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**SoCalGas Summer 2022 Technical Assessment**

*Additional submitted attachment is included below.*



## SOUTHERN CALIFORNIA GAS COMPANY SUMMER 2022 TECHNICAL ASSESSMENT

March 30, 2022

### **Executive Summary**

SoCalGas has prepared this technical assessment to provide a forecasted outlook of system reliability during the coming summer months, assess the preparedness of the system for this upcoming winter, and analyze the associated risks to energy reliability during these periods. For this assessment, SoCalGas analyzed the following: (1) pipeline capacity available to bring gas into the system, (2) the forecasted summer demand, (3) available system capacity to serve demand, and (4) the forecasted storage inventory for the following winter season. In performing this analysis, this assessment takes into consideration the various existing and potential outages and the operating restrictions on gas transmission and storage assets.

SoCalGas has sufficient capacity to serve the forecasted summer peak demand of 3.307 billion cubic feet per day (BCFD) under the “best case” supply scenario, with or without the use of Aliso Canyon, and under the “worst case” supply scenario with the use of Aliso Canyon. SoCalGas has insufficient capacity to serve the forecasted summer peak demand under the “worst case” supply scenario without the use of Aliso Canyon. Under the “worst case” supply scenario without the use of Aliso Canyon, the system capacity is 2.88 BCFD resulting in a partial curtailment of electric generating (EG) customers. Core and non-EG noncore customers are not impacted, however, as consistent with the Commission’s July 23, 2019 Aliso Canyon Withdrawal Protocol,<sup>1</sup> SoCalGas may use Aliso Canyon to maintain service to core and critical noncore customers.

SoCalGas also performed a preliminary analysis of projected storage injection and resulting inventory through the summer to prepare for the 2022-23 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 April 1, SoCalGas finds that the current maximum allowable system storage inventory of 91.36 billion cubic feet (BCF)<sup>2</sup> can be reached by November 1 under a “best case” supply scenario assumption. However, under a “worst case” supply scenario assumption, SoCalGas does not expect to have sufficient capacity and supply to fill its storage fields by the end of the summer season. The total storage inventory is only expected to reach 76.79 BCF, about 14.57 BCF short of the current maximum capacity of 91.36 BCF. Under either the “best case” or “worst case” supply scenarios SoCalGas does not foresee difficulty meeting the November total month-end minimum storage inventory level needed to maintain reliable service to core and critical noncore customers during the following winter season as specified in the SoCalGas Winter 2021-22 Technical Assessment. This expectation of meeting minimum inventory levels for core reliability is due to a mild 2021-22 winter season, increased receipt capacity in the Northern Zone with Line 4000 returned to service at reduced pressure, and the increase in inventory capacity at Aliso Canyon.

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<sup>1</sup> Aliso Canyon withdrawal is currently restricted to specific requirements specified in and pursuant to the CPUC’s Aliso Canyon Withdrawal Protocol dated July 23, 2019.

<sup>2</sup> This assumes Playa del Rey’s typical maximum inventory of 1.7 BCF.

### **System Reliability Assessment of Summer Months**

SoCalGas does not have a summer design standard. This is partly because the SoCalGas system is a winter peaking system and service to the core customers is not at risk in the summer season. Although noncore customers are fully interruptible pursuant to the CPUC-approved SoCalGas Tariff Rule No. 23 and San Diego Gas & Electric Company (SDG&E) Gas Rule No. 14, the CPUC and SoCalGas/SDG&E have recognized that supply and operating constraints placed upon the electric grid balancing authorities<sup>3</sup> in the utilities' service territory can place electric reliability at risk, and understand the importance of working to maintain service to local EG plants in southern California.

In assessing reliability for the upcoming summer months, SoCalGas analyzed the supply outlook for the system and the peak demand forecast, which are addressed in turn, below.

### **Supply Outlook, Available Flowing Pipeline Supplies and Storage Withdrawal Capacities**

The SoCalGas gas transmission system is nominally designed to receive up to 3.78 BCFD of flowing supply on a firm basis. This means that if customers deliver that much supply to the SoCalGas system, and there is sufficient customer demand, then SoCalGas can redeliver that gas supply to end-use customers.<sup>4</sup> 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.

To calculate this season's capacity of the system to serve customer demand, assumptions must be made regarding the available supply. The peak summer demand period is expected to occur after July, so SoCalGas determined ranges of available flowing pipeline supplies by analyzing "best" and "worst" case scenarios for this period. For the available receipt point supplies under a "best case" scenario, Line 235-2 and Line 4000 are assumed in service at reduced pressures, resulting in a Northern Zone receipt capacity of 1,250 million cubic feet per day (MMcfd). Sufficient supply is assumed available and delivered at both Blythe and Otay Mesa in order to fully utilize the Southern System receipt capacity of 1,210 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.

Under a "worst case" scenario, however, supply at Otay Mesa is assumed to be unavailable as, historically, little to no supply has been delivered at Otay Mesa. Furthermore, deliveries at Blythe are assumed to be only 60% of the receipt capacity due to the outage of El Paso Natural Gas (EPNG) Line 2000 in Arizona starting in August 2021. The EPNG Line 2000 pipeline failure has reduced the transport capacity of the EPNG Southern System, and the level of supply delivered for all shippers. This upstream supply constraint may result in insufficient supply to support Southern System customer demand, and may require some level of noncore curtailment, beginning with EG demand in accordance with the Commission-approved procedure specified in SoCalGas Rule No. 23 and SDG&E Gas Rule No. 14.

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<sup>3</sup> California Independent System Operator (CAISO), Los Angeles Department of Water and Power (LADWP), and Imperial Irrigation District (IID).

<sup>4</sup> 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.

Additionally, there will be an in-line inspection performed on Line 225. If anomalies are found that require an outage of Line 225, Wheeler Ridge will be limited to the downstream demand of the San Joaquin Valley (SJV) system of approximately 90 MMcfd under a “worst case” condition. The limited gas supply at Wheeler Ridge allows more gas to flow from Adelanto to Quigley, which increases the Northern Zone receipt capacity from 1,250 MMcfd to 1,460 MMcfd, with higher delivery pressures from Kern Mojave, and while Line 235 and Line 4000 are still operating at reduced pressures. This increased as-available capacity is used in the “worst case” supply scenario.

In addition to the outages and restrictions discussed above, SoCalGas took into consideration in its analysis that customers do not typically fully balance their supply with their demand given SoCalGas’ balancing rules. Reviewing scheduled deliveries shows that customers have historically used on average 85% of available interstate receipt capacity. In situations with significant infrastructure outages and limited storage supply, however, SoCalGas would require tighter balancing and expect to see higher capacity utilization as a result.

Given these considerations, for the purpose of this peak day capacity calculation, SoCalGas has adopted a peak day utilization assumption of 85% for the “best case” supply scenario and 95% for the “worst case” supply scenario for all supplies except for local California production, which is assumed at the current production rate. Additionally, in the “worst case” scenario Wheeler Ridge receipt capacity is limited to the local demand in the SJV after the Line 225 ILI, and Blythe is assumed at 60% due to the EPNG outage.

Using the scenario information outlined above, the resulting “best” and “worst” case receipt capacities during the peak summer period are detailed below in Tables 1 and 2.

**Table 1. “Best Case” Available Flowing Pipeline Supplies**

Receipt Point	Capacity/Supply (MMCFD)	Details
North Needles	480	Capacity limited to 1,250 MMcfd due to the reduced operating pressure of Line 235 and Line 4000.
Topock	350	
Kramer Junction	420	
Blythe	980	Reduced receipt capacity due to loss of pipeline on Southern System.
Otay Mesa	230	Available supply at Otay Mesa limited by southern system capacity of 1210 MMcfd.
Wheeler Ridge & Kern River Station	765	
California Production	70	Current level of local California production.
<b>Total</b>	<b>3,295</b>	
<b>Assume 85% pipeline utilization</b>	<b>2,811</b>	85% except at California Production.

**Table 2. “Worst Case” Available Flowing Pipeline Supplies**

Receipt Point	Capacity/Supply (MMCFD)	Details
North Needles	550	Line 235 and Line 4000 operating at reduced pressures. With limited supply at Wheeler Ridge, Northern Zone capacity increases from 1,250 MMcf to 1,460 MMcf on an interruptible basis.
Topock	350	
Kramer Junction	560	
Blythe	588	Reduced receipt capacity due to loss of supply assumed from EPNG Line 2000 outage.
Otay Mesa	0	Supplies assumed to be unavailable as, historically, little to no supply has been delivered at Otay Mesa.
Wheeler Ridge & Kern River Station	90	Potential outage due to anomalies, Wheeler Zone limited to 90 MMcf.
California Production	70	Current level of local California production.
<b>Total</b>	<b>2,208</b>	95% except at Blythe, Wheeler Ridge, and California Production.
<b>Assume 95% pipeline utilization</b>	<b>2,135</b>	

The capacities shown in Table 2 as “worst case” are based on 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, could still occur throughout the summer season, further reducing receipt capacity beyond the level projected in Table 2.

For this assessment, based on current storage field withdrawal capacities, the supplies assumed in Tables 1 and 2, and the resultant inventory levels expected during the peak summer demand period, SoCalGas assumed that 2.33 BCFD (best case) and 1.91 BCFD (worst case) of storage withdrawal capacity would be available during the peak summer season with the use of Aliso Canyon. Without Aliso Canyon, withdrawal capacity is reduced to 1.18 BCFD (best case) and 0.76 BCFD (worst case). These withdrawal capabilities are dependent on having sufficient inventory levels in storage to sustain these withdrawal capacities. The lower withdrawal rates available under the “worst case” supply assumption reflects the lower levels of storage inventory that could be attained by the peak summer demand period given the reduced pipeline supplies.

**Peak Summer Demand Forecast and System Capacity Calculation**

For the upcoming summer season, the forecasted level of total system demand is approximately 3.307 BCFD as shown in Table 3, itemized by customer type as:

**Table 3. Summer 2022 Forecasted Customer Demand**

Customer Type	Summer Demand (BCFD)
Core	0.776
Noncore, Non-EG	0.774
Noncore, EG*	1.757
Total	3.307

\* 2020 CGR forecast for summer 2022.

Using the values reflected in Table 3, SoCalGas analyzed how much of this forecasted demand the system can sustain using hydraulic simulations of its gas transmission and storage system under both the “best” and “worst” case pipeline supply scenarios described in Tables 1 and 2, with and without utilizing Aliso Canyon. With available storage withdrawals considered, the total supply (pipeline receipts and storage withdrawal) available under the “best” and “worst” case scenarios are 5.14 BCFD and 4.04 BCFD with the availability of Aliso Canyon and 3.99 BCFD and 2.89 BCFD without.

Based on the forecasted summer 2022 demand and system capacity, SoCalGas will be able to meet forecast peak day demand under a “best case” supply scenario, with or without the use of Aliso Canyon. SoCalGas does not have a detailed demand forecast for the summer season greater than the peak day demand of 3.307 BCFD, and the location and level of EG demand impacts the system capacity. However, given the level of available pipeline and withdrawal supply under the “best case” scenario, SoCalGas estimates that it could support a sendout up to approximately 5 BCFD and 4 BCFD with and without the use of Aliso Canyon, respectively. In the “worst case” supply scenario, SoCalGas could support a sendout up to approximately 3.9 BCFD and 2.88 BCFD with and without the use of Aliso Canyon. SoCalGas will be able to meet the forecasted peak day demand under a “worst case” supply scenario with the use of Aliso Canyon, but will be unable to meet the forecasted peak day demand without the use of Aliso Canyon; under this scenario, SoCalGas can support an EG demand of approximately 1.33 BCFD, resulting in the curtailment of approximately 0.42 BCFD of forecasted EG demand from the peak day forecast.

Note that the system capacity is typically less than the sum of the available pipeline and storage supplies as a result of 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 at a constant 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. When customer demand drops off, SoCalGas will reduce the amount of supply withdrawn from its storage fields or even inject excess supply into them if system conditions permit. Because storage supplies are not used at a constant rate for the entire day, the system capacity is typically less than the sum of the available pipeline and storage supplies. Additionally, the changing EG demand pattern represented by the “duck curve” presents operational problems with gas supply and may impact the need and frequency of supplies from our storage fields including Aliso Canyon.

### **System Reliability Assessment for 2022-2023 Winter**

While the summer season is a peak electric generation demand period, it is also when SoCalGas prepares for the upcoming winter season by injecting gas supply into storage for the following winter season.<sup>5</sup>

Using public demand forecast data published in the 2020 CGR workpapers for the summer season (April through October 2022, average temperature with base hydro condition), a projection of the expected storage inventory levels on April 1 (78.08 BCF), and estimates for injection capacity at each field, SoCalGas performed a mass balance examining the ability to fill storage under both the “best” and “worst” case supply scenarios.

The mass balance assessments assumed receipt point utilizations depending upon which assets are expected to be in service. For months with high levels of pipeline supply assumed available, SoCalGas used a utilization factor of 85% corresponding to historical behavior. However, as system-wide injection capacity is diminished, it may become increasingly difficult to receive high levels of pipeline supply consistently through the summer season.

Pipeline supply for the “best” and “worst” case reflect foreseeable outages due to various assumed validation digs, in-line inspections, hydrotests, and other maintenance and compliance work over the summer months. The “best case” supply assumptions consider the shortest reasonable outage for potential summer impacts and includes hydrotests that have posted outages. In the “worst case,” validation digs are assumed to impact pipelines for longer periods of time and the results from in-line inspections are assumed to cause further reduction of receipt capacity via extended outage periods or pressure reductions. Additionally, the “worst case” assumes more pipelines are subject to validation digs than in the “best case.”

Under both the “best case” and “worst case” scenarios, SoCalGas analyzed different levels of receipt point utilization depending on the forecasted available supply. These utilization factors differ from those used in assessing the peak day capacities because the mass balance is a seasonal assessment, spanning all 214 days of the summer season. SoCalGas performed a mass balance for the 2020 CGR average temperature condition with base hydro where “best case” supplies are at 85% utilization, and “worst case” supplies are at 95% in August, when forecasted supplies are at the lowest point, and 90% utilization for the remaining months. Storage injection (Inj) and excess supply values are positive and storage withdrawal (WD), and supply shortfall values are negative. This mass balance is presented below in Table 4.

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<sup>5</sup> SoCalGas Operations does not purchase and store any gas supply for the use of any customer. SoCalGas’ Gas Acquisition department purchases supplies for storage only for the SoCalGas retail core and the SDG&E wholesale core market segment, excluding those core customers served by Core Transport Agents as part of a Core Aggregation Transportation program (CAT) and other wholesale providers.

**Table 4. Monthly Storage Injection Assessment (CGR Average Temperature with Base Hydro) (MMCF)**

		2022						
		APR	MAY	JUN	JUL	AUG	SEP	OCT
" Best Case"	Supply Utilization	85%	85%	85%	85%	85%	85%	85%
	CGR Demand	65,340	57,691	54,270	69,502	80,042	74,040	69,626
	Pipeline Supply	84,338	87,149	74,648	87,149	87,149	84,338	87,149
	Storage Inj (+) / WD (-)	11,694	1,589	-	-	-	-	-
	Excess (+) / Short (-)	7,304	27,869	20,378	17,647	7,107	10,298	17,523
	Month End Inv. (BCF)	89.77	91.36	91.36	91.36	91.36	91.36	91.36
" Worst Case"	Supply Utilization	90%	90%	90%	90%	95%	90%	90%
	CGR Demand	65,340	57,691	54,270	69,502	80,042	74,040	69,626
	Pipeline Supply	61,995	76,617	63,885	70,339	66,185	74,145	68,805
	Storage Inj (+) / WD (-)	-3,345	13,424	2,473	731	-13,857	105	-821
	Excess (+) / Short (-)	-	5,502	7,142	106	-	-	-
	Month End Inv. (BCF)	74.73	88.16	90.63	91.36	77.50	77.61	76.79

Under the "best case" supply scenario, SoCalGas expects to have sufficient capacity and supply to fill its storage fields by the end of the summer season. In fact, this calculation shows excess pipeline supply of 108.1 BCF over the summer season, some of which could potentially be stored at Aliso Canyon but for the Commission's inventory limitation of 41.16 BCF at that field.

Under the "worst case" supply scenario, SoCalGas does not expect to have sufficient capacity and supply to fill its storage fields by the end of the summer season. The total storage inventory is only expected to reach 76.79 BCF, about 14.57 BCF short of the current maximum capacity of 91.36 BCF, but greater than the minimum level of 39.2 BCF required for core reliability specified in the SoCalGas Winter 2021-22 Technical Assessment.

### **Conclusion**

This technical assessment provides forecasts of the upcoming summer and winter seasons. For the upcoming summer season, SoCalGas estimates that it will be able to meet the forecasted peak day demand under a "best case" supply assumption even without supply from Aliso Canyon. Under a "worst case" supply assumption, the forecasted peak day demand cannot be met without supply from Aliso Canyon.

SoCalGas also expects to be able to fill its storage inventory under the "best case" supply assumption in preparation for the winter 2022-23 season. However, under the "worst case" supply assumption, SoCalGas would be unable to fully fill storage. This may result in greater restrictions on the use of storage supply to support noncore demand, and corresponding noncore customer curtailment during the winter season to preserve inventory and associated withdrawal capacity for core customer reliability.