PUBLIC UTILITIES COMMISSION
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SAN FRANCISCO, CA 94102-3298

January 18, 2019

Advice Letter 5390

Ronald van der Leeden
Director, Regulatory Affairs
Southern California Gas
555 W. Fifth Street, GT14D6
Los Angeles, CA 90013-1011

SUBJECT: Advice Letter Providing Information Pursuant to Resolution G-3540

Dear Mr. van der Leeden:

Advice Letter 5390 is effective as of November 30, 2018.

Sincerely,

Edward Randolph

Edward Randolph
Director, Energy Division

Ronald van der Leeden
Director
Regulatory Affairs

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November 30, 2018

Advice No. 5390
(U 904 G)

Public Utilities Commission of the State of California

Subject: Advice Letter Providing Information Pursuant to Resolution G-3540

Southern California Gas Company (SoCalGas) hereby provides the following information requested in California Public Utilities Commission (Commission or CPUC) Resolution (Res.) G-3540.

Background

On March 13, 2018, the Executive Director sent a letter to Bret Lane, President and Chief Operating Officer of SoCalGas, under the subject "Injection Required for SoCalGas Summer Reliability and Storage Inventories." The letter states that "[a]dequate natural gas inventory levels are necessary to maintain reliable delivery to both core and noncore customers during 1-in-10-year peak demand periods" and that "[g]iven the withdrawals from all storage fields during winter 2017-18 and the limited availability of the Aliso Canyon storage field due to the Public Utilities Code Section 715 Report requirements adopted December 11, 2017, overall storage inventory is critically low." To support energy reliability for Southern California, the March 13 letter directs SoCalGas to "take immediate action to increase injections at all available storage facilities" and "to immediately begin maximizing storage injections at all storage fields using the procurement capabilities of the SoCalGas Acquisition Department to support SoCalGas' storage requirement for system reliability" (Second System Reliability Directive).[1]

To accomplish this, the Executive Director directed SoCalGas to submit a Tier 2 Advice Letter "proposing an agreement between the SoCalGas System Operator and the SoCalGas Gas Acquisition Department to support SoCalGas' storage requirements for system reliability similar to the Injection Enhancement Plan and Injection Enhancement Memorandum process approved by Res. G-3529 (June 29, 2017)."[2]

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[1] On May 8, 2017, then CPUC Executive Director Timothy Sullivan sent a similar request to Mr. Lane. SoCalGas complied with the request, submitting Advice Letter No. (AL) 5139 on May 19, 2017. AL 5139 was approved, in part, by Res. G-3529 on June 29, 2017.

[2] The March 13, 2018 letter originally directed the AL to be submitted by March 20, 2018, however,

The Executive Director further stated that SoCalGas should include the following in its AL:

- An Injection Plan based on rapidly achieving storage withdrawal capacity at the non-Aliso storage fields of 1,320 MMcfd;[3]
- Minimum month-end storage targets for the remaining months of 2018 beginning with May 2018;
- Forecasted monthly natural gas storage quantities procured by the Gas Acquisition Department solely for the purpose of ensuring system reliability outside of its normal business as usual procurement for core customers; and
- An estimated cost for the Gas Acquisition Department to provide these support services.

Additionally, the Executive Director directed SoCalGas to request expedited treatment by proposing a shortened protest period and time to reply to the protest, and authorized SoCalGas to submit a separate AL seeking the establishment of a memorandum account to track costs resulting from the Second Injection Enhancement Plan.[4]

On March 30, 2018, at the direction of the Executive Director, SoCalGas submitted AL 5275, and in order to expedite the AL, the Commission set a five-day protest period, with protests due April 6, 2018, and SoCalGas' reply (if necessary) due by April 11, 2018. No protests to AL 5275 were received. On April 19, 2018, Energy Division requested that SoCalGas issue a supplemental AL to address the four changes identified above. As such, and at the direction of Energy Division, SoCalGas submitted AL 5275-A on April 20, 2018, which replaced AL 5275 in its entirety. On May 10, 2018, the Commission issued Res. G-3540 which approved in part and denied in part SoCalGas Supplemental AL 5275-A, which requested approval of a Proposed Second Injection Plan and a Second Injection Enhancement Memorandum between the Utility System Operator and the Gas Acquisition Department for Services to Maintain Summer Reliability pursuant to the March 13, 2018, "Injection Required for SoCalGas Summer Reliability and Storage Inventories" Letter from the California Public Utilities Commission (Commission or CPUC) Executive Director.

Res. G-3540 approved the following measures in SoCalGas' Second Injection Enhancement Plan to enhance injections to increase the system's ability to meet summer customer demand and to prepare storage for the winter operating season:

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the deadline was extended to March 30 per Executive Director Stebbins' letter dated March 19, 2018.

[3] As noted in the March 13, 2018 letter, the Commission does not require that SoCalGas maintain this level of withdrawal capacity at all times. SoCalGas is authorized to use storage to meet demand, even if it means withdrawal capacity at the non-Aliso Canyon fields temporarily falls below 1,320 MMcfd. If that occurs, however, the Commission indicates that it expects SoCalGas to make an effort to return storage to levels needed to support this withdrawal capacity.

[4] See AL 5276, Expedited Advice Letter Requesting to Modify the Injection Enhancement Cost Memorandum Account (IECMA) Pursuant to the March 13, 2018 "Injection Required for SoCalGas Summer Reliability and Storage Inventories" letter from CPUC Executive Director Alice Stebbins.

1. Continuing to implement temporary modifications to system operations to increase storage injections;
2. Implementing temporary modifications to increase storage injection capacity available to the market; and
3. Implementing temporary modifications to system operator limits on available injection capacity provided to the market and temporary, conditional modifications to Rule 41.

Res. G-3540 denied the following proposed measures:

1. Increasing the allowable inventory at Aliso Canyon to enable more system-wide injections; and
2. Modifying the Aliso Canyon Withdrawal Protocol to allow for more flexible use of Aliso Canyon to manage storage inventories and support reliability in conjunction with a temporary deviation to SoCalGas Rule No. 23.

Status Report of Storage Inventories

Res. G-3540 requested that SoCalGas provide a status report of storage inventories. Pursuant to the Second System Reliability Directive, AL 5275-A included targeted inventories for each of SoCalGas' storage fields. The following table provides the actual inventory at each of the storage fields as of November 1, 2018. As shown, while SoCalGas did not meet the inventory target for Playa del Rey, it more than exceeded its overall inventory target for the total system.

Storage Field	11/1/2018	
	Target Inventory (Bcf)	Actual Inventory (Bcf)
La Goleta	19.5	20.6
Playa Del Rey	1.9	1.8
Honor Rancho	17.3	24.5
Aliso Canyon	24.6	33.6
Total System	63.3	80.5

Costs Incurred from the Injection Enhancement Plan (IEP)

Pursuant to the Second Injection Enhancement Memorandum approved by Res. G-3540, SoCalGas' Gas Acquisition Department was to use reasonable best efforts to utilize storage injection capacity allocated to the system balancing function and made available for Cycle 1 or Cycle 3 for injection nominations in support of the System Reliability Directive. SoCalGas Gas Acquisition estimated that accelerating procurement of up to 8 Bcf of natural gas to meet the inventory targets in support of system reliability would result

in incremental costs of approximately $4 to $8 million.[5] These incremental costs were to be recorded in the Injection Enhancement Cost Memorandum Account (IECMA), which was approved by AL 5140.

Res. G-3540 requested that SoCalGas provide in this AL the costs incurred for the IEP. SoCalGas identified accelerated injections pursuant to the IEP of 1,805,242 Dth. The net costs of these injections was ($295,835) which is being tracked in the IECMA in addition to the cost associated with the first IEP.[6] As noted above, SoCalGas met its overall storage target set in AL 5275-A.

Analysis of System Reliability for the Upcoming Winter

Res. G-3540 directed SoCalGas to include "an analysis of system reliability for the upcoming winter." Attachment A to this AL is SoCalGas' Winter 2018-2019 Technical Assessment dated October 16, 2018, which provides a forecasted outlook of system reliability during the coming winter season (November 1, 2018 through March 31, 2019) and analyzes the associated risks to energy reliability during this period. On October 31, 2018, SoCalGas' Winter 2018-2019 Technical Assessment was submitted in the California Energy Commission's Integrated Energy Policy Report (IEPR) docket in the sub-docket for Southern California Energy Reliability. In addition, on November 2, 2018, the SoCalGas' Winter 2018-2019 Technical Assessment was served on parties to CPUC Investigation (I.)17-02-002 in a Notice of Ex Parte Communication.

Protest

Anyone may protest this AL to the Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received within 20 days from the date of this AL, which is December 20, 2018. The address for mailing or delivering a protest to the Commission is:

CPUC Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

Copies of the protest should also be sent via e-mail to the attention of the Energy Division Tariff Unit (EDTariffUnit@cpuc.ca.gov). A copy of the protest shall also be sent via both e-mail and facsimile to the address shown below on the same date it is mailed or delivered to the Commission.

[5] AL 5275-A at p. 12.
[6] The overall credit for the Second Injection Enhancement Plan is primarily the result of 1) SMS park fees; and 2) incremental physical purchases at prices under the bidweek first-of-month published index.

Attn: Ray B. Ortiz
Tariff Manager - GT14D6
555 West Fifth Street
Los Angeles, CA 90013-1011
Facsimile No.: (213) 244-4957
E-mail: ROrtiz@semprautilities.com

Effective Date

SoCalGas believes this AL is subject to Energy Division disposition and should be classified as Tier 1 (effective pending disposition) pursuant to General Order (GO) 96-B. This submittal is in compliance with Res. G-3540. Therefore, SoCalGas respectfully requests that this submittal be made effective November 30, 2018, the date submitted.

Notice

A copy of this AL is being sent to SoCalGas' GO 96-B service list and the Commission's service lists for I.17-02-002 and A.15-07-014. Address change requests to the GO 96-B service list should be directed via e-mail to Tariffs@socalgas.com or call 213-244-2837. For changes to all other service lists, please contact the Commission's Process Office at 415-703-2021 or via e-mail at Process_Office@cpuc.ca.gov.

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Ronald van der Leeden
Director – Regulatory Affairs

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.:

Utility type:

☐ ELC ☐ GAS ☐ WATER

☐ PLC ☐ HEAT

Contact Person:
Phone #:
E-mail:
E-mail Disposition Notice to:

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #:

Tier Designation:

Subject of AL:

Keywords (choose from CPUC listing):

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☐ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #:

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL:

Summarize differences between the AL and the prior withdrawn or rejected AL:

Confidential treatment requested? ☐ Yes ☐ No

If yes, specification of confidential information:
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? ☐ Yes ☐ No

Requested effective date:

No. of tariff sheets:

Estimated system annual revenue effect (%):

Estimated system average rate effect (%):

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected:

Service affected and changes proposed[1]:

Pending advice letters that revise the same tariff sheets:

[1]Discuss in AL if more space is needed.

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division Attention: Tariff Unit 505 Van Ness Avenue San Francisco, CA 94102 Email: EDTariffUnit@cpuc.ca.gov	Name: Title: Utility Name: Address: City: State: Zip: Telephone (xxx) xxx-xxxx: Facsimile (xxx) xxx-xxxx: Email:
	Name: Title: Utility Name: Address: City: State: Zip: Telephone (xxx) xxx-xxxx: Facsimile (xxx) xxx-xxxx: Email:

ATTACHMENT A

Advice No. 5390

SoCalGas' Winter 2018-19 Technical Assessment

SOUTHERN CALIFORNIA GAS COMPANY WINTER 2018-19 TECHNICAL ASSESSMENT

October 16, 2018

Executive Summary

This technical assessment provides a forecasted outlook of system reliability during the coming winter season (November 1, 2018 through March 31, 2019) and analyzes the associated risks to energy reliability during this period. For this assessment, SoCalGas analyzed the following: pipeline capacity available to bring gas into the system, the forecasted winter demand, available system capacity given the forecasted winter supply and demand, and the forecasted winter storage inventory.

SoCalGas will begin the winter season with levels of natural gas in storage that were higher than predicted in the Summer 2018 Technical Assessment.[1] This was due to the mild summer conditions which allowed for late season injection versus the predicted withdrawal during this time-period. During the summer season, SoCalGas executed its Second Injection Enhancement Plan[2] and the California Public Utilities Commission ("CPUC" or "Commission") increased the allowable inventory limit at Aliso Canyon to 34 billion cubic feet (BCF)[3] in support of increasing storage inventory levels in advance of the winter season; both efforts were successful.

SoCalGas forecasts a demand of 4,965 million cubic feet per day (MMcfd) under the Commission mandated 1-in-10 year cold day design standard, in which service is provided to both core and noncore customers, and a demand of 3,527 MMcfd under the 1-in-35 year peak day design standard, in which all noncore customers are assumed to be fully curtailed. Even with the use of Aliso Canyon, SoCalGas has insufficient capacity to meet the 1-in-10 year cold day design standard given the expected withdrawal capacity of its storage fields and the transmission pipeline outages that are expected to remain throughout the winter season. With prudent management of its storage levels to maintain sufficient inventory to provide reliability, including the use of Aliso Canyon to maintain that inventory through critical periods, SoCalGas has calculated an approximate maximum system-wide capacity range available to serve end-use customers of 3.75 to 4.15 billion cubic feet per day (BCFD), depending upon the extent of existing and potential outages on transmission and storage facilities. This range is sufficient to meet the 1-in-35 year peak day design standard and still provide some level of service to critical noncore customers. SoCalGas believes that the use of Aliso Canyon to maintain service to core and critical

[1] Advice Letter (AL) No. 5275, Attachment C.
[2] AL No. 5275, approved by the Commission in Resolution G-3540.
[3] Aliso Canyon Working Gas Inventory, Production Capacity, Injection Capacity, and Well Availability for Reliability, Summer 2018 Supplemental Report, Public Utilities Code Section 715, July 6, 2018.

noncore customers is consistent with the Commission's Aliso Canyon Withdrawal Protocol dated November 2, 2017.[4]

SoCalGas also performed an analysis of projected system-wide storage inventory levels (all fields, including Aliso Canyon) through the winter season. Using demand forecast data prepared for the 2018 California Gas Report (CGR), the projected SoCalGas capacity to receive pipeline supplies, and an estimate of storage field inventory levels on November 1, 2018, SoCalGas finds that noncore curtailment will be required during the winter season under all but the most optimistic conditions (warm temperature conditions with minimal facility outages). SoCalGas may need to curtail between 3.2 and 63.5 BCF of forecast noncore demand throughout the winter season, given certain assumptions regarding weather and facility outages, to maintain minimum inventory levels needed for core reliability. The analysis indicates that without the noncore curtailments, SoCalGas storage inventory levels will be fully depleted before the end of the winter season, putting core service at risk.

System Reliability Assessment of Winter Months

The CPUC has mandated two design standards for the winter operating season: the 1-in-10 year cold day standard, in which service is to be maintained to core customers and noncore customers under a temperature condition expected to recur once in a ten-year period; and the 1-in-35 year peak day standard, in which service is to be maintained to core customers under a temperature condition expected to recur once in a thirty-five-year period and service to all noncore customers is curtailed.

In assessing reliability in the upcoming winter, SoCalGas analyzed the supply outlook for the system and the winter demand forecasts. These are addressed in turn, below.

Supply Outlook

Available Flowing Pipeline Supplies

The SoCalGas/SDG&E gas transmission system is nominally designed to receive up to 3.775 BCFD of flowing supply on a firm basis. This means, if customers deliver that much supply to the SoCalGas

[4] This Technical Assessment examines capacities to serve the 1-in-35 year peak day, during which service to core customers may be at risk if storage inventories are depleted, and includes the preemptive use of Aliso Canyon to avoid loss of service to core customers by maintaining specified withdrawal targets. The Aliso Canyon Withdrawal Protocol permits withdrawals from Aliso Canyon "when, in coordination with the Balancing Authorities, it is determined that withdrawals are necessary to maintain reliability overall, to respond to a risk to electric system reliability, and/or to avoid or to limit curtailments to core and noncore customers." Further, in response to a SoCalGas request for guidance on whether the Withdrawal Protocol restricted SoCalGas from "curtail[ing] to maintain withdrawal capacity targets," Energy Division responded that " SoCalGas should manage its system as a prudent operator." (see Email from Edward Randolph to Devin Zornizer, dated 12/21/2017). Consistent with this clarification, this winter SoCalGas plans to prudently manage the inventory levels across all the storage fields to maintain withdrawal capacity targets, which could include implementation of noncore curtailments and withdrawals from Aliso Canyon.

system, and there is a sufficient level of customer demand, [5] SoCalGas can redeliver that gas supply to customers' burners. Supplies delivered to the SoCalGas system, however, do not reach these maximum receipt levels for a variety of reasons, including that customers may choose to use SoCalGas' balancing service rather than deliver supplies, California production has declined over time, system demand frequently does not require maximum delivery of supply, or flowing supplies may not be available due to weather patterns or maintenance impacting the interstate pipelines upstream of the SoCalGas system. Additionally, planned and unplanned pipeline outages can reduce receipt capacity.

SoCalGas determined ranges of flowing pipeline supplies by analyzing "best" and "worst" case scenarios. Under a "best case" scenario, only Line 235-2 between the Newberry and Adelanto compressor remains out of service during the full winter season.[6] Line 4000 would continue to experience a temporary pressure reduction and the current associated capacity reduction under this scenario, limiting the volumes received from Transwestern and El Paso at North Needles and Topock, respectively. Additionally, sufficient supply is assumed delivered at Otay Mesa in order to fully utilize the Southern System receipt capacity of 1,210 MMcfd.

Under a "worst case" scenario, Line 4000 between Newberry compressor station and the Cajon Pass would be removed from service for remediation. This, along with the outage of Line 235-2, eliminates the receipt of supply at North Needles and Topock. Additionally, supply at Otay Mesa is assumed to be unavailable as, historically, little to no supply has been delivered at Otay Mesa. The ability to receive supply at Otay Mesa beyond 400 MMcfd is dependent upon local demand in San Diego or displacing supplies that would otherwise be delivered at Ehrenberg.

In addition to the outages and restrictions discussed above, SoCalGas factored in that customers do not typically fully balance their supply with their demand even given SoCalGas' balancing rules. While a review of scheduled deliveries from the last 5 years shows that customers have used on average 80% of interstate receipt capacity, SoCalGas has adopted a 90% utilization factor for this assessment. This factor reflects that SoCalGas expects to require tighter balancing requirements through this winter season in response to the storage capabilities and supply outlook. SoCalGas has therefore adopted the assumption of 90% in the capacity calculations in this report for all supplies except for local California production, which is assumed at the current production rate.[7]

SoCalGas' ability to maintain uninterrupted service also depends upon customers delivering sufficient supply to the SoCalGas system. Given SoCalGas' use of all its regulatory tools available as authorized by the CPUC, SoCalGas expects that there may be times during the winter season when gas supply from the

[5] Customer demand may also be required to be in a specific location, such as on the Southern System in order to receive the full receipt capacity of 1,210 MMcfd at Blythe and Otay Mesa.
[6] Line 2000 on the Southern System has been operating at reduced pressure since 2011, and was abandoned in March 2018 across the Morongo Reservation, thereby reducing the receipt capacity at Blythe to 980 MMcfd dependent on load along the southern system. Similarly, receipt of gas supply at Otay Mesa depends upon the level of demand in San Diego to a certain extent.
[7] In its Scenarios Framework I.17-02-002, dated September 13, 2018, the Energy Division has assumed an 85% utilization factor for certain aspects of its analyses. SoCalGas believes that 85% is more appropriate for that framework given the planning horizons used in the framework versus the single operating season used in this technical assessment.

interstate pipelines is unavailable due to weather conditions elsewhere in the country or pipeline constraints upstream of SoCalGas' system, such that supplies delivered to the system may be less than the 90% assumed in this assessment. These situations are beyond the scope of this technical assessment, and additional customer curtailment may be necessary to maintain system integrity and service to core and critical noncore customers.

Using the scenario information outlined above, the resulting "best" and "worst" case receipt capacities are detailed below in Tables 1 and 2.

Table 1
"Best Case" Available Flowing Pipeline Supplies

Receipt Point	Capacity/Supply (MMcfd)	Details
North Needles/Topock	270	Reduced receipt capacity due to Line 235 outage and Line 4000 temporary pressure reduction.
Kramer Junction	600	Increased capacity due to reduced receipt capacity at North Needles and Topock.
Blythe	980	
Otay Mesa	230	Otay Mesa has a firm receipt capacity of 400 MMcfd, but is limited by the total 1,210 MMcfd receipt capacity of the Southern System. 230 MMcfd represents the remaining capacity to receive firm supply. Historically, little supply has been delivered at Otay Mesa.
Wheeler Ridge/Kern River Station	765	
California production	70	SoCalGas' firm receipt capacity is reduced from 310 MMcfd to 210 MMcfd following the derating of pipeline in the Line 85 Zone. However, local California producers are currently utilizing only approximately 70 MMcfd of that capacity.
Total	2,915	
Assumed Pipeline Supplies	**2,630**	Assumes 90% pipeline utilization and current CA production.

Table 2
"Worst Case" Available Flowing Pipeline Supplies

Receipt Point	Capacity/Supply (MMcfd)	Details
North Needles/Topock	0	No receipt capacity due to Line 235 and Line 4000 outage.
Kramer Junction	700	Increased capacity due to lost receipt capacity at North Needles and Topock
Blythe	980	
Otay Mesa	0	
Wheeler Ridge/Kern River Station	765	
California production	70	SoCalGas' firm receipt capacity is reduced from 310 MMcfd to 210 MMcfd following the derating of pipeline in the Line 85 Zone. However, local California producers are currently utilizing only approximately 70 MMcfd of that capacity.
Total	2,515	
Assumed Pipeline Supplies	**2,270**	Assumes 90% pipeline utilization and current CA production.

SoCalGas has labeled the capacities shown in Table 2 as "worst case," based upon current known potential projects which may impact receipt capacity. However, unexpected outages on the transmission system, such as those resulting from third-party damage and safety related conditions, may still occur throughout the winter season, further reducing receipt capacity beyond the level projected in Table 2.

Available Storage Supplies

Table 3 below presents the maximum available withdrawal capabilities for SoCalGas' four storage fields for the winter season at the maximum inventory levels. SoCalGas does not expect to be at maximum inventory levels system-wide during the peak demand periods of December through February, therefore withdrawal capability will not be at the maximum rates stated below. We also do not expect to be at minimum inventory levels, and minimum withdrawal capability, during the peak demand period; inventory levels necessary for core reliability are presented later in this assessment. The withdrawal rates presented in Table 3 assumes that well work currently in progress and planned will be completed in time for the peak winter season; to the extent that this work is not completed, withdrawal capacities will be less.

Table 3
Maximum Projected Storage Withdrawal Capacity, Winter 2018-19

Field	Inventory (BCF)	Maximum Withdrawal Capacity (MMCFD)
Aliso Canyon	34 *	1317
Non-Aliso Canyon **	49.9	1343

* Aliso Canyon Working Gas Inventory, Production Capacity, Injection Capacity, and Well Availability for Reliability Summer 2018 Supplemental Report, Public Utilities Code Section 715, July 6, 2018.

** Combined Honor Rancho, La Goleta, and Playa del Rey

This data is based on wells currently or forecast to be in service during the winter operating season. SoCalGas assumes that there will be no outages at any of the storage fields that would impact their ability to provide the withdrawal capacity assumed for this assessment. However, well performance is currently untested across all inventory levels. SoCalGas' storage capacities are continually re-assessed in light of performance and the safety-related work planned, in progress, or completed at our storage fields. To the extent that the withdrawal capacities shown in Table 3 change during the winter season, the results and findings of this assessment may change as well.

Peak Winter Demand Forecast and System Capacity Calculation

Demand Outlook: 1-in-10 Year Cold Day Event

For the upcoming winter season, SoCalGas forecasts a 1-in-10 year cold day demand of 5.0 BCFD, consisting of the following in Table 4 below:

Table 4
Customer Demand Forecast, 1-in-10 Year Cold Day Event

Customer Type	Winter Demand (BCFD)
Core (including wholesale core)	3.4
Noncore, Non-Electric Generation	0.8
Noncore, Electric Generation (EG)	0.8
Total	5.0

Given the supply available from interstate pipelines, local California production, and expected storage withdrawal (including the use of Aliso Canyon), SoCalGas expects that it will have insufficient supplies to meet the 1-in-10-year cold day[8] demand forecast. In a 1-in-10-year cold day scenario, some level of noncore curtailment will be required, either voluntary or involuntary, beginning with EG demand in accordance with the CPUC-approved procedure specified in SoCalGas Rule No. 23 and SDG&E Gas Rule No. 14.

[8] This cold day event has the potential to occur in December or January, and may also occur more than once per season.

Demand Outlook: 1-in-35 Year Peak Day Event

SoCalGas forecasts a 1-in-35 year peak day demand of 3.53 BCFD, consisting entirely of core demand[9] per the design standard. With prudent and active management of storage inventory, including the use of Aliso Canyon to maintain inventory levels in the other storage fields needed for core reliability, SoCalGas expects to have sufficient supply and capacity to meet this design standard under both the "best" and "worst" case pipeline supply scenarios. SoCalGas does not believe, therefore, that core service is at risk this winter season. However, without the use of supply from Aliso Canyon, SoCalGas cannot support the 1-in-35 year peak day demand under either pipeline supply scenario. For this reason, SoCalGas must maintain target levels of storage supply throughout the winter season to protect core reliability.

Using inventory and withdrawal relationships for the storage fields, SoCalGas optimized the minimum inventory level required at each storage field to produce the needed withdrawal rates for core reliability. These levels are shown below in Table 5. SoCalGas must use supply from Aliso Canyon and our curtailment procedures (as necessary) to preserve these minimum inventory levels at all four storage fields throughout the winter season, in accordance with the Aliso Canyon Withdrawal Protocol, SoCalGas Rule No. 23, and SDG&E Gas Rule No. 14.

Table 5
Month-End Minimum Inventory Requirements for Core Reliability

	Month-End Minimum Inventory (BCF)				
Storage Field	NOV 2018	DEC 2018	JAN 2019	FEB 2019	MAR 2019
Aliso Canyon	5.7	5.1	4.4	3.8	2.1
Honor Rancho	13.9	13.2	12.6	7.5	5.0
La Goleta	8.0	7.9	7.7	7.6	7.5
Playa de Rey	1.9	1.9	1.5	1.1	0.7
TOTAL	29.5	28.1	26.2	20.0	15.3

Ventura compressor station is necessary to fill the Goleta storage field, and because of the capacity at the station, if SoCalGas were to draw La Goleta inventory down to those minimum levels, it is expected that the field could not be refilled in the summer 2019 operating season to sufficient levels needed to support winter 2019-20 demand. SoCalGas will therefore manage its system to maintain 7.5 BCF at La Goleta through March 2019, and has included that additional inventory in Table 5 above.

SoCalGas also calculated the capacity to serve noncore customers assuming inventory levels approached the levels shown in Table 5. The SoCalGas system has sufficient capacity to support 3.75 to 4.15 BCFD of customer demand under the "worst" and "best" case pipeline supply assumptions, respectively, with the use of Aliso Canyon. This capacity allows for approximately 200 to 600 MMcfd of noncore demand during the peak day event; given that noncore non-EG demand is forecast at approximately 800 MMcfd, this will require the curtailment of all EG demand and some noncore non-EG demand as well. To the

[9] Retail and wholesale.

extent that the core demand is less than 3.53 BCFD (i.e., a warmer temperature condition), that difference will be available to serve noncore customers.

Based on the forecast Winter 2018-2019 demand and system capacity, SoCalGas can meet the forecasted 1-in-35 year peak day demand under either the "best" or "worst" case scenarios with the use of Aliso Canyon. Without Aliso Canyon, SoCalGas is unable to meet forecast peak day demand under either a "best case" or "worst case" pipeline supply scenario unless storage field inventory levels are higher than those shown in Table 5 and used in this calculation.

Note that in all scenarios, the system capacity is always less than the sum of the available pipeline and storage supplies. This is a result of the system hydraulics. Customer demand is not constant over the course of the day, and gas supplies from interstate pipelines travel slowly across the pipeline network. Those supplies simply cannot meet the changing customer demand in time before minimum operating pressures are reached, and are also scheduled on a ratable basis based on daily expected demand rather than hourly peaks. SoCalGas' storage fields are closer to the customer demand center in the Los Angeles Basin than the interstate pipeline receipt points and are the "flex supply" available to meet imbalances between the scheduled pipeline supplies and intraday customer demand.

Likewise, when customer demand drops off, gas supplies need to be actively managed and reduced to avoid overpressuring the pipeline system. Once again, storage supplies serve the critical purpose of "flex supply", and are reduced by SoCalGas' Gas Control department to keep the pipeline supplies flowing. In theory, SoCalGas can also begin injecting gas supply into its storage fields if the pipeline supplies far exceed the customer demand even with all withdrawal reduced to zero. However, as system-wide injection capacity is diminished, it may become increasingly difficult to achieve high levels of pipeline utilization consistently through the winter season.

Seasonal Reliability Assessment

Using demand forecast data prepared for the 2018 California Gas Report for the winter season (November 2018 through March 2019, cold and hot temperature conditions with base hydro) and a projection of expected storage inventory levels on November 1 (78.9 BCF), SoCalGas performed a mass balance examining the impact on its storage supplies, including supply stored in Aliso Canyon, and our ability to meet customer demand under both the "best" and "worst" case pipeline capacity scenarios. These mass balances are presented below in Tables 6 and 7.

Table 6
Monthly Storage Assessment, "Best" Case Supply Assumption (MMCF)

	Nov -18	Dec-18	Jan-19	Feb-19	Mar-19	Curtailment Total
Pipeline supply	78,915	81,546	81,546	73,654	81,546	
COLD TEMPERATURE CONDITION						
CGR Demand	86,880	104,811	102,269	88,004	88,009	
Storage WD	7,965	23,266	20,724	14,350	6,464	
Mth-end Inv	70,935	47,670	26,946	12,596	6,133	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	7,404	1,764	**9,168**
HOT TEMPERATURE CONDITION						
CGR Demand	80,040	90,799	86,335	75,292	77,128	
Storage WD	1,125	9,254	4,790	1,638	0	
Mth-end Inv	77,775	68,522	63,732	62,094	62,094	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**

Table 7
Monthly Storage Assessment, "Worst" Case Supply Assumption (MMCF)

	Nov -18	Dec-18	Jan-19	Feb-19	Mar-19	Curtailment Total
Pipeline supply	68,115	70,386	70,386	63,574	70,386	
COLD TEMPERATURE CONDITION						
CGR Demand	86,880	104,811	102,269	88,004	88,009	
Storage WD	18,765	34,426	31,884	24,430	17,624	
Mth-end Inv	60,135	25,710	-6,174	-30,604	-48,228	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	2,391	29,984	18,230	12,924	**63,528**
HOT TEMPERATURE CONDITION						
CGR Demand	80,040	90,799	86,335	75,292	77,128	
Storage WD	11,925	20,414	15,950	11,718	6,743	
Mth-end Inv	66,975	46,562	30,612	18,894	12,152	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	1,106	2,043	**3,149**

Tables 6 and 7 show that on a monthly basis under most supply and temperature conditions, SoCalGas has sufficient pipeline receipts and storage inventory supplies to serve all noncore customer demand without curtailment up to the system capacity, without regard to core reliability requirements. The exception is the cold temperature condition with the "worst" case supply assumption, in which the system-wide storage inventory is depleted in January, and SoCalGas is short 48.2 BCF of storage inventory supplies; that much noncore demand would need to be curtailed over the winter season. However, using all storage inventory supplies leaves insufficient withdrawal capability to maintain core reliability, and minimum inventory levels must be maintained for that purpose as previously discussed.

Maintaining the minimum inventory requirements in Tables 6 and 7 results in noncore curtailment required in most supply and temperature conditions, potentially up to 63.5 BCF over the winter season.

These mass balance calculations assume that gas supplies are delivered to the SoCalGas system equal to the receipt capacities assumed. In this sense, the mass balances provide the most optimistic assessment of the capability to meet demand thorugh the winter season. To the extent that customers are unwilling or unable to deliver supply to the SoCalGas system, the curtailment of noncore demand will increase from those figures calculated in Tables 6 and 7.