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Aliso Canyon Risk Assessment Technical Report
Winter 2018-19[1] Supplement

Southern California continues to face reliability challenges to its energy system this coming winter, primarily due to continuing outages and reduced capacity on key natural gas transmission pipelines. The Southern California Gas Company (SoCalGas) remains unable to meet its 1-in-10-year peak cold day forecast gas demand of 4.965 billion cubic feet (Bcf) without Aliso Canyon,[2] and its ability to provide gas through the delivery system — often called sendout — is largely the same this winter as a year ago.[3] As a result, customers should continue their attentiveness to conservation measures to reduce the use of electricity and natural gas.

Table 1: SoCalGas Feasible System Sendout for Winter 2018-19

Million Cubic Feet Per Day (MMcfd)	Winter 2018-19 Outage on Line 235-2 and Reduced Operating Pressure on Line 4000s and 3000[4]
Maximum Feasible System Sendout Without Gas System Mitigations	3,807
Maximum Feasible System Sendout With Gas System Mitigations	4,057

Note: Includes flowing pipeline supplies and non-Aliso Canyon storage.[5]

SoCalGas Line 235-2, which ruptured on October 1, 2017, will remain out of service this coming winter. Line 4000, which is adjacent to Line 235-2 near the rupture point, will continue operating at reduced pressure until testing and maintenance work is complete. The utility states that in its best-case scenario, Line 235-2 will return to service in mid-April, and the work needed to bring Line 4000 back to full capacity will resume once Line 235-2 is back in service.[6] Line 3000 returned to service at reduced operating pressure on September 17, allowing receipts from the Topock area. However, the capacity of the Needles/Topock zone will continue to be 270 million cubic feet per day (MMcfd) due to the bottleneck created by losses on Lines 235-2 and 4000. SoCalGas will make interruptible supplies of 50 MMcfd available at Kramer Junction while Line 4000 operates at reduced pressure. An additional 200

[1] The California Energy Commission (Energy Commission), California Public Utilities Commission (CPUC), California Independent System Operator (California ISO), and Los Angeles Department of Water and Power (LADWP) continue to work together to evaluate the risks to energy reliability, both electricity and natural gas, and to take actions to reduce those risks.

[2] The source of the forecast gas demand is the 2018 California Gas Report, p. 97: https://www.socalgas.com/regulatory/documents/cgr/2018_California_Gas_Report.pdf

[3] By "largely" staff means within 100 MMcfd or so.

[4] Maximum feasible sendout varies according to which pipeline assets are in versus out of service. The combination of outages this winter is slightly different than those evaluated in last winter's Supplement. Staff's "Period 3: Post 12/31/2017" case projected a maximum feasible sendout (with mitigations) of 4,117 MMcfd, some 60 MMcfd higher than the 4,057 MMcfd shown for this winter.

[5] In an October 5, 2018, data response, SoCalGas indicated that Aliso Canyon can add withdrawal capacity of 1,317 MMcfd when inventory at the field is at its currently authorized maximum of 34 Bcf.

[6] SoCalGas Critical Notice, posted to Envoy on October 5: https://scgenvoy.sempra.com/ebb/attachments/1538761032116_Line_235_and_4000_Update.pdf.

MMcfd of supply at Otay Mesa could increase feasible system sendout to 4,057 MMcfd as shown in Table 1. While Table 1 includes known outages, there is a risk that additional unplanned outages could further reduce SoCalGas' feasible system sendout.

Last winter, the Los Angeles Department of Water and Power (LADWP) postponed necessary maintenance and upgrades on its electric transmission lines to reduce the reliability risks caused by outages on the SoCalGas system. Because of impending Renewables Portfolio Standard requirements, LADWP must continue its capital projects and infrastructure upgrades this winter. LADWP will manage the upgrades to have frequent review of the impact from transmission outages and will be prioritizing reliability over construction costs by including off ramps from the outages. These off ramps will allow a more expedited ability to return outage transmission lines to service in the event of adverse weather in the regional forecast or forced outages on the SoCal Gas system. The minimum electric generation requirement[7] for this winter is similar to the amount from last winter post-February 1, 2018, when LADWP planned to begin its maintenance and upgrade work. Without Aliso Canyon, under 1-in-10-year peak day demand, a shortfall exists even when the balancing authorities reduce generation to the minimum levels needed to meet reliability. If a 1-in-10-year peak day occurs, the options would be to withdraw gas from the Aliso Canyon natural gas facility or curtail other noncore customers since any electric generation reductions once generators are at their calculated minimum would result in electricity service interruptions to customers.

It is likely that SoCalGas will need to use gas stored at Aliso Canyon this winter. If there are any extreme cold weather events, there may be insufficient gas supplies to meet demand even when relying on withdrawals from all storage fields including Aliso Canyon. The largest risk to the system is not from a single day with high gas demand. The greatest risk is from multiple high demand days that draw down storage inventories to a point where there is insufficient withdrawal capacity to meet gas demand later in the winter.

Exceptionally warm temperatures last winter kept demand lower than expected through mid-February, which helped to preserve storage inventories. However, an extended cold snap from February 19 through March 6, 2018, quickly drew down storage inventories and led to a two-week natural gas service curtailment of electric generators. During this period, SoCalGas withdrew roughly 10 Bcf from underground storage, including 1.14 Bcf from Aliso Canyon.[8]

On July 6, 2018, the CPUC authorized SoCalGas to increase the natural gas storage volume at Aliso Canyon from 24.6 Bcf to 34 Bcf.[9] As of October 3, 2018, the combined inventory at all of SoCalGas' storage fields is 80.3 Bcf, which is close to full inventory. The additional 9.4 Bcf of storage inventory at

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[7] As covered in the 2018 Summer Assessment, taking electric generation gas demand to minimum levels is not desirable and is not even identified in any of the Joint Agency technical assessments as a mitigation measure. See page 21 of the "Aliso Canyon Risk Assessment Technical Report Summer 2018" May 7, 2018, http://www.energy.ca.gov/2018_energypolicy/documents/#05082018.

[8] "30-Day Alison Canyon Withdrawal Report," dated April 3, 2018, p.8. http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Aliso%20WD%2030_Day%20Report_Public%20Version.pdf.

[9] Letter from CPUC Executive Director Alice Stebbins to SoCalGas Senior Vice President Rodger Schwecke, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/7-2-18_Ltr%20To%20Rodger%20Schwecke%20re.%20Aliso%20Canyon%20Gas%20Storage%20Facility.pdf

Aliso Canyon will help meet seasonal winter demand. However, Aliso Canyon is a resource of last resort and subject to the withdrawal protocol established by the CPUC.[10]

With no reduced risk from last winter, all the mitigation measures established last year will need to continue. On August 30, 2018, Southern California Edison issued a second request for 20 megawatts (MW) of energy storage to help address electrical system operational limitations resulting from Aliso Canyon. The storage will not be online this winter.[11] SoCalGas may call upon LADWP and the California Independent System Operator to curtail electric generation once again, which was done during last year's cold snap. The balancing authorities and other noncore users should be prepared to respond to operational flow orders and gas service curtailments. SoCalGas has proposed to expand its demand response program from an initial 9,000 customer thermostats last winter to 50,000 customer thermostats this winter, pending approval by the CPUC on October 25, 2018. If the program is approved, SoCalGas plans to launch the effort before the end of November. Additionally, the CPUC has renewed funding for wintertime conservation messaging and noticed SoCalGas that they may authorize additional funds for such messaging.[12] Southern California residents should be prepared to turn down the heat and conserve both electricity and natural gas. The Aliso Canyon Technical Assessment Group has learned that delivering 200 MMcfd of additional supply at Otay Mesa using the North Baja and Gasoducto Baja Norte pipelines is limited by the lack of firm transmission capacity. Deliveries of liquefied gas from the Energía Costa Azul facility through Otay Mesa could bring additional gas into the SoCalGas system.[13]

Reliability challenges continue in Southern California despite the increase in authorized inventory at Aliso Canyon. The current operating status of the SoCalGas system is mostly unchanged from last winter except for the extra gas stored at Aliso Canyon. The risk of gas service curtailment is largely unchanged. The need for curtailments will depend on the weather and how effectively consumers reduce gas demand if and when requested.

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[10] September 5, 2018, Letter from CPUC Energy Division Director Edward Randolph to SoCalGas Senior Vice President Rodger Schwecke, http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/CPUC%20Letter%20to%20SoCalGas%20re%20Aliso%20Canyon%20Withdrawal%20Protocol.pdf

[11] One megawatt of electricity storage for one hour can replace roughly 0.012 million cubic feet of natural gas that would otherwise need to be burned in a gas-fired power plant. Twenty MW of electric storage would replace less than 1 MMcfd of natural gas, assuming a four-hour battery life.

[12] See Decision 18-07-008.

[13] The Federal Energy Regulatory Commission reports liquefied natural gas (LNG) landed prices of less than $3 per million British thermal unit (MMbtu) for July and August 2018 at Lake Charles, Cove Point, and Canaport LNG terminals.