Buchalter

55 Second Street
Suite 1700
San Francisco, California
94105-3493
Tel: (415) 227-0900
Fax: (415) 227-0770
File Number: C0631-0005
415-227-3551 Direct
nsheriff@buchalter.com

August 13, 2020

VIA E-MAIL (ALISOCANYONOII@CPUC.CA.GOV)

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

Re: Indicated Shippers' Post-Workshop Informal Comments on Aliso Canyon OII (I.17.02-002) July 28, 2020 Workshop #3 – Phase 2 Data and Results

Dear Commission Staff:

The Indicated Shippers[1] appreciate the opportunity to offer informal comments on the Commission's July 28, 2020, Final Production Cost Modeling Results, Econometric Modeling, Hydraulic Modeling Updates, and Production Cost Modeling (PCM) Updates Workshop (Workshop) regarding the future of Aliso Canyon. As Commissioner Randolph reminded all workshop participants, this investigation's purpose is to meet the statutory mandate to consider if the use of Aliso Canyon can be reduced or eliminated. Senate Bill (SB) 380 requires the Commission to determine the "feasibility of minimizing or eliminating the 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."[2] Notably, as the California Legislature recognized, regional reliability, including electric reliability, must be maintained; based on the workshop presentations, it appears that without Aliso Canyon, regional reliability, including electric reliability, is at risk.

[1] The Indicated Shippers include, for the purpose of this proceeding, California Resources Corp.; Chevron U.S.A., Inc.; PBF Holding Company; Phillips 66 Company; and, Tesoro Refining & Marketing Company, LLC.
[2] Cal. Pub. Util. Code §714.

I. Introduction and Summary of Recommendations

Overall, the Staff determined the following after running the instant models and simulations:

1. Reliability results show that there is a significant degradation in reliability across all study years. The Minimum Local Generation scenario has a higher Loss-of-Load Expectation as compared to the Unconstrained scenario.

2. Production costs in the Minimum Local Generation scenario are projected to be $121.3 million higher than the Unconstrained scenario in 2030.

3. Greenhouse gas emission reductions under the Minimum Local Generation scenario are predicted to slightly decrease in 2030 due to the inability to fully serve all the electric demand.

This Workshop was the result of extensive efforts by the Energy Division staff (Staff) to conduct Phase 2 modeling and simulation efforts to inform the Commission's Phase 3 consideration of the future use of Aliso Canyon in the Southern California Gas Company (SoCalGas) system. Through these efforts, Staff determined that, under the Minimum Local Generation (MGL) scenario, during a 1-in-10 Cold Day event, SoCalGas' system requires the use of Aliso Canyon to provide reliable, cost-effective service. *This bears repeating*: this scenario shows that the system cannot provide reliable, cost-effective service without use of Aliso Canyon. These modeling and simulation processes and results will be documented for the record in the Commission staff's Workshop Report. The Indicated Shippers offer these informal comments, including the attached memo by DNV GL, to help in the development of the Phase 2 Workshop Report.

The Indicated Shippers have been assisted by DNV GL consultants, who are experts in these types of studies. DNV GL is an internationally recognized independent consulting and verification company. The current consultants are part of the Hydraulic and Flow Assurance Group, which conducts and reviews numerous gas system simulation studies and analysis. They have reviewed and critiqued the input data, modeling methods, simulation output, and interpretation of the results, with the goal of improving the reliability and confidence in the conclusions. DNV GL's specific technical comments and questions are detailed in the attached memo. The key points are:

- ✓ We share the goal of obtaining accurate, reliable, and appropriately conservative results that can be used with confidence in making decisions about the use of Aliso Canyon storage.

- ✓ The Staff should not be overly optimistic in its selection of modeling inputs/assumptions and how those inputs shape the entire framework of the models. It is essential that these results can be used with confidence in establishing the reliability and economic operation of the system. Phase 3 of this investigation will analyze what resources and changes could be used to replace Aliso Canyon by 2027 and 2045; the analysis will be based on the work done here and in Phase 1.

- ✓ The assumptions used in the models should be further refined to increase the reliability and efficacy of the results reached.

- ✓ The Staff should conduct additional investigations to find the peak loads for the noncore/non-generating demands on the system.

- ✓ The Staff should examine historical and foreseeable future outages on the system beyond the single outage attributed to lines 3000, 235-2, and 4000. The possible need for this was mentioned in "Further Hydraulic Modeling Clarifications," page 3. *(As the results of simulations S01-S03 become available, CPUC staff may elect to add or remove outages from simulations S04-S06)*. Since S01-S03 showed failure of the system without Aliso, further outages will quantify the amount needed from Aliso.

- ✓ Model inputs should not rely on both Wheeler Ridge and Honor Rancho simultaneously at their individual extreme maximum capacities, because historical data shows that this is a very rare condition. This overly optimistic assumption has a strong impact on the need for Aliso Canyon.

- ✓ The Staff should conduct additional sensitivity cases incorporating:

  - 1) the unique arrangements of input-demand flows to test withdrawal capabilities at non-Aliso storage fields;

  - 2) reduced withdrawal at Honor Rancho;

  - 3) the many "zip code" 24-hour core demand shapes;

  - 4) inventory levels of the non-Aliso storage fields; and,

- ✓ The Staff should conduct an uncertainty analysis of the results. Given the important applications of the results in this Investigation and possibly other dockets (e.g., Rulemaking 20-01-007), more information about the reliability of these results is appropriate. The recommended sensitivity cases can provide ranges of effects that can be combined into an uncertainty range for the results of the study. In the event

that such cases are not done, at a minimum some level of confidence limits must be provided in the Workshop Report based on the experience with the cases. This will give critical guidance for the application of these results.

- ✓ The study should not use 90% of maximum withdrawal rates for the other storage facilities. Given the purpose of this study, assuming that this withdrawal rate will always be available in the next 10 to 20 years isn't appropriate. A prolonged severe winter condition would prevent this withdrawal rate. For the purposes of future application, it is appropriate to assume that periods of winter conditions are more and more likely due to the effects of climate change. Because of this, more conservative assumptions about the availability of storage are appropriate.

- ✓ The Staff should study the increase in greenhouse gas (GHG) emissions outside of California when imports are used to cure a deficit in in-state generation.

- ✓ There are outstanding analyses that have not been addressed by Staff, including: 1) the need for an uncertainty analysis; and 2) the need to assess sensitivity of PCM-based electric generation (EG) loads in the hydraulic model.

Although Staff presented adequate models, modeling methods, simulation options, and type of data being used in the determination of the instant results, these inputs and processes must be modified to further reduce the potentially high levels of uncertainty and optimism. These are needed so that the results can be confidently used to analyze as to whether, and to what degree, the operation of Aliso Canyon can be eliminated or reduced.

It is important to reiterate that the determinations reached in this investigation could gravely impact the costs and reliability of not only the SoCalGas system, but the electric system as well. The Energy Division staff should be hyper-vigilant in producing the most accurate and realistic results to ensure the continued safe and reliable operation of the natural gas and electric systems, while keeping energy costs reasonable.

The Indicated Shippers appreciate the opportunity to provide informal comments to Staff in the further refinement of the models and development of the Workshop Report.

Very truly yours,

BUCHALTER
A Professional Corporation

/s/ Nora E. Sheriff
Nora E. Sheriff

Cc: I.17-02-002 Service list

Attachment

DNV GL Informal Comments to Workshop #3

August 13, 2020

Dear Commission Staff:

DNV GL has the following informal comments and questions for the Energy Division Staff regarding the modeling work presented in the workshop. Overall, Staff provided models and analysis of satisfactory quality. It is clear that a high level of effort has gone into the work. DNV GL provides these comments to improve the reliability and accuracy of the results. In particular, there are assumptions and choices of data that have a higher level of uncertainty or optimism which decrease the confidence in application of the results.

1. An uncertainty analysis is needed for this study. Given the important applications of the results of this study in major future policy and regulatory decisions, more information about the reliability of these results is appropriate. Our usual approach would be identifying the assumptions and inputs that have a strong effect on the results, and doing some simple sensitivity cases for each. The resulting ranges of effects can be used to come up with a ballpark uncertainty range for the results of the study.

   We strongly recommend an uncertainty analysis be conducted. This will give critical guidance in the application of these results. If it's not possible to run these additional cases, we recommend that some level of confidence limits be provided in the Workshop Report based on your experience with the cases.

2. The calculation of the transient behavior of the pressures throughout the system during the 24-hours of operation is critical in evaluating the "failure" due to low pressures. As Staff may be aware, in actual operation, managing low pipeline pressures during extremely high loads (1-in-10 and 1-in-35 scenarios) is one of the most difficult jobs for the control room operators. In our experience, there is always considerable uncertainty in these simulation results, because they are highly sensitive to many aspects of the system.

   Because of this, we recommend that the simulations use values that are on the conservative side of the uncertainty range. A select few of those more critical factors are summarized as follows:

a. The locations of the demands (nodes) in the simulated network. In this study, the main factor is the aggregate demands applied at each location. In actual operation, each high-demand condition has a significantly different distribution of the loads. Using a single distribution runs the risk of missing future problems. Was any work done to come up with conservative values? We recommend at least a few simple sensitivity cases looking at a realistic range of each of these inputs to see how much they affect the results.

b. The time-varying demand (curve shape) at each of these locations, particularly the magnitude of the demand during peak usage times. These factors are critical. As noted in the workshop, some of these inputs used in the study typically have a high level of uncertainty when used for projected behavior. These factors include the following:

    i. Choice of "zip code" curve shapes for the core demand at each node. Was there an effort to choose conservative aggregate shapes that have peak loads at the critical time periods? If not, again, some simple sensitivity cases can be done to establish an uncertainty range. If not, can you provide some idea of the confidence limit?

    ii. Shapes of the PCM-generated EG load. There's no discussion of this, except for the shape of the total system load. Was there an effort to choose conservative aggregate shapes at each node? Perhaps based on historical information?

c. Magnitude of the demands. It is clear that a major effort went into predicting and validating core demand values. While we do not question Staff's methods and procedures, we have the following recommendations and questions for non-core demand:

    i. The values used for peak demands of the noncore non-EG users might not be high enough. Noncore, non-EG demands aren't necessarily seasonal, so just using the historical demand values from a single operating condition might miss peak demands that could occur during a 1-in-10 condition. We suggest going back to the historical data to see if the annual peak for these demands was substantially higher. If so, please note this in the report.

    ii. PCM-based EG loads might have a higher than usual uncertainty. Parties provided comments regarding this issue in

previous workshops; however, we cannot identify whether Staff addressed this issue. Were any sensitivity cases done on these? Is there any way to quantify this?

d. Because of the uncertainties in the calculation of the transient pressures, we recommend that the study reports any low pressures that come within some threshold of each violation limit. For example, if the minimum allowable pressure at a location is 40 psig, then the study might use an additional threshold of 5 psig to account for the potential errors in the simulation. Using this, the report would flag a value of 45 psig as a potential violation. The value of this threshold should be chosen based on the Staff's understanding of the uncertainty in the calculations.

3. The values used for Honor Rancho and Wheeler Ridge combined flows appear to be inappropriately optimistic. The workshop provided an excellent presentation of this issue. As noted, both of these sources were used at their individual absolute maximum capacities. The workshop presenter addressing this issue noted that this is extremely rare, and has only been possible under very high loads. We understand the explanations about how this turns out to be possible in terms of the simulation behavior under this one set of operating conditions. But based on the historical behavior, this looks very optimistic.

   We're concerned that these supply flows might not be possible in actual operation when there is a different set of high demand operating conditions. Because these simulation results will be used for major future decisions, we strongly recommend a more conservative set of values.

   For example, when we look at the historical operating points provided in the graph on Slide 43 of Session 3, the highest set of values that show a significant historical grouping with Honor Rancho at a rate of 500 to 600 MMcfd. For this condition there is a combined supply of 1,300 MMcfd, which is much lower than the absolute maximum of 1,565 MMcfd used in the simulation. This change in value is especially important because this assumption seems to be used in all of the scenarios, and this could seriously skew the application of these results in the major regulatory decisions to come later in this process.

   We recommend that the case be re-run with this assumption. If a re-run is not possible, please give your best estimate of the effect this would have on the Aliso Canyon requirements in your report. Would it be a direct application of the change in withdrawal at Honor Rancho?

4. The use of 90% of maximum withdrawal rates for the other storage facilities is too optimistic. This issue was addressed several times in prior comments, as well as during workshop discussions. This will lead to underestimating the necessary flow from Aliso. We recommend at least a few simple sensitivity cases to get an uncertainty range. If this isn't possible, please discuss this possibility in the report, with some information about the effects of this. Will some analysis of this in the future storage sensitivity cases be undertaken in the Feasibility cases?

5. The single outage case isn't adequate for providing a context for these results. The framework called for additional outage cases conditional on the results of S01-S03. Since these clearly showed the need for Aliso, the S05 Winter case should have examined other outages in order to quantify the likely amount of withdrawal needed. We understand the difficulty of defining the case outages rigorously (as described in the pre-workshop updates), however some kind of cases are necessary.

   We strongly recommend that cases be run; at the very least for outages on one of the winter conditions. Perhaps these could be based on historical outages? If this isn't possible at this time, please write a description in the report that explains that the results must be qualified by the absence of these cases.

6. Additional cases with lower inventory levels are needed. The framework (page 7 of "Updating Hydraulic Modeling…") called for "*sensitivity analysis on the inventory levels of the other three storage fields. These inventory levels will be decided after completing the first round of simulations.*" The effect of the reduced inventories will increase the requirement for Aliso. This information is important for providing a context to the results.

   Are these additional cases still planned? If not, please provide some discussion of the general effect of a reduced inventory level in the Workshop Report.

We understand the time and resource limitations of Staff; therefore, in every case, if further simulations cannot be conducted, it is necessary to account for these in the Workshop Report. In many cases, it is likely that Staff can estimate the impact of these issues, or at least describe the impact the issue would have. If DNV GL can be of any assistance, please use the contact information below.

DNV GL appreciates the opportunity to provide informal comments to Staff as they continue to develop and draft the Workshop Report.

CONTACT INFORMATION:

Michael Bednorz M.ChE
Principal Hydraulic Engineer, Hydraulic & Flow Assurance Management
Mobile +1 713-410-5134
DNV GL USA, Inc.
michael.bednorz@dnvgl.com
Direct +1-832-320-4742
dnvgl.com | LinkedIn