport it to their facilities. They tend to be large, sophisticated customers such as electric generators, refineries, and manufacturers. Historically, they only had to balance their gas deliveries to within 10% of their gas usage by the end of the month. In the winter, additional balancing rules applied, but they were relatively lax, in most cases requiring noncore customers to supply at least 50% of their burn over a five-day period.

There are legitimate reasons why it can be difficult for noncore customers to correctly estimate their daily gas needs. For example, unexpected changes in cloud cover can increase the need for electric generation. However, loose balancing rules also provided a financial advantage to noncore customers. Since daily gas prices are volatile, noncore customers tended to deliver insufficient gas on days when gas prices were high. They would wait until the price dropped to purchase enough gas to bring their accounts into balance.

⁴ Savings are estimated based on the reduction in negative daily imbalances between June 1, 2016, when the Summer Balancing Agreement went into effect, and November 30, 2016, as compared to the same period in 2015, less the difference that can be attributed to the balancing rules that went into effect December 3, 2015. This is a very rough estimate since summer and winter gas usage are very different.

Several policies to reduce noncore customers' daily imbalances were introduced in the months prior to the Aliso Canyon gas leak. In the aftermath of the gas leak, the CPUC further tightened those new policies through the Summer and Winter Balancing Settlement Agreements.⁵ In order to determine how much of the year-over-year reduction in negative imbalances is due to the Summer and Winter Balancing Agreements, it is necessary to tease out the reduction in imbalances that can be attributed to the Low Operational Flow Order (OFO) procedures that were implemented in late 2015.

A. Implementing Low Operational Flow Order Procedures (Initiated Pre-Leak): The CPUC approved Low OFO procedures, which went into effect on December 3, 2015.⁶ Under the new rules, a Low OFO was triggered when SoCalGas had to use more than the quantity of storage withdrawal designated for balancing (3.48 million therms) to compensate for underdeliveries. The low OFO procedures allow SoCalGas to require customers to deliver up to 95% of their daily gas usage and to impose increasingly severe financial penalties for noncompliance.

Results:

- 69.86 million therm reduction (42%) in customers' cumulative negative daily imbalance for the period from December 3, 2015, through May 31, 2016, compared to the same period the previous year.⁷

B. Implementing the Summer and Winter Balancing Settlement Agreements (Initiated Post-Leak): On June 1, 2016, settlement agreements went into effect that temporarily reduce the high OFO band of permissible overdeliveries from 110% to 105% of a customer's actual burn and acknowledge that SoCalGas' existing rules allow the utility 1) to call simultaneous high and low OFOs and 2) to set the OFO trigger based on operational conditions rather than

⁵ The Summer Settlement Agreement (D.16-06-021) became effective June 1, 2016, and expired November 30, 2016. The Winter Settlement Agreement (D.16-12-015) became effective December 1, 2016, and expires March 31, 2017.

⁶ Decision (D.) 15-06-004 and Resolution G-3511, respectively.

⁷ The cumulative negative daily imbalance during the December 3 through May 31 period in 2014-15 was 166.86 million therms, while in 2015-16 it was 97 million therms. These are the cumulative totals for all days with a negative imbalance.

using a constant number. In practice, the latter provision allowed SoCalGas to reduce the trigger from 3.48 million therms to as low as 1.73 million therms depending on conditions.

Results:

- 113.72 million therm reduction (60%) in customers’ cumulative negative daily imbalances for the period from June 1, 2016, through November 30, 2016, compared to the same period the previous year.⁸
- 43.86 million therms of that reduction can be attributed to the incremental impact of the Summer and Winter Balancing Agreements.⁹

III. Reprioritize Existing Energy Efficiency

Estimated Impacts

Total Estimated Savings to Date ¹⁰	5,221,897 therms
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Background

The CPUC authorizes approximately \$76 million per year for the SoCalGas energy efficiency portfolio. To date, SoCalGas’ 2016 gas savings across its service territory are significantly greater than 2015 savings. The majority of gas-saving energy efficiency projects installed to date are due to codes and standards, which are not directly related to the Aliso Canyon efforts but help to alleviate demand nonetheless. In response to Aliso Canyon, the CPUC directed SoCalGas to accelerate custom projects and expand deemed program offerings¹¹ in the Los Angeles Basin.

⁸ The cumulative negative daily imbalance during this period in 2014-15 was 188.81 million therms, while in 2015-16 it was 75.08 million therms. These are the cumulative totals for all days with a negative imbalance.

⁹ 113.72 million therms (total) - 69.86 million therms (attributable to the rules that went into effect December 3, 2015) = 43.86 million therms.

¹⁰ Estimated savings from May 1, 2016, to December 1, 2016. A previous version of this document included all savings from SoCalGas’ energy efficiency portfolio beginning January 1, 2016. For consistency with other demand-side response activities discussed in this document, the energy efficiency impacts are limited to those specifically focused on providing relief for Aliso Canyon.

¹¹ “Deemed” programs have a predetermined energy savings value in contrast to custom projects where savings vary by project.

A. Custom Projects: Custom projects involve site-specific energy efficiency activities that usually include complex processes that result in significant energy savings. SoCalGas identified 71 custom projects that may provide relief in the Aliso Canyon impact area through an incentive kicker, accelerated ex ante review, additional technical assistance, or support in obtaining local permits. Of the 71 custom projects, three have been accelerated to date; 50 have cleared ex ante review or are awaiting additional data from SoCalGas; eight projects were identified as out of the Aliso Canyon impact area or adding new load; two were canceled or on hold; and eight project reviews are currently in progress.

In working with SoCalGas to identify custom projects that could be accelerated, Commission staff found that customers implementing custom projects have difficulty accelerating project installation schedules due to long project lead times and the need to purchase, manufacture, or install unique, project-specific equipment. Additional efforts are underway, including the installation of steam trap projects, which will be reported on in the next update of this report.

Results:

- 274,000 therms in savings were achieved ahead of schedule.

B. Commercial Direct Install Program: The CPUC approved a new program¹² that includes a three-pronged approach to deliver measures to the small commercial market. SoCalGas is working in partnership with the Los Angeles Department of Water and Power (LADWP) and Southern California Edison (SCE) to target hard-to-reach small- to medium-sized commercial businesses throughout the SoCalGas territory and to install no- or low-cost energy efficiency equipment.

Results:

- 138,520,458 kWh and 119,727 Therms have been saved in partnership with LADWP.

C. Targeted Measure Rebate Kickers: All pipe and tank insulation, pool covers and heaters, and process boilers purchased and installed between June 1, 2016, and March 31, 2017, are eligible to receive an incentive kicker. These measures were selected for additional incentives because they can be installed quickly and have significant potential.

Results:

- 85,083 therms via 11 projects.

¹² Advice Letter 4950.

D. New Measure Offerings: New rebates have been added for ENERGYSTAR® High Efficiency Dryers, laminar flow restrictors for healthcare facilities, tub spout thermostatic diverters, smart thermostats, and AC/furnace tune ups. These measures may save natural gas, electricity, and/or water.

Results:

- 19,539 therms via 3,323 ENERGYSTAR® high efficiency dryers.

IV. Intensified Deployment of Energy Savings Assistance Program Measures

Estimated Impacts

	SoCalGas <i>(therms)</i>	SCE <i>(kWh converted to therms)</i>	Total <i>(therm equivalent)</i>
Total Estimated Savings to Date ¹³	305,918	87,197	393,115

Background

The CPUC directed SoCalGas and SCE to take immediate steps to intensify existing Energy Savings Assistance (ESA) programmatic efforts in low-income communities affected by the Aliso Canyon gas leak. The decision:

- Granted authority to use unspent funds already collected from ratepayers for the emergency response effort; approximately \$158.6 million was made available to SoCalGas and \$89.7 million to SCE;
- Directed SoCalGas and SCE to suspend the “three measure rule” and the “go-back rule” and serve previously treated households in the targeted area; and
- Extended this emergency authorization for the remainder of the current California Alternate Rates for Energy (CARE)/ESA portfolio cycle, which has been extended through 2020 unless modified in a subsequent decision.

¹³ Estimated savings from May 1, 2016, through November 30, 2016.

A. Program Rule Changes and Target Measures: SCE and SoCalGas identified high impact ESA program measures and high usage households for prioritization and also completed IT enhancements to suspend designated program rules on June 10, 2016.

Results:

- 21,945 homes were treated with an estimated 305,918 therms saved by SoCalGas in the Aliso-impacted area since the CPUC order was issued in April.¹⁴
- 14,980 homes treated with an estimated 2,557,104 kWh saved by SCE in the Aliso-impacted area since CPUC order was issued in April.¹⁵
- Increased activity and deeper savings have occurred in this area as a result the recent IT enhancements.

V. California Solar Initiative: Thermal Program Changes

Estimated Impacts

Total Estimated Savings through 2016 ¹⁶	230,655 therms
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Background

Temporary changes to the SoCalGas California Solar Initiative (CSI): Thermal Program budget were made at the request of the CPUC to reduce natural gas use in the area impacted by the Aliso Canyon gas leak. These changes resulted in improved incentives for customers in the SoCalGas service territory who install solar water heating systems by December 31, 2016.

A. Shifting Funding: On March 17, 2016, Energy Division approved a joint Advice Letter¹⁷ from the CSI: Thermal Program Administrators to shift \$25 million from the General Market incentive budget to the Low-Income incentive budget, which had exhausted funds.

¹⁴ Across the entire SoCalGas service territory, 50,887 homes were treated with an estimated 895,323 therms saved between January 1, 2016 and November 2016.

¹⁵ Across the entire SCE service territory, 37,645 homes were treated with an estimated 24,874,667 kWh saved between January 1, 2016 and November 2016.

¹⁶ CSI Thermal estimated savings data are as of December 31, 2016.

¹⁷ PG&E AL 3694-G/4800-E; Center for Sustainable Energy AL 69; SoCalGas AL 4930

Results:

- 14,816 therms in annual energy savings achieved through the installation of 20 multifamily and single family projects.

B. Additional Incentives for Systems Installed Before December 31: On May 6, 2016, Energy Division approved¹⁸ temporary changes to incentives for solar water heating systems installed by the end of 2016. This decision removed the cap that limited the Solar Pool Heating incentive from covering more than 50% of a project's cost and increased incentive levels for general market, single-family and multifamily/ commercial projects.¹⁹

Results:

- 115,039 therms of expected additional savings from 39 additional Solar Pool Heating projects installed since May 2016, compared to May–December 2015 installation data.²⁰
- 100,800 therms of expected additional savings from 449 additional applications for general market, single-family and multifamily/ commercial projects approved since May 2016, compared to May–December 2015.²¹

¹⁸ SoCalGas Advice Letter 4953.

¹⁹ Incentives were increased from \$29.85/therm to \$70/therm for single-family and from \$20.19/therm to \$25/therm for multifamily and commercial projects.

²⁰ From May to December 2015, 46 Solar Pool Heating projects were completed with a total of 99,232 therms in natural gas savings. From May to December 2016, 85 Solar Pool Heating Projects were completed with a total of 214,271 therms in natural gas savings.

²¹ From May to December 2015, 200 general market, single-family and multifamily/commercial projects were completed, with a total of 172,473 therms in natural gas savings. With the higher incentives available in 2016, a total of 649 general market, single-family and multifamily/commercial projects were completed from May to December 2016 with a total natural gas savings of 273,273 therms.

VI. Marketing and Outreach

Estimated Impacts

Program	June 20	July 27	July 28
Flex Alerts**	530 MW	490 MW	540 MW

** CAISO estimate (not verified by the CPUC)

Background

The CPUC ordered SoCalGas to spend \$11 million from May 1, 2016, through the end of the year on public message efforts to reduce electric and gas usage. Two main tactics were employed:

A. Flex Alerts: \$5 million was allocated for Flex Alert messaging. Flex Alerts are called by the California Independent System Operator (CAISO) on anticipated high use days. Alerts are broadcast by the news media, advertised, and sent directly to people who sign up for them through the Flex Alert website. They ask people to reduce their electricity usage, especially in the late afternoon and early evening. There were three Flex Alert days called in summer 2016: June 20, July 27, and July 28, with the highest demand reduction at 540 MW.

Results:

- 530 MW estimated savings on June 20.
- 490 MW estimated savings on July 27.
- 540 MW estimated savings on July 28.

B. Marketing, Education, and Engagement Response: \$6 million was allocated for a general electric and gas reduction campaign. SoCalGas was ordered to lead an advisory committee of 10 local governments and utilities on a coordinated campaign. Strategies included social media, earned media (news coverage), and event outreach. Information can be found at: www.conserveenergysocal.com

Tactics included the above-referenced website; outreach on social media; promotion at events such as outdoor movie screenings; sponsoring a weekly energy conservation theme at Pacific Park on the Santa Monica Pier; and the “Hot Days, Hot Deals” and “Cool Days, Cool Deals” promotions that encouraged people to get out of their homes and into local businesses offering special deals. In the appendix below are some examples of the outreach. These were made “open source” for local governments and public utilities to use.

Opinion Dynamics evaluated the impacts of the program using a split panel survey of residents in the Los Angeles Area during summer and fall 2016. A total of 1,200 residents were surveyed in each of two survey waves, with half of the first wave repeated in the second wave (meaning 1,800 were surveyed).

Results:

- Over 50% of respondents reported hearing or seeing the Conserve Energy So Cal campaign and Flex Alerts.
- Radio ads were the most effective, with about 40% of respondents reporting hearing about the campaign on the radio
- Over 25% of respondents who heard about Flex Alert alerts signed up for them.
- About 97% of respondents reported taking at least one action.
- The most common action taken was turning off a power strip when not in use.
- The average number of total reported actions per respondent was just over nine.

VII. Accelerated Deployment of Electricity Storage

Estimated Impacts

Total Estimated Online Storage Capacity ²²	98.5 MW
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Background

Electricity storage can reduce demand for natural gas during periods of peak electricity demand by charging the storage resource during off-peak times and discharging the resource during peak hours, reducing the demand for conventional natural gas-powered peaking generation. The CPUC has taken several steps to accelerate the deployment of electricity storage in the area impacted by Aliso Canyon, resulting in securing approximately 98.5 MW of online storage capacity contracts. Three main tactics were employed to accelerate electricity storage deployment:

²² Estimated storage as of December 2016/January 2017.

A. Expedited In-Front-of-the Meter Storage Procurements: The CPUC ordered SCE to hold an expedited energy storage procurement solicitation to mitigate potential Aliso Canyon-related reliability problems.²³ The resolution required that storage resources solicited in the expedited storage procurement be located in front of the meter; be operational by December 31, 2016; interconnect in a location that helps to alleviate electric reliability concerns associated with Aliso Canyon; qualify for Resource Adequacy credit; be price competitive with previous solicitations; and have a contract term of 10 years or less.

Results

- 22 MW of in-front-of-the-meter storage through capacity-only contracts with two different suppliers:²⁴
 - AltaGas Pomona Energy Storage, Inc. (20 MW); and
 - Grand Johanna LLC (2 MW).
- 20 MW of storage from two 10 MW projects installed by Tesla at the Mira Loma 1 and 2 peaker power plants.²⁵
- 1 MW of incremental resource adequacy capacity from storage integrated at two existing peaker plants (Grapeland and Center).

B. SDG&E Accelerated Deployment of Electricity Storage: San Diego Gas & Electric (SDG&E) sought bidders from its existing 2016 Preferred Resources Local Capacity Requirement Request for Offer who could bring energy storage projects online by the end of the year. Due to lead times for ordering necessary equipment, the deadline was extended to January 31, 2017. SDG&E sought and received Commission approval for two lithium-ion battery energy storage facilities to be located at two SDG&E substations. The projects are being constructed on a turnkey basis with AES Energy Storage and should be online by the January deadline.

Results

- 37.5 MW from two projects.

²³ Resolution E-4791 passed on May 26, 2016.

²⁴ A third, 5 MW project by Western Grid Development, LLC was initially approved by the CPUC but was later cancelled due to a permitting delay.

²⁵ SCE will request after-the-fact reasonableness review from the Commission within 90 days of December 31, 2016.

C. Behind-the-Meter Storage Interconnection: Energy Division, SCE, and storage developers expedited the construction and interconnection of at least 18 MW of behind-the-meter energy storage projects so that they would come online by the end of 2016.

Results

- 18 MW of behind-the-meter storage.

VIII. Demand Response

Estimated Impacts

Total Estimated Savings in 2016	37.8 MW
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Background

The CPUC directed SCE to intensify demand response activities in the Los Angeles Basin. SCE's proposal, submitted April 4, 2016, included:²⁶

- Targeted marketing to increase enrollment in the Air Conditioner (AC) Cycling program.
- Increasing enrollment in the emergency curtailment programs.
- Offering a rebate for installing smart thermostats and enrolling in the Peak Time Rebate program.
- An Aliso Canyon-focused competitive demand response solicitation.

A. AC Cycling Program: The AC Cycling program is triggered by high system peaks, high electricity prices, or emergency conditions, and a signal is sent to control devices that limit the operation of the AC unit.

Results:

- 10.8 MW of new load has been added, which represents 10,500 additional customers.

B. Emergency Curtailment: Emergency curtailment programs provide monthly capacity payments based on committed load to eligible customers for allowing SCE to temporarily interrupt electric service during CAISO or local emergencies.

²⁶ SCE's proposal was approved on June 16, 2016 in D.16-06-029.

Results:

- 10 MW of estimated new load has enrolled in two programs.

C. Smart Thermostats Load Control Program: SCE Peak Time Rebate-Enabling Technology Direct Load Control gives SCE or a third party the ability to control residential customers' loads during a Peak Time Rebate event through a smart thermostat. The customer receives a bill credit for reductions in electricity usage during the event. SCE was given a target of enrolling 22,000 customers by the end of 2016.

Results:

- 6 MW of additional load added with the enrollment of 11,100 new customers since partial launch in July.

D. Aliso Competitive Demand Response Solicitation: SCE held a solicitation for demand response contracts from third parties to meet Aliso Canyon reliability needs in the LA Basin.

Results:

11 MW of incremental demand response load reduction.

IX. Appendix A: Marketing, Education, and Engagement Collateral and Screenshots

Examples of Facebook Posts



Website Screenshot



Collateral

