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SoCalGas Summer 2023 Technical Assessment

Additional submitted attachment is included below.



SOUTHERN CALIFORNIA GAS COMPANY SUMMER 2023 TECHNICAL ASSESSMENT

April 5, 2023

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 hybrid¹ forecasted summer peak demand of 3.317 billion cubic feet per day (BCFD) without the use of Aliso Canyon, assuming customers utilize the available receipt capacity to deliver supply to the SoCalGas system and no further infrastructure outages occur than those considered in this assessment. Even so, SoCalGas may need to utilize Aliso Canyon to maintain service to core and critical noncore customers, consistent with the Commission's July 23, 2019 Aliso Canyon Withdrawal Protocol.²

SoCalGas also performed a preliminary analysis of projected storage injection and resulting inventory through the summer to prepare for the 2023-24 winter season. Using a hybrid of demand forecast data prepared for the 2020 and 2022 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)³ can be reached by November 1. 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 2022-23 Technical Assessment. This expectation of meeting minimum inventory levels for core reliability is due to an increased receipt capacity in the Northern Zone.

¹ During a heat wave in 2022, electric generation (EG) demand significantly exceeded the 2022 California Gas Report (CGR) high summer day demand forecast for several consecutive days, and were more comparable to the 2020 CGR forecast. For this reason, SoCalGas has elected to use the 2020 CGR EG summer demand forecast combined with the 2022 CGR core and non-EG noncore summer demand forecasts, creating a hybrid between the two CGRs.

² 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.

³ 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 authorities⁴ in the utilities' service territory can place electric reliability at risk, and understand the importance of working to maintain service to local electric generation (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.⁵ 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. During this timeframe, Line 4000 is assumed to be restored to normal operating pressure and Line 235 West is assumed to be out of service for remediation, resulting in a Northern Zone receipt capacity of 1,250 million cubic feet per day (MMcfd). Additionally, since both El Paso Natural Gas's (EPNG) Line 2000 and SoCalGas's Line 2000 downstream of Blythe have been restored to normal operating pressures, there is sufficient supply assumed at Blythe to utilize the full 1,210 MMcfd of receipt capacity. Otay Mesa is still available to receive up to 400 MMcfd of supply, however, the total Southern Zone receipt capacity is limited to 1,210 MMcfd.

In addition to the outages and restrictions discussed above, SoCalGas' analysis took into consideration 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.

⁴ California Independent System Operator (CAISO), Los Angeles Department of Water and Power (LADWP), and Imperial Irrigation District (IID).

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.

Given these considerations, and the lack of expected significant infrastructure outages, for the purpose of this peak day capacity calculation, SoCalGas has adopted a peak day utilization assumption of 85% for all supplies except for local California production, which is assumed at the current production rate.

Using the scenario information outlined above, the resulting receipt capacities during the peak summer period are detailed below in Table 1.

Table 1. Available Flowing Pipeline Supplies

Receipt Point	Capacity/Supply (MMCFD)	Details
North Needles	600	Northern Zone capacity limited to 1,250 MMcfd due to Line 235 West remediation.
Topock	200	
Kramer Junction	450	
Blythe	1,210	EPNG Line 2000 and the majority of SoCalGas’s Line 2000 downstream of Blythe MOP restored to normal operating pressure.
Otay Mesa	0	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.
Wheeler Ridge & Kern River Station	765	
California Production	70*	Current level of local California production.
Total	3,295	85% utilization except at California Production.
Assume 85% pipeline utilization	2,811	

The capacities shown in Table 1 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 1.

For this assessment, based on current storage field withdrawal capacities, the supplies assumed in Table 1, and the resultant inventory levels expected during the peak summer demand period, SoCalGas assumed that 2.45 BCFD 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 1.37 BCFD. These capacities are dependent on having sufficient inventory levels in storage to sustain these withdrawal rates.

Peak Summer Demand Forecast and System Capacity Calculation

For the upcoming summer season, the forecasted level of total system demand is approximately 3.317 BCFD as shown in Table 2, itemized by customer type as:

Table 2. Summer 2023 Forecasted Customer Demand

Customer Type	Summer Demand (BCFD)
Core*	0.785
Noncore, Non-EG*	0.759
Noncore, EG**	1.773
Total	3.317

* 2022 California Gas Report forecast for summer 2023.

** 2020 California Gas Report forecast for summer 2023.

For this assessment, SoCalGas used the 2020 CGR EG demand forecast combined with the 2022 CGR core and non-EG noncore demand forecasts, creating a hybrid between the two CGRs. The demand forecast data that was prepared for the 2022 CGR reflected updated electricity demand and supply assumptions, including those relating to renewable resources and building electrification, which resulted in a significantly lower gas-fired EG demand forecast relative to the 2020 CGR. These assumptions were based on California Energy Commission (CEC) recommendations in the Integrated Energy Policy Report (IEPR), and the three utilities responsible for the CGR (SoCalGas, SDG&E, and PG&E) adopted a common set of assumptions that represented the mid-point scenario regarding demand reduction. This decline was seen most dramatically in the summer high sendout day demand forecast which was approximately 700 MMcfd lower in EG demand, a reduction of 40% from the previous forecast. During the heat wave that occurred in September 2022, demand on the SoCalGas and SDG&E system significantly exceeded the 2022 CGR high summer day demand forecast for several consecutive days, and were more comparable to the 2020 CGR forecast as shown in Figure 1 below.

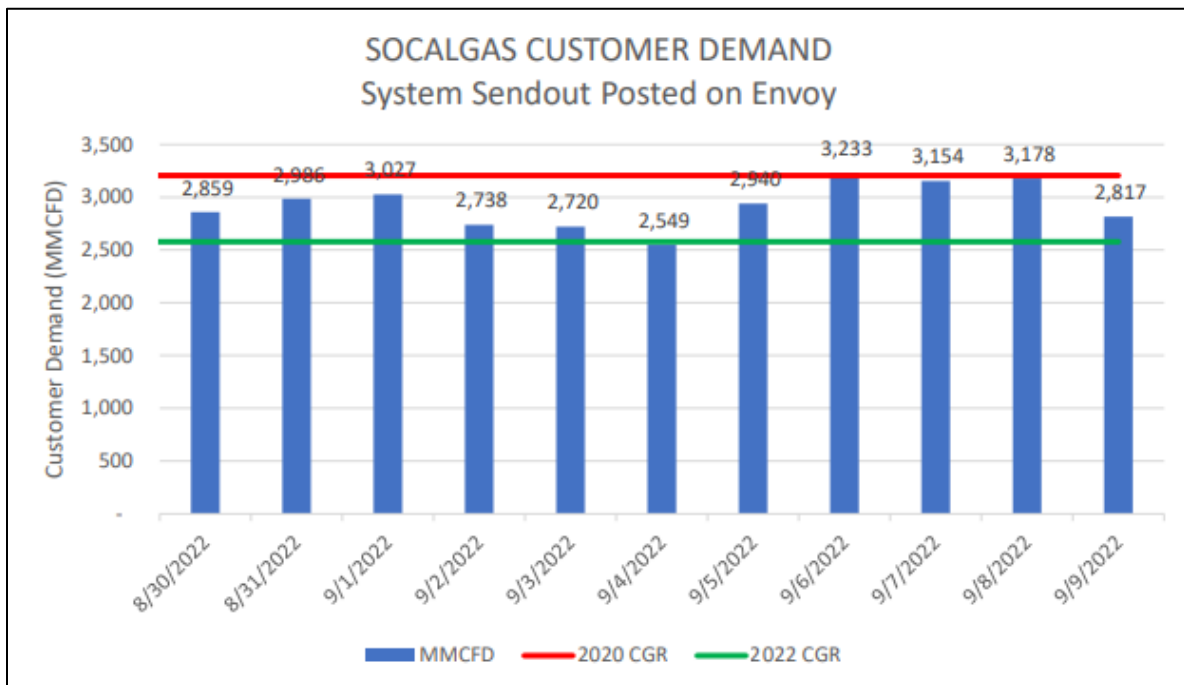


Figure 1. September 2022 Heatwave Demand vs. 2020 and 2022 CGR

The assumptions that went to the 2022 CGR's summer demand forecast do not seem to have considered this kind of extreme heat event, or assumed greater renewable generation, stored energy, or imported power than actually existed or occurred. Until this can be explored further and resolved, SoCalGas has elected not to use 2022 CGR EG demand forecasts in its system planning processes.

Using the values reflected in Table 2, SoCalGas analyzed how much of this forecasted demand the system can sustain using hydraulic simulations of its gas transmission and storage system under the pipeline supply scenario described in Table 1.

Based on the hybrid forecasted summer 2023 demand and system capacity, SoCalGas will be able to meet the peak day demand.⁶ SoCalGas does not have a detailed demand forecast for the summer season greater than the hybrid peak day demand of 3.317 BCFD, and the location and level of EG demand impacts the system capacity. However, given the level of available pipeline and withdrawal capacity, SoCalGas has capacity to serve a higher level of EG demand than shown in Table 2, should it develop.⁷

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 increasing ramping needs of the EG demand pattern represented by the "duck curve" presents operational challenges with gas supply and may impact the need and frequency of supplies from our storage fields including Aliso Canyon.

⁶ SoCalGas may need to use Aliso Canyon to maintain service to core and critical noncore customers, consistent with the Commission's July 23, 2019 Aliso Canyon Withdrawal Protocol.

⁷ The highest summer EG demand in the last five years was 1.87 BCFD and occurred on September 9, 2015.

System Reliability Assessment for 2023-2024 Winter

While the summer season is a peak EG demand period, it is also when SoCalGas prepares for the upcoming winter season by injecting gas supply into storage for the following winter season.⁸

Using the public demand forecast data published in the 2020 CGR workpapers (for the EG market segment) and the 2022 CGR workpapers (for all other market segments) for the summer season (April through October 2023, average temperature with base hydro condition), a projection of the expected storage inventory levels on April 1 (36.9 BCF), and estimates for injection capacity at each field, SoCalGas performed a mass balance for the summer season examining the ability to fill storage.

The available pipeline supply used in the mass balance reflects foreseeable outages due to in-line inspections, hydrotests, replacements, and other maintenance and compliance work over the summer months. These supply assumptions consider the most reasonable outage for potential summer impacts and are assumed to further reduce receipt capacity and available supplies due to extended outage periods or pressure reductions.

The mass balance assessments assumed receipt point utilizations depending upon which assets are expected to be in service. 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 using the hybrid 2020 and 2022 CGR demand forecast under an average temperature condition with base hydro where supplies are at 85% utilization if the total receipt capacity is over 3 BCFD for that month, and at 90% utilization if the total receipt capacity is under 3 BCFD for that month. Storage injection (Inj) and excess supply values are positive and storage withdrawal (WD) and supply shortfall values are negative. 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. This mass balance is presented below in Table 3.

⁸ 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 3. Monthly Storage Injection Assessment (CGR Average Temperature with Base Hydro) (MMCF)

	2023						
	APR	MAY	JUN	JUL	AUG	SEP	OCT
Supply Utilization	90%	85%	90%	85%	85%	85%	90%
CGR Demand	63,720	56,885	54,390	67,487	78,554	70,890	68,913
Pipeline Supply	75,135	81,036	74,460	82,406	87,149	84,338	83,499
Storage Inj (+) / WD (-)	1,142	1,504	1,962	758	81	-	-
Excess (+) / Short (-)	-	9,110	454	7,337	7,787	13,448	14,586
Month End Inv.(BCF)	48.32	63.36	82.97	90.55	91.36	91.36	91.36

SoCalGas expects to have sufficient capacity and supply to fill its storage fields by the end of the summer season, and store more than the minimum level of 38.7 BCF required for core reliability specified in the SoCalGas Winter 2022-23 Technical Assessment. In fact, this calculation shows excess pipeline supply of approximately 53 BCF over the summer season, some of which could potentially be stored at Aliso Canyon if the Commission’s inventory limitation of 41.16 BCF were not in place. For example, if the maximum allowable inventory limitation at Aliso Canyon was set to 68.6 Bcf, a level deemed safe by the California Geologic Energy Management Division (CalGEM),⁹ SoCalGas expects it would have sufficient excess supply to fill Aliso Canyon by November 1, 2023. The mass balance assessment assumes that supplies at Otay Mesa are unavailable as, historically, little capacity is available to SoCalGas from the pipelines that supply Otay Mesa given the Mexican EG demand in the summer season. However, if supply is available at Otay Mesa to fully utilize the 1,210 MMcfd capacity in the Southern System throughout the summer season, the excess gas would increase from 53 BCF to approximately 74 BCF.

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 hybrid forecasted peak day demand. SoCalGas also expects to be able to fill its storage inventory in preparation for the winter 2023-24 season.

⁹ This figure is based on April 19, 2018 email from CalGEM to the Commission. (See California Public Utilities Commission, *Aliso Canyon Working Gas Inventory, Production Capacity, Injection Capacity, and Well Availability for Reliability, Summer 2018 Supplemental Report*, July 6, 2018).