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California Energy Commission Docket Office
Docket: 19-IEPR-09 - Southern California Energy Reliability
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Winter 2019-2020 Technical Assessment

Southern California Gas Company (SoCalGas), as part of our ongoing commitment to providing safe and reliable service to Southern California and our customers, has prepared the attached "Winter 2019-20 Technical Assessment" (Assessment). The Assessment details the following issues relating to system reliability on the SoCalGas system for the upcoming winter season:

- Pipeline operating limitations will continue to impact the sendout capacity of the SoCalGas system through the winter season;
- SoCalGas will likely need to use gas stored at Aliso Canyon this winter;
- Sendout capacity may fall short of supporting all customer demand during extreme temperature conditions even with the use of Aliso Canyon's restricted inventory; and
- Prudent and active management of storage inventory through the winter season, including withdrawals from Aliso Canyon and/or curtailment of noncore customers, is likely necessary to support storage inventory management and to provide reliability to our core customers next winter.

SoCalGas also notes that the California Public Utilities Commission (Commission) recently issued a letter to SoCalGas indicating concern for the upcoming winter season and directing SoCalGas to act to increase injections at all "available" storage facilities "in preparation for the peak winter season, when gas storage is critical for meeting customer demand."[1] SoCalGas appreciates the Commission's ongoing efforts to address winter reliability; however, when Aliso Canyon reaches its maximum authorized inventory, as it now has, the field's injection capacity is no longer available for scheduling. Given the limited remaining injection capacity available, it is difficult for sufficient gas to be brought onto the system for injection, regardless of the additional efforts to increase injections directed by the Commission.

[1] See https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2019/Signed%20Letter%20to%20Bret%20Lane%20So%20Cal%20Gas%20Company%20re%20Injection%20Required%20for%20SCG%20Winter%20Reliability%20and%20Storage%20Inventory_v2.pdf.

SoCalGas remains committed to providing safe, reliable, and affordable natural gas service to our millions of customers across our service territory as part of the State's efforts to make sure there is a reliable supply of energy to California's residents, businesses, and economy.

Sincerely,

Rodger R. Schwecke
Senior Vice President
Gas Operations and Construction

Enclosure

SOUTHERN CALIFORNIA GAS COMPANY WINTER 2019-20 TECHNICAL ASSESSMENT

October 8, 2019

Executive Summary

This technical assessment provides a forecasted outlook of system reliability during the coming winter season (November 1, 2019 through March 31, 2020) 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 forecasts a demand of 4,949 million cubic feet per day (MMcfd) 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 3,511 MMcfd under the Commission-mandated 1-in-35 year peak day design standard, in which all noncore customers are assumed to be fully curtailed.

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[1] and the transmission pipeline outages that are are forecasted in this analysis to exist 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 utilization and pipeline outages, of 3.77 to 4.11 BCFD with the support of Aliso Canyon. This capacity is sufficient to serve the 1-in-35 peak day design standard and still provide some level of service to noncore customers. Without Aliso Canyon, this capacity is reduced to approximately 3.20 to 3.54 BCFD.

Consistent with the Commission's Aliso Canyon Withdrawal Protocol dated July 23, 2019, SoCalGas may use Aliso Canyon to maintain service to core and critical noncore customers.[2]

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[1] 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.

[2] 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, 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,"

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 performed 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 2018 California Gas Report (CGR), the projected SoCalGas capacity to receive pipeline supplies, and an estimate of storage field inventory levels on November 1, 2019, SoCalGas finds that noncore curtailment may be required under cold temperature conditions throughout the winter regardless of facility outage scenarios. SoCalGas may need to curtail up to 54.3 BCF of forecasted noncore demand through the winter season, given certain assumptions regarding weather and facility outages, to maintain minimum inventory levels needed for core reliability. SoCalGas' analysis indicates that, under these circumstances and without such noncore curtailments, SoCalGas storage inventory levels would be fully depleted before the end of the winter season, putting core service at significant risk.

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 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/San Diego Gas and Electric (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 system, and there is sufficient customer demand, SoCalGas can redeliver that gas supply to customers' burners.[3] 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

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.

[3] 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.

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" cast scenarios. For the purposes of this assessment, under a "best case" scenario, Line 235-2 will have been returned to service at a reduced pressure by the start of the winter season while Line 4000 will be shut-in for pipeline integrity improvements until November 2019. Upon returning to service, Line 4000 will operate under a temporary pressure reduction from December through January, thereby reducing the associated capacity under this scenario and limiting the volumes received from Transwestern and El Paso at North Needles and Topock. Line 4000's operating pressure is expected to increase to higher operating pressure by February though the end of the winter season, increasing the Northern Zone capacity to 1250 MMcfd. Additionally, sufficient supply is assumed delivered at 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, Line 4000 and Line 235-2 would be removed from service for pipeline integrity improvements though March 2020, thus eliminating the receipt of supply at North Needles and Topock for the entire winter season. Additionally, supply at Otay Mesa is assumed to be unavailable as, historically, little to no supply has been delivered at Otay Mesa.

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 shows that customers have used on average 80% of interstate receipt capacity, SoCalGas has adopted utilization factors of 85% and 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, with the scenario having the "best case" seasonal average pipeline receipt capacity assuming only an 85% utilization factor. 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.

Additionally, the below scenarios include 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 levels projected in even the "worst case" scenario.

Based on the scenario information outlined above, the resulting "best" and "worst" case scenarios for 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	300	Reduced receipt capacity due to Line 235 outage and Line 4000 temporary pressure reduction.
Topock	250	Reduced receipt capacity due to Line 3000 temporary pressure reduction.
Kramer Junction	400	Limited due to supply from 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	2,995	
Assume 85% Pipeline Utilization	**2,556**	Used to evaluate the entire winter season due to higher pipeline receipts and fewer months of potential curtailment.
Assume 90% Pipeline Utilization	**2,703**	Used to evaluate a cold peak demand day anticipating higher demand and balancing requirements.

Table 2
"Worst Case" Available Flowing Pipeline Supplies

Receipt Point	**Capacity/Supply (MMcfd)**	**Details**
North Needles	0	No receipt capacity due to Line 235-2 and Line 4000 outage.
Topock	0	
Kramer Junction	700	Increased capacity due to lost receipt capacity at North Needles and Topock
Blythe	980	
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	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	
Assume 90% Pipeline Utilization	**2,270**	

Available Storage Supplies

The maximum and forecasted inventories for SoCalGas' Aliso Canyon and Non-Aliso Canyon storage fields at the start of the winter season, and associated minimum level of inventory and withdrawal rate necessary to provide core customer reliability are presented below in Table 3. 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 shown below.

Table 3
Projected Storage Field Performance, Winter 2019-20

Storage Field	Maximum		Forecasted at November 1		Minimum Level for Peak Day Reliability *	
	Inventory (BCF)	Withdrawal Capacity (MMcfd)	Inventory (BCF)	Withdrawal Capacity (MMcfd)	Inventory (BCF)	Withdrawal Capacity (MMcfd)
Aliso Canyon	34	1,350	33.6	1,340	4.4	610
Non-Aliso Canyon	50.4	1,437	43.2	1,320	21.8	940
Total	**84.4**	**2,787**	**76.8**	**2,660**	**26.2**	**1,550**

* End of January.

This data is based on wells currently or forecast to be in service during the winter operating season. SoCalGas assumes in its forecast 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 reassessed 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

System Capacity

SoCalGas has adopted a utilization factor 90% for the peak winter assessment as SoCalGas will require tighter balancing requirements to protect core customers under such a condition. As shown in Table 1 and Table 2, the "best" and "worst" case pipeline supply outlook at 90% utilization is 2,703 MMcfd and 2,270 MMcfd, respectively. The SoCalGas system capacity under "best" and "worst" case supply assumptions, with and without the use of Aliso Canyon, is presented in Table 4.

Table 4

Winter 2019-20 System Capacity

	System Capacity (MMcfd)	
	Without Aliso Canyon	**With Aliso Canyon**
Best Case	3,540	4,110
Worst Case	3,200	3,770

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 4,949 MMcfd, broken down by customer class in Table 5 below:

Table 5
Customer Demand Forecast, 1-in-10 Year Cold Day Event

Customer Type	**Winter Demand (MMcfd)**
Core (including wholesale core)	3,367
Noncore, Non-Electric Generation	794
Noncore, Electric Generation (EG)	788
Total	4,949

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 demand forecast.[4] 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.

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

SoCalGas forecasts a 1-in-35 year peak day demand of 3,511 MMcfd, consisting entirely of core demand[5] 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. SoCalGas could not, however, support the 1-in-35 year peak day demand under a "worst" case pipeline supply scenario without the use of supply from Aliso Canyon.

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

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

minimum inventory level required at each storage field to produce the needed withdrawal rates for core reliability. These levels are shown below in Table 6, and are consistent with Table 1 in the Aliso Canyon Withdrawal Protocol, updated 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 6
Month-End Minimum Inventory Requirements for Core Reliability

Storage Field	Month-End Minimum Inventory (BCF)				
	NOV 2019	DEC 2019	JAN 2020	FEB 2020	MAR 2020
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 those minimum levels, it is expected that the field could not be refilled in the summer 2020 operating season to sufficient levels needed to support winter 2020-21 demand. SoCalGas will therefore manage its system to maintain 7.5 BCF at La Goleta through March 2020 and has included that additional inventory in Table 6 above.

Seasonal Reliability Assessment

Using demand forecast data prepared for the 2018 California Gas Report for the winter season (November 2019 through March 2020, cold, average, and hot temperature conditions with base hydro) and a projection of expected storage inventory levels on November 1 (76.8 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, presented below in Tables 7 and 8, are simply a comparison of forecasted demand against assumed supply, and do not account for actual withdrawal capability.

Table 7
Monthly Storage Assessment, "Best" Case Supply Assumption, 85% Utilization (MMCF)

	NOV 2019	DEC 2019	JAN 2019	FEB 2019	MAR 2019	Curtailment Total
Pipeline Supply	76,688	79,244	79,244	78,715	87,149	
COLD TEMPERATURE CONDITION						
CGR Monthly Demand	79,530	104,935	104,656	85,540	83,886	
Storage WD	2,843	25,691	25,412	6,825	-3,263	
Mth-end Inv	73,908	48,216	22,804	15,979	19,242	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	3,396	625	0	**4,021**
AVERAGE TEMPERATURE CONDITION						
CGR Monthly Demand	74,550	95,666	95,480	78,568	77,283	
Storage WD	-2,138	16,422	16,236	-147	-9,866	
Mth-end Inv	78,888	62,465	46,229	46,376	56,242	
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	71,308	88,888	89,068	73,364	73,155	
Storage WD	-5,380	9,644	9,824	-5,351	-13,994	
Mth-end Inv	82,130	72,485	62,661	68,012	82,006	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**

Table 8
Monthly Storage Assessment, "Worst" Case Supply Assumption, 90% Utilization (MMCF)

	NOV 2019	DEC 2019	JAN 2019	FEB 2019	MAR 2019	Curtailment Total
Pipeline Supply	68,115	70,386	70,386	63,574	70,386	
COLD TEMPERATURE CONDITION						
CGR Monthly Demand	79,530	104,935	104,656	85,540	83,886	
Storage WD	11,415	34,550	34,271	21,966	13,501	
Mth-end Inv	65,335	30,786	-3,485	-25,451	-38,952	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	-2,686	32,371	15,766	8,801	**54,252**
AVERAGE TEMPERATURE CONDITION						
CGR Monthly Demand	74,550	95,666	95,480	78,568	77,283	
Storage WD	6,435	25,281	25,095	14,994	6,898	
Mth-end Inv	70,315	45,035	19,940	4,946	-1,952	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	6,260	8,794	2,198	**17,252**
HOT TEMPERATURE CONDITION						
CGR Monthly Demand	71,308	88,888	89,068	73,364	73,155	
Storage WD	3,193	18,503	18,683	9,790	2,770	
Mth-end Inv	73,557	55,055	36,372	26,582	23,813	
Min Inv Req	29,500	28,100	26,200	20,000	15,300	
Curtailment	0	0	0	0	0	**0**

The mass balance assessment for the "best" case supply scenario (Table 7) shows that on a monthly basis under most temperature conditions, SoCalGas generally 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. The exception is the cold temperature condition during the months of January through March, where the system-wide storage inventory is depleted to its monthly minimum inventory. Under such a condition, SoCalGas is unable to support 4.0 BCF of noncore demand over the winter season, and customer curtailment may be required.

For the "worst" case supply scenario (Table 8) during most winter months, SoCalGas will have insufficient pipeline receipts and storage inventory supplies to serve all noncore customer demand under all temperature conditions except for hot temperature while maintaining minimum inventory requirements. Under a "worst" case supply scenario, SoCalGas may need to curtail up to 54.3 BCF of noncore customer demand 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 through the winter season. To the extent that customers are unwilling or unable to deliver supply to the SoCalGas system at these assumed levels, the curtailment of noncore demand will increase from those figures calculated in Tables 7 and 8 in order to maintain core reliability.