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December 4, 2020

BY E-MAIL

California Public Utilities Commission
Energy Division
505 Van Ness Avenue
San Francisco, CA 94102

RE: Southern California Gas Company's Comments on Aliso Canyon OII (I.17-02-002) Phase 3 Workshop #1

Dear Commission Staff:

SoCalGas appreciates the opportunity to offer informal comments on the California Public Utilities Commission's (Commission) November 17, 2020 Phase 3 Workshop #1 (Workshop) for the Senate Bill 380 Aliso Canyon Order Instituting Investigation. SoCalGas thanks FTI Consulting, Inc. and Gas Supply Consulting (together referred herein as "FTI") for presenting at the Workshop and offers comments on the presentation as well as comments, questions, and statements made at the Workshop.

I. Background

This proceeding has potential far-reaching impacts both in California and in the surrounding western region of the United States. Reducing or eliminating Aliso Canyon reduces natural gas supply and reliability, and increases price volatility, customer costs, and energy prices.

SoCalGas operates four storage fields—Aliso Canyon, Honor Rancho, La Goleta, and Playa del Rey—as an essential part of an integrated transmission system. Aliso Canyon is by far the largest of SoCalGas' four storage fields in terms of inventory, injection, and withdrawal capacity. SoCalGas' natural gas transmission and distribution system was designed and has developed based on the availability of a strategically located source of natural gas supply at Aliso Canyon.

As a result, Aliso Canyon plays a key role in SoCalGas' delivery of reliable energy at just and reasonable rates to over 20 million people and thousands of businesses, as well as electric

generators, refineries, universities, and hospitals. Aliso Canyon allows for appropriate response to daily, hourly, and seasonal gas demand, provides a local and strategic supply source, and increases systemwide capacity/flexibility by also serving as an on-system demand source. Natural gas travels slowly—approximately 20-30 miles per hour—and SoCalGas' natural gas receipt points, located at the fringes of the service territory, are too far from the load centers to fully support customers' changing needs throughout the operating day. Natural gas supplies are also delivered by interstate pipelines at a uniform daily rate, whereas customer usage rarely happens at a uniform rate throughout the day—particularly for electric generation (EG) customers. The situation is further complicated by the fact that California currently receives approximately 95% of its natural gas supply from out-of-state sources. Because there is no meaningful in-state production of natural gas, the SoCalGas system is almost wholly dependent on out-of-state deliveries of gas, which makes the availability of local natural gas storage critical to energy reliability.

From a system planning perspective, it is important to understand the potential limitations of out-of-state supplies and the importance of local natural gas storage in providing system resiliency, emergency response, and incident mitigation capabilities. SoCalGas' system is at the terminus of several interstate pipelines delivering gas into California and, as a result, SoCalGas is more likely to be impacted by upstream events. There are countless events that could prevent or limit natural gas from reaching California. For example, climate change related emergencies such as wildfires could restrict the capabilities of the upstream system, or freezing temperatures could cause well freeze offs in producing basins and a sharp increase in customer demand east of California and affect the availability of upstream supplies. When this happens, California has limited options. Today and in the past, local underground storage serves as the system's largest contingency resource for flexibility and resiliency and is the primary safeguard against curtailments and the significant safety and economic impacts that can result from curtailments.

As recognized by the California Council of Science and Technology (CCST)[1] in their Technical Report on the Long-Term Viability of Underground Natural Gas Storage in California (CCST Report):

- "The overarching reason for the utilities' underground gas storage is to meet the winter demand for gas."[2]
- "Storage provides supply when monthly winter needs exceed the available pipeline capacity."[3]
- "Storage provides supply when winter peak day demands exceed pipeline capacity."[4]

[1] The CCST is a nonpartisan, nonprofit organization that responds to the Governor, the Legislature, and other state entities who request independent and impartial assessments of public policy issues affected the State of California.
[2] CCST Report at 511.
[3] *Id*. at 494.
[4] *Id*.

- "Storage provides intraday balancing to support hourly changes in demand that the receipt point pipelines cannot accommodate. This service is essential in allowing the flexible use of gas-fired electricity generators to back up renewable generation."[5]
- "Gas storage could increasingly be called on to provide gas and electric reliability during emergencies caused by extreme weather and wildfires in and beyond California. Both extreme weather and wildfire conditions are expected to increase with climate change. These emergencies can threaten supply when demand simultaneously increases."[6]
- "Underground gas storage protects California from outages caused by extreme events, notably extreme cold weather than can drastically reduce out-of-state supplies."[7]

Additionally, the Commission has previously recognized the following benefits:

- "When daily or hourly gas demand is higher than the pipeline flowing capacity, gas is withdrawn from storage at Aliso to serve the demand that exceeds the flowing supplies. This functionality is possible because Aliso is close to the major gas demand centers."[8]
- "When daily gas demand is highly variable, for example when electric generation is re-dispatched in the CAISO hour ahead or real time market, rapid increases or decreases in the hourly gas demand can cause large pipeline pressure swings. Withdrawals from or injections into Aliso can be used to mitigate these pressure swings and keep the pressure within operating bounds. This is a critical requirement for maintaining safety and avoiding excessively low pressures from limiting gas flows."[9]
- "A traditional role of gas storage at Aliso Canyon is to leverage seasonal variations in gas prices to store significant quantities of gas near the load centers while gas prices are low and to release that gas to customers during periods of high prices."[10]

Further, as recognized in the Energy Division's Phase 2 analyses, Aliso Canyon mitigates price volatility, reduces customer bills, and reduces the price of energy (natural gas and electric generation) in California.[11] Notably, if gas can be injected into storage fields when prices are

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[5] *Id*.
[6] CCST Report at 506; *see* Natural Gas Network Resiliency to a "ShakeOut Scenario" Earthquake, by Sandia National Laboratories (Sandia Report), available at http://prod.sandia.gov/techlib/access-control.cgi/2013/134938.pdf ("The role of natural gas storage, in general, is to provide a buffer between constant production and the highly seasonal nature of consumption. In this case, Los Angeles is fortunate to have Aliso Canyon storage facility in its backyard. At roughly 85,000 mmcf of working (or usable) gas capacity, this storage facility is one of the largest in the Unites States.").
[7] CCST Report at 506.
[8] Scenarios Framework at 6.
[9] *Id*.
[10] *Id*. at 8.
[11] *See* Economic Analysis Report.

low (off-peak season) and withdrawn when prices are high (peak season), storage fields become a physical hedge against those higher prices.

Finally, Wood Mackenzie has separately explained the value of Aliso Canyon as an interstate wholesale market facility. Wood Mackenzie's June 2018 Western Interconnection Gas—Electric Interface Study (WECC Study) found limitations on Aliso Canyon had heightened region-wide reliability risks to the Western Interconnection (a wide area synchronous grid stretching from Western Canada south to Baja California in Mexico, reaching eastward over the Rockies to the Great Plains).[12] Recently, in Rulemaking (R.) (R.20-01-007),[13] a presentation on this study highlighted "the impact of an Aliso Canyon outage/retirement and its ripple effects into neighboring regions," including, for example, "significant unserved energy and unmet spinning reserves resulting in [approximately $1 billion] risked impact across Southwest / CA."[14] Notably, during the workshop, the authors of the study indicated that "[t]he actual event would effectively be around a 30-billion-dollar economic-impact event, so quite significant." The study then noted that "Aliso Canyon at 30% of capacity fully mitigated the unserved energy and 75% of the unmet spinning reserve."[15]

Extensive analysis from a wide array of sources confirms the value of Aliso Canyon and the potential reliability and economic impacts of reducing Aliso Canyon's capabilities—including the extreme potential impacts of an unreliable or un-resilient gas system. As part of this proceeding it is important to compare these risks to the benefits of continuing to operate Aliso Canyon—a facility that the Commission and California Department of Conservation, Geologic Management Division (CalGEM) formally determined is safe to operate following completion of a comprehensive safety review in 2017.[16]

II. General Comments on the Workshop

A. It Is Essential to System Reliability and Just and Reasonable Rates that Phase 3 Analyses Adequately Recognize the Benefits and Value Provided by Aliso Canyon.

In describing their understanding of Phase 3 at the Workshop, FTI indicated that Phase 3 is not necessarily intended to understand or quantify the value of Aliso Canyon to customers and California. Rather, Phase 3 is intended to determine how to retire the facility. SoCalGas first notes that Senate Bill 380 does not *require* the closure of Aliso Canyon. Rather, it requires the

[12] June 2018, Wood Mackenzie, WECC Study at 3, available at https://www.wecc.org/Reliability/Western%20Interconnection%20Gas-Electric%20Interface%20Study%20Public%20Report.pdf).
[13] Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning.
[14] R.20-01-007 Track 1B Workshop Presentation at Slide 13.
[15] *Id*.
[16] *See* July 19, 2017, SB 380 Findings and Concurrence Regarding the Safety of the Aliso Canyon Gas Storage Facility, available at https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/OpenLettertoSoCalGasandPublic.pdf.

Commission "open a proceeding to determine the *feasibility* of minimizing or eliminating use of the Aliso Canyon natural gas storage facility located in the County of Los Angeles while still maintaining energy and electric reliability for the region" (emphasis added), which the first two phases were intended to address. Nevertheless, the Commission has opted to open a subsequent phase of this proceeding to consider potential alternatives to the facility.[17] In any event, since the purpose of this Phase 3 is to assess potential alternatives to Aliso Canyon, it is important to continue to consider and incorporate analysis from earlier phases of the proceeding that helped identify and understand the benefits and value provided by the facility. It would be reckless to make any determination as to how to replace the facility without first understanding the broad set of benefits and value provided by Aliso Canyon. Evaluating replacement options necessarily entails assuring the proposed replacement(s) convey the benefits and value, not merely a subset of them.

At the Workshop, FTI identified two specific values that it is currently attempting to solve for: one related to withdrawals from Aliso Canyon, and the other related to injections into Aliso Canyon.

For the withdrawal component, FTI identified a deliverability shortfall without Aliso Canyon, which translates to an electricity shortage as generators are curtailed. FTI notes that, without Aliso Canyon, the system cannot provide necessary gas deliveries, with FTI's model indicating shortages of 434 MMcf per day on a peak winter day in 2027 and 318 MMcf per day on that winter peak day in in 2035. This gas shortage translates to 56,000 MWh of curtailed electric generation in 2027 and 33,000 MWh of curtailed electric generation on that winter peak day in 2035. For the identified shortage, FTI calculates a "critical hour" to identify the peak hourly demand that will be unavailable if Aliso Canyon is retired. For 2027 the critical hour shortage is 32.6 MMcf or 4,215 MWh. For 2035, the critical hour shortage is 24.2 MMcf or 2,600 MWh. To address these shortages, FTI proposes assessing multiple electric and gas supply and demand-side solutions. FTI's approach, however, does not take into consideration multi-day events and understates the magnitude of the identified supply shortage because it assumes that least efficient generators can be curtailed.[18]

Additionally, FTI's approach only attempts to quantify and replace one component of the economic and reliability benefits provided by Aliso Canyon, and does not address the broader benefits addressed in these comments.

For the injection component, FTI acknowledges that removing Aliso Canyon renders the system less flexible and less able to manage imbalances. FTI notes that additional system injection balancing capabilities are needed to address a potential retirement of Aliso Canyon. SoCalGas agrees that removing Aliso Canyon decreases system flexibility, which may become increasingly more valuable and important as EG demand becomes more volatile. As EG demand

[17] *See* FTI Research Presentation at 2 ("Our primary objective is to identify and analyze options to invest in new infrastructure that could facilitate the retirement of the Aliso Canyon facility.").
[18] FTI appears to acknowledge that other approaches would increase the shortage later in the presentation, noting "[a]lternative methods would increase the magnitude of the required investment" (FTI Research Presentation at Slide 66).

becomes peakier, storage enables SoCalGas to inject levelized supply when the EG burn is low, and switch to withdrawal when EG demand ramps up. FTI also appeared to indicate that this consideration of injection capability was a "non-wintertime problem." Utilizing Aliso for system balancing is not just a non-wintertime problem. Eliminating or reducing Aliso will also affect wintertime system balancing, which as indicated above could become increasingly important as EG demand increases the need for a flexible system.

B. It is Important to Make Available the Underlying Data for Workstream 1 and Issue a Scenarios Framework for Workstream 2.

Due to the far-reaching impacts of decisions made in this proceeding both within Southern California and the surrounding western region of the United States, it is incumbent upon the Commission and FTI to allow parties to provide feedback on the inputs, analytical methods, assumptions, and scenarios in this Phase 3. SoCalGas understands that FTI began work on Phase 3 in August 2020, i.e., prior to the Workshop.[19] FTI conducted simulation analyses of the California gas and power markets for 2027 and 2035 (Workstream 1)[20] without an opportunity for parties to provide feedback. In addition, FTI is currently in the process of identifying solutions to address reliability concerns if Aliso Canyon is retired (Workstream 2).[21]

This is a departure from the practice in this proceeding. In Phase 1 of this proceeding, Energy Division Staff issued three versions of its scenarios framework which it utilized for economic, production cost, and hydraulic modeling in Phase 2. Parties were provided several opportunities to submit comments on the scenarios framework before the modeling was performed, and did so.[22] In contrast, in Phase 3, there has been no opportunity for parties to comment on the inputs, analytical methods, and assumptions prior to the modeling in Workstream 1. Further, there is presently no plan for the Commission nor its consultant to issue a scenarios framework, thus precluding parties from reviewing and providing written comments on the proposed assumptions or scenarios in Workstream 2. Given the reasons cited herein, it is important to have transparency regarding the data underlying Workstream 1, and a scenarios framework for Workstream 2 should be issued for party comment.

C. Impacts Beyond California.

Aliso Canyon is a critical component of energy reliability, not just in California, but throughout the western United States. Accordingly, the analyses should not be limited to impacts within California. Weather and market events outside of California can and have impacted the price and availability of California's natural gas supply, and the loss of storage in California can impact prices and reliability in neighboring states. In turn, those effects in neighboring states can have an effect on gas supplies and costs in California.

[19] ALJ's Ruling Noticing November 17, 2020 Workshop.
[20] *Id*.
[21] *Id*.
[22] Scenarios Framework at 4.

For example, weather and market events east of California can cause supply shortages and/or demand spikes between the supply basins in Texas, New Mexico, Colorado and SoCalGas' service territory. Because there is no gas storage between the Permian Basin in Texas (where most supplies for the Southwest originate) and SoCalGas' storage facilities in and around Los Angeles, the states along the Permian to Los Angeles supply lines rely almost entirely on flowing natural gas pipeline supplies.

A facility with the storage capacity of Aliso Canyon not only supports significant local customer demand but also creates a system that is flexible enough to displace gas to support surrounding states and regions. Recent history has demonstrated the importance of local natural gas storage not only to California's reliability, but also to the reliability of neighboring states.

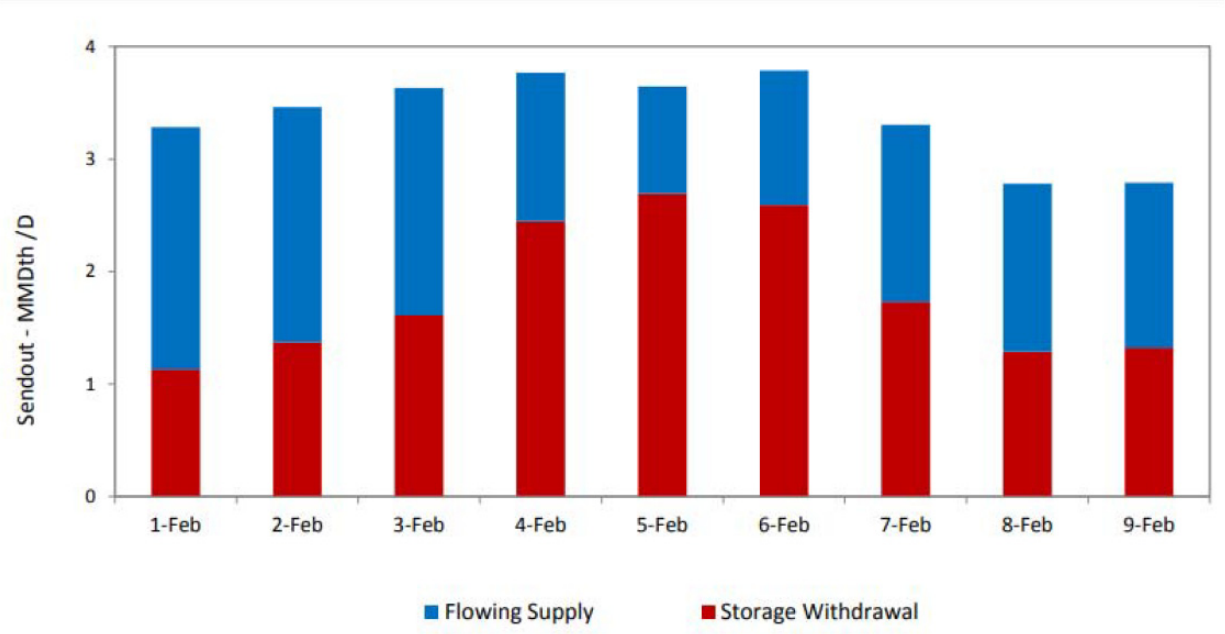
In early 2014, most of North America experienced an extreme weather event where average temperatures in much of the lower 48 states fell significantly below normal (colloquially called the "Polar Vortex"). California, by contrast, did not incur an extreme weather event at that time. However, because average temperatures outside California fell considerably, gas demand in the impacted areas increased significantly. This was compounded by freezing temperatures in and around the Permian Basin, causing well-freeze offs and power outages, and further exacerbating the gas supply shortfall.

When high gas demand outside California created negative price spreads between Southern California and upstream supply basins, marketers began diverting supplies to higher-valued markets east of California, and receipts into the SoCalGas system began to fall. To

illustrate the differences in market conditions, the below table provides approximate prices for various supply basin and citygate trading points for gas delivered on February 6, 2014:

Location	Approximate $ per MMBtu
Rockies	$30
Permian	$24
San Juan	$21
PG&E Citygate	$22
SoCalGas Citygate	$12

As gas which was being delivered to SoCalGas was diverted to those higher-priced markets outside California, SoCalGas' receipts declined sharply and SoCalGas relied heavily on storage withdrawals to support system reliability. SoCalGas withdrawals reached 2.5 billion cubic feet or 73% of natural gas send out.



During this time, SoCalGas' Gas Acquisition department similarly redirected some of its firm natural gas supplies to the higher-priced markets, thus helping to support reliability in states east of California that were hard hit by the extreme weather conditions while concurrently reducing core procurement ratepayer costs. During this event, SoCalGas' system was essentially an "energy island" due to the robust capability to withdraw natural gas from storage.

Nationwide electric and natural gas issues like those seen during the Polar Vortex may become more pronounced. The WECC Study found that the Western Interconnection was at risk of being pushed to the limit: "Up until 2015, Aliso Canyon's 86 bcf of market-area gas storage and 1.8 bcfd of withdrawal capacity were historically sufficient to balance system variability in

the Southern California region. However the operational limitations imposed on Aliso Canyon are now highlighting several issues that were previously masked; SoCalGas is now effectively in an N-1 scenario with any major disruptions in the gas transmission system or the Bulk Power System (BPS) pushing the system to the limit."[23] The report goes on to note: "System reserve margins are expected to become increasingly tight through 2026…natural gas demand for power generation across the Western Interconnection [is forecast] to increase by 30% by 2026" and "[t]he configuration of the gas-electric system combined with the retirement of Aliso Canyon creates region-wide reliability issues, resulting in widespread loss of electric load; the Southwest and Southern California regions appear to be most vulnerable to major disruption events due to 1) heavy reliance on gas generation to meet peak demands, and 2) limited gas storage capability."[24] In addition, as noted herein, a presentation on this study in R.20-01-007 highlighted the impact of an Aliso Canyon outage/retirement and its ripple effects into neighboring regions.

The importance of considering the entire WECC is necessary to form a complete understanding of the impacts of Commission action in this proceeding. This is made more important by the fact that FTI's analysis, as currently presented, relies heavily on electric imports to minimize impacts of retiring Aliso Canyon. In other words, the current analysis is incomplete and only considers imports from the WECC, and not the value provided to the WECC.

D. The Commission and FTI Should Assume Compliance with Current Laws, Regulations, and Requirements.

This proceeding should not be about potential, imaginative, or proposed policies or overly optimistic forecasts. For example, FTI appears to assume that SoCalGas could curtail the least efficient electric generators if Aliso Canyon is retired, even though SoCalGas is not authorized to curtail based on generation facility efficiency. The impact of this inaccurate assumption is to understate the amount of electric generation that might be curtailed without Aliso Canyon, thereby rendering FTI's assessment unreliable.

The Commission and FTI should also be careful to limit inputs and assumptions to current requirements. Such requirements include, for example, (1) well deliverability reductions resulting from well reassessments every two years; (2) internal pipeline inspections and remediations performed on all transmission pipelines every seven years; and (3) additional storage well and facility planned outages throughout the year as a result of more frequent facility shut-ins to assess inventory.[25]

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[23] June, 2018, Wood Mackenzie, WECC Study at 3, available at https://www.wecc.org/Reliability/Western%20Interconnection%20Gas-Electric%20Interface%20Study%20Public%20Report.pdf). The "N-1" condition requires electric operators to plan their system to have sufficient resiliency to lose a critical component and continue operating.
[24] *Id.* at 3. SoCalGas notes, and as the Commission knows, it has not been decided to retire Aliso Canyon.
[25] CalGEM Requirements for Underground Gas Storage Projects, 14 California Code of Regulations ("CCR") § 1726.

E. The Commission Should Be Certain to Incorporate the Impacts of Decisions in Related Proceedings.

As noted herein, at least three related matters are simultaneously pending in multiple proceedings.[26] This raises the concern that conflicts and inconsistencies may arise, and that the impacts of a decision in one matter are not fully considered in another matter. Given the utmost importance of the decisions made in these proceedings, and their wide-reaching reliability and affordability impacts, the Commission must be deliberate. SoCalGas thus encourages the Commission not to reach any final results in this proceeding until after a final decision in R.20-01-007, which is revisiting, among other things, gas and electric system design standards.

F. Issues Determined to Be Outside the Scope of This Proceeding Should Remain So.

As noted in the Order Instituting Investigation (OII), certain issues are outside the scope of this proceeding, including:[27]

- Air quality concerns or impacts, with the exception of the impact of the Aliso Canyon facility on meeting SB 32 mandates.
- Any issues related to the cause of the 2015 natural gas leak or issues of culpability.
- Any costs associated with discovery, damage and resolution of the 2015 natural gas leak, including who will bear responsibility for those costs.
- Acute public health concerns as a result of the 2015 natural gas leak.
- Any and all other issues outside the jurisdiction of the Commission or which are or will be addressed through other Commission actions or proceedings.

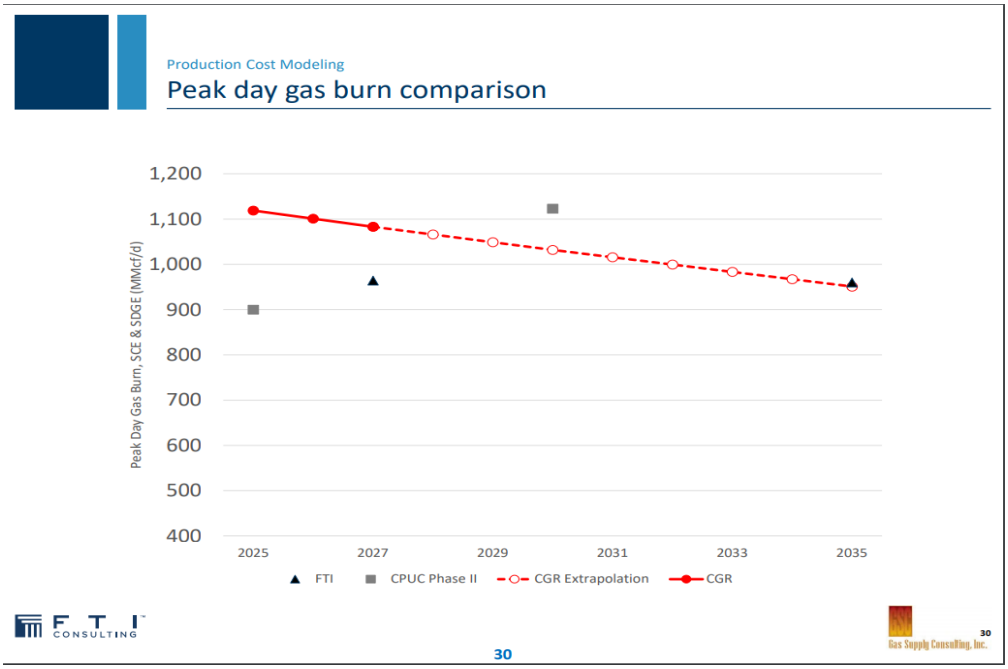
III. Responses to Questions Posed by FTI

Question 1: Is Our Approach to Modifying the Phase 2/IRP Datasets Reasonable?

SoCalGas understands that, in Phase 2 of this proceeding, the Energy Division relied on the data and assumptions underlying the Integrated Resource Plan (IRP) Proceeding and Resource Adequacy (RA) Proceeding (the Unified RA and IRP Modeling Datasets). Thus, the conclusions and results reached in Phase 2 have the benefits of being consistent with data that is foundational in two separate and significant Commission proceedings: (1) the IRP proceeding, an "umbrella" planning proceeding to consider all of the Commission's electric procurement policies and programs to ensure California has a safe, reliable, and cost-effective electricity

[26] Phase 2 of I.17-02-002 (analysis of the impacts to energy reliability and affordability if the use of the Aliso Canyon storage facility is reduced or eliminated, and whether to authorize the reduction of Aliso Canyon); Phase 3 of I.17-02-002 (development of scenarios to examine resources and infrastructure that could be implemented to replace Aliso Canyon); and R.20-01-007 (a rulemaking to promote safe and reliable natural gas service at just and reasonable rates by, among other things, revisiting reliability standards, long-term contracting, and operational flow orders).
[27] OII at 8-9.

supply; and (2) the RA proceeding, which guides resource procurement and promotes infrastructure investment by requiring that load serving entities (LSEs) procure capacity so that capacity is available to the CAISO when and where needed. As such, it does not appear reasonable to modify data and assumptions underlying Phase 2 of this proceeding and two other significant proceedings. Consistency across these proceedings and analyses is likely to promote results that are consistent, an important factor when the systems under consideration are the same. At a minimum, FTI should identify where it has relied on different data or assumptions, the impact of those changes, and why it is reasonable to rely on different assumptions and data in Phase 3. Preliminarily, it appears the assumptions and changes do have notable impacts. For example, FTI's presentation provided a slide that indicated the various peak conditions identified through analysis:

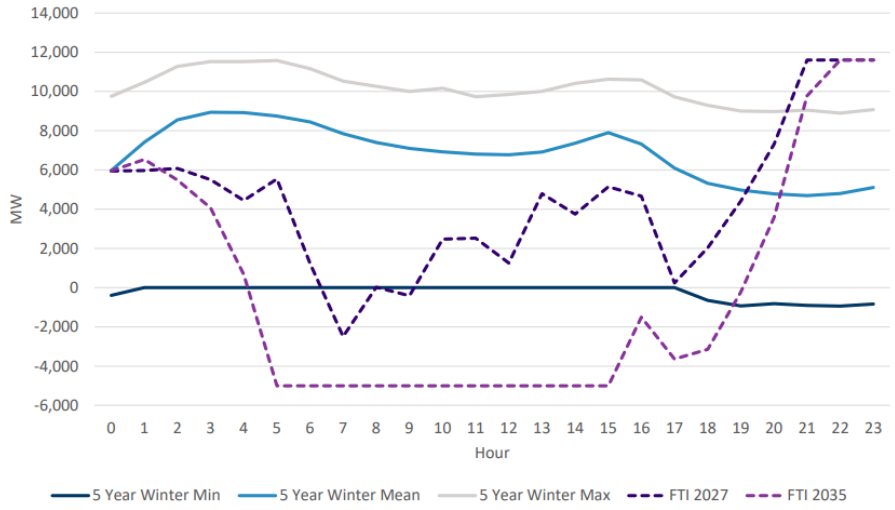


Notably, FTI's analysis of 2027 and 2035 are significantly below the peak condition identified for 2030 in the Phase 2 analysis. A better understanding of these differences and why it is reasonable and advisable to rely on these lower figures would promote transparency.

Perhaps more notable, FTI's analysis does not provide any indication of a morning electric generation demand ramp:

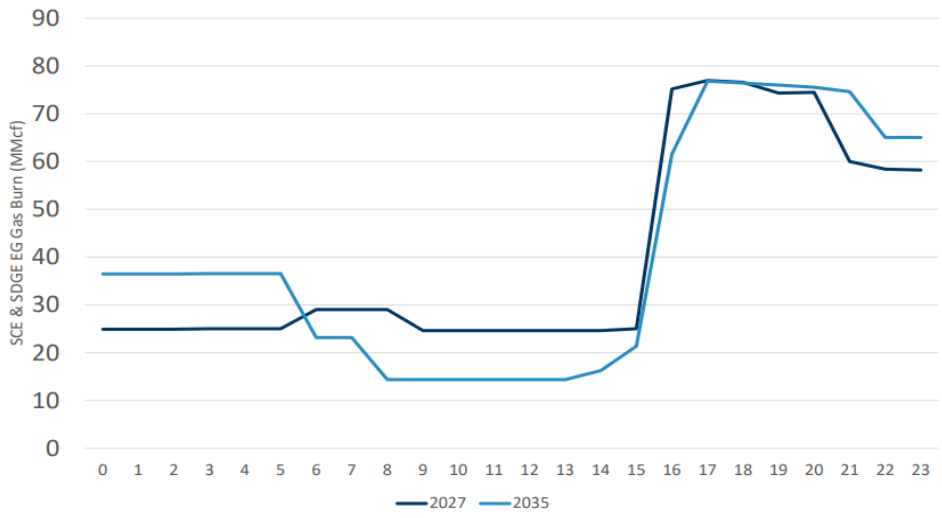
Production Cost Modeling

Peak day CAISO Interface Activity

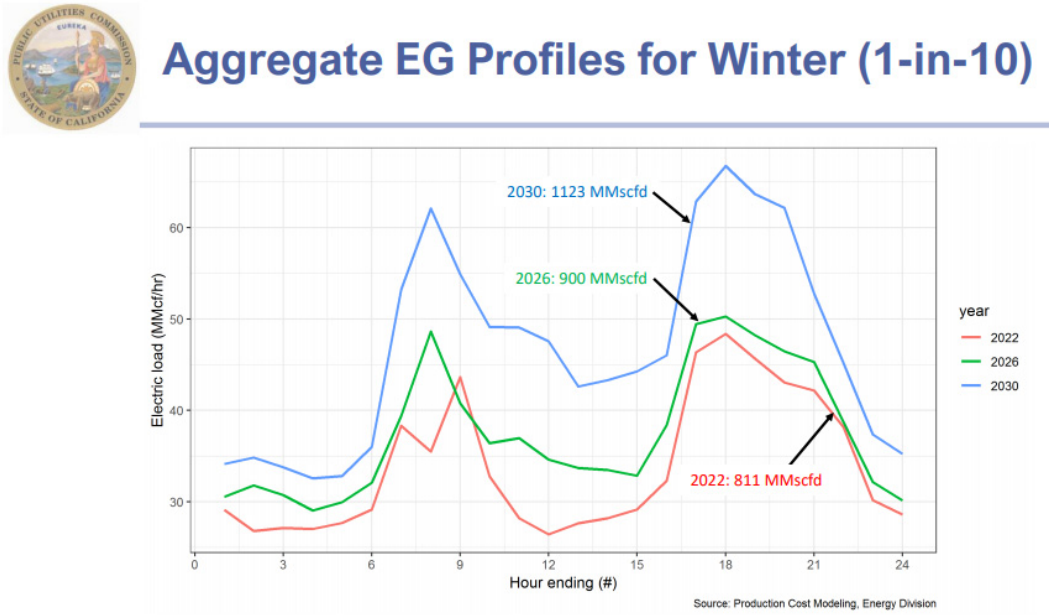


Production Cost Modeling

Peak Winter Gas Burn 24 Hour Profiles



In contrast to FTI's demand curves, Energy Division previously provided the following indication of electric generator activity:



An explanation for these differences is important. And an explanation for why it is reasonable to rely on new data and assumptions here, rather than the data and assumptions underlying earlier phases of the proceeding and other Commission proceedings, is equally if not more important.

In addition to providing additional explanation of the changes FTI has incorporated, many of the same comments that SoCalGas and other parties raised previously with regard to earlier analysis remain applicable here.

Hydraulic modeling assumptions should reflect actual operational constraints and realities. As previously noted, SoCalGas does not agree with certain inputs and assumptions utilized in Phase 2 because they are overly optimistic. For example, the hydraulic modeling in Phase 2 assumed system storage at 90% inventory levels during peak winter months without Aliso Canyon, which is not realistic. Further, the modeling assumed certain capabilities of SoCalGas' system and percent utilizations of Southern, Northern, and Wheeler Ridge Zones. The modeling also assumed that current nominal system pipeline capacities and non-Aliso Canyon withdrawal capabilities persist through 2030. This means pipelines must be maintained at these levels through 2030 and non-Aliso Canyon storage facilities must maintain the same injection, withdrawal and inventory capabilities. However, these assumed operating capabilities do not reflect how the system operates or is likely to operate.

Receipt point utilization is a market issue and is dependent upon decisions by market participants—from upstream suppliers, shippers, and the core and noncore customers—to purchase, schedule, and deliver gas. Receipt point utilization is primarily dependent upon customer demand and does not reflect actual historical receipts. Full receipt point utilization, for instance, only provides the upper bounds of SoCalGas' ability to serve customer demand. Assuming 85% receipt point utilization in the Northern and Southern Zones and 100% in the

Wheeler Ridge Zone oversimplifies the gas market and scheduling processes, and does not consider the variability that can occur. As previously noted, a probabilistic model is more appropriate to obtain the most accurate presumption.

It is also important to note that the Energy Division has acknowledged the need to assume more realistic receipt point utilization assumptions. Specifically, Commission staff noted that average historical receipt point utilization was approximately 70% and that this figure was more appropriately used for the feasibility assessment to assess typical conditions.[28] Commission staff also determined that an "upper bound of [receipt point utilization] is 95% given that 100% requires…perfect forecasting from ALL shippers…ignoring price of gas…interstate supply availability."[29] It is highly unlikely that an 85% or higher receipt point utilization would be realistic over the time period being considered. When considering assumptions, it is reasonable to err on the side of caution so that the model and assessment do not, based on faulty assumptions, incorrectly result in negative impacts to energy reliability and costs.

It is also important to note that the analysis FTI presented at the first workshop also assumes that supplies coming into California would be fixed and available when needed. In other words, there has not been an evaluation of upstream pipelines to understand how reasonable it is to assume that gas will be available, when needed, at the border. Assuming out-of-state flowing supplies will always be available when needed removes the very real uncertainty of gas being available due to upstream conditions, thereby discounting the value of in-state and local storage. FTI later noted that it plans to review upstream infrastructure capabilities and contractual arrangements that may impact the availability of gas on a peak day. SoCalGas highlights the importance of this future analysis and suggests it could warrant discussion and presentation at a later workshop.

SoCalGas also notes that Aliso Canyon has historically afforded sufficient system flexibility and resiliency to manage planned and unplanned outages and provided opportunities to reduce operating pressures to enhance safety. The Commission and FTI must assume reasonable planned and unplanned outages both on the SoCalGas system and upstream of the SoCalGas system. It is not appropriate to rely on historical outage data to forecast future outages. Changing regulatory requirements, advancements in technology, and efforts to upgrade and enhance the SoCalGas system will likely lead to more outages in the future. Accordingly, SoCalGas has recommended a sensitivity analysis to determine the impact of not just a single outage but to also capture the effect of a potential multiple outage scenario.

Question 2: Is Our Exclusion of Upgrades to SCG's Northern Zone from Our Base Assumptions Reasonable?

When forecasting out 10+ years and assuming certain capabilities of the system, there needs to be a path for those assumptions to be realized. For instance, when assuming a return of

[28] SoCalGas Comments on I.17-02-002 Technical Workshop and Modeling Update at 3, available at https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2019/I.17-02-002%20SCG%20Comments%20on%20Aliso%20Canyon%20OII%20Modeling%20Workshop%20(6.28.2018).pdf.
[29] *Id*.

capacity in the Northern Zone, there should be a path for that to occur; when assuming the non-Aliso storage fields will continue to operate at their current capacities, there should also be a realistic path for that to be achieved. It is uncertain what the system will look like in 2027 or 2035. Thus, the analysis should err on the side of being conservative, especially given the known value of Aliso Canyon to customers and the system.

In addition, if the analysis assumes certain capabilities of the system, the Commission should make an affirmative finding of the reasonableness of maintaining or returning to that capacity. Moreover, the Commission should implement processes to revisit and verify today's assumptions, forecasts, and expectations in the future. These could include keeping this proceeding open, or re-opening the proceeding in the future to validate that today's modeling assumptions are consistent with actual future operating realities.

Question 3: Is Our Selection of 2027 and 2035 as the Years to Analyze Reasonable? If Not, is there a Preferred Option?

SoCalGas believes a more useful approach is to align the years with the Energy Division's Phase 2 analysis (2026, 2030) and to add 2035 as the final year. This would avoid the issue of misalignment and provide an opportunity to compare analyses.

In addition, SoCalGas agrees with FTI that winter system customer usage is much higher than in the summer. However, if the purpose of this phase is to examine the elimination of the Aliso Canyon storage field, then the impact on summer operations must also be examined. For example, in August 2020 during a heat wave spanning several western states, SoCalGas made use of Aliso Canyon to serve local electric generation plants when some expected import power supplies were not available. Without Aliso Canyon, the system's ability to serve those generation plants to the same extent may not have been possible, and more extensive rolling blackouts ("load shed") could likely have been required by the electric balancing authorities.

Question 4: Is Our Exclusion of Impacts in 2027 and 2035 Attributable to Potential Changes to Resource Adequacy Rules Reasonable?

All portfolios examined by FTI should meet the 0.1 day loss of load expectation (LOLE) criteria as defined by the Unified Resource Adequacy and Integrated Resource Plan Inputs and Assumptions Guidance for Production Cost Modeling and Network Reliability Studies.[30] If FTI's scenarios do not meet the 0.1 LOLE criteria, additional generation or transmission infrastructure should be placed into service by 2027 and 2035 to make certain that the criteria is met. FTI should adhere to the assumptions developed by CAISO in its Assessment of the CPUC-Selected 38 MMT Integrated Resource Plan Portfolio, on electric imports to confirm that they are consistent with CAISO expectations.[31]

[30] March 29, 2019, Unified Resource Adequacy and Integrated Resource Plan Inputs and Assumptions Guidance for Production Cost Modeling and Network Reliability Studies at 12.
[31] *See* October 23, 2020, Assessment of the CPUC-Selected 38 MMT Integrated Resource Plan Portfolio.

Question 5: Are the "Key Uncertainties" Described in the Materials Associated with the Workshop Reasonable?

Any exercise where the capabilities of a system as complex as the SoCalGas system and the electric system are being forecast fifteen years into the future is rife with possibility for uncertainty, missed targets, and unrealized assumptions. FTI acknowledged some of these uncertainties at the Workshop.[32] SoCalGas recommends, at a minimum, that the following uncertainties be considered:

- The future of Playa del Rey and Honor Rancho;
- Impacts of new regulatory requirements;
- Future capabilities of the system;
- Availability of electric imports;
- Availability of gas at the border; and
- Changing demand profiles.

As noted, the Commission currently has pending multiple related proceedings (and phases and tracks within proceedings) that could have far-reaching and permanent impacts on California's energy system. R.20-01-007, for example, aims to promote safe and reliable natural gas service at just and reasonable rates by, among other things, revisiting reliability standards, long-term contracting, and operational flow orders. Occurrences in these proceedings that may impact this Phase 3 should be taken into account.

SoCalGas' system is also evolving in response to changing customer demand, changing supply conditions, and new regulatory requirements. The SoCalGas system will not necessarily look like it does today in 2027 and 2035. For example, SoCalGas recommends that FTI examine a scenario where Honor Rancho may not be in operation given that the Honor Rancho lease expires in 2032. Moreover, future changes to the SoCalGas system could include the introduction of hydrogen and renewable gases and enhancements to operating and maintenance regulations for pipelines and storage facilities which could lead to further infrastructure capacity reductions and additional outages.

In reaching a decision in this proceeding, the Commission must be aware of these changing conditions and not make any decision in the near term that will have long-term and potentially irreversible gas and power reliability and affordability impacts on Californians. FTI must consider the ability of gas to provide reliability, flexibility, resiliency, and affordability benefits, and must further account for uncertainty and the potential for its forecasts and assumptions to be imprecise or unrealized.

[32] FTI noted the following uncertainties: (1) as a result of the reliability issues that arose at the end of summer, there are discussions to change the resource adequacy rules; however, these discussions are still preliminary and there is no clear guidance as to what will emerge from them; (2) there is not enough clarity regarding the EV build-out at this time; (3) discussions regarding improvements to the SoCalGas system are ongoing and it is unknown what the resolution of those discussions will be; and (4) there is an expectation of an increasing shortfall of available energy outside of California in WECC.

FTI's assumptions and approach assume that current capabilities are maintained and that, on the hypothetical peak day, everything works at assumed capacity – in other words, no outages and no maintenance. This assumed future state puts pressure on the need to inject and withdraw gas from other fields, with Honor Rancho being used to meet fluctuating demand. The removal of Aliso Canyon, the system's largest contingency resource for flexibility and resiliency, quite simply increases reliability risks. All of this is done despite the fact that the Commission and CalGEM have determined that the facility is safe.

The Commission should implement processes to revisit and verify today's assumptions, forecasts, and expectations in the future. These could include keeping this proceeding open, or re-opening the proceeding in the future to validate that today's modeling assumptions are consistent with actual future operating realities. This is especially necessary in light of the uncertainty that exists in California regarding future demand, electric generation needs and capabilities, design standards, and pipeline system capabilities.

SoCalGas also incorporates its response to Question 7.

Question 6: Is the Composition of the Four Investment Options That are Specified Reasonable? If Not, is there an Option that is Preferred for Further Analysis?

In exploring potential alternatives to Aliso Canyon, the benefits provided by Aliso Canyon, some of which are discussed herein, first must be fully understood and identified. FTI should perform an analysis of the ability of a replacement asset to provide: 1) the same seasonal, multi-day, daily, and hourly benefits provided by Aliso Canyon; 2) the ability to serve as an emergency or strategic energy reserve; 3) the same ability as Aliso Canyon to mitigate or dampen price volatility, lower customer bills, and reduce energy costs; and 4) the ability of other scenarios to perform as expected (e.g., the ability of California to reliably import enough electricity given public safety power shutoffs). In addition, FTI should consider the potential future role of Aliso Canyon to support clean energy initiatives and cost effectively facilitate additional intermittent renewable resources.

Each replacement strategy/portfolio should have a realistic ability to replace Aliso Canyon for specified periods. Each alternative should include detailed costs and contemplate a reasonable in-service date. The Commission can evaluate each solution separately and then develop a composite solution, if necessary, that borrows elements from the most cost-effective solutions. The costs of each solution should be measured against the projected costs of operating Aliso Canyon over the same time period, and the bill impacts for each solution should be calculated. In addition to the alternatives that FTI is already planning to consider, FTI should also assess the capabilities of (1) LNG/CNG peak shaving; (2) distributed generation (city-wide or neighborhood-wide) fuel cells to replace power currently provided by larger electric generators; and (3) tighter customer balancing requirements.

With regards to gas transmission investments, FTI should consider the proposed Energia Costal Azul LNG export terminal and its impact on the SoCal Border gas market (e.g., gas being diverted from the California border to that facility). In addition, other gas investments like gas

storage expansions (e.g., upgrades to withdrawal capabilities) or CNG, which is scalable and provides flexibility, should be considered.

FTI should also consider that adoption of a statewide building electrification policy would lead to higher electric loads and would need to be re-optimized in PLEXOS to determine if sufficient renewable or gas-fired generation assets are available to meet the increase in winter peak day needs. Incremental costs also need to be assessed and incorporated into the analysis. Further, incremental renewable generation and battery storage should include any incremental transmission upgrades and distribution system costs, and solutions like demand response or energy efficiency, need to be vetted and proven technically feasible before being considered as equivalent and feasible alternatives in 2027 or 2035.

SoCalGas notes that FTI's analysis assumes that Aliso Canyon will be fully retired in 2027 or 2035; however, additional scenarios with partial Aliso Canyon withdrawal capabilities should be considered if they offer ratepayers the most cost-effective way to meet reliability needs. During the workshop, FTI noted that it was looking at retirement only, not reduction, and that FTI was not aware of scenarios where it would make operational sense to reduce or restrict Aliso Canyon rather than retire the facility. There are numerous reasons to retain Aliso Canyon, even if reduced or restricted. A reduced or restricted Aliso Canyon can still serve as a contingency resource facility to operate when conditions warrant. Even during the years when Aliso Canyon was restricted to an asset of last resort, it continued to provide benefits to the system and ratepayers. In Decision (D.) 18-09-032, the Commission determined that "Aliso Canyon continued to provide ongoing benefits to SoCalGas customers subsequent to the gas leak detected there."[33] Specifically, the Commission concluded that "Aliso Canyon continued to support system flexibility and reliability during summer and winter peak demand periods, helped maintain the integrity of transmission and storage facilities, and supported system balancing…[i]n particular, Aliso Canyon storage provided the flexibility to respond to sudden or short-term spikes in demand for natural gas."[34]

The Commission subsequently decided to reduce restrictions on Aliso Canyon which provided additional system flexibility, and concluded that the changes to the restrictions contributed to natural gas and electricity prices remaining relatively stable during summer 2019.[35] Specifically, the Commission noted:

> Summer 2019 was the first season without abnormal gas price volatility since October 2017, when the region began experiencing the combined impacts of the Line 235-2 rupture and the Aliso Canyon storage field restrictions. Generally, moderate weather, high production from out-of-state gas and oil wells, ample hydroelectric energy, **and revisions to the Aliso Canyon Withdrawal Protocol contributed to a stabilizing of average gas prices.**[36]

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[33] D.18-09-032 at 16.
[34] *Id*.
[35] CPUC Summer 2019 SoCalGas Conditions and Operations Report at 4, available at https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2020/SummerLookback2019Report-final.pdf).
[36] *Id*. (emphasis added).

The California Independent System Operator (CAISO) also acknowledged the positive impacts of the changes to the restrictions on Aliso Canyon.[37]

Finally, as mentioned above, the WECC Study found Aliso Canyon at 30% of capacity was able to largely mitigate an energy shortage event that could have economic impacts of $30 billion in the WECC.[38]

Question 7: Please Identify Any of the Specific Assumptions or Inputs Discussed During the Workshop or Provided in the Supporting Materials that are Unreasonable or That Should Be Replaced with a Preferred Alternative.

FTI did not select a 1-in-10 peak gas burn day where dry hydro conditions are included as defined in the reliability standard and Phase 2 analysis. SoCalGas recommends that FTI include the dry hydro condition in its analysis. Dry hydro conditions impact available resources both within and outside California, and energy import potentials available to California. As acknowledged by FTI during the Workshop, dry-hydro conditions would change its results.[39]

It is unclear how FTI determined the peak gas demand day for electric generation in its development of the system forecast demand with 1-in-10 year cold day demand for core (temperature dependent) customers. Because there is weak correlation to temperature in the electric generation demand forecast, the conservative and more appropriate approach would be to assume that the peak electric generation demand could coincide with the peak temperature dependent demand. It is uncertain whether FTI's demand forecast followed this approach.

SoCalGas also requests clarity on the out-of-state resources which FTI assumes are providing close to 12,000 MW of imports in hours 20-23, or early morning hours 0-5. Further, FTI should provide additional clarity on its winter peak day results. In particular, FTI should provide hourly generation by source on a winter peak day to understand role of battery, renewables, gas-fired generation and imports. As noted herein, FTI and the Energy Division's EG profiles do not match. In Phase 2, the Energy Division had a morning peak and evening peak, whereas FTI's winter profile is flat during the daytime and spikes at night.[40]

FTI utilized the California Gas Report (CGR) analysis to benchmark its results, but not the Phase 2 analysis that incorporated the Los Angeles Department of Water and Power (LADWP) and California Independent System Operator (CAISO) power flow and future import limitations, which is a more accurate reflection of future electric operation conditions in California. Expected energy imports should be determined by CAISO, as consistent with the Phase 2 analysis, and should not be based on historical analysis. FTI should report the out-of-

[37] CAISO 2020 Summer Loads and Resources Assessment at 13 ("Specifically, on July 23, 2019 the CPUC made revisions to the Aliso Canyon Withdrawal Protocol to remove its classification as "an asset of last resort" to provide SoCalGas with more flexibility to use Aliso Canyon to balance the system and easy energy price spikes."), available at https://www.caiso.com/Documents/2020SummerLoadandResourcesAssessment.pdf.
[38] R.20-01-007 Track 1B Workshop Presentation at Slide 13.
[39] I.17-02-002, Phase 3 Workshop #1.
[40] FTI Research Presentation at 31.

state resources from the model to ensure that the results are consistent with CAISO/LADWP assumptions. At a minimum, FTI should provide additional detail when it has diverged from analysis and explanations reached in earlier phases of this proceeding. For example, the Energy Division previously explained that "Imports from outside CAISO decrease over time as other states transition from fossil to more renewables and retire a large amount of coal generation." Does FTI's analysis incorporate assumptions for decreasing imports due to changing generation mixes outside of California? If not, an explanation for such a change should be provided to aid parties and the Commission in understanding differences and results.

SoCalGas also notes that FTI utilized the 2018 Integrated Energy Policy Report (IEPR) assumptions that only assumed approximately 3.5 million light duty vehicles (~16,000 GWh) by 2030.[41] This assumption may underestimate the potential electric load requirements and ramping needs on SoCalGas' system. At a minimum, a sensitivity around this uncertainty and Governor Newsom's recent executive order mandating that all new cars and passenger trucks sold in California be zero-emission vehicles by 2035 should be considered.

FTI uses three different types of modifiers (Mid-AAEE Scenario; Mid-EV Scenario; and Behind the Meter (BTM) Solar) that were extrapolated from 2030 to 2035. It would be beneficial to all parties to understand how those modifiers were applied to the winter peak day load.

The proposed use of 20-year monthly simulations of power and gas markets may underestimate the potential reliability and volatility benefits of gas assets. Reliability and volatility benefits are best captured by looking at daily price impacts and intraday disruptions on the electric system. Considering only the monthly average energy price impacts could seriously underestimate the benefits of Aliso Canyon.

SoCalGas also incorporates its response to Question 1.

Question 8: Is Our Approach to Allocating the Modeled Gas Shortfall Based on Unit Heat Rates Reasonable? If Not, is there a Preferred Approach?

SoCalGas recommends that Mcf/d and total MWh also be provided, to show the shortfall duration and total shortfall for the entire day. During the presentation, FTI noted that "[t]he largest generation shortfall in any hour defines the most critical hour which, in turn, defines the quantity of new electric resources that would be required [in] order to retire Aliso Canyon."[42] Peak hour shortfalls may need multi-hour solutions. Showing longer-duration/full day provides a better picture of the overall system need.

However, it is important to note that focusing on an EG shortfall fails to recognize many of the benefits of Aliso Canyon. For example, the value of local energy storage in mitigating the potential impacts from upstream supply disruptions and the unexpected loss of electric imports. Upstream supply disruptions on the interstate pipeline system can occur during the winter or

[41] 2018 IEPR Update Light Duty PEV Forecast – IEPR Workshop December 6, 2018.
[42] FTI Research Presentation at 60.

summer, creating a loss of deliverability to the SoCalGas receipt points. Aliso Canyon's ability to deliver directly into the Los Angeles basin can mitigate the sudden temporary, or even prolonged, loss of gas supplies at the border until other interstate pipelines can properly compensate for the loss. An unexpected loss of electric imports would create the emergency need for in-basin gas fired generation to avoid a loss of load event. Given the storage capacity at Aliso Canyon, and its proximity to the Los Angeles Basin, gas supplies can quickly be withdrawn to balance the ramp in gas consumption from generators, thereby mitigating the loss of electric imports.

In addition, during the workshop, FTI indicated that the shortfall in gas would be allocated among the generators based on the efficiency of each individual unit. FTI would curtail the least efficient units in order, and the available gas would be re-allocated to the most efficient units. However, the order of curtailment needs to be consistent with Rule 23 and applicable CAISO operation rules, which FTI's assumption is not.

Question 9: Is Our Approach to Define the Fifth Investment Option After Modeling and Analyzing the First Four Reasonable?

SoCalGas believes that defining the fifth investment option after modeling and analyzing the first four is reasonable; however, SoCalGas recommends FTI considers the comments provided in response to Question 6.

Question 10: How Should We Value Reductions in Carbon Emissions in Workstream 2?

SoCalGas requests clarity on how carbon emissions will be quantified. Without this information, SoCalGas is not able to provide input on how carbon emissions should be valued. It is important to note that the Commission has determined that imposing artificial constraints on gas-fired generation in Southern California increases production costs and decreases reliability, and does so with only a minor decrease in in-state emissions caused by unmet demand, and with uncalculated out-of-state emissions.[43] It is unclear whether total emissions would, in fact, be lower if the emissions associated with imports from out-of-state generation were considered (which they should be).

Question 11: Aside from Reductions in the Cost of Delivered Energy, What Benefits Should We Capture in the Workstream 2 Analysis of the Investment Options?

SoCalGas incorporates its response to Question 6. In addition to analyzing and considering the benefits of Aliso Canyon that will need to be replaced, cost estimates are a critical aspect of potential replacement scenarios, consistent with the primary objective of this proceeding: to determine the feasibility of reducing or eliminating the use of Aliso Canyon while maintaining energy reliability for the Los Angeles region *at just and reasonable rates*. Thus, cost estimates that include the cost to implement, install, own, and operate potential replacement

[43] Intro and Production Cost Modeling Results Presentation at Slide 11.

assets must be developed and considered. This step is necessary to understand the relative costs associated with potential alternatives and to compare them to the costs and benefits provided by Aliso Canyon.

SoCalGas notes that attempting to cover the additional needed gas or electricity via imports, particularly during a multi-day regional extreme weather event, could mean that the assumed imports are unavailable or, if available, would command a significantly higher price. SoCalGas recommends this be analyzed properly to obtain a realistic impact on markets. To the extent a new investment option intends to rely on increased imports generally, then California will risk higher prices during periods when the western region has extreme weather, even if the temperatures in California are not extreme, which could add new price volatility to the gas and electric markets.

Question 12: Aside from the capital and financing costs to build new infrastructure, what costs should we capture in our Workstream 2 analysis of the investment options?

SoCalGas incorporates its response to Questions 6 and 11. FTI should capture increases in import costs as a result of increased demand pressure from California and this analysis should include periods when the entire western region has extreme weather-induced increased demand, and not just assume California has extreme weather-induced increased demand. SoCalGas also notes that, as discussed herein, the analysis should not include issues outside the scope of this proceeding.

Question 13: If the data provided at the CPUC website are insufficient, please indicate which datasets should be added.

SoCalGas requests the datasets utilized by FTI in Phase 3, and that FTI explicitly explain what modifications were made between the Phase 2 dataset and Phase 3 dataset, and why.

Question 14: Should another workshop be held between now and the one currently scheduled for May 2021? If so, when and to discuss what topics?

This proceeding has potential long-reaching impacts both within Southern California and in the surrounding western region of the United States. As such, it is incumbent upon the Commission and FTI to allow parties to provide timely feedback in Phase 3 of this proceeding. SoCalGas recommends an additional workshop prior to the workshop scheduled for May 2021. SoCalGas believes it would be helpful to hold the workshop prior to the issuance of FTI's report after FTI has finalized its proposed investment portfolio and determined the associated costs and benefits, so that parties can provide timely feedback.

IV. Conclusion

SoCalGas appreciates the opportunity to submit comments and participate in this ongoing and important Commission effort to promote system reliability and affordable energy rates. The decisions made in this proceeding will impact Californians in the near and long terms, and therefore it is all the more imperative that decisions are made only after thorough vetting, with due consideration given to the impacts from variabilities, uncertainties, and unknowns. We encourage this proceeding to move deliberately and for the Commission to allow the appropriate opportunities for feedback necessary to do so.

Sincerely,

/s/ Setareh Mortazavi
Setareh Mortazavi
Counsel

SOUTHERN CALIFORNIA GAS COMPANY