# DOCKETED

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| **Docket Number:** | 16-IEPR-02 |
| **Project Title:** | Natural Gas |
| **TN #:** | 213594 |
| **Document Title:** | Southern California Generation Coalition Comment on Joint Agency Aliso Canyon Action Plan |
| **Description:** | Southern California Generation Coalition Comment on Joint Agency Aliso Canyon Action Plan for Local Energy Reliability for Winter of 2016 to 2017 |
| **Filer:** | System |
| **Organization:** | Southern California Generation Coalition/Norman Pedersen |
| **Submitter Role:** | Public |
| **Submission Date:** | 9/9/2016 3:29:49 PM |
| **Docketed Date:** | 9/9/2016 |

*Comment Received From: Norman Pedersen*
*Submitted On: 9/9/2016*
*Docket Number: 16-IEPR-02*

## Southern California Generation Coalition Comment on Joint Agency Aliso Canyon Action Plan for Local Energy Reliability for Winter of 2016 to 2017

*Additional submitted attachment is included below.*

**BEFORE THE**

**CALIFORNIA ENERGY COMMISSION**

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| In The Matter of 2016 Integrated Energy Policy Report Update (2016 IEPR Update) | Docket No. 16-IEPR-02<br>JOINT AGENCY WORKSHOP<br>RE: Aliso Canyon Action Plan |

# SOUTHERN CALIFORNIA GENERATION COALITION COMMENT ON JOINT AGENCY ALISO CANYON ACTION PLAN FOR LOCAL ENERGY RELIABILITY FOR WINTER OF 2016 TO 2017

Norman A. Pedersen, Esq.
HANNA AND MORTON LLP
444 South Flower Street, Suite 1500
Los Angeles, California 90071-2916
Telephone: (213) 430-2510
Facsimile: (213) 623-3379
E-mail: *npedersen@hanmor.com*

Attorney for the **SOUTHERN CALIFORNIA GENERATION COALITION**

Dated: September 9, 2016

## TABLE OF CONTENTS

**BEFORE THE**

**CALIFORNIA ENERGY COMMISSION**

| | |
|---|---|
| In The Matter of 2016 Integrated Energy Policy Report Update (2016 IEPR Update) | Docket No. 16-IEPR-02<br>JOINT AGENCY WORKSHOP<br>RE: Aliso Canyon Action Plan |

**SOUTHERN CALIFORNIA GENERATION COALITION COMMENT ON JOINT AGENCY ALISO CANYON ACTION PLAN FOR LOCAL ENERGY RELIABILITY FOR WINTER OF 2016 TO 2017**

In accordance with the California Energy Commission ("CEC") notice of the August 26, 2016 workshop in the captioned proceeding before the CEC, the California Public Utilities Commission ("CPUC"), the California Independent System Operator ("CAISO"), and the Los Angeles Department of Water and Power ("LADWP") (jointly, "Joint Agencies"), the Southern California Generation Coalition ("SCGC") respectfully submits this comment on the August 22, 2016 Aliso Canyon Gas and Electric Reliability Winter Action Plan ("Winter Action Plan") prepared by the staffs of the CEC, CPUC, CAISO, and LADWP.[1]

## I. INTRODUCTION.

SCGC appreciates the dedicated effort of the staffs of the Joint Agencies that is clearly reflected in the high quality of analysis and the thoughtful proposals presented in the Winter Action Plan. SCGC supports the Winter Action Plan and its ten proposed measures for the four months December, 2016, through March, 2017. In particular, SCGC supports Winter Mitigation

[1] Notice of the workshop was also published in the CPUC Daily Calendar, p. 7 (August 26. 2016).

Measures 3, "Keep the Tight Noncore Balancing Rules," and 4, "Add Core Balancing Rules," to maximize the potential to achieve both gas and electric reliability under trying operational circumstances on the Southern California Gas Company ("SoCalGas") system.

At this writing, there is no assurance that SoCalGas' Aliso Canyon storage field will be restored to provide injection or withdrawal capacity during the winter that comes anywhere near the pre-leak operational capacities of the storage field. The Division of Oil, Gas, and Geothermal Resources ("DOGGR") requires SoCalGas to file reports on its progress in testing the 114 Aliso Canyon wells for safety before injections resume at Aliso Canyon. SoCalGas files the reports on the first and third Friday of each month. As of the September 2, 2016 report, only 20 of the 114 wells at Aliso Canyon were identified as having "passed all tests."[2] The number of wells categorized as "pending test results" decreased from the previous (August 19, 2016) report from 28 to 15.[3] The rest of the 114 wells are identified as "taken out of operation (plugged & isolated)."[4]

From its biweekly reports to DOGGR, it seems that SoCalGas is able to move a well from the "pending test results" category to the "passed all tests" category at the rate of about one well per week. This tends to indicate that by December 1, 2016, SoCalGas has a chance of completely testing, at best, 35 wells, assuming a somewhat accelerated pace of testing and no test failures at any of the15 wells now identified as "pending test results." Assuming that fully tested wells would have an average withdrawal capacity of about 15 MMcf/d, the most withdrawal capacity that could become available at Aliso Canyon by December 1, 2016, would be 525

[2] ftp://ftp.consrv.ca.gov/pub/oil/SCG_Reports/Southern%20CA%20Gas$20Report%2009%2002%2016.pdf

[3] *Ibid.*

[4] *Ibid.*

MMcf/d, far short of the pre-leak withdrawal capacity of 1860 MMcf/d.[5] The injection capacity at the field with 35 of the 114 wells available for injection is unknown to SCGC, but it would certainly be far less than the pre-leak capacity of 600 MMcf/d.

Furthermore, it is unclear that any injections at all will be permitted at Aliso Canyon by December 1, 2016. SB 380 mandates that DOGGR undertake an administrative process that requires at least one noticed public meeting before permitting injections and that the CPUC Executive Director concur with permitting injections before SoCalGas resumes injecting gas at Aliso Canyon.[6] The result of the DOGGR/CPUC regulatory process is unknown, let alone the result of any ensuing judicial litigation. In a nutshell, the December 1, 2016, level of injections, if any, at Aliso Canyon is subject to test risk, regulatory risk, and litigation risk.

Given the continued uncertainty about the status of Aliso Canyon as of December 1, 2016, SCGC supports the ten mitigation measures proposed in the draft Winter Action Plan, particularly Winter Mitigation Measures 3 and 4 as discussed below.[7]

## II. WINTER MITIGATION MEASURE 3: KEEP THE TIGHT NONCORE BALANCING RULES.

The Winter Action Plan summarizes Winter Mitigation Measures 3, entitled "Keep the Tight Noncore Balancing Rules," as follows:

> **Keep the Tight Noncore Balancing Rules.** The settlement adopting tighter balancing rules for noncore customers in June 2016 expires unless extended by its terms. It expires November 30, 2016, or once Aliso Canyon achieves operations of 450 mmcfd withdrawal capacity and 45 Bcf inventory. The Energy Commission's gas balance analysis suggests these levels are not likely to be achieved by November 30. The revised rules are costly to noncore customers but appear to have helped reduce the

[5] The Winter Action Plan (at 9, footnote 7) recognizes that the assumed withdrawal rate of 15 MMcf/d is unconfirmed but that "SoCalGas is performing 6-hour flow tests to confirm the withdrawal rates."

[6] SB 380, Chap 14, Stats, 2016; California Public Resources Code § 3217(a)(1) and (d).

[7] Winter Action Plan, pp. 20-22.

> risk of gas curtailment. The CPUC should consider extending them for winter.[8]

SCGC understands Winter Mitigation Measure 3 to be a proposal to extend for the four months December 1, 2016, through March 31, 2017, the substantive provisions of the Settlement Agreement Regarding Daily Balancing Issues ("Summer Settlement") dated April 29, 2016, as agreed by SoCalGas, the San Diego Gas Electric Company ("SDG&E") and other parties in CPUC, Application ("A.") 15-06-020. The Summer Settlement was approved on an interim basis on May 27, 2016 to take effect on June 1, 2016,[9] and was approved by the CPUC in Decision ("D.") 16-06-021.[10]

The Summer Settlement by its terms will terminate upon the earlier of "(1) any superseding decision or order by the Commission, (2) return of Aliso Canyon to at least 450 MMcfd of injection capacity and 1,395 MMcfd of withdrawal capacity, or (3) November 30, 2016."[11] Given the status of Aliso Canyon as reported in the September 2, 2016 SoCalGas report to DOGGR, it is highly unlikely Aliso Canyon will operate with 450 MMcf/d of injection capacity and 1,395 MMcf/d of withdrawal capacity by November 30, 2016. On that assumption, absent action by the CPUC, the Summer Settlement will expire by its terms on November 30, 2016.

The substantive provisions in the Summer Settlement should be continued into the four winter months as a package, not piece-meal, with March 31, 2017, as a new termination date. In approving the Summer Settlement, the CPUC emphasized that it was approving the settlement as a whole rather than determining whether any single provision provides an optimal result:

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[8] Winter Action Plan, p. 20.

[9] CPUC Assigned Commissioner's Ruling, A.15-06-020, p. 4 (May 27, 2016).

[10] D.16-06-021, p. 13 (June 9, 2016) (Ordering Paragraph 1).

[11] *Ibid,* p. A-3.

> In assessing settlements, we consider individual settlement provisions but in light of strong public policy favoring settlements, we do not base our conclusion on whether any single provision is the optimal result. Rather, we determine whether the settlement as a whole produces a just and reasonable outcome. When looked at in total, the Settlement before us produces a reasonable outcome.[12]

The Summer Settlement, as noted in the Joint Agencies' explanation of the Winter Mitigation Measure 3, imposes tighter balancing rules on customers. Tighter rules apply for both high Operational Flow Orders ("OFOs") and low OFOs. In the case of high OFOs, the Summer Settlement provides for SoCalGas and SDG&E to impose a tighter tolerance than otherwise specified in the SoCalGas tariff, with SoCalGas and SDG&E being permitted to set a less stringent tolerance at their discretion given operational circumstances:

> The existing 110% high OFO tolerance (specified in G-IMB) will be changed to 105% or 110%. The default will be 105%, but SoCalGas and SDG&E will have the ability to set the tolerance at 110% if, in SoCalGas' and SDG&E's sole discretion, operational circumstances allow.[13]

Similarly, the Summer Settlement permits SoCalGas and SDG&E to declare low OFOs on the basis of operational constraints at their sole discretion instead of using as a trigger the withdrawal capacity allocated to the balancing function:

> SoCalGas and SDG&E will revise their current Low OFO formula so that the balancing trigger is based on operational constraints. SoCalGas and SDG&E will have the sole discretion to set the level

[12] D.16-06-021, p. 8.

[13] D. 16-06-021, Attachment A, p. A-3. The Summer Settlement provision regarding high OFOs may need to be adjusted by the CPUC if D.16-06-039 in the SoCalGas and SDG&E Triennial Cost Allocation Proceeding ("TCAP") Phase 1, A.14-12-017, takes effect to revise the SoCalGas high OFO procedure on December 1, 2016, January 1, 2017, or some other date during winter 2016-2017 as a result of the Aliso Canyon Turbine Replacement Project ("ACTR") 145 MMcf/d expansion of injection capacity becoming operational. D.16-06-039, Attachment A, p. A-10 (June 23, 2016) ("The new High OFO Trigger mechanism cannot become effective until the Aliso Canyon 145 MMcf/d expansion of injection is in operation.") If the ACTR were placed in operation after March 31, 2017, the high OFO provision in the extended Summer Settlement would apply for the entire period December 1, 2016, through March 31, 2017.

> of withdrawal capacity available for balancing based on operational conditions.[14]

However, while the Summer Settlement provided for "tighter balancing rules" as observed in the Winter Action Plan, the Summer Settlement also contains important provisions that ameliorate the adverse operational and financial effects that the tighter Summer Settlement balancing rules have on customers. For example, the Summer Settlement contains provisions that recognize the need to maintain electric system reliability and integrity as well as gas system reliability and integrity. The Summer Settlement provides for SoCalGas and SDG&E with discretion to waive OFO non-compliance charges in the event that an electric generation ("EG") customer is unable to meet an OFO requirement due to a request by either SoCalGas or an electric grid operator that is aimed maintaining either gas or electric system reliability and integrity:

> SoCalGas and SDG&E will have the discretion to waive OFO noncompliance charges for an electric generation customer who was dispatched after the Intraday 1 (Cycle 3) nomination deadline in response to (1) a SoCalGas System Operator request to an Electric Grid Operator to reallocate dispatched electric generation load to help maintain gas system reliability and integrity, or (2) an Electric Grid Operator request to the SoCalGas System Operator to help maintain electric system reliability and integrity that can be accommodated by the SoCalGas System Operator at its sole discretion.[15]

This provision enhances gas-electric coordination to assure to the maximum extent possible that both gas system and electric system reliability and integrity will be maintained as much as possible while tighter balancing rules are imposed on SoCalGas and SDG&E customers.

Thus, it is important that the Summer Settlement be continued into the four month winter period as a package of provisions without "cherry picking" just the tighter balancing provisions.

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[14] *Ibid*, p. A-4.

[15] *Ibid,* pp. A-3 - A-4.

The CPUC approved the Summer Settlement without singling out either the provisions for tighter balancing or the provisions to ameliorate the adverse effects of tighter balancing on gas customers, and the Summer Settlement should likewise be approved for the winter period as a package.

Additionally, the Joint Agencies should urge the CPUC to issue a decision extending the substantive provisions of the Summer Settlement in a timely fashion so that both the tighter balancing provisions and the ameliorative measures of the Summer Settlement can be continued seamlessly into the four months of the winter 2016-2017, with termination of the provisions being extended to March 31, 2017.[16]

## III. WINTER MITIGATION MEASURE 4: ADD CORE BALANCING RULES.

The fourth mitigation measure proposed in the Winter Action Plan would add core balancing rules to achieve a better match between core gas daily supply and core gas daily demand. The proposal was summarized in the Winter Action Plan as follows:

> **Add Core Balancing Rules.** SoCalGas is responsible, with certain exceptions, for buying and scheduling the natural gas it uses to serve core customers. Unlike noncore customers who must balance their scheduled gas quantities to their actual demand (something that is often difficult for electric generators whose load is driven both by weather and the electricity market), SoCalGas balances its core loads to a forecast. In other words, noncore customers are responsible for forecast error. SoCalGas is not responsible for any forecast error.
>
> A look at the gas balance tables in Appendix C shows monthly demand for core customers, even in a winter with normal weather, often to be in excess of 1500 mmcfd. The monthly balancing tolerance allowing a 10 percent difference between demand and supply could, in theory, easily be more than the 150 mmcfd identified as the maximum supply and demand differential

[16] As noted above, given that the Summer Settlement regarding the high OFO procedures as approved in D.16-06-039 may operate to change SoCalGas and SDG&E high OFO rules as of December 1, 2016, January 1, 2017, or some other date during the winter period December, 2016, through March, 2017, the Summer Settlement provision regarding high OFO balancing requirements may require commensurate modification.

> tolerable while Aliso Canyon is not in full service. Noncore customers (including electric generators) can be completely in balance while SoCalGas is responsible for doing nothing to reduce a core customer imbalance that could be large enough to put the system in stress.
>
> SoCalGas should assure that meter read information for the first portion of the gas is analyzed and transmitted to the system operators. The operators should then update the gas quantities scheduled for core customers to achieve a better match of core customer gas purchases and actual core gas demand. CPUC action will be required to put this measure in place.[17]

Given the high potential for limited injection and withdrawal capacity, if any, at the Aliso Canyon storage field during the winter December, 2016, through March, 2017, it is essential that the Commission require that the balancing agents that supply the core, primarily the SoCalGas and SDG&E Gas Acquisition Department ("Gas Acquisition"),[18] balance daily supplies (send-out) and daily usage within the tolerances established under the provisions of the Summer Settlement as extended to the four winter months.

A more detailed version of Mitigation Measure 4 was presented to the CPUC in the Motion of Southern California Edison Company on Behalf of the Customer Coalition for Consideration of Winter Reliability Measures ("Customer Coalition Motion") filed on August 17, 2016, in the CPUC proceeding, A.15-06-020. SCGC is a member of the Customer Coalition supporting the Motion. The proposal to bring core customers into parity with noncore customers by requiring Gas Acquisition to balance core daily supply with core daily usage was supported by a Declaration of Catherine E. Yap in Support of the Customer Coalition Motion for Consideration of Winter Reliability Measures ("Yap Declaration").

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[17] Winter Action Plan, p. 21.

[18] Currently there are 20 Core Transport Agents ("CTAs") that provide gas to only about 18,000 core customers on the SoCalGas and SDG&E system. Gas Acquisition provides gas to all remaining core customers. A.14-11-004, Direct Testimony of Ann Ayres at ADA-66, https://socalgas.com/regulatory/A1411004.shtml. Thus, in the discussion from this point on, SCGC refers only to Gas Acquisition even though some core customers are served by CTAs.

The Yap Declaration has been updated, primarily, (1) to include with explanatory text a graph that SCGC presented on behalf of the Customer Coalition at the Joint Agencies Workshop on August 26, 2016, (2) to include data from the August 31, 2016, SoCalGas Advanced Meter Semi-Annual Report to the CPUC, and (3) to include data from the September 2, 2016 SoCalGas report to DOGGR about progress with well tests at Aliso Canyon. The Updated Yap Declaration is attached to this comment as Attachment A.

The Updated Yap Declaration explains in detail with supporting documentation that, given the operational limitations at Aliso Canyon that are reasonably foreseeable for this winter December, 2016, through March, 2017, the SoCalGas and SDG&E System Operator will not be able to accommodate the degree of imbalances that Gas Acquisition has incurred previously as a consequence of permitting Gas Acquisition to balance its daily supplies against a 5:00 a.m. forecast of its served daily demand for a Gas Day rather than actual served daily demand.[19]

The Updated Yap Declaration also presents the Customer Coalition proposal to bring Gas Acquisition into parity with noncore customers by requiring Gas Acquisition to balance its Gas Day (7:00 a.m. to 7:00 a.m.) supply with Measurement Day (midnight to midnight) actual served demand instead of a forecast.[20]

As explained in the Updated Yap Declaration, it is entirely feasible to require Gas Acquisition to balance its Gas Day supply with its Measurement Day served demand this winter. Data on daily core consumption is now available through SoCalGas and SDG&E's Automated Meter Infrastructure ("AMI").[21] SDG&E's AMI is already fully installed.[22] According to the August 31, 2016 SoCalGas Advanced Meter Semi-Annual Report, 90 percent (5.4 million) of

[19]Updated Yap Declaration, pp. 6-19

[20] Updated Yap Declaration, p. 19-24.

[21] *Ibid.*.

SoCalGas' meters are now automated, and 81 percent (3,721) of the Data Collector Units are installed.[23] Given the status of the SoCalGas AMI installation, a data base is now available to be queried to determine with minor statistical extrapolation the aggregate Gas Acquisition served demand for each Measurement Day.[24] Additionally, SoCalGas is able to develop estimated actual Gas Acquisition served demand for each Measurement Day.[25] Thus, information about the daily Gas Acquisition served demand can be available to require that Gas Acquisition balance its Gas Day supplies (sendout) with its aggregate Measurement Day served demand as required of noncore customers.

Furthermore, data obtained through the AMI program is available during the course of the Gas Day to assist Gas Acquisition to assure that its supply and served demand will be within the tolerances prescribed under the balancing rules that would apply during this winter if the Summer Settlement is extended.[26]

For these reasons as more fully discussed in the Updated Yap Declaration, SCGC strongly supports the Winter Mitigation Measure 4 and urges the Joint Agencies to adopt the proposal as presented in the Updated Yap Declaration, with the CPUC approving the proposal in a timely fashion so that it can be implemented by SoCalGas and SDG&E prior to the expiration of the Summer Settlement on November 30, 2016.

## IV. CONCLUSION.

For the reasons set forth above and in the attached Updated Yap Declaration, SCGC supports the Joint Agencies' Winter Mitigation Measure 3 to extend the substantive provisions of

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[22] *Ibid,* p. 23.

[23] SoCalGas Advanced Meter Semi-Annual Report, p. 5.

[24] Updated Yap Declaration, pp. 22-23

[25] *Ibid,* pp. 26-27.

[26] *Ibid,* pp. 24-25.

the Summer Settlement for the four winter months December, 2016, through March, 2017, with the extension terminating on March 31, 2017, and SCGC supports the Joint Agencies' Winter Mitigation Measure 4 as presented in greater detail in the Motion and the Updated Yap Declaration to bring Gas Acquisition into parity with noncore customers by requiring Gas Acquisition to balance its Gas Day supply (sendout) with its Measurement Day served demand during the winter period December, 2016, through March, 2017.

Respectfully submitted,

*/s/ Norman A. Pedersen*

Norman A. Pedersen, Esq.
HANNA AND MORTON LLP
444 South Flower Street, Suite 1500
Los Angeles, California 90071-2916
Telephone: (213) 430-2510
Facsimile: (213) 623-3379
E-mail:

Attorney for the **SOUTHERN CALIFORNIA GENERATION COALITION**

Dated: September 9, 2016

# ATTACHMENT A

UPDATED DECLARATION OF CATHERINE E. YAP
IN SUPPORT OF THE CUSTOMER COALITION
MOTION FOR CONSIDERATION OF WINTER RELIABILITY MEASURES

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE**

**STATE OF CALIFORNIA**

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|---|---|
| Application of Southern California Gas Company (U 904 G) and San Diego Gas & Electric Company (U902G) for Authority to Revise their Curtailment Procedures | A.15-06-020<br>(Filed June 26, 2015) |

# UPDATED DECLARATION OF CATHERINE E. YAP IN SUPPORT OF THE CUSTOMER COALITION MOTION FOR CONSIDERATION OF WINTER RELIABILITY MEASURES

I, Catherine E. Yap, declare:

1. Based on my knowledge and experience, I make this declaration in support of the Customer Coalition's Motion for Consideration of Winter Reliability Measures.

2. I am a Principal of Barkovich & Yap, Inc. and have been consulting in the utility regulatory area for over twenty-nine years. Prior to this, I was employed for nine years by the California Public Utilities Commission. I have directed and/or performed major examinations of cost-of-service requirements, operations, allocation, rate design, and customer bill effects for electric, natural gas, water, and solid waste utilities. I have testified on numerous occasions before this Commission as well as in other jurisdictions.

3. I have completed an evaluation of the situation faced this winter by Southern California Gas Company ("SoCalGas") and San Diego Gas and Electric Company given the significant operational problems created by the reduced availability of the SoCalGas Aliso Canyon storage field. I present my examination in detail below. Based on my knowledge and experience, the contents of my declaration are true and accurate and are incorporated herein by reference.

I declare under penalty of perjury, under the laws of the State of California, that to the best of my knowledge, the foregoing and the following is true and correct. Executed this 9th day of September, 2016 at Piedmont, California.

/s/ Catherine E. Yap
Catherine E. Yap
Barkovich & Yap, Inc.

**Declaration of Catherine E. Yap**

## 1. Introduction

This declaration is presented by Catherine E. Yap on behalf of the Customer Coalition. Ms. Yap has over 35 years' experience preparing and delivering testimony before this Commission as well as in other jurisdictions.

## 2. Severe Restriction of the Aliso Canyon Storage Operations Has Led to Significant Constraints for Customers.

Decision ("D.") 16-06-021 adopted the Daily Balancing Proposal Settlement ("Settlement"), to address the significant operational problems created by the reduced availability of the Southern California Gas Company ("SoCalGas") Aliso Canyon storage field.[1] The Settlement became effective on an interim basis on June 1, 2016,[2] and was approved by the Commission on June 9, 2016, to be effective for the six month period, June 1, 2016, through November 30, 2016.[3,4] The Settlement provides for Operational Flow Orders ("OFOs") to be the

[1] Approximately 15 Bcf of gas still remains in Aliso Canyon working inventory as a means of ensuring that SoCalGas' combined storage fields have withdrawal capability sufficient to meet the core customers' 1-in-35 year peak day requirements and other very cold day requirements. Aliso Canyon Gas and Electric Winter Action Plan, August 22, 2016 at 4, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN213406_20160901T073434_Aliso_Canyon_Gas_and_Electric_Reliability_Winter_Action_Plan.pdf . According to the field report filed by SoCalGas on September 2, 2016, with the Department of Oil, Gas and Geothermal Resources ("DOGGR"), 20 storage wells at Aliso Canyon have successfully passed all of the tests required by DOGGR. ftp://ftp.consrv.ca.gov/pub/oil/SCG_Reports/Southern%20CA%20Gas%20Report%2009%2002%2016.pdf . Another 15 wells remain in a "pending test results" category. *Id.* As noted by the Winter Action Plan: Under Senate Bill 380 (Pavley, Chapter 14, Statutes of 2016), "all wells must either pass a battery of six safety tests or be plugged to isolate them from the field before any injection can begin. SB 380 requires DOGGR to hold a noticed public meeting on the matter and the CPUC Executive Director must concur with any DOGGR finding that the field is safe to return to injection." Aliso Canyon Gas and Electric Winter Action Plan at 8.

[2] Assigned Commissioner's Ruling, (May 27, 2016) at 4; SoCalGas Advice Letter 4973 (June 1, 2016).

[3] D.16-06-021, slip op. at 5. The term of the Settlement will conclude upon the earlier of: (1) any superseding decision or order by the Commission, (2) return of Aliso Canyon to at least 450 million cubic feet per day (MMcfd) of injection capacity and 1,395 MMcfd of withdrawal capacity, or (3) November 30, 2016.

primary tool available to the SoCalGas and San Diego Gas and Electric Company ("SDG&E") System Operator to ensure that pipeline pressures remain within the allowed maximum and minimum range while the storage capacity that is available for system balancing is restricted.

The Settlement permits several temporary changes to SoCalGas OFO procedures for the six month period. The Settlement permits the System Operator to declare high OFOs with a "default" five percent tolerance instead of the otherwise allowed ten percent tolerance.[5] For low OFOs, the System Operator will have sole discretion to set the level of withdrawal capacity available for balancing based on operational conditions, although the System Operator is obligated to attempt to maximize the amount of withdrawal capacity available for balancing up to the amount of withdrawal capacity allocated to the balancing function.[6] If circumstances require it, the System Operator can declare either or both a high and a low OFO, each with a five percent tolerance, on any given day during the Settlement period.

**3. Under the Settlement, Customers Must Balance Their Gas Supplies within Five Percent of their Gas Usage on OFO Days Declared by the System Operator.**

Postings made to SoCalGas' Envoy system demonstrates that there were 11 low OFOs declared in June and 14 low OFOs declared in July, each with a five percent tolerance.[7] There were nine high OFOs declared in June and four high OFOs declared in July, each with a five percent tolerance.[8] Thus, given that there were two days in June where both a low and high OFO

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[4] The Winter Action Plan does not contemplate the return of the Aliso Canyon field to nearly full service prior to November 30, 2016. In fact, the most optimistic scenario presented in the report has Aliso Canyon inventory at 48.4 Bcf. Aliso Canyon Gas and Electric Winter Action Plan, August 22, 2016 at 14, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN213406_20160901T073434_Aliso_Canyon_Gas_and_Electric_Reliability_Winter_Action_Plan.pdf . If as many as 28 wells can be returned to service, the withdrawal rate is expected to be about 420 MMcf/d. *Id.* at Footnote 7.

[5] *Id.* at 6. Under the Settlement, the default will be 105 percent but the System Operator will have the discretion to set the tolerance at 110 percent if, in the System Operator's sole discretion, operational circumstances allow.

[6] *Id.*, Attachment 2: Settlement at A-4.

[7] SoCalGas Envoy Low OFO Report, August 3, 2016.

[8] SoCalGas Envoy High OFO Report, August 3, 2016.

was declared, the SoCalGas system was under an OFO protocol 60 percent of the days in June and 58 percent of the days in July, with a five percent tolerance.

A high OFO with a five percent tolerance requires customers to ensure that their delivered gas supply is no more than 105 percent of their gas usage for the day.[9] If a customer's deliveries exceed its burn by more than five percent during a high OFO, the excess deliveries are subject to the Buy-Back Rate as established by G-IMB.[10] Similarly, since the System Operator has repeatedly declared either Stage 1 or Stage 2 low OFOs with a five percent tolerance since June 1, 2016, customers must ensure that their gas usage does not exceed their gas deliveries by more than five percent.[11] If a customer's burn exceeds its deliveries by more than five percent during the low OFO, the non-compliance charge that is specified for the low OFO event will apply to all amounts in excess of the tolerance limit.[12] For example, the Stage 1 penalties are $0.25 per Dth while the Stage 2 penalties are $1.00 per Dth.[13] The System Operator has the discretion to set the Stage defined for the low OFO event at any level up to Level 5, where the higher levels are accompanied by significant increases in the penalty level.[14] Furthermore, penalties can increase to over $50 per Dth under an Emergency Flow Order.[15]

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[9] Under the settlement, the default is 105 percent although the System Operator may allow a high OFO to be established at the 110 percent level. D.16-06-021, slip op. at 6. *See*, also. SoCalGas Rule 30.F at Sheets 11-12, https://www.socalgas.com/regulatory/tariffs/tariffs-rules.shtml.

[10] SoCalGas Rule 30.F.4 (Sheet 11); SoCalGas G-IMB, Special Condition 11 (Sheet 6) https://www.socalgas.com/regulatory/tariffs/tariffs-rules.shtml.

[11] The System Operator has the discretion to set low OFOs at a higher tolerance than five percent, but because of Aliso Canyon, tolerances have been repeatedly set at five percent. SoCalGas Rule 30.G.1.a (Sheet 12) https://www.socalgas.com/regulatory/tariffs/tariffs-rules.shtml; SoCalGas Envoy Low OFO Report, August 3, 2016.

[12] Rule 30.G.1. (Sheets 12-14), https://www.socalgas.com/regulatory/tariffs/tariffs-rules.shtml. There is an exception if the amount of the overage is less than 10,001 therms.

[13] SoCalGas Rule 30.G.1.a (Sheet 12) https://www.socalgas.com/regulatory/tariffs/tariffs-rules.shtml

[14] *Id.*

[15] *Id.*

## 4. Customer Usage for Determining OFO Penalties Is Currently Defined Differently for Core Customers than for Noncore Customers.

The definition of a customer's daily usage depends on whether a customer is core or noncore because, at the time the Commission established the balancing requirements, SoCalGas and SDG&E recorded core customers' monthly, not daily, usage.

### 4.1. Noncore Customers Must Balance Deliveries to Metered Usage.

Unlike core customers, noncore customers have been subject to automated meter reading ("AMR") since December, 1990.[16] Thus, metered noncore customer usage is generally available for each calendar day,[17] although SoCalGas Rule 30 makes provision for noncore customers that lack AMR.[18] Furthermore, the usage for a number of noncore customers may be combined into a group for balancing purposes if these customers are served by a Contracted Marketer.[19] The largest noncore customers on the system are metered on an hourly basis with special advanced metering equipment making the determination of daily usage straightforward.[20] However, these noncore customers do not receive their metered usage from the SoCalGas and SDG&E Envoy electronic bulletin board system until the early hours of the day following the metering day. Smaller noncore customers without advanced metering equipment may wait additional time to receive their daily metered usage. In any case, because metered data is available for noncore customers for each calendar day, noncore customers are required to balance to this metered daily usage under OFO circumstances.

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[16] A.08-09-023, Errata to Direct Testimony of Mark Serrano at 25, https://socalgas.com/regulatory/A0809023.shtml.

[17] A.14-11-004, Direct Testimony of Ann Ayres at ADA-77, https://socalgas.com/regulatory/A1411004.shtml.

[18] SoCalGas Rule 30.F.4 at Sheet 11 and SoCalGas Rule 30.G.f.ii and Rule 30G.f.iii at Sheet 13, https://socalgas.com/regulatory/tariffs/tariffs-rules.shtml.

[19] G-IMB, Special Condition 2 (Sheet 4), https://www.socalgas.com/regulatory/tariffs/tariffs-rates.shtml.

[20] A.15-07-014, SoCalGas Response to SCGC-05, Q.5.10.2 and Q.5.10.7, https://socalgas.com/regulatory/A15-07-014.shtml.

For SoCalGas and SDG&E, the Measurement Day for which usage is billed is a calendar day from midnight to midnight, but the Gas Day for which supplies are nominated and delivered runs from 7:00 a.m. of the calendar day to 7:00 a.m. of the following calendar day.[21] Noncore customers must balance gas supplies delivered on the Gas Day with metered usage billed on the Measurement Day.

Matching gas deliveries closely to usage is particularly difficult and costly for electric generation ("EG") customers because usage can vary dramatically between the amount forecasted for a particular day and the amount that is required to meet actual electric demands. These variations can occur because of unanticipated changes in weather, which affects the amount of electricity required for cooling or heating, or other events such as unscheduled equipment outages. Meeting these demands for electric generation can be essential for maintaining electric grid reliability and avoiding firm electric load shedding. Thus, in order to meet OFO limitations and avoid penalties, EG customers may be required to buy or sell gas supplies in the intraday gas markets that are more thinly traded and subject to large swings in price. The Aliso Canyon outage has been very costly for EG customers and the electricity consumers that they serve.

### 4.2. Despite the Fact that the Core as Managed by SoCalGas' Gas Acquisition Department Is the Largest Single Block of Loads on the System, the Core Must Only Balance Deliveries to a Single Daily 5:00 a.m. Forecast of Core Usage.

Core customers are treated differently. During an OFO event, the SoCalGas' Gas Acquisition Department ("Gas Acquisition Department") has the same responsibility as noncore customers to balance its deliveries against its usage within the five percent tolerance, but the Gas Acquisition Department only has to balance its daily deliveries against a single 5:00 a.m. forecast of daily core Gas Day usage[22]. This is true despite the fact that the Gas Acquisition Department

[21] Applicants Response to SCGC-15, Q.15.1 and Q.15.2.

[22] As discussed previously, the Gas Day runs 7:00 a.m. to 7:00 a.m. of the following day while the Measurement Day runs midnight to midnight.

is responsible for scheduling and balancing for the largest, single block of loads on the Applicants' combined systems.[23] Similarly, other core balancing agents or core transportation agents ("CTAs") balance during an OFO event to their contract daily quantity.[24]

Furthermore, SoCalGas' Forecasting Group is not even required to provide to the Gas Acquisition Department any updated forecasts of core gas usage throughout the Gas Day. This lack of updating is a very serious problem during the winter months when the bulk of the core usage is temperature dependent and revised temperature forecasts are available throughout the day. Updating the forecast of core usage would enable the Gas Acquisition Department to modify its nominations of flowing supplies or storage gas correspondingly in the Intraday Cycles.

### 4.3. The Core's Usage Dominates Daily Requirements During the Winter Months.

As shown below in Figures 1 and 2, core[25] usage is well below noncore usage during the summer months on both an average and peak day basis. In the winter, however, core usage exceeds noncore usage on both an average and a peak day basis. Thus, the core's usage clearly dominates daily requirements for natural gas supplies during the winter months.

[23] Currently, there are 20 CTAs that purchase and deliver gas for about 18,000 core customers; otherwise, the Gas Acquisition Department purchases and delivers for all remaining core customers. A.14-11-004, Direct Testimony of Ann Ayres at ADA-66, https://socalgas.com/regulatory/A1411004.shtml.

[24] SoCalGas Rule 30.F.4 at Sheet 11 and Rule 30.G.1.f.v. at Sheet 13, https://socalgas.com/regulatory/tariffs/tariffs-rules.shtml.

[25] Core usage in this comparison includes both the usage served by Gas Acquisition and the usage served by the CTAs.

**Figure 1: Core versus EG Usage During the Summer (April-October) in MMcf/d**[26]

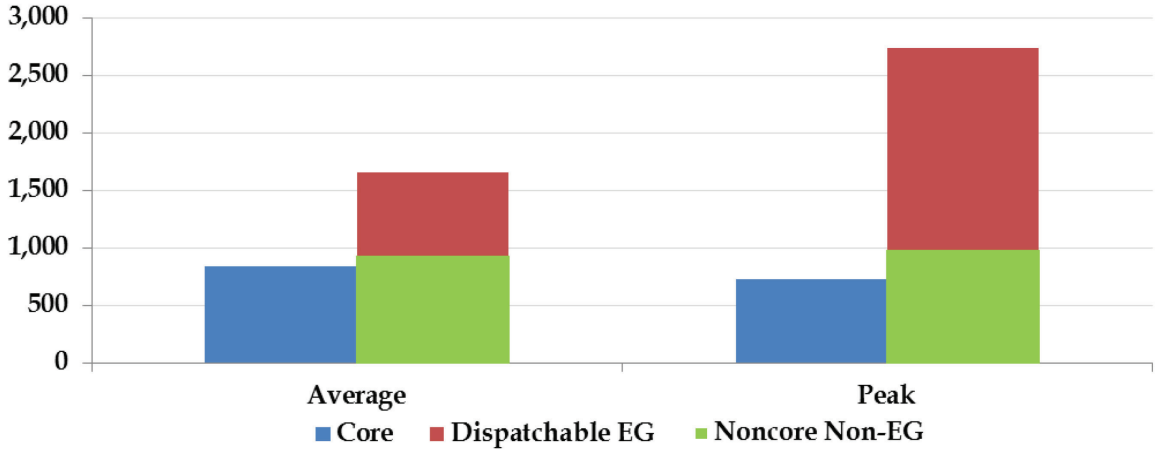
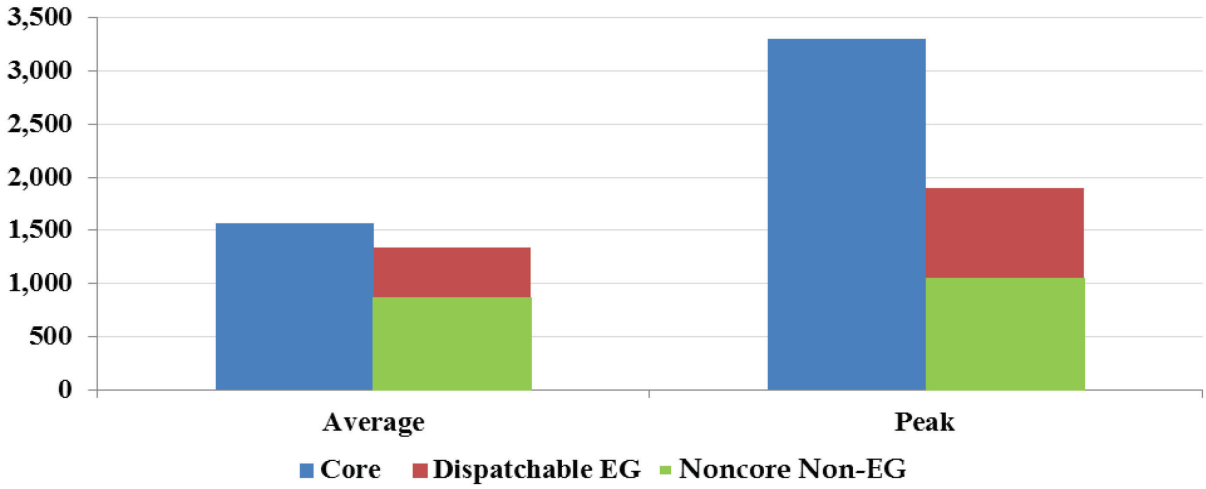



**Figure 2: Core versus EG Usage During the Winter (November-March) in MMcf/d**[27]




[26] Response to SCGC-1, Q.1.1; 2014 California Gas Report Workpapers for SoCalGas at 10 and for SDG&E at 11 https://www.socalgas.com/regulatory/cgr.shtml; Aliso Canyon Risk Assessment Technical Report (for Summer 2016), April 5, 2016 at 21, http://www.energy.ca.gov/2016_energypolicy/documents/2016-04-08_joint_agency_workshop/Aliso_Canyon_Risk_Assessment_Technical_Report.pdf . I have modified this figure to reflect the peak summer day information presented in Table 2 of the Aliso Canyon Risk Assessment Technical Report.

[27] Response to SCGC-1, Q.1.1; 2014 California Gas Report Workpapers for SoCalGas at 10 and for SDG&E at 11 https://www.socalgas.com/regulatory/cgr.shtml; Aliso Canyon Winter Risk Assessment Technical Report, April 5, 2016 at 19, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN212913_20160823T090035_Aliso_Canyon_Winter_Risk_Assessment_Technical_Report.pdf. I have modified this figure to reflect the peak 1-in-10 cold day information presented in Table 1 of the Aliso Canyon Winter Risk Assessment Technical Report..

### 4.4. The Core Forecast of Daily Usage Prepared for the Gas Acquisition Department Has Deviated Significantly from the Core Usage Served by the Gas Acquisition Department During the Previous Five Years.

The daily forecast of core usage is prepared by SoCalGas' Demand Forecasting Group, which is a part of the Regulatory Affairs Department, on behalf of the Gas Acquisition Department.[28] Figure 3 demonstrates that during the past five years, this core forecast has deviated significantly from estimated actual core usage. Estimated actual core usage is derived from metered system sendout less the metered noncore and estimated CTA usage. [29]

**Figure 3: Percent Deviation Between Core Usage and Core Forecasted**[30]

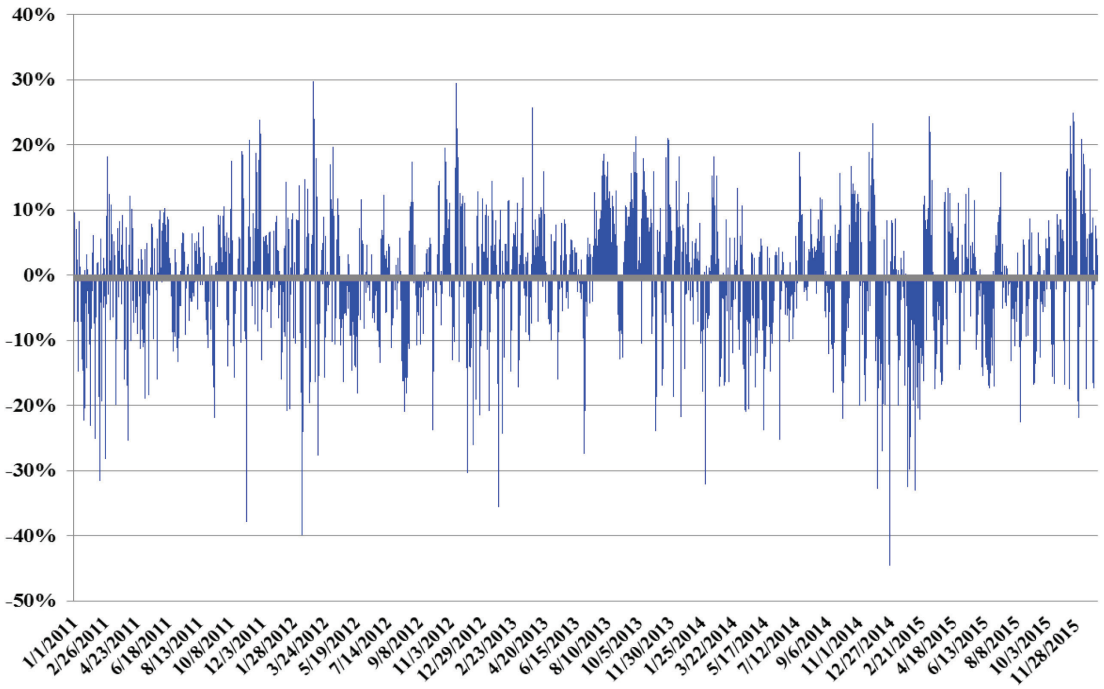



Figure 3 demonstrates that some of the deviations have been very large, well in excess of 25 percent, including some over-forecasts of core usage during winter months that have exceeded usage by at least 40 percent.

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[28] Applicants' Response to SCGC-14, Q.14.1.

[29] Applicants' Response to SCGC-12, Q.12.1. Estimated CTA usage is based on historical per meter usage trended to reflect increased numbers of meters.

[30] *Id.* Core Forecast is developed by SoCalGas Regulatory Affairs on behalf of SoCalGas Gas Acquisition Department. Core usage is estimated as the difference between metered system sendout and metered noncore and estimated CTA usage.

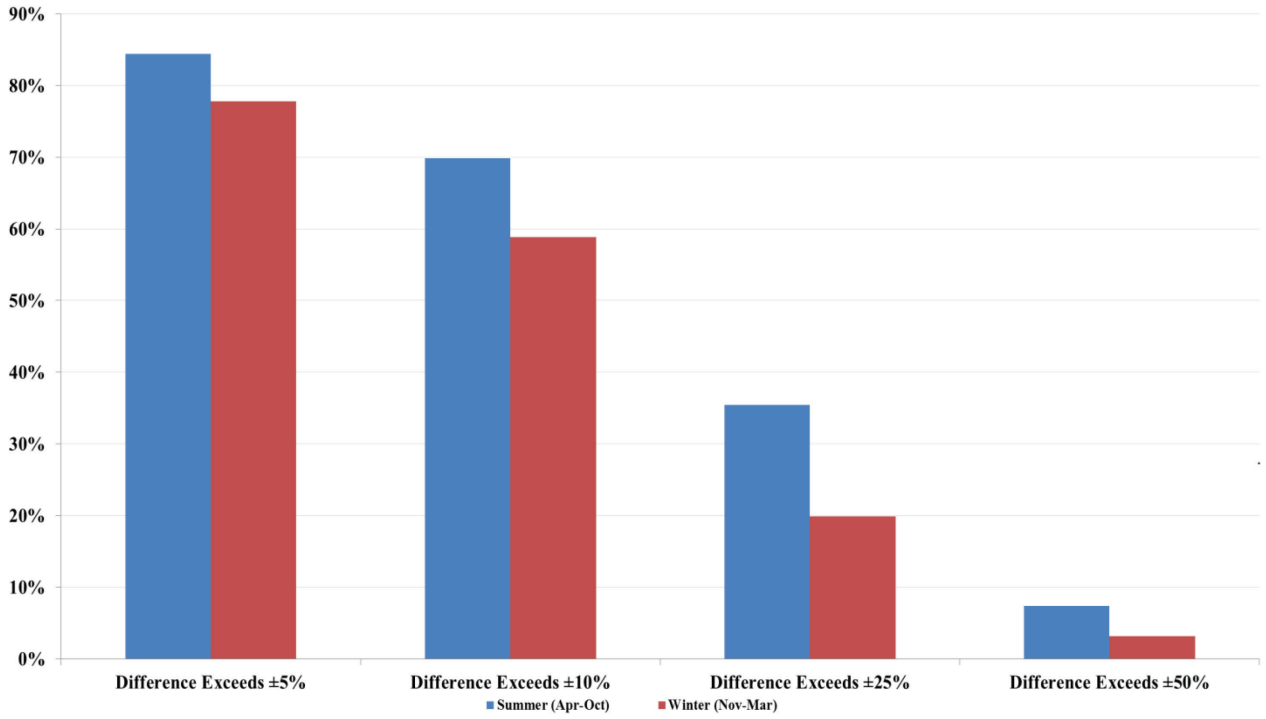
## 5. Allowing the Gas Acquisition Department to Balance to a Single 5:00 a.m. Forecast of Usage Can Cause Significant Problems for the System Operator.

Considering the size of the core's winter usage in combination with the extent of the core's historical forecasting deviation, allowing the Gas Acquisition Department to balance against a single 5:00 a.m. forecast of core usage (as adjusted to eliminate CTA served core usage) may create significant risks for the SoCalGas system this winter, 2016-2017, given the likely restrictions on Aliso Canyon storage capacity. If , as currently occurs, the forecast of daily core usage prepared by the Gas Forecasting Group is not updated during the day, substantially too much or too little gas may be delivered into the Applicants' system to supply actual core demand even though the supplies delivered by the Gas Acquisition Department balance with the 5:00 a.m. forecast.

### 5.1. Allowing the Gas Acquisition Department to Balance Core Supplies to a Single 5:00 a.m. Forecast of Daily Core Usage Has Resulted in a Significant Number of Deliveries that Deviate Substantially from Core Usage.

Figure 4 below, demonstrates that the Gas Acquisition Department's balancing to a single 5:00 a.m. forecast of usage has resulted in a significant number of deliveries that deviated substantially from actual usage.

**Figure 4: Frequency of Differences Between Core Supply and Estimated Actual Core Usage**[31]




As the chart demonstrates, during the last five years, 2011-2015, the Gas Acquisition Department's deliveries have deviated from estimated actual core usage by more than five percent for about 85 percent of summer days and about 78 percent of winter days. The Gas Acquisition Department's deviation has exceeded ten percent for about 70 percent of summer days and nearly 60 percent of winter days. Furthermore, the Gas Acquisition Department's deviation has exceeded 25 percent for about 35 percent of the summer days and about 20 percent of winter days. Since the Gas Acquisition Department serves such a large amount of core usage, deviations in excess of five percent can create problems for the System Operator, particularly since storage capacity will be limited during the upcoming winter months.

[31] Applicants Response to SCGC-12, Q.12.3. Core Forecast is developed by SoCalGas Regulatory Affairs on behalf of SoCalGas Gas Acquisition Department. Core usage is estimated as the difference between metered system sendout and metered noncore and estimated CTA usage.

### 5.2. If the Gas Acquisition Department's Imbalance Exceeds the Allowed Five Percent on OFO Days During the Winter, the Gas Acquisition Department's Excess Imbalance Could Swamp the Balancing Efforts of All Noncore Customers.

Having the Gas Acquisition Department effectively balancing at levels in excess of 25 percent tolerance or even ten percent tolerance is a critical problem in a system that has been operating on a five percent tolerance for nearly 60 percent of the days this summer because of the Aliso Canyon situation.[32] Given the size of the core's winter usage, the Gas Acquisition Department's error in balancing could swamp the balancing efforts of noncore customers.

For example, if the Gas Acquisition Department were to deliver 25 percent too much or too little during a winter month, as it has done about 20 percent of the time, the amount in excess of the five percent balancing tolerance could range between 300 and 661 MMcf/d depending upon the core's usage on the winter day in question.[33] Even if the EG customers were to perfectly balance their deliveries to their usage instead of deviating by five percent, this would only offset the core deviation by an amount between about 29 and 51 MMcf/d.[34] Assuming conservatively that other noncore customers might amount to about the same winter usage as EG, the total noncore could only offset core imbalances between about 58 and 109 MMcf/d, even if the total noncore could somehow balance deliveries perfectly against usage. This problem is illustrated in Figure 5 below:

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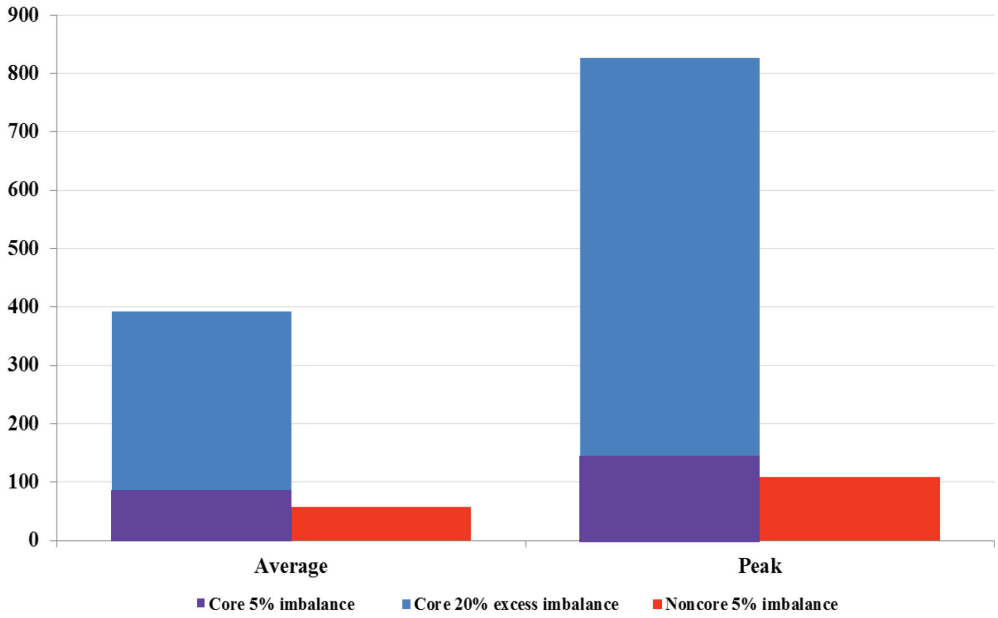
[32] SoCalGas Envoy Low OFO Report, August 3, 2016; SoCalGas Envoy High OFO Report, August 3, 2016.

[33] Per Figure 2, 2014 core winter usage averaged about 1566 MMcf/d while according to the Aliso Canyon Winter Risk Assessment Technical Report, core peak 1-in-10 winter demand amounts to 3304 MMcf/d. Aliso Canyon Winter Risk Assessment Technical Report at 19-20, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN212913_20160823T090035_Aliso_Canyon_Winter_Risk_Assessment_Technical_Report.pdf. The incremental 20 percent imbalance thus amounts to about 300-661 MMcf/d.

[34] Per Figure 2, 2014 dispatchable EG usage ranges between 581-1094 MMcf/d. The five percent imbalance thus amounts to about 29-55 MMcf/d. Doubling this amount would amount to 58-109, which is conservative given other noncore peak loads according to the 2014 CGR workpapers (at p. 90) amount only to 996 MMcf/d.

**Figure 5: Core Winter Daily 25 Percent Imbalance Showing the Amount in Excess of Five Percent as It Compares to the Noncore Five Percent Imbalance**




### 5.3. With the Absence of Aliso Canyon, the System Operator Has Limited Options for Addressing the Gas Acquisition Department's Excess Imbalances.

If the Gas Acquisition Department continues its current practice of balancing to a single 5:00 a.m. daily forecast with no updates at later times during the day, the System Operator could face problems balancing the SoCalGas and SDG&E system this winter, 2016-2017. In the absence of Aliso Canyon, the System Operator has only 470 MMcf/d of injection capacity at the remaining storage fields.[35] This capacity diminishes as the storage inventory approaches its maximum.[36] If the Gas Acquisition Department were to deliver between 300 and 661 MMcf/d more gas into the system than its allowed five percent imbalance tolerance, the System Operator would need between 64 and 141 percent of the available injection capacity simply to handle the extra Gas Acquisition Department imbalance, not even considering what might be required to

[35] A.14-11-004, Testimony of Philip E. Baker at 5, https://socalgas.com/regulatory/A1411004.shtml.

[36] The injection rate at storage fields during the winter months where inventory is high appears to be about one-half the injection rate at storage fields during the summer months where inventory is low. *See*, A.14-12-017, Direct Testimony of Steve Watson at 10, https://socalgas.com/regulatory/A1412017.shtml.

handle the Gas Acquisition Department's five percent allowed imbalance and the noncore's five percent allowed imbalance.

This is not merely a hypothetical problem. Figure 3 demonstrates that some of the largest deviations historically (in excess of 25 percent) between forecasted and estimated actual core usage have occurred during the winter months resulting in a substantial over-forecast of core gas. If the Gas Acquisition Department were to deliver between 300 and 661 MMcf/d more gas into the system than allowed with a 105 percent imbalance tolerance, the over-delivery would exceed the available injection capacity on the system causing an over-pressurization event.[37] The System Operator would have already declared a high OFO to reduce the contribution that any customer might make to the over-pressurization problems. However, as Figure 5 demonstrates, reducing noncore imbalances to within the 105 percent high OFO tolerance would be completely inadequate to offset the core's imbalance caused by forecasting error. The System Operator would have to resort to "windowing" the system,[38] requiring all customers on the system to turn back supplies of gas.

The remaining withdrawal capacity without Aliso Canyon is about 1800 MMcf/d[39] but this capacity diminishes as the storage inventory approaches its minimum. If the Gas Acquisition Department were to deliver between 300 and 661 MMcf/d less gas into the system than allowed with a 95 percent imbalance tolerance, the System Operator would need between 17 and 37 percent of the available withdrawal capacity simply to handle the extra imbalance

[37] During the winter the 600 MMcf/d nominal injection capacity is likely to be reduced to about 300 MMcf/d because inventory levels would be high. *See*, A.14-12-017, Direct Testimony of Steve Watson at 10, https://socalgas.com/regulatory/A1412017.shtml. Thus, even on an average day if the Gas Acquisition Department were to deliver 25 percent more gas than the core's usage, there would be insufficient injection capacity to accommodate the over-delivery.

[38] Under to SoCalGas Rule 30.F.3: "In the event customers fail to adequately reduce their transportation nominations, the Utility shall reduce the confirmed receipt point access nominations as defined in Section D," https://socalgas.com/regulatory/tariffs/tariffs-rules.shtml. Thus, the Gas Acquisition Department's forecasting error would lead to a prorata reduction in nominations across the entire system requiring customers to turn back supplies of gas.

[39] *Id.*

caused by forecasting error, not even considering what might be required to handle the five percent imbalance tolerance allowed for both core and noncore. If the Gas Acquisition Department had already requested a substantial withdrawal from storage to meet the core's forecasted requirements for the day, the combined effect might lead to a deficit in supplies to meet actual system usage. Under these circumstances, the System Operator would have to curtail substantial amounts of noncore usage without withdrawal from Aliso Canyon.

### 5.4. Accommodating the Core's 25 Percent Imbalance During a Peak Cold Day Without Withdrawal from Aliso Canyon Would Require Significant Curtailments from Noncore Customers.

If the 25 percent core imbalance were to occur on a peak 1-in-10 cold day, noncore customers would, without withdrawal from Aliso Canyon, sustain significant curtailments just to accommodate the core excess imbalance caused by forecasting error. If there were any other problems associated in obtaining supplies or providing delivery capacity, this would increase the severity of the curtailment.

The Aliso Canyon Winter Risk Assessment Technical report examines SoCalGas' ability to meet the peak 1-in-10 cold day in light of Aliso Canyon's limited availability. While from a supply-demand balance perspective there would appear to be sufficient capacity to meet the 1-in-10 cold day demands without Aliso Canyon, more dynamic analyses demonstrate that this is not the case. [40] Based on hydraulic analyses conducted by SoCalGas, the report concludes that if a peak 1-in-10 cold day were to occur this winter, it would be necessary to curtail EG customers by 530 MMcf/d out of the projected 1094 MMcf/d EG demand, in order to maintain system operating pressures within the allowed ranges.[41] A 530 MMcf/d curtailment of EG usage on the peak 1-in-10 cold day would represent a 48 percent EG curtailment, which would fit within Step

[40] Aliso Canyon Winter Risk Assessment Technical Report at 19-20, Aliso Canyon Winter Risk Assessment Technical Report, April 5, 2016 at 19, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN212913_20160823T090035_Aliso_Canyon_Winter_Risk_Assessment_Technical_Report.pdf.

[41] *Id.*

2 of the Curtailment Order adopted in D.16-07-008.[42] This level of EG curtailment would be necessary even if the core balanced at a five percent level.

However, as shown above in Figure 4, the core generates at least a 25 percent imbalance about 20 percent of the time due to forecasting error. As shown in Figure 5, above, the core's excess 20 percent imbalance would amount to 661 MMcf/d. If the core were to have a negative 25 percent imbalance due to forecasting error on a peak 1-in-10 cold day during this winter, 2016-2017, the noncore would need to sustain an additional curtailment in order to maintain system operating pressures even if a withdrawal were made from Aliso Canyon.[43] Without a withdrawal from Aliso Canyon, under the Curtailment Order adopted in D.16-07-008, the EG customers would be curtailed under Step 2 an additional 126 MMcf/d, which would bring the EG curtailment level up to 60 percent of peak day EG usage. Noncore non-EG customers would then be curtailed by the remaining 535 MMcf/d, which would represent a 67 percent curtailment of peak day noncore non-EG usage.

The Aliso Canyon Winter Risk Assessment Technical Report considered the maximum curtailment level that could be sustained by EGs during a peak cold day event while maintaining electric system reliability.[44] The analysis was completed jointly by the California Independent System Operator ("CAISO") and the Los Angeles Department of Water and Power ("LADWP"). According to the report, EGs in the SoCalGas service territory could reduce their natural gas

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[42] D.16-07-008, slip op., Attachment 1 at A-2.

[43] Assuming a withdrawal rate for Aliso Canyon wells of 15 MMcf/d per well, the 20 wells Aliso Canyon wells that have successfully completed testing would produce 300 MMcf/d. Aliso Canyon Gas and Electric Winter Action Plan, August 22, 2016 at 4, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN213406_20160901T073434_Aliso_Canyon_Gas_and_Electric_Reliability_Winter_Action_Plan.pdf There are an additional 15 wells that are still undergoing testing although it is not clear how many of these wells will pass all of the tests. Therefore, while the highest possible withdrawal rate is 525 MMcf/d, this rate is not assured at this time. Furthermore, even the 525 MMcf/d would not be sufficient to offset the entire 661 MMcf/d of excess core imbalance.

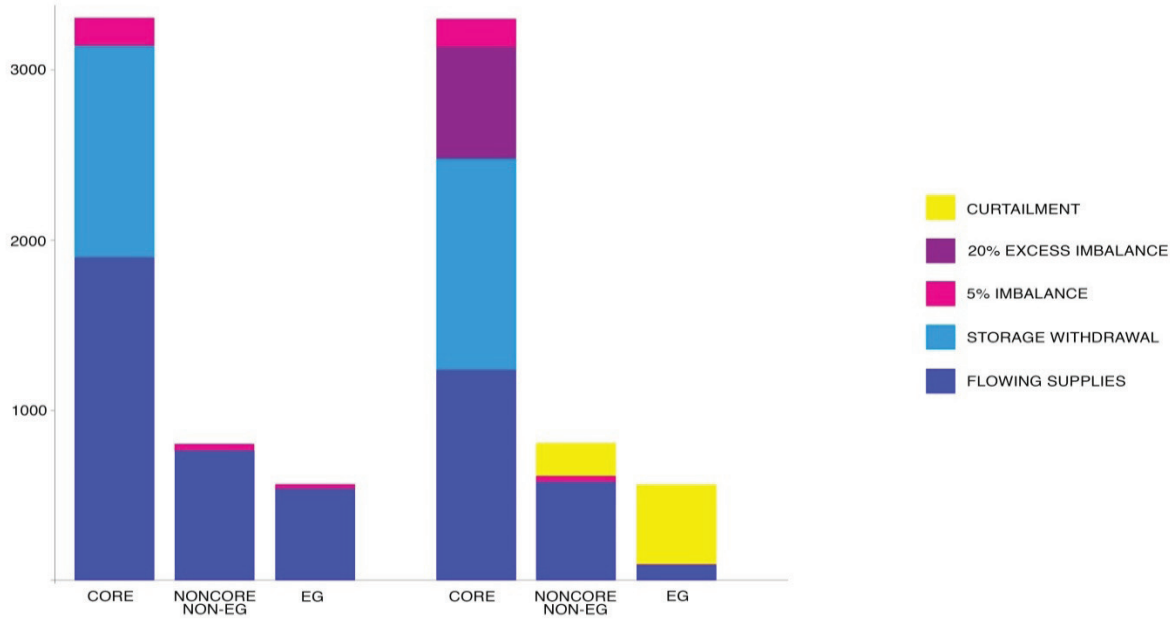
[44] Aliso Canyon Winter Risk Assessment Technical Report at 19-20, Aliso Canyon Winter Risk Assessment Technical Report, April 5, 2016 at 30-37, http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-02/TN212913_20160823T090035_Aliso_Canyon_Winter_Risk_Assessment_Technical_Report.pdf.

requirements to 96 MMcf/d while maintaining an N-1 reliability standard.[45] Thus, under the Aliso Canyon Winter Risk Assessment Technical Report analysis, EG customers could sustain as much as a 91 percent (996 MMcf/d out of 1094 MMcf/d) curtailment while maintaining an N-1 reliability level.

However, even 91 percent EG curtailment would not avoid curtailing noncore non-EG customers. A 48 percent (530 MMcf/d) curtailment was already required of EG customers simply to meet the peak 1-in-10 cold day demands assuming a core five percent imbalance. Thus, there would only be 466 MMcf/d left to meet the core's excess imbalance of 661 MMcf/d caused by forecasting error. Absent withdrawal from Aliso Canyon, noncore non-EG customers would have to be curtailed by 195 MMcf/d or 24 percent to make up the core's deficiency. Thus, even with EG usage being curtailed to 96 MMcf/d, noncore non-EG usage would be curtailed to 606 MMcf/d, as illustrated below in Figure 6:

[45] *Id.* at 37.

**Figure 6: Winter Peak Day Comparison with Core 5 Percent Imbalance vs. Core 25 Percent Imbalance (MMcf/d) under the Aliso Canyon Winter Risk Assessment Technical Report Hypothetical EG Curtailment[46]**




The first three bars in Figure 6 represent the core, noncore non-EG, and curtailed EG requirements on the peak 1-in-10 cold day assuming a five percent negative imbalance. The second three bars show core, noncore non-EG, and curtailed EG requirements with the additional curtailment that would be required to accommodate the excess 20 percent core imbalance.

**6. Allowing the Gas Acquisition Department to Balance to a Single 5:00 a.m. Forecast of Daily Usage Is Based on an Outdated Notion of Core Metering.**

The Gas Acquisition Department's responsibility for balancing to a single 5:00 a.m. daily forecast is based upon a 2007 Commission decision where the Commission acknowledged that because of the type of meters and the technology available for reading them that was available for core customers in December 2007, it was "not physically possible to obtain real-time usage

[46] *Id. at 19;* Applicants Response to SCGC-12, Q.12.3. Note that for simplicity EG usage is shown at the initial curtailment level of 564 MMcf/d under the core five percent imbalance scenario.

information from each core customer. As a result, core must balance to a forecast."[47] The policy has become outdated because of advances in metering and meter reading technology.

### 6.1. The SoCalGas and SDG&E AMI Systems Provide Core Customers Hourly Metering and Daily Reading of Their Meters.

It is now more than eight years after the Commission established the balancing requirements for the core in D.07-12-019. Metering and meter reading technology has advanced dramatically since 2007. In 2010, the Commission approved SoCalGas' proposal to install an Advanced Metering Infrastructure ("AMI") system for its core customers.[48] SoCalGas is in the process of completing the installation of its AMI system for core customers. According to SoCalGas, as of June 30, 2016: "Over 5.4 million meter modules [have been] installed representing 90% of the total meters to be upgraded. [There are] 3,722 data collector units (DCUs) installed and functioning On-Air representing nearly 81% of the estimated 4,600 DCUs required. Approximately 97 percent of the installed modules have been deemed 'Billing Ready' and are now used or ready for billing customers." [49] SoCalGas projects that it will complete the remainder of the installation of its AMI system by the middle of 2017.[50] SDG&E's AMI system was approved in 2007.[51] Its installation was completed in 2012.[52]

According to SoCalGas, the AMI system "three primary components – a meter transmission unit ("MTU" or "module") attached to SoCalGas meters; a communications network consisting of data collection units ("DCU") installed across the SoCalGas service territory; and associated back-office software systems, including the "Head End" system and "Meter Data Management Software," which securely receive and process Advanced Meter

[47] D.07-12-019, slip op. at 57.

[48] D.10-04-027, slip op. at 3.

[49] SoCalGas Advanced Meter Semi Annual Report, August 31, 2016 at 5, https://socalgas.com/regulatory/A0809023.shtml.

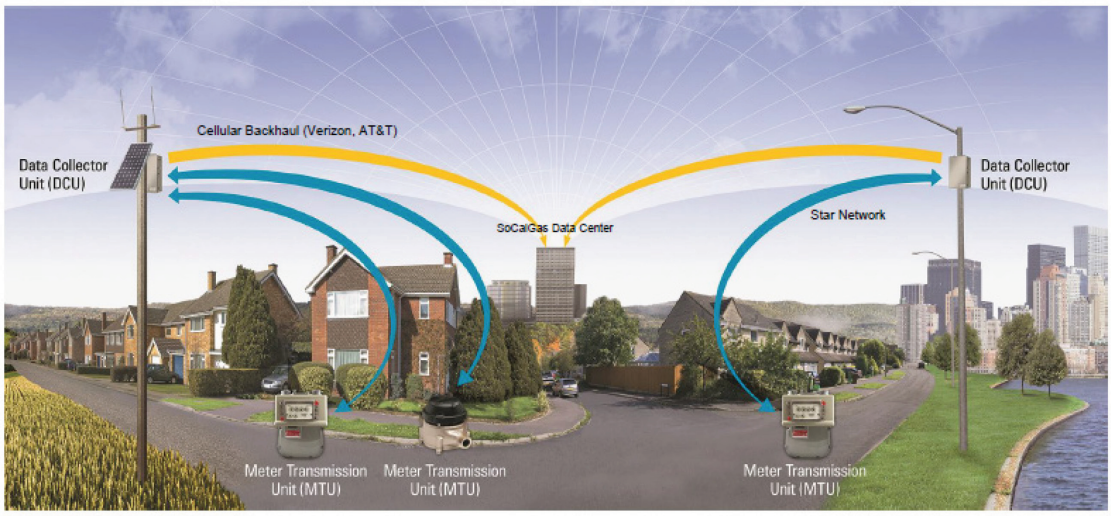
[50] *Id.* at 35,

[51] D.07-04-043, slip op. at 2.

[52] A.14-11-003, Direct Testimony of Bradley Baugh at BMB-18, http://www.sdge.com/regulatory-filing/12931/sdge-grc-testimony-exhibit-list.

data.[53] Data from the meter modules is communicated to the DCUs and then transmitted to SoCalGas' back-office systems."[54] Figure 7 below depicts the AMI system:

**Figure 7: SoCalGas AMI System**[55]




SoCalGas' AMI system provides hourly and daily metering of core customers. The system provides daily reading of core meters that were previously read by human meter readers once a month. As a result of the advanced meter reading and communications technology: "Compiled AMI hourly and daily gas usage data is available on a next day basis to SoCalGas customers with an Advanced Meter. For these customers, by 2 pm the next day, over 99% of the hourly usage data through midnight the prior day is available."[56] SoCalGas acknowledges that it currently has software developed that enables the compilation of all customer usage data metered through its AMI system on a daily basis.[57]

SoCalGas maintains, however, that it currently does not have the Information Technology ("IT") systems in place that would enable SoCalGas to aggregate the compiled AMI

[53] SoCalGas Advance Meter Semi Annual Report, August 31, 2016 at 4-5, https://socalgas.com/regulatory/A0809023.shtml

[54] *Id.* at 5.

[55] D.15-09-023, CPUC Water Energy Nexus AMI Pilots Workshop, SoCalGas presentation, January 19, 2016 at 4, http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=9192.

[56] Advice Letter No. 4910, SoCalGas Response to SCGC Data Request, Q.2.7.

[57] Advice Letter 4910, Applicants' Response to SCGC-01, Q.2.5.

data to a single daily core usage figure against which core balancing agents, including the Gas Acquisition Department, could balance daily supplies that they deliver to the SoCalGas/SDG&E system.[58] The Commission should not find this argument persuasive as SoCalGas' problem amounts to nothing more than a programming issue.

SoCalGas already acknowledges that, on a daily basis, it compiles the data for all customers on the AMI system into a database.[59] SoCalGas already has database software available to it that is sufficient to query the AMI database in order to develop monthly customer bills.[60] Developing aggregate core customer metered usage on a daily basis based on the AMI system is a matter of database programming using SoCalGas' existing database software. SoCalGas should direct its IT department to develop the appropriate queries that would produce each morning a total daily usage figure for each core balancing agent, including the biggest, the Gas Acquisition Department.

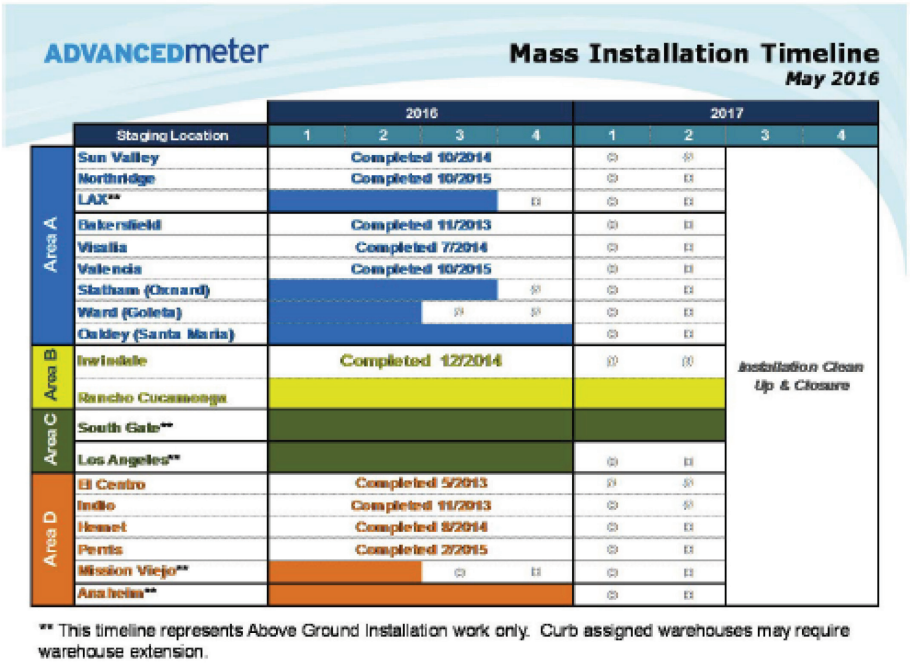
Although SoCalGas will not have completed its AMI system entirely by December 1, 2016, as shown in Figure 8, the AMI system will be quite close to full completion by that time.

[58] A.15-07-014, Paul Borkovich Rebuttal Testimony at 5, https://socalgas.com/regulatory/A1507014.shtml.

[59] Advice Letter 4910, Applicants' Response to SCGC-01, Q.2.5.

[60] SoCalGas identifies in each of its semi-annual reports the exact number of customers that are being billing through the AMI system. In its February 2016 report, SoCalGas states that over 4.5 million customers are being billed through the AMI system.

**Figure 8: SoCalGas AMI Installation Time**[61]




** This timeline represents Above Ground installation work only. Curb assigned warehouses may require warehouse extension.

SoCalGas expects the advanced metering system to be nearly complete by the beginning of 2017 and essentially complete by April 2017: "SoCalGas' AMI deployment to approximately 6 million meters will be nearly complete in Q2, 2017. A small percentage, projected to be less than 0.2% of the remaining, more challenging deployments (primarily underground and noncore meters), will be completed by the end of 2017."[62]

### 6.2. The AMI System Offers SoCalGas a Tremendous Amount of Historical Data that Can Be Used in Balancing Core Daily Supply to Core Actual Daily Usage.

The SDG&E system is entirely completed and the SoCalGas' AMI system will be substantially completed by December 1, 2016. By that time, SoCalGas and SDG&E should have AMI installed for about 88 percent of core customers.[63] The SoCalGas Gas Forecasting Group

[61] SoCalGas Advanced Meter Semi Annual Report, August 31, 2016 at 35, https://socalgas.com/regulatory/A0809023.shtml

[62] Advice Letter No. 4910, SoCalGas Response to SCGC Data Request, Q.2.2.

[63] SoCalGas had 90 percent of AMI meters installed as of June 30, 2016. At the rate that they are installing meters, at least 95 percent will be installed by December 1, 2016. Furthermore, SDG&E's core, which makes up about 12 percent of core usage, has 100 percent AMI metering. SoCalGas had 81 percent of the DCUs installed as of June 30, 2016. At the rate they are installing DCUs, 86 percent will

should certainly be able to do a very good extrapolation to derive total core usage[64] using the AMI data from the 88 percent of core meters that they do read through the AMI system and an estimate based on their forecasting efforts for the remaining 12 percent of core customers. Furthermore, the AMI system already contains valuable historical data[65] that can be used to greatly improve SoCalGas' forecasting, enhancing the accuracy of the estimate provided for the 12 percent of customers that are not metered through AMI during winter, 2016-2017.

### 6.3. In Addition to the AMI Installation Bringing Core Customers into Parity with Noncore Customers, the AMI System Offers an Opportunity for the Core Balancing Agents to Obtain a Portion of Each Day's Metered Usage Data During the Gas Day, Further Enabling Balancing of Daily Core Supply with Core Daily Usage.

Daily metering data for the entire SoCalGas and SDG&E Measurement Day is available to SoCalGas' back office by 8:00 a.m. the morning following the Measurement Day. Hence, daily metering for the combined core customers could be made available to the core balancing agents, including the Gas Acquisition Department, and to the System Operator every morning following the billing day. Obtaining daily metering data on the morning following the Measurement Day, would put the core in parity with noncore customers. Both core and noncore actual metered usage for a Measurement Day would be available the morning after the Measurement Day that ends at the stroke of midnight.

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be installed by December 1, 2016. SDG&E's DCUs are 100 percent complete so the combined level of DCUs for the core would be 88 percent.

[64] Adjusted to eliminate estimated CTA usage. The information about CTA usage should be greatly informed by the AMI meters associated with CTA customers.

[65] At the current time, SoCalGas has AMI metering histories in excess of two years for 30 percent of core customers and in excess of one year for another 18 percent of core customers. Although the existing metering histories have not been developed through a random sample, they still inform SoCalGas' forecasting efforts in very important ways. The AMI data provides an actual hourly profile of customer usage that can be analyzed relative to the hourly weather information in the local region. The quantitative analysis should establish important relationships between parameters such as hourly core usage and hourly weather conditions, e.g., temperature, wind speed, etc., which are so important to establishing core gas usage during the winter months. Thus, SoCalGas will be able to improve its forecasts which currently rely upon aggregated temperature relationships and engineering estimates to produce forecasts of heating loads.

Furthermore, hourly AMI reads are transmitted to SoCalGas four times each day after a lag of about eight hours, which is required to complete data transmission, compilation, and processing.[66] Thus, for example, SoCalGas receives all of the hourly AMI metering data for hours 1 through 6 by 2:00 p.m. of the 24 hour midnight-to-midnight Measurement Day. SoCalGas receives data for hours 7 through 12 by 8:00 p.m. of the Measurement Day. SoCalGas receives data for hours 13 through 18 by 2:00 a.m. of the calendar day following the end of the Measurement Day. Lastly, SoCalGas receives data for the final six hours of the Measurement Day, hours 19 through 24 by 8:00 a.m. of the calendar day following the end of the Measurement Day.

If SoCalGas' AMI vendor were to make programming changes to the AMI software, all core customer data could be compiled multiple times per day instead of once per day.[67,68] SoCalGas could use database queries to aggregate these partial day reads to a single gas usage number for each core balancing agent, including the Gas Acquisition Department. A portion of the core metered data for a Measurement Day could then be made available to each core balancing agent to use during the Gas Day, which runs from 7:00 a.m. of a Measurement Day to 7:00 a.m. of the day following the end of the Measurement Day, allowing each core balancing agent to make adjustments to its Gas Day nominations during the Intraday nomination cycles. Metering data for the first six hours of the Measurement Day would be available by 2:00 p.m., seven hours into the Gas Day, which is in time to adjust nominations that are due by 5:00 p.m. for Intraday Cycle 3. Metering data for the entire first twelve hours of the Measurement Day would be available by 8:00 p.m., which is in time to adjust 9:00 p.m. Intraday Cycle 4 nominations into and out of storage.

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[66] Applicants' Response to SCGC-15, Q.15.3.

[67] Applicants' Response to SCGC-14, Q.14.11.

[68] The Applicants state in their revised response to SCGC-15, Q.15.3.1, that they run the validation programs only twice a day in order to "promote system efficiency." However, if data were to be compiled four times per day and a portion were to be made available to Gas Acquisition Department during the metering day, the most efficient use of the validation programs could be reexamined at that time.

The core balancing agents could take into account updated weather forecasts that would be available in the afternoon and evening to update estimates of gas usage for the remaining hours of the Measurement Day in combination with the actual metered core usage for the first twelve hours of the Measurement Day to adjust Intraday Cycle 3 nominations that are due at 5:00 p.m. and Intraday Cycle 4 nominations that are due at 9:00 p.m. Getting actual Measurement Day meter reads in such proximity to supply nominations should give the core balancing agents an enhanced opportunity to balance supplies obtained during the Gas Day with actual Measurement Day usage.

### 7. If the Commission Declines to Adopt the Customer Coalition's AMI Balancing Proposal for the Core, It Should Order SoCalGas to Use Estimated Actual Core Usage as the Basis for Balancing Core Supplies.

If the Commission declines to order the Gas Acquisition Department to balance daily "bundled core" [69] Measurement Day usage as measured by the AMI system against daily bundled core Gas Day supply, it should require the Gas Acquisition Department to balance its Gas Day supply against "estimated actual" bundled core usage. Estimated actual bundled core usage is derived from metered system sendout less the metered noncore and estimated CTA usage.[70] Balancing to this usage measure would serve the objectives of reducing winter curtailment risk and bringing parity with noncore customer balancing, while allowing SoCalGas to supplement its reliance on AMI data with a measure that is already developed regularly.

SoCalGas routinely provides core balancing agents with core usage figures derived by SoCalGas from daily metered system sendout less the daily metered noncore usage.[71] SoCalGas then apportions the core usage between the Gas Acquisition Department and the CTAs using historical per meter usage for each CTA times the number of meters for which the CTA is

[69] Bundled core corresponds to those customers who obtain both their gas supply and gas delivery services from SoCalGas. The bundled core is served by the Gas Acquisition Department.

[70] Applicants Response to SCGC-12, Q.12.1.

[71] A relatively smaller number of noncore customers are not metered through AMR. Hence, the deduction of these noncore meters takes place once the meters are read on a monthly basis.

currently responsible.[72] While estimated actual bundled core usage would be available on a gross basis shortly after each Gas Day, the refined version of estimated actual bundled core usage would not be available until after the end of the billing month because it takes SoCalGas some time to calculate precisely the various components of estimated actual bundled core usage.

Estimated actual bundled core usage would be available as a stand-alone figure or as a check against extrapolated daily bundled core usage values that are developed from the data collected through the AMI system. An advantage to using estimated actual bundled core usage is the fact that it does not require any IT changes to the AMI data management system.

Using a daily usage figure for core balancing that does not become available for some time after the close of the billing month is actually consistent with how imbalance calculations for noncore balancing are completed. SoCalGas Rule 30 states: "The daily measurement quantity used to calculate the Noncompliance Charge for each Low OFO event will be the daily quantity recorded as of the month-end close of the applicable month."[73] Thus, even the largest noncore customers on the system that are metered on an hourly basis with special advanced metering equipment do not receive a statement of imbalance quantities from SoCalGas until well after the close of the billing month.

SoCalGas is concerned that the Gas Acquisition Department would be unduly disadvantaged if were to be required to balance to actual daily bundled core usage instead of a forecast of daily bundled core usage. SoCalGas claims that "noncore customers and their suppliers can install technology that allows them to monitor their gas usage on a real-time basis"[74] while the Gas Acquisition Department would not be able to do this. However, this argument is misleading in two ways.

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[72] Applicants Response to SCGC-12, Q.12.1.

[73] SoCalGas Rule 30.G.1.h at Sheet 14, https://socalgas.com/regulatory/tariffs/tariffs-rules.shtml.

[74] A.15-07-014, Paul Borkovich Rebuttal Testimony at 1-2, https://socalgas.com/regulatory/A1507014.shtml.

First, as I demonstrated previously, SoCalGas has already gained a significant amount of data through the AMI system that can be used to enhance its estimates of core usage. Furthermore, the AMI system has the capability of providing the Gas Acquisition Department and other core balancing agents up to twelve hours of metered core data during the Gas Day once SoCalGas completes the database programming that is required to take advantage of this capability. The Commission should direct SoCalGas to complete the required IT work to take advantage of this valuable aspect of the AMI system. Using the AMI system to balance core gas supplies more closely with actual core usage so as to enhance the reliability of SoCalGas' system is clearly consistent with the Commission's language in D.10-04-027. In granting its approval of the SoCalGas AMI system, the Commission recognized that the SoCalGas AMI system was a "system-wide technology platform with the ability to expand operating benefits as new applications emerge… [expecting] that this AMI system will yield further, unforeseen benefits in the future, improving customer service, allowing utilities to operate more safely and efficiently, and reducing utility operating costs."[75]

Second, noncore customers are not better positioned than core customers to balance their deliveries to usage. Noncore customers are not required have a "check meter," but even if a customer has one, it only informs a customer how much gas it has already consumed. The check meter provides no indication of how much additional gas a customer will use during the remainder of the day. Thus, in this respect the noncore faces the same issues as the core where each day gas supplies must be matched to the best estimates of usage.

The Gas Acquisition Department has sufficient tools to estimate bundled core usage. During the winter, the bundled core is the largest gas customer because of the large residential heating load. Core customer usage is highly correlated to weather. Actual and forecast weather conditions are continuously reported and are readily available to the Gas Acquisition Department. The information available to SoCalGas to improve its estimate of bundled core

[75] D.10-04-027, slip op. at 40.

usage, however, has materially improved through the gathering of hourly metering data through the AMI system. This data offers SoCalGas an increased understanding of the relationship between hourly weather changes and changes in hourly core usage. Thus, SoCalGas now has the option to update the forecasts available to the Gas Acquisition Department throughout the day to reflect changes in weather assumptions for future hours or replace weather assumptions with values based on observed weather. These updates should significantly improve the accuracy of SoCalGas' forecast of bundled core usage thus enhancing the Gas Acquisition Department's ability to successfully balance its supplies of gas to actual bundled core usage.

Noncore customer usage also requires estimation and is not as easily predicted as core usage. For example, EG customer demand is a function of not only the weather but also other external conditions like transmission line conditions, generation facility conditions, and ongoing real-time dispatch instructions if the generator operates in an organized market like the CAISO. Noncore industrial customer demand reflects changes in process requirements that can vary unexpectedly as well as changes associated with plant and process upsets and changes in customer orders. Thus, noncore customers can face considerably greater uncertainty than does the Gas Acquisition Department in matching daily gas supplies to an estimate of daily usage.

## 8. Conclusion

In conclusion, it is critical that this winter the Commission bring core customers into parity with noncore customers by requiring the Gas Acquisition Department to balance daily core Measurement Day usage against daily core Gas Day supply. Because the use of Aliso Canyon is extremely restricted, the System Operator will not be able to accommodate the kind of imbalances from the Gas Acquisition Department that have occurred under the existing system of permitting the Gas Acquisition Department to balance Gas Day supplies against a 5:00 a.m. forecast of core Gas Day demand.

The SoCalGas core will be over 80 percent metered through the AMI system by December 1, 2016, and the SDG&E core is entirely metered through the AMI system. Data

already collected through the AMI system as it has been completed will permit SoCalGas and SDG&E to accurately predict core usage and enhance the Gas Acquisition Department's ability to balance core Gas Day supplies against actual core Measurement Day usage. Going forward, twelve hours of actual metered core usage data could be made available to all core balancing agents prior to the deadline for adjusting Cycle 4 nominations in and out of storage. The availability of this data during the Gas Day should provide a huge advantage to the core balance agents in avoiding excess imbalances.

If the Commission declines to order the Gas Acquisition Department to balance daily bundled core Measurement Day usage as measured by the AMI system against daily bundled core Gas Day supply, it should require the Gas Acquisition Department to balance its Gas Day supply against "estimated actual" bundled core usage. Imbalances for the various core balancing agents would be determined after the end of the billing month.

The Commission's objective for the upcoming winter and beyond should be to minimize the risk of curtailment on SoCalGas' system. The AMI or "estimated actual" usage proposals both serve this objective, without placing core balancing agents at a disadvantage relative to the noncore class.