DOCKETED	
Docket Number:	20-IEPR-03
Project Title:	Electricity and Natural Gas
TN #:	235320
Document Title:	Southern California Gas Company Comments - Southern California Gas Company 2020-2021 Winter Technical Assessment
Description:	N/A
Filer:	System
Organization:	Southern California Gas Company
Submitter Role:	Intervenor
Submission Date:	10/19/2020 5:01:40 PM
Docketed Date:	10/20/2020

Comment Received From: Southern California Gas Company
Submitted On: 10/19/2020
Docket Number: 20-IEPR-03

Southern California Gas Company 2020-2021 Winter Technical Assessment

Additional submitted attachment is included below.

SOUTHERN CALIFORNIA GAS COMPANY WINTER 2020-21 TECHNICAL ASSESSMENT

October 19, 2020

Executive Summary

This technical assessment provides a forecasted outlook of system reliability during the coming winter season (November 1, 2020 through March 31, 2021) and analyzes the associated risks to energy reliability during this period. For this assessment, Southern California Gas Company (SoCalGas) analyzes the following: (1) pipeline capacity available to bring gas into the system, (2) available storage withdrawal capacity and inventory levels needed for core reliability, (3) the forecasted winter demand, (4) available system capacity given the forecasted winter supply and demand, and (5) the forecasted winter storage inventory. In performing this analysis, this assessment takes into consideration the various existing outages and operating restrictions on gas transmission and storage assets.

SoCalGas forecasts a demand of 4.98 billion cubic feet per day (BCFD) under the 1-in-10 year cold day design standard mandated by the California Public Utilities Commission (Commission), in which service is provided to both core and noncore customers, and a demand of 3.46 BCFD under the Commission-mandated 1-in-35 year peak day design standard, in which all noncore customers are assumed to be fully curtailed.[1]

Even with the use of the Aliso Canyon storage field, SoCalGas has insufficient capacity to meet the 1-in-10 year cold day design standard given the expected withdrawal capacity of all active storage fields at the minimum levels required for core reliability[2] and the transmission pipeline capacity available during the peak demand months (December and January). As a result, SoCalGas has calculated an approximate maximum system-wide daily capacity available to serve end-use customers, based on existing and potential storage and pipeline capacities, of 3.57 to 4.18 BCFD without and with the support of Aliso Canyon, respectively. SoCalGas has sufficient capacity to serve the 1-in-35 peak day design standard with and without the use of Aliso Canyon, and still provide some level of service to noncore customers. Consistent with the Commission's Aliso Canyon Withdrawal Protocol dated July 23, 2019,[3] SoCalGas may use Aliso Canyon to maintain service to core and critical noncore customers.[4]

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[1] 2020 California Gas Report, page 139-140

[2] SoCalGas' storage fields will likely not be at maximum inventory levels during the peak winter demand months of December and January, and therefore maximum withdrawal rates would be unavailable.

[3] The Aliso Canyon Withdrawal Protocol dated July 23, 2019 was revised on April 1, 2020 to add two additional reporting requirements. These changes did not alter the conditions under which SoCalGas may withdraw gas from Aliso Canyon.

[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

Customer demand is not constant over the course of the day, and gas supplies from interstate pipelines travel slowly across the pipeline network at a steady rate. During those times of the day when demand exceeds the pipeline supply, SoCalGas will use supplies from its storage fields to make up the difference. And when customer demand drops off, SoCalGas will reduce the amount of supply taken from its storage fields or even put excess supply into them. Because storage supplies are not used at a constant rate for the entire day, the system capacity is always less than the sum of the available pipeline and storage supplies.

SoCalGas also performs an analysis of projected system-wide storage inventory levels of all fields, including Aliso Canyon, through the winter season. Using demand forecast data prepared for the 2020 California Gas Report (CGR), the projected SoCalGas capacity to receive pipeline supplies, and an estimate of storage field inventory levels on November 1, 2020, SoCalGas finds that sufficient gas supply is available to serve all forecasted core customer demand and maintain inventory levels necessary for core reliability.

As always, unexpected outages on the transmission pipeline and storage system, such as those resulting from third-party damage and safety-related conditions, or impacts to maintaining these capacities due to potential employee availability or governmental orders in response to COVID-19, could still occur throughout the winter season and impact our capacity to serve demand as presented in this technical assessment. Additionally, as this is the first winter season since the COVID-19 pandemic began, day-to-day forecasting of customer demand may have a greater degree of uncertainty as forecasting methodologies are adjusted to account for people working from home and businesses either closed or operating at reduced capacities.

System Reliability Assessment of Winter Months

The Commission 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 analyzes the supply outlook for the system and the winter demand forecasts. These are addressed in turn below.

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avoid loss of service to core customers by maintaining specified withdrawal targets. The Aliso Canyon Withdrawal Protocol, dated July 23, 2019, permits withdrawals from Aliso Canyon when one of four conditions are met (including Condition 4 when there is an "imminent and identifiable risk of gas curtailments created by an emergency condition that would impact public health and safety or result in curtailments of electric load that could be mitigated by withdrawals from Aliso Canyon"). Furthermore, 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 noncore curtailments and withdrawals from Aliso Canyon.

Supply Outlook

Available Flowing Pipeline Supplies

The SoCalGas/San Diego Gas and Electric (SDG&E) gas transmission system has a current capability to receive up to 3.035 BCFD of flowing supply on a firm basis.[5] This means, if customers deliver that much supply to the SoCalGas system, and there is sufficient customer demand, SoCalGas can redeliver that gas supply to customers.[6] Supplies delivered to the SoCalGas system, however, do not reach these available 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, such as during a polar vortex event over the Midwest. Additionally, planned and unplanned pipeline outages can reduce available receipt capacity further.

For the available receipt point supplies, Line 235-2, Line 4000 and Line 3000 East are all assumed in service at reduced pressures limiting the volumes received from Transwestern and El Paso at North Needles and Topock, respectively. Sufficient supply is assumed delivered at Otay Mesa in order to fully utilize the Southern System receipt capacity of 1210 MMcfd. 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. The pipeline conditions are expected to be constant throughout the winter season.

In addition to the operating restrictions discussed above, SoCalGas factors in that customers do not typically fully balance their supply with their demand even given SoCalGas' balancing rules. While a review of scheduled deliveries shows that customers have used on average 80% of interstate available receipt capacity, SoCalGas has adopted utilization factors of 90% for this assessment. These factors reflect SoCalGas' expectation of tighter balancing requirements through this winter season in response to the storage capabilities and supply outlook. SoCalGas has therefore adopted these assumptions in the capacity calculations in this report for all supplies except for local California production, which is assumed at the current production rate.

SoCalGas' ability to maintain uninterrupted service also depends upon customers delivering sufficient supply to the SoCalGas system. SoCalGas expects that there may be times during the winter season when gas supply from the 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 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 under such conditions.

While SoCalGas has factored in the known operating restrictions on its transmission pipelines, unexpected outages on the transmission system, such as those resulting from third-party damage and

[5] Reflects the current level of local California production.
[6] 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.

safety related conditions, may still occur throughout the winter season, further reducing available receipt capacity beyond the levels projected here. The assumed available receipt capacities are detailed below in Table 1.

Table 1
Available Flowing Pipeline Supplies

Receipt Point	**Capacity/Supply (MMcfd)**	**Details**
North Needles	250	Reduced receipt capacity due to Line 235 and Line 4000 temporary pressure reduction.
Topock	190	Reduced receipt capacity due to Line 235, Line 4000 and Line 3000 temporary pressure reduction.
Kramer Junction	550	
Blythe	980	Reduced receipt capacity due to loss of pipeline on Southern System.
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	Current level of local California production.
Total	3035	
Assume 90% Pipeline Utilization	**2,736**	Used to evaluate a cold peak demand day anticipating higher demand and balancing requirements.

Available Storage Supplies

The forecasted inventories with associated withdrawal rates for SoCalGas' Aliso Canyon and Non-Aliso Canyon storage fields at the start of the winter season and at those levels necessary to provide core customer reliability are presented below in Table 2. Under all-weather scenarios, gas will be withdrawn from storage throughout the winter season. Therefore, SoCalGas does not expect to be at maximum inventory levels system-wide during the peak demand periods of December through February, resulting in withdrawal capability lower than the maximum rates shown below.

Table 2
Projected Storage Field Performance, Winter 2020-21, Typical Well Maintenance Activities

Storage Field	Forecasted at November 1		Minimum Level for Peak Day Reliability *	
	Inventory (BCF)	Withdrawal Capacity (MMcfd)	Inventory (BCF)**	Withdrawal Capacity (MMcfd)
Aliso Canyon	34	1,350	4.4	610
Non-Aliso Canyon	48.03	1,379	21.8	934
Total	**82.03**	**2,729**	**26.2**	**1,544**

* End of January
** Aliso Withdrawal Protocol dated July 23, 2019

This data is based on wells currently or forecast to be in service during the winter operating season and assumes a typical level of well outages at each field for routine maintenance and mandated reassessment. SoCalGas assumes in its forecast that there will be no outages beyond those already identified at any of the storage fields that would impact their ability to provide the winter withdrawal capacity assumed for this assessment. However, well performance is currently untested across all inventory levels, and maintenance schedules are still subject to change. SoCalGas' storage capacities are continually reassessed in light of performance and the safety-related work planned, in progress, or completed at our storage fields. To the extent that more aggressive well maintenance or reassessment is necessary such that the withdrawal capacities or field performance assumed herein is impacted during the winter season, the results and findings of this assessment may change as well.

Peak Winter Demand Forecast and System Capacity Calculation

System Capacity

Using the pipeline supply and withdrawal assumptions present in Tables 1 and 2 earlier, SoCalGas calculated the system capacity to serve demand. System capacities with and without the use of Aliso Canyon are shown in Table 3.

Table 3
Winter 2020-21 System Capacity

	System Capacity (MMcfd)	
	Without Aliso Canyon	With Aliso Canyon
System Capacity	3,571	4,184

The capacities are calculated based on the withdrawal available at the minimum inventory levels necessary to maintain core reliability discussed later in this report. SoCalGas notes that if it has higher inventory levels at its storage fields, and therefore higher withdrawal rates than shown in Table 2, it may have sufficient capacity to serve a 1-in-10 year cold day demand. There should be no expectation, however, that higher withdrawal rates will be available.

Additionally, the Aliso Canyon storage facility is currently restricted to operating at a working inventory of 34 BCF. In Commission proceeding I.17-02-002, however, the Assigned Administrative Law Judge has indicated that the Commission is considering whether to modify this restriction.[7] No specific timeline for such a modification has been provided. While higher levels of authorized storage capacity at Aliso Canyon will be helpful in the future, it will be difficult, if not impossible, to physically increase the gas in storage at Aliso Canyon in the peak months (i.e., December through February) of the upcoming winter operating season.

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 4,983 MMcfd, broken down by customer class in Table 4 below:

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

Customer Type	**Winter Demand (MMcfd)**
Core (including wholesale core)	3,255
Noncore, Non-Electric Generation	661
Noncore, Electric Generation (EG)	1,068
Total	4,984

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

Again, SoCalGas may have sufficient capacity to serve a 1-in-10 year cold day demand if it has higher inventory levels at its storage fields, and therefore higher withdrawal rates, than those shown in Table 2. As previously stated, there should be no expectation that higher withdrawal rates will be available.

[7] I.17-02-002, Administrative Law Judge's Ruling Entering Into the Record Direction to Maintain Aliso Canyon Storage Capacity At or Below the Interim Level of 34 Billion Cubic Feet and Requesting Comment dated August 26, 2020.
[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 3,460 MMcfd, 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. SoCalGas does not believe, therefore, that core service is at risk this winter season.

SoCalGas must maintain minimum 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. The inventory levels shown below in Table 5 are consistent with the Aliso Canyon Withdrawal Protocol dated July 23, 2019. SoCalGas will 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

Storage Field	Month-End Minimum Inventory (BCF)				
	NOV 2020	DEC 2020	JAN 2021	FEB 2021	MAR 2021
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 del Rey	1.9	1.9	1.5	1.1	0.7
TOTAL	29.5	28.1	26.2	20.0	15.3

The 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 near zero inventory, it is expected that the field could not be refilled in the summer 2021 operating season to sufficient levels needed to support winter 2021-22 demand. SoCalGas will therefore manage its system to maintain 7.5 BCF at La Goleta through March 2021 and has included that additional inventory in Table 5 above.

Seasonal Reliability Assessment

Using demand forecast data prepared for the 2020 California Gas Report for the winter season (November 2020 through March 2021, cold, average, and hot temperature conditions with base hydro) and a projection of expected storage inventory levels on November 1 (82.03 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. These mass balances presented below in Table 6 are simply a comparison of forecasted demand against assumed supply.

[9] Retail and wholesale.

Table 6
Monthly Storage Assessment, 90% Utilization (MMCF)

	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Curtailment Total
Pipeline Supply	82,155	84,894	84,894	76,678	84,894	
COLD TEMPERATURE CONDITION						
CGR Monthly Demand	80,790	104,966	96,596	87,052	78,802	
Storage WD	-1,138	20,073	11,703	10,374	-6,092	
Mth-end Inv	83,163	63,091	51,388	41,014	47,106	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**
AVERAGE TEMPERATURE CONDITION						
CGR Monthly Demand	77,820	98,704	89,962	81,256	74,462	
Storage WD	-2,374	13,811	5,069	4,578	-10,036	
Mth-end Inv	84,400	70,590	65,521	60,943	70,979	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**
HOT TEMPERATURE CONDITION						
CGR Monthly Demand	74,864	92,450	84,037	76,171	70,718	
Storage WD	-2,374	7,557	-856	-507	-5,885	
Mth-end Inv	84,400	76,843	77,700	78,207	84,092	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**

The mass balance assessments show that on a monthly basis under all temperature conditions, SoCalGas has sufficient pipeline receipts and storage inventory supplies to serve all noncore customers demand without curtailment up to the system capacity, without impacting core reliability requirements, assuming a 90% utilization factor of receipt point capacity.

In this sense, the mass balances provide the most optimistic assessment of the capability to meet demand through the winter season. To the extent that customers are unwilling or unable to deliver supply to the SoCalGas system at these assumed levels, storage month end inventories will be lower, and noncore curtailment may be necessary in order to maintain core reliability.