

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



January 4, 2016

Advice Letters 4822-G and 4822-G-A

Ronald van der Leeden
Director, Regulatory Affairs
Southern California Gas
555 W. Fifth Street, GT14D6
Los Angeles, CA 90013-1011

SUBJECT: Modification of the Tariffs Necessary to Implement Low Operational Flow Order (OFO) and Emergency Flow Order (EFO) Requirements and Description of Forecasting Model in Compliance with Decision (D.) 15-06-004

Dear Mr. van der Leeden:

Advice Letters 4822-G and 4822-G-A are effective as of December 3, 2015, per Resolution G-3511 Ordering Paragraphs.

Sincerely,

A handwritten signature in cursive script that reads "Edward Randolph".

Edward Randolph
Director, Energy Division



A  Sempra Energy utility

Ron van der Leeden

Director

Regulatory Affairs

555 W. Fifth Street, GT14D6
Los Angeles, CA 90013-1011

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June 29, 2015

Advice No. 4822

(U 904 G)

Public Utilities Commission of the State of California

Subject: Modification of Tariffs Necessary to Implement Low Operational Flow Order (OFO) and Emergency Flow Order (EFO) Requirements and Description of Forecasting Model in Compliance with D.15-06-004

Southern California Gas Company (SoCalGas) hereby submits revisions to its tariffs, applicable throughout its service territory, as shown on Attachment A.

Purpose

This filing complies with Ordering Paragraph (OP) 1 of Decision (D.) 15-06-004, *Decision Granting Application of Southern California Gas Company and San Diego Gas & Electric Company for Low Operational Flow Order and Emergency Flow Order Requirements*, which says:

Within 15 days of the issuance of this decision, San Diego Gas & Electric and Southern California Gas Company shall file Tier 2 advice letters to implement their proposed low Operational Flow Order (OFO) and Emergency Flow Order (EFO) tariff modifications with a full description of the forecast model to be used to call a low OFO or EFO.¹

The tariff modifications included as Attachment A are those necessary to implement D.15-06-004. Additionally, the full description of the forecast model SoCalGas will use to call a low OFO or EFO is included. Finally, SoCalGas presents a modification to the language approved for Rule No. 30 in order to adequately implement OP 9, which directs SoCalGas to apply the low OFO and EFO requirements to California producers upon approval of this filing.² San Diego Gas & Electric Company (SDG&E) is concurrently making a related advice filing, AL 2392-G, implementing substantially the same modifications to its tariffs.

¹ D.15-06-004, mimeo., at 40.

² *Id.* at 43.

Background

On June 27, 2014, SoCalGas and SDG&E filed A.14-06-021, which requested approval for new low OFO and EFO requirements. D.15-06-004 granted the requested low OFO and EFO requirements. The new requirements include five low OFO stages and one EFO stage, which, when triggered, would require customers to deliver gas within set tolerances or be assessed noncompliance charges. A low OFO or EFO is triggered when the amount of withdrawal capacity allocated to the storage load balancing function is forecasted to be exhausted. The new low OFO and EFO requirements replace the winter balancing rules and obviate the need for standby procurement service curtailment procedures.

As explained above, D.15-06-004 directs SoCalGas and SDG&E to implement the new low OFO and EFO requirements upon approval of a Tier 2 advice letter implementing the necessary tariff modifications and providing a full description of the forecast model used to call a low OFO or EFO. The tariff modifications provided in this advice letter are those that were presented in A.14-06-021, with one modification to the previously-proposed Rule No. 30 related to California producer applicability in compliance with OP 9, as discussed below.

Tariff Modifications

Pursuant to OP 1 of D.15-06-004, the following rules, rate schedules, and preliminary statements are being modified as described:

Rules

- Rule No. 23

Rule No. 23 is modified to remove provisions relating to the curtailment of standby procurement service.

- Rule No. 30

Section F of Rule No. 30, which addresses OFOs triggered by "Nominations in Excess of System Capacity," is modified to clarify that it is addressing High OFOs, in order to differentiate them from the low OFO and EFO procedures being added to Rule No. 30. Section G of Rule No. 30, which currently addresses "Winter Delivery," is renamed "Low Operational Flow Orders and Emergency Flow Orders," and the winter balancing rules are removed and replaced with the new low OFO and EFO procedures. This includes a table showing the five stages of the low OFO and EFO requirements, the corresponding daily imbalance tolerance and noncompliance charge, and the adoption of the term "Balancing Agent" to better describe all customers financially responsible for managing and clearing transportation imbalances. Section G.1.f.vi of Rule No. 30 is modified from the version presented in A.14-06-021 to clarify applicability to California producers in compliance with OP 9, as discussed below.

- Rule No. 41

Rule No. 41 is modified to add two new special conditions (conditions 5 and 6) that describe the methodology used by Gas Control to determine when either a low

OFO or EFO is required. Additionally, as in Rule No. 30, the existing OFO procedure is renamed High OFO in order to better differentiate the existing procedure from the new low OFO and EFO procedures.

Rate Schedules

- G-IMB

Schedule No. G-IMB is modified to remove the existing provisions relating to winter balancing rules and replace them with a daily balancing standby rate that will be in effect when a Stage 5 low OFO or EFO is called. The daily balancing standby rate will be the InterContinental Exchange (ICE) Day-Ahead Index (including FF&U and brokerage fee) for the SoCal-Citygate, rounded up to the next whole dollar.

Preliminary Statements - Regulatory Accounts

- Purchased Gas Account (PGA)

The PGA is modified to recognize noncore low OFO and EFO noncompliance charges as an entry to the balancing account.

- Noncore Fixed Cost Account (NFCA)

The NFCA is modified to recognize core low OFO and EFO noncompliance charges as an entry to the balancing account.

Description of Forecast Model

Pursuant to OP 1 of D.15-06-004, SoCalGas hereby provides a full description of the forecast model to be used to call a low OFO or EFO.

a) Detailed narrative explanation of the model and its elements, assumptions incorporated into the model

SoCalGas will calculate an initial estimate of the imbalance based on the latest available cycle 1 and cycle 2 confirmations. The Confirmed Customer Imbalance is estimated as follows:

$$\text{Confirmed Customer Imbalance} = \text{Confirmed Receipts} - \text{Expected Sendout} - \text{Confirmed Injections into storage accounts} + \text{Confirmed Withdrawals from storage accounts}$$

All numbers in the right hand side of the equation are treated as positive numbers. SoCalGas will then adjust the Confirmed Customer Imbalance to capture expected differences between scheduled and confirmed receipts. SoCalGas will further adjust the Confirmed Customer Imbalance to capture any expected changes in scheduled injections and withdrawals in and out of storage accounts that are likely to occur on cycles 3 thru 5. The magnitude of the adjustments will be determined using statistical analysis on historical data and all other

relevant information which may become available. The adjustments are described in further detail in the following sections.

b) Formulas incorporated in the model accompanied by a description of each of the variables and elements of the model, and the sources of any input

SoCalGas will calculate the cycle 2 Negative Imbalance as follows:

$$\text{Negative Imbalance}_{c2} = \text{Min}(\text{Confirmed Imbalance}_{c1} + \text{Adjustment}_{t_{c2},0})$$

Where the cycle 1 Confirmed Imbalance is calculated as follows:

$$\begin{aligned} \text{Confirmed Imbalance}_{c1} &= \text{Confirmed Receipts}_{c1} \\ &- \text{Expected Sendout} \\ &- \text{Confirmed Injection into storage accounts}_{c1} \\ &+ \text{Confirmed withdrawal into storage accounts}_{c1} \end{aligned}$$

The cycle 2 Adjustment is calculated as follows:

Winter Calculation (November thru March):

$$\begin{aligned} \text{Adjustment}_{c2} &= 167,648 - 0.3(\text{Actual Receipts}_{t2} - \text{Confirmed Receipts}_{c1,t2}) \\ &+ 0.302(\text{Scheduled Net Withdrawal}_{c5,t2} - \text{Confirmed Net Withdrawal}_{c1,t2}) \\ &+ 0.337(\text{Confirmed Net Withdrawal}_{c3,t1} \\ &- \text{Confirmed Net Withdrawal}_{c1,t1}) \end{aligned}$$

Summer Calculation (April thru October, the same formula is used, but the last coefficient is multiplied by 1.5):

$$\begin{aligned} \text{Adjustment}_{c2} &= 167,648 - 0.3(\text{Actual Receipts}_{t2} - \text{Confirmed Receipts}_{c1,t2}) \\ &+ 0.302(\text{Scheduled Net Withdrawal}_{c5,t2} - \text{Confirmed Net Withdrawal}_{c1,t2}) \\ &+ 0.506(\text{Confirmed Net Withdrawal}_{c3,t1} \\ &- \text{Confirmed Net Withdrawal}_{c1,t1}) \end{aligned}$$

Similarly, SoCalGas will calculate the cycle 3 Negative Imbalance as follows:

$$\text{Negative Imbalance}_{c3} = \text{Min}(\text{Confirmed Imbalance}_{c2} + \text{Adjustment}_{t_{c3},0})$$

Where the cycle 2 Confirmed Imbalance is calculated as follows:

$$\begin{aligned} \text{Confirmed Imbalance}_{c2} &= \text{Confirmed Receipts}_{c2} \\ &- \text{Expected Sendout} \\ &- \text{Confirmed Injection into storage accounts}_{c2} \\ &+ \text{Confirmed withdrawal into storage accounts}_{c2} \end{aligned}$$

The cycle 3 Adjustment is calculated as follows:

Winter Calculation (November thru March):

$$\begin{aligned} \text{Adjustment}_{c3} &= 5,598 - 0.239(\text{Actual Receipts}_{t-2} - \text{Confirmed Receipts}_{c2,t-2}) \\ &\quad + 0.255(\text{Scheduled Net Withdrawal}_{c5,t-2} - \text{Confirmed Net Withdrawal}_{c2,t-2}) \\ &\quad + 0.411(\text{Confirmed Net Withdrawal}_{c4,t-1} \\ &\quad - \text{Confirmed Net Withdrawal}_{c2,t-1}) \end{aligned}$$

Summer Calculation: (April thru October the same formula is used, but the last coefficient is multiplied by 1.5):

$$\begin{aligned} \text{Adjustment}_{c3} &= 5,598 - 0.239(\text{Actual Receipts}_{t-2} - \text{Confirmed Receipts}_{c2,t-2}) \\ &\quad + 0.255(\text{Scheduled Net Withdrawal}_{c5,t-2} - \text{Confirmed Net Withdrawal}_{c2,t-2}) \\ &\quad + 0.617(\text{Confirmed Net Withdrawal}_{c4,t-1} \\ &\quad - \text{Confirmed Net Withdrawal}_{c2,t-1}) \end{aligned}$$

All the values in the cycle 2 and 3 low OFO calculations can be found in SoCalGas' Electronic Bulletin Board system, Envoy. Their location is summarized in the following table:

Variable	Webpage	File Name	Page	Column
Confirmed Receipt	Capacity Utilization → Archive	capacity_m_yyyy.xls	1	J:K
Actual Receipt	Daily Operations → Archive	daily_operations_m_yyyy.xls	1	P
Forecasted Sendout	OFO Calculation → Archive	of0_archive_m_yyyy.xls	1	C
Confirmed Net Withdrawal	Capacity Utilization → Archive	capacity_m_yyyy.xls	1	J
Scheduled Net Withdrawal	Capacity Utilization → Archive	capacity_m_yyyy.xls	1	L

c) Specific criteria to be used to evaluate the accuracy of the model and the frequency with which evaluations of the model will occur

SoCalGas will consider an actual low OFO event is captured by the model if the model forecasts a low OFO on the day of the event, the day prior to the event or the day following the event. SoCalGas expects the model will capture over 70% of the winter days in which actual imbalances exceed the trigger level. SoCalGas expects the ratio between the number of forecasted low OFOs and the number of actual low OFOs will not exceed 1.25 over a one year period. SoCalGas will be continuously evaluating the model using this metric.

d) Conditions/circumstances under which a modification to the model will be made

The model coefficients will be changed when SoCalGas determines that the model no longer meets the minimum accuracy goals for the model described above or when it is determined that a different model can reduce the number of "misses" of large "actual" negative customer imbalances without increasing the number of low OFO events. Any estimate of frequency is speculative at this point, but major changes in the model are unlikely to occur more than every six months to one year.

Case 1:

On October 23, 2014, the model forecasted a low OFO when the actual negative imbalance was -457,655 and thus greater than the current low OFO trigger of 350,200 Dth. On that day, the Confirmed Imbalance for cycle 2 was -402,006 Dth:

$$\text{Confirmed Imbalance}_{c2} = -402,006 = 2,830,254 - 2,799,386 - 459,824 + 26,950$$

The cycle 3 Adjustment to the confirmed imbalance was -21,504 Dth (without rounding the coefficients to three digits):

$$\begin{aligned} \text{Adjustment}_{c3} = & 5,598 - 0.239(3,191,000 - 3,325,080) + 0.255(-328,335 - -447,945) \\ & + 0.617(-487,733 - -342,425) \end{aligned}$$

Therefore the expected Negative Imbalance was -423,509 Dth:

$$\text{Negative Imbalance}_{c3} = -423,509 = \text{Min} (-402,005 - 21,504, 0)$$

Thus, on October 23, the model forecasts a cycle 3 low OFO.

Case 2:

On November 12, 2014, the model failed to forecast a low OFO; however, the actual withdrawal used for customer imbalance was 351,564 Dth, which is greater than the low OFO trigger. On that day, the Confirmed Imbalance for cycle 2 was -554,244 Dth:

$$\text{Confirmed Imbalance}_{c2} = -554,244 = 2,406,569 - 2,478,194 - 493,544 + 10,925$$

The Adjustment to the Confirmed Imbalance was 292,242 Dth (without rounding the coefficients to three digits):

$$\begin{aligned} \text{Adjustment}_{c3} = & 5,598 - 0.239(2,791,000 - 2,742,477) + 0.255(-66,387 - -686,113) \\ & + 0.411(-228,827 - -570,477) \end{aligned}$$

Therefore the expected Negative Imbalance was -262,002 Dth:

$$\text{Negative Imbalance}_{c3} = -262,002 = \text{Min} (-554,244 + 292,242, 0)$$

On that day the actual sendout was over 200,000 Dth higher than expected on the prior day. Thus, the actual negative imbalance was higher than expected.

Case 3:

On December 15, 2014, the model forecasted a low OFO; however, an actual low OFO did not occur until the next day, December 16. On December 15 the actual negative imbalance was 320,549 Dth. On that day, the Confirmed Imbalance for cycle 2 was -999,916 Dth:

$$\text{Confirmed Imbalance}_{c2} = -999,916 = 3,031,371 - 3,453,813 - 902,686 + 352,212$$

The Adjustment to the Confirmed Imbalance was 326,927 Dth (without rounding the coefficients to three digits):

$$\begin{aligned} \text{Adjustment}_{c3} = & 5,598 - 0.239(3,063,000 - 3,031,345) + 0.255(8,829 - -600,544) \\ & + 0.411(-204,138 - -626,771) \end{aligned}$$

Therefore the expected Negative Imbalance was -672,989 Dth:

$$\text{Negative Imbalance}_{c3} = -672,989 = \text{Min} (-999,916 + 326,927, 0)$$

Thus, on December 15, the model forecasted a low OFO. The forecasted low OFO on December 15 anticipated the actual low OFO that occurred on December 16.

Low OFO and EFO Requirements Applicability to California Producers

In D.15-06-004, the Commission required SoCalGas to apply the low OFO and EFO requirements to California producers upon approval of this advice filing:

Upon approval of the Tier 2 Advice Letters, San Diego Gas & Electric Company and Southern California Gas Company shall apply their low Operational Flow Order and Emergency Flow Order requirements to California Producers.³

In compliance with this directive, SoCalGas is modifying the proposed Rule No. 30 language that it included in its testimony supporting A.14-06-021. In its supporting testimony, SoCalGas included language that would apply the low OFO and EFO requirements to producers once new California Producer Operational Balancing Agreements, Form 6452, have been implemented. Since this language is inconsistent with the Commission's direction, it has been eliminated in the proposed revised Rule No. 30 included with this advice filing. Revisions to the version presented with our testimony are shown in redline below:

For a California Producer ~~with an effective California Producer Operational Balancing Agreement, Form 6452~~, compliance with a Low OFO and EFO and calculation of any noncompliance charges will be based on the difference between scheduled receipts and measured receipts for each day of an event. ~~Low OFO and EFO compliance for a California Producer with an existing access agreement will be treated consistent with the terms of that access agreement.~~

Protest

Anyone may protest this AL to the Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received within 20 days of the date of this AL, which is July 19, 2015. There is no restriction on who may file a protest. The address for mailing or delivering a protest to the Commission is given below.

³ D.15-06-004, mimeo., at 43 (Ordering Paragraph No. 9). See also Conclusion of Law No. 17 at 40.

CPUC Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

A copy of the protest should also be sent via e-mail to the attention of the Energy Division Tariff Unit (EDTariffUnit@cpuc.ca.gov). A copy of the protest should also be sent via both e-mail and facsimile to the address shown below on the same date it is mailed or delivered to the Commission.

Attn: Sid Newsom
Tariff Manager - GT14D6
555 West Fifth Street
Los Angeles, CA 90013-1011
Facsimile No. (213) 244-4957
E-mail: snewsom@SempraUtilities.com

Effective Date

Per OP 1 of D.15-06-004, this Advice Letter should be classified as Tier 2 and shall be effective upon approval. SoCalGas respectfully requests that the tariffs be made effective August 1, 2015.

Notice

A copy of this advice letter is being sent to SoCalGas' GO 96-B service list and the Commission's service list in A.14-06-021. Address change requests to the GO 96-B should be directed by electronic mail to tariffs@socalgas.com or call 213-244-3387. For changes to all other service lists, please contact the Commission's Process Office at 415-703-2021 or by electronic mail at Process_Office@cpuc.ca.gov

Ronald van der Leeden
Director- Regulatory Affairs

Attachments

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No. **SOUTHERN CALIFORNIA GAS COMPANY (U 904-G)**

Utility type:

ELC GAS
 PLC HEAT WATER

Contact Person: Sid Newsom

Phone #: (213) 244-2846

E-mail: snewsom@semprautilities.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 4822

Subject of AL: Modification of Tariffs Necessary to Implement Low Operational Flow Order and Emergency Flow Order Requirements and Description of Forecasting Model in Compliance with D.15-06-004

Keywords (choose from CPUC listing): Affiliates; Compliance

AL filing type: Monthly Quarterly Annual One-Time Other _____

AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:

D15-06-004

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL No

Summarize differences between the AL and the prior withdrawn or rejected AL¹: N/A

Does AL request confidential treatment? If so, provide explanation: No

Resolution Required? Yes No

Tier Designation: 1 2 3

Requested effective date: 8/1/15

No. of tariff sheets: 43

Estimated system annual revenue effect (%): None

Estimated system average rate effect (%): None

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: Schedules PGA, NFCA, and G-IMB; Rule Nos. 23, 30, and 41; and TOCs

Service affected and changes proposed¹: N/A

Pending advice letters that revise the same tariff sheets: None

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Ave.
San Francisco, CA 94102
EDTariffUnit@cpuc.ca.gov

Southern California Gas Company
Attention: Sid Newsom
555 West Fifth Street, GT14D6
Los Angeles, CA 90013-1011
SNewsom@semprautilities.com
Tariffs@socalgas.com

¹ Discuss in AL if more space is needed.

ATTACHMENT A
Advice No. 4822

Cal. P.U.C. Sheet No.	Title of Sheet	Cancelling Cal. P.U.C. Sheet No.
Revised 51641-G	PRELIMINARY STATEMENT - PART V - BALANCING ACCOUNTS, PURCHASED GAS ACCOUNT (PGA), Sheet 1	Revised 49671-G
Revised 51642-G	PRELIMINARY STATEMENT - PART V - BALANCING ACCOUNTS, NONCORE FIXED COST ACCOUNT (NFCA), Sheet 2	Revised 51355-G
Revised 51643-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 1	Revised 45342-G
Revised 51644-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 2	Revised 51541-G
Revised 51645-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 3	Revised 51542-G
Revised 51646-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 4	Revised 51422-G
Revised 51647-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 5	Revised 51154-G
Revised 51648-G	Schedule No. G-IMB, TRANSPORTATION IMBALANCE SERVICE, Sheet 6	Revised 43325-G
Revised 51649-G	Rule No. 23, CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY, Sheet 2	Revised 47352-G
Revised 51650-G	Rule No. 23, CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY, Sheet 3	Revised 33041-G
Revised 51651-G	Rule No. 23, CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY, Sheet 10	Revised 44941-G
Revised 51652-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 11	Revised 49723-G
Revised 51653-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 12	Revised 47362-G*
Revised 51654-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 13	Revised 47363-G*
Original 51655-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 14	
Revised 51656-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 15	Revised 47364-G*
Revised 51657-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 16	Revised 47365-G*
Revised 51658-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 17	Revised 47366-G*
Revised 51659-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 18	Revised 50807-G
Revised 51660-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 19	Revised 50808-G
Revised 51661-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 20	Revised 50809-G

ATTACHMENT A
Advice No. 4822

Cal. P.U.C. Sheet No.	Title of Sheet	Cancelling Cal. P.U.C. Sheet No.
Revised 51662-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 21	Revised 51381-G
Revised 51663-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 22	Revised 51382-G
Revised 51664-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 23	Revised 51383-G
Revised 51665-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 24	Revised 51384-G
Revised 51666-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 25	Revised 51385-G
Revised 51667-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 26	Revised 51386-G
Revised 51668-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 27	Revised 51387-G
Revised 51669-G	Rule No. 30, TRANSPORTATION OF CUSTOMER-OWNED GAS, Sheet 28	Revised 50817-G
Revised 51670-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 1	Revised 48620-G
Revised 51671-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 2	Revised 48621-G
Original 51672-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 3	
Revised 51673-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 4	Revised 49391-G
Revised 51674-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 5	Original 45402-G
Revised 51675-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 6	Revised 49392-G
Revised 51676-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 7	Revised 49393-G
Revised 51677-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 8	Revised 49633-G
Revised 51678-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 9	Revised 49395-G
Revised 51679-G	Rule No. 41, UTILITY SYSTEM OPERATION, Sheet 10	Original 49396-G
Revised 51680-G	TABLE OF CONTENTS	Revised 51605-G
Revised 51681-G	TABLE OF CONTENTS	Revised 51582-G
Revised 51682-G	TABLE OF CONTENTS	Revised 51388-G
Revised 51683-G	TABLE OF CONTENTS	Revised 51606-G

PRELIMINARY STATEMENT - PART V - BALANCING ACCOUNTS
PURCHASED GAS ACCOUNT (PGA)

Sheet 1

The PGA is a balancing account. Effective April 1, 2008, the purpose of this account is to balance the recorded cost of gas for the Single Gas Portfolio to provide procurement service for both SoCalGas and SDG&E customers with the corresponding revenue from the sale of that gas. The Single Gas Portfolio, as adopted in Decision (D.) 07-12-019, is comprised of all gas purchases to serve the combined needs of SoCalGas and SDG&E. In addition, the PGA will record adjustments in compliance with Advice No. (AL) 4291-A, 4394-B, and 4513-A and their respective Memorandum In Lieu of Contract (MILC) consistent with Resolution G-3468, Resolution G-3476, and Resolution G-3485, respectively.

The Utility shall maintain the PGA by making entries at the end of each month as follows:

1. A debit entry equal to the recorded gas cost in the Single Gas Portfolio Account during the month, which includes all gas and backbone transportation services purchased for SoCalGas and SDG&E's procurement customers. Costs associated with the Utility System Operator providing transportation imbalance services under Rule No. 30 and Schedule No. G-IMB to the Utility Gas Procurement Department will be included concurrent with the Utility Gas Procurement Department being relieved of its responsibility for minimum flow requirements. Gas purchases are net of costs allocated to company use fuel and unaccounted for gas. The Single Gas Portfolio also includes interstate and PG&E pipeline capacity costs, carrying cost of storage inventory and financial transactions, net of proceeds from secondary market transactions such as core parking, loaning, and backbone transportation services activities.
2. Credit entries equal to the procurement revenue, which includes recovery of backbone transportation services, from the sale of gas delivered to SoCalGas and SDG&E customers, including revenues associated with noncore and core aggregator Low OFO and EFO noncompliance charges under Rule No. 30 and Schedule No. G-IMB; and noncore standby and buyback services under Schedule No. G-IMB during the month, excluding the allowance for F&U.
3. A credit entry for supplier refunds received that are associated with interstate capacity costs previously recovered through core procurement rates pursuant to D.04-09-022.
4. An entry equal to amortization of the forecasted PGA balance, excluding the allowance for F&U.
5. A credit entry equal to the brokerage fee charged to core customers less the allowance for F&U.
6. A debit entry equal to 1/12 of the annual core brokerage fee revenue requirement.
7. A credit entry equal to the El Paso settlement proceeds received pursuant to the Master Settlement Agreement approved by the FERC and CPUC (D.03-10-087). The first payment received will be reduced by the estimated net present value of refunds due to core subscription and core aggregation transportation (CAT) customers.

N
N
N

(Continued)

(TO BE INSERTED BY UTILITY)
 ADVICE LETTER NO. 4822
 DECISION NO. 15-06-004

ISSUED BY
Dan Skopec
 Vice President
 Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)
 DATE FILED Jun 29, 2015
 EFFECTIVE Dec 3, 2015
 RESOLUTION NO. _____

PRELIMINARY STATEMENT - PART V - BALANCING ACCOUNTS
NONCORE FIXED COST ACCOUNT (NFCA)

Sheet 2

(Continued)

4. Accounting Procedures – Authorized Base Margin Subaccount

SoCalGas shall maintain this subaccount by recording entries at the end of each month, net of FF&U, as follows:

- a. A debit entry equal to the seasonalized monthly amount of the authorized margin;
- b. A one-time debit entry equal to the adjustment to the adopted revenue requirements for Test Year 2012 and Attrition Years 2013 through 2014 to comply with the normalization requirements pursuant to PLR 136851-14;
- c. A debit entry equal to the adjustment to the adopted revenue requirements for Attrition Year 2015, prorated on a seasonalized basis during the year, to comply with the normalization requirements pursuant to PLR 136851-14;
- d. A credit entry equal to the noncore revenues to recover the authorized margin excluding revenues from (1) future non-tariff contracts with Sempra Energy affiliates not subject to competitive bidding and (2) Competitive Load Growth Opportunities for noncore Rule No. 38 and Red Team incentive revenues;
- e. An entry to amortize the previous year's balance;
- f. A credit entry equal to the noncore's allocation of the SMF charged to California Producers; and
- g. An entry equal to interest on the average balance in the subaccount during the month, calculated in the manner described in Preliminary Statement, Part I, J.

5. Accounting Procedures – Non-Base Margin Costs and Revenues Subaccount

SoCalGas shall maintain this subaccount by recording entries at the end of each month, net of FF&U, as follows:

- a. A debit entry equal to the recorded cost for the noncore portion of company-use fuel (excluding transmission and load balancing company-use fuel);
- b. A debit entry equal to the recorded cost for the noncore portion of unaccounted for gas;
- c. A debit entry equal to the recorded cost for the noncore portion of well incidents and surface leaks;
- d. A debit entry equal to the actual funds used, up to amounts authorized by the Commission, in providing eligible customers with assistance in paying their bills in connection with SoCalGas' Gas Assistance Fund (GAF) program;
- e. A credit entry equal to the noncore revenues to recover the costs associated with this subaccount;
- f. A credit entry equal to 100% of the net revenues associated with the Utility System Operator providing transportation imbalance services under Rule No. 30 and Schedule No. G-IMB to the Utility Gas Acquisition Department;
- g. An entry to amortize the previous year's balance; and
- h. An entry equal to interest on the average balance in the subaccount during the month, calculated in the manner described in Preliminary Statement, Part I, J.

(Continued)

(TO BE INSERTED BY UTILITY)
ADVICE LETTER NO. 4822
DECISION NO. 15-06-004

ISSUED BY
Dan Skopec
Vice President
Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)
DATE FILED Jun 29, 2015
EFFECTIVE Dec 3, 2015
RESOLUTION NO. _____

Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

Sheet 1

DESCRIPTION OF SERVICE

The Utility System Operator will provide a Monthly Imbalance Service for individual customers including the Utility Gas Procurement Department, end-use customers, wholesale customers, marketers and aggregators (referred to herein as "customers") when their usage differs from their transportation deliveries to the Utility's system or their targeted sales gas quantities purchased and delivered by the Utility. In case of the Utility Gas Procurement Department, the Daily Forecast Quantity will be used as a proxy for daily usage and the calculation of imbalances.

The Monthly Imbalance Service provided hereunder has four components: Imbalance Trading, a no-charge Balancing Service, Standby Procurement, and Buy-Back. Under the Imbalance Trading Service, customers may locate other customers with offsetting imbalances and trade these quantities to avoid imbalance charges (Standby Procurement or Buy-Back). Imbalance Trading Service shall be facilitated either through Electronic Bulletin Board (EBB), as defined in Rule No. 1, or through the Imbalance Trading Form as described in Special Conditions 2 and 4 of this Schedule and in Rule No. 33. Balancing Service will be provided without charge if the cumulative imbalance at the end of the monthly imbalance trading period is within 10 percent of the customer's usage, in case of core aggregators their applicable Daily Contract Quantity, or in the case of the Utility Gas Procurement Department the applicable Daily Forecast Quantity, (Tolerance Band) for the billing period. Any remaining cumulative imbalance within the tolerance band will be carried forward. Remaining imbalance quantities outside the tolerance band at the end of the imbalance trading period will be subject to a Standby Procurement Charge or Buy-Back as described under Rates.

APPLICABILITY

Applicable to core and noncore transportation service to customers.

TERRITORY

Applicable throughout the service territory.

RATES

Imbalance quantities remaining at the end of the designated imbalance trading period and which are outside of the 10% tolerance band will be billed at the Standby Procurement Charge or purchased by the Utility at the Buy-Back Rate. Any Standby Procurement Charge or purchases at the Buy-Back Rate of core imbalances created by the Utility Gas Procurement Department will be managed within the Utility System Operator's Operational Hub Services. Such core imbalances will be disposed of, with the net revenues from the core imbalance charges flowing back through the Noncore Fixed Cost Account (NFCA).

(Continued)

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Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

Sheet 2

(Continued)

RATES (Continued)

Standby Procurement Charge

This charge is applied to customer's cumulative negative transportation imbalance (confirmed transportation deliveries less actual usage) exceeding the 10 percent tolerance band. The Standby Procurement Charge is posted at least one day in advance of each corresponding imbalance trading period for noncore/wholesale and core transport agents (CTAs). It is calculated at 150% of the highest daily border price index at the Southern California border beginning on the first day of the month that the imbalance is created to five days prior to the start of each corresponding imbalance trading period plus a Brokerage Fee of 0.266¢ per therm for noncore retail service and all wholesale service, and 0.160¢ per therm for core retail service. The highest daily border price index is an average of the highest prices from "NGI's Daily Gas Price Index – Southern California Border Average" and "ICE Daily Indices – SoCal Border."

Core Retail Service:

SP-CR Standby Rate, per therm

September 2015	42.939¢
October 2015	40.059¢
November 2015	TBD*

Noncore Retail Service:

SP-NR Standby Rate, per therm

September 2015	43.045¢
October 2015	40.165¢
November 2015	TBD*

Wholesale Service:

SP-W Standby Rate per therm

September 2015	43.045¢
October 2015	40.165¢
November 2015	TBD*

*To be determined (TBD). Pursuant to Resolution G-3316, the Standby Charges will be filed by a separate advice letter at least one day prior to December 25.

(Continued)

(TO BE INSERTED BY UTILITY)
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Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

Sheet 3

(Continued)

RATES (Continued)

Buy-Back Rate

This rate is applied to customer's cumulative positive transportation imbalance (confirmed transportation deliveries less actual usage) exceeding the 10 percent tolerance band. The Buy-Back Rate is established effective the last day of each month and will be the lower of 1) the lowest incremental cost of gas purchased by the Utility during the month the excess imbalance was incurred; or 2) 50% of the applicable Adjusted Core Procurement Charge, G-CPA, set forth in Schedule No. G-CP, during the month such excess imbalance was incurred.

Retail Service:

BR-R Buy-Back Rate, per therm	
September 2015	16.395¢
October 2015	15.988¢
November 2015	13.046¢

Wholesale Service:

BR-W Buy-Back Rate, per therm	
September 2015	16.349¢
October 2015	15.944¢
November 2015	13.010¢

If the incremental cost of gas is the basis for the Standby or Buy-Back Rates, the Utility will provide CPUC the necessary work papers for such cost. Such documentation will be provided under confidentiality pursuant to General Order 66-C and Section 583 of the Public Utilities Code.

Daily Balancing Standby Rates

When a Stage 5 Low Operational Flow Order (Low OFO) or Emergency Flow Order (EFO) is declared, quantities not in compliance with the daily imbalance tolerance are purchased at the daily balancing standby rate. The daily balancing standby rate shall be equal the InterContinental Exchange (ICE) Day-Ahead Index (including F&U and brokerage fee) for SoCal-Citygate, rounded up to the next whole dollar, for each day a Stage 5 Low OFO or EFO is issued. Authorized F&U will not be added to any daily balancing standby charge for the Utility Gas Procurement Department to the extent that it is collected elsewhere

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Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

Sheet 4

(Continued)

RATES (Continued)

Revision of Rates

The Standby Procurement Charge and the Buy-Back Rate shall be established effective the last day of each month. The Daily Balancing Standby Rate shall be established on ICE's Day Ahead Index.

SPECIAL CONDITIONS

1. Definitions of the principal terms used in this rate schedule are contained in Rule No. 1.
2. Imbalances of customers other than the Utility Gas Procurement Department or ESPs will be calculated by combining all of a customer's meters served under the same order control code, not by account or individual delivery point. The order control code is used by the Utility to group those facilities identified by the customer for determining the customer's imbalances. In the case of the Utility Gas Procurement Department the applicable Daily Forecast Quantity will be used. In the case of ESPs their applicable Daily Contract Quantity (DCQ) will be used.
3. Immediately each month when actual meter usage information becomes available, an adjustment to the Utility Gas Procurement Department's imbalance account will be made to account for any differences between actual consumption of the core customers and the Daily Forecast Quantity, company use and LUAF.
4. Immediately each month when actual meter usage information becomes available, an adjustment to the ESP's imbalance account will be made to account for any differences between actual consumption of the core customers and the DCQ.
5. Customers may not use imbalance trading to offset imbalances in excess of the daily imbalance tolerances applicable during an OFO or EFO event.

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Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

(Continued)

SPECIAL CONDITIONS (Continued)

6. Customers may trade their monthly imbalances with other customers. Customer's cumulative imbalances will be stated on the customer's monthly bill. The customer's bill will serve as notice of current imbalances. Beginning at 7:00 a.m., Pacific Clock Time (PCT), on the 25th calendar day in the month of notification, customers may enter EBB to trade imbalances with other customers. Customers within the tolerance band may trade any quantities so long as the 10% tolerance band is not exceeded. Customers outside the tolerance band may trade quantities up to a maximum of their excess imbalance (quantities outside of tolerance) plus the 10% tolerance band. The Utility will notify participants through EBB or other notice once the trade is validated. The trading period will end at 11:59 p.m. PCT on the last calendar day of the same month. During the month of February, the trading period begins at 7:00 a.m. PCT on the 23rd of the month and ends at 11:59 p.m. PCT on the last calendar day of the month. The trading periods are as follows:

January 25-31	May 25-31	September 25-30
February 23-28 (or 29)	June 25-30	October 25-31
March 25-31	July 25-31	November 25-30
April 25-30	August 25-31	December 25-31

7. Imbalance trades may be submitted through EBB or by facsimile using the Imbalance Trading Agreement Form (Form No. 6544) and must be received by the Utility by the close of the trading period.

To submit an imbalance trade by facsimile, both parties must complete and send by facsimile a copy of the Imbalance Trading Agreement Form to the Utility. The Utility will then confirm the trade and adjust the participants' imbalance accounts. A processing charge of \$13.73 will be charged by the Utility for each imbalance trade submitted by facsimile using the Imbalance Trading Agreement Form. No processing charge will apply to an EBB subscriber for imbalance trades submitted by facsimile at a time the EBB system is unavailable for use by the subscriber.

8. Customers may opt to participate in the EBB's interactive trading platform in which imbalance trading parties may buy and/or sell imbalance gas. Instructions are provided on the EBB website.
9. Customers may use their storage account(s) to offset their imbalances or to trade with other customers under the conditions set forth in their applicable storage service rate schedule for unbundled storage service, or in Rule No. 32 for Aggregators.

A storage customer may trade positive imbalances, i.e., overdeliveries, into its storage account only if its storage inventory capacity is available during the month that the imbalance occurred and at the time the imbalance trade takes place. Similarly, a storage customer may trade negative imbalances, i.e., underdeliveries, using its storage account only if there is sufficient gas in storage in the account during the month that the imbalance occurred and at the time the imbalance trade takes place.

(Continued)

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Schedule No. G-IMB
TRANSPORTATION IMBALANCE SERVICE

Sheet 6

(Continued)

SPECIAL CONDITIONS (Continued)

- 10. After the imbalance trading period, the Standby Procurement Charge or Buy-Back Rate will be applied to all imbalance quantities in excess of the tolerance band. L
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- 11. When in the judgment of the Utility Gas Control Department the latest scheduled quantities are in excess of system capacity, Buy-Back service hereunder shall be applied to daily periods as designated by the Utility in accordance with the provisions of Rule No. 30, Section F. Customers shall not be allowed to trade positive imbalances incurred during such daily periods. The Buy-Back Rate shall apply to all positive imbalances in excess of the 10% tolerance band for each such period. Standby service shall be provided for the regular monthly balancing period and shall not be restricted to the excess nominations periods. T,L
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- 12. Under this schedule, the responsible customer will reimburse the Utility for any penalties or charges incurred by the Utility under an interstate or intrastate supplier arrangement when such penalties or charges occur as a direct result of the Utility's providing this imbalance service to customer. T,L
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- 13. If as the result of billing error, metering error, or transportation adjustments, customer trades an incorrect amount of imbalance quantities based on notification by the Utility, the Utility will not be liable for any financial losses or damages incurred by customer nor will the Utility be financially liable to any of the customer's imbalance trading partners. If as a result of such error, the Utility overbills customer, the Utility shall refund the difference. If the Utility underbills customer, the customer shall be liable for the undercharge including any associated penalty. The customer shall not be relieved of imbalance penalties when a subsequent billing adjustment is made by the Utility. For the purpose of determining imbalances and any applicable charges hereunder, the Utility will include subsequent billing adjustments for prior periods as part of the usage deemed to occur during the subsequent period unless the customer reimburses the Utility for the actual cost of gas incurred. Trades occurring in prior periods will not be affected by such billing adjustments. The Utility may issue a bill for Daily Balancing Standby Rate charges on a weekly or fortnightly basis upon customer or marketer request or if a customer or marketer delivers into the system less than 50 percent of its usage. Otherwise, Daily Balancing Standby Rate charges shall be included in the regular monthly bill. T,L
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- 14. The Utility Gas Procurement Department will be not be assessed any charges under this schedule that are a result of its obligation to maintain system reliability when called upon by the Utility System Operator to increase flowing supply when supply is insufficient to meet expected end-use demand or decrease scheduled deliveries when deliveries are expected to exceed end-use demand plus storage injection capacity. T,L
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Rule No. 23

Sheet 2

CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY

(Continued)

B. Priority of Service (Continued)

Off-System Delivery Service

- | | |
|-----------------------|--|
| Firm Service | All transportation served through firm off-system delivery service. |
| Interruptible Service | All transportation served through interruptible off-system delivery service. |

C. Curtailement of Service

1. Effectuation of Curtailment

When in the judgment of the Utility, operating conditions require curtailment of service and/or the diversion of customer-owned gas, such curtailment shall be effectuated in the order and manner described below, unless otherwise specified in this rule.

- (1) All Interruptible Off-system Delivery service. Customers will be curtailed on a pro rata basis (by equal percentage) at an off-system delivery point.
- (2) All Firm Off-system Delivery service. Customers will be curtailed on a pro rata basis at an off-system delivery point.
- (3) All interruptible storage withdrawal service or portions thereof according to the interruptible withdrawal reservation price paid with customers paying the lowest price curtailed first and customers paying the highest price curtailed last. Customers paying the same price will be curtailed on a pro rata basis with the exception that all UEG service shall be curtailed before cogeneration service.
- (4) All interruptible intrastate service according to the percentage of default rate paid, as defined in Rule No. 1, with customers paying the lowest percentage of default curtailed first. Customers paying the same percentage of default shall be curtailed on a pro rata basis with the exception that all UEG service shall be curtailed before cogeneration service where such service is at the same percentage of default.

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(Continued)

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Rule No. 23

Sheet 3

CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY

(Continued)

C. Curtailment of Service (Continued)

1. Effectuation of Curtailment (Continued)

- (5) All firm intrastate service on a rotating basis as described in Section C.2 herein.
- (6) All firm unbundled storage withdrawal, equally with the Utility's core price function storage, on a pro rata basis with the exception that all UEG service shall be curtailed before cogeneration service.
- (7) All Priority 2A service on a pro rata basis.
- (8) All Priority 1 non-residential service on a pro rata basis.
- (9) All Priority 1 residential service on a pro rata basis.

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2. Curtailment of Firm Intrastate Service

Firm intrastate service curtailment shall be effectuated by customer rotation. For determining the order of such curtailment, customers shall be separated into two firm service curtailment lists. The first list shall be for UEG and cogeneration customers and the second list shall be for all other firm service customers. Each curtailment list shall be ordered by individual customer as described in Section C.1. The order of customers for the two lists shall be established by lottery or other non-discriminatory means prior to the implementation date of the CPUC's Capacity Brokering Rules. The customer distribution for the two lists shall be maintained for the ten-year period beginning on the date of such implementation. During the ten-year period, new customers to firm service shall be randomly assigned a position on the appropriate list.

Once the order of the customers is established for each firm service curtailment list, the Utility shall aggregate customers with peak-day usage under 20 MMcfd into "blocks" of approximately 20 MMcfd, to the extent possible. Such aggregation shall be accomplished in the order of the listed customers for each list. Customers with peak-day usage of 20 MMcfd or more shall remain separately listed and shall be considered as one curtailment block. In the event firm service customers are added or deleted from the curtailment lists over the ten-year period, the Utility shall adjust the aggregation of the customer blocks as necessary.

(Continued)

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CONTINUITY OF SERVICE AND INTERRUPTION OF DELIVERY

(Continued)

J. Curtailed Violations

The Utility shall read the meter of the curtailed customer at the beginning and end of each curtailment period for the applicable service curtailed. For other than a customer operating emergency as set forth in Section C.6, customers failing to curtail on request will be assessed a penalty of \$1.00 per therm for the initial 5 hours of the Customer's operating day, \$3.00 per therm for hours 6 through 8, and \$10.00 per therm for hours 9 through the end of the curtailment episode. The penalty applies to all gas quantities determined by the Utility to be in violation of curtailment. All other charges associated with such usage will apply. Curtailment violations will be determined as follows:

1. System Curtailment

For curtailment of interruptible or firm intrastate service, customers whose consumption under their applicable service schedule exceeds their authorized curtailment quantity during the curtailment of such service will be in violation of curtailment.

2. Localized Curtailment

For curtailment of interruptible or firm intrastate service, customers whose consumption under their applicable service schedule exceeds their authorized curtailment quantity during the curtailment period for such service will be in violation of curtailment. Standby procurement service shall not be curtailed during a localized curtailment.

3. Authorized Curtailment Quantity

The authorized curtailment quantity used to determine a customer's compliance with curtailment shall be established on the basis of the monthly contract billing quantities set forth in the customer's Master Services Contract, Schedule A, Intrastate Transmission Service (Form Nos. 6597 and 6597-1).

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

E. Interruption of Service

1. The customer's transportation service priority shall be established in accordance with the definitions of Core and Noncore service, as set forth in Rule No. 1, and the provisions of Rule No. 23, Continuity of Service and Interruption of Delivery. If the customer's gas use is classified in more than one service priority, it is the customer's responsibility to inform the Utility of such priorities applicable to the customer's service. Once established, such priorities cannot be changed during a curtailment period.
2. The Utility shall have the right, without liability (except for the express provisions of the Utility's Service Interruption Credit as set forth in Rule No. 23), to interrupt the acceptance or redelivery of gas whenever it becomes necessary to test, alter, modify, enlarge or repair any facility or property comprising the Utility's system or otherwise related to its operation. When doing so, the Utility will try to cause a minimum of inconvenience to the customer. Except in cases of unforeseen emergency, the Utility shall give a minimum of ten (10) days advance written notice of such activity.

F. Nominations in Excess of System Capacity – High Operational Flow Order

1. The Utility System Operator's protocol for declaring a High Operational Flow Order (High OFO) is described in Rule No. 41. Any High OFO shall apply to all customers, including wholesale customers and the Utility Gas Procurement Department. N
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2. The High OFO period shall begin on the flow date(s) indicated by the Utility Gas Control Department. Customers shall be allowed to reduce their nominations or adjust their supply ranking in response to the High OFO. N
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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.
4. In accordance with the provisions of Schedule No. G-IMB, Buy-Back service shall be applied separately to each High OFO day. Customer meters subject to maximum daily quantity limitations will use the maximum daily quantity as a proxy for daily usage. For the Utility Gas Procurement Department, the Daily Forecast Quantity will be used as a proxy for daily usage. For core aggregators, their Daily Contract Quantity will be used as a proxy for daily usage. N
5. A California Producer, with an effective California Producer Operational Balancing Agreement, Form 6452, will be subject to Schedule No. G-IMB Buy-Back service during excess nominations days (i.e., High OFO days). For each OFO day, the Utility shall cash out, at the Retail Buy-Back Rate as described in Schedule No. G-IMB, all of an individual California Producer's actual deliveries that are in excess of 110% of that particular California Producer's scheduled quantities for that High OFO day. The High OFO day imbalance of a California Producer with an existing access agreement will be treated consistent with the terms of that access agreement. N
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Rule No. 30

Sheet 14

TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

G. Low Operational Flow Orders and Emergency Flow Orders (Continued)

1. Low Operational Flow Order (Low OFO) (Continued)

h. 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.

2. Emergency Flow Order (EFO)

- a. The Utility System Operator's protocol for declaring an Emergency Flow Order (EFO) is described in Rule No. 41.
- b. During an EFO Customer usage must be less than or equal to scheduled supply for a gas day. EFOs will have a zero percent tolerance and a noncompliance charge of \$5.00 plus the Schedule G-IMB Daily Balancing Standby Rate for each therm of usage in excess of scheduled supply.
- c. The EFO shall apply to all customers financially responsible for managing and clearing transportation imbalances (Balancing Agents), including wholesale customers, Contracted Marketers, core aggregators, California Gas Producers and the Utility Gas Procurement Department.
- d. When an EFO is in effect interruptible storage withdrawals are limited to one half of the capacity normally available for interruptible withdrawals. Interruptible storage withdrawal capacity is equal to Withdrawal Capacity minus confirmed firm storage withdrawal nominations minus withdrawal allocated to the balancing function.
- e. Daily measurement quantities used to determine EFO compliance and charges are the same as those used to determine Low OFO compliance and charges.
- f. The daily measurement quantity used to calculate the noncompliance charges for each EFO event will be the daily quantity recorded as of the month-end close of the applicable month.

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

H. Accounting and Billing (Continued)

2. The customer agrees that it shall accept and the Utility can rely upon, for purposes of accounting and billing, the allocation made by customer's shipper as to the quality and quantity of gas, expressed both in Decatherm and therms, delivered at each point of receipt during the preceding billing period for the customer's account. If the shipper does not make such an allocation, the customer agrees to accept the quality and quantity as determined by the Utility. All quality and measurement calculations are subject to subsequent adjustment as provided in the Utility's tariff schedules or applicable CPUC rules and regulations. Any other billing correction or adjustment made by the customer or third party for any prior period shall be based on the rates or costs in effect when the event occurred and accounted for in the period they are reconciled.
3. The Utility shall render to the customer an invoice for the services hereunder showing the quantities of gas, expressed in therms, delivered to the Utility for the customer's account, at each point of receipt and the quantities of gas, expressed in therms, redelivered by the Utility for the customer's account at each point of delivery during the preceding billing period. The Customer shall pay such amounts due hereunder within nineteen (19) calendar days following the date such bill is mailed.
4. Both the Utility and the customer shall have the right at all reasonable times to examine, at its expense, the books and records of the other to the extent necessary to verify the accuracy of any statement, charge, computation, or demand made under or pursuant to service hereunder. The Utility and the customer agree to keep records and books of account in accordance with generally accepted accounting principles and practices in the industry.

I. Gas Delivery Specifications

1. The natural gas stream delivered into the Utility's system shall conform to the gas quality specifications as provided in any applicable agreements and contracts currently in place between the entity delivering such natural gas and the Utility at the time of the delivery. If no such agreement is in place, the natural gas shall conform to the gas specifications as defined below.
2. Gas delivered into the Utility's system for the account of a customer for which there is no existing contract between the delivering pipeline and the Utility shall be at a pressure such that the gas can be integrated into the Utility's system at the point(s) of receipt.
3. Gas delivered, except as defined in I.1 above, shall conform to the following quality specifications at the time of delivery:

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

I. Gas Delivery Specifications (Continued)

3. (Continued)

- a. Heating Value: The minimum heating value is nine hundred and ninety (990) Btu (gross) per standard cubic foot on a dry basis. The maximum heating value is one thousand one hundred fifty (1150) Btu (gross) per standard cubic foot on a dry basis.
- b. Moisture Content or Water Content: For gas delivered at or below a pressure of eight hundred (800) psig, the gas shall have a water content not in excess of seven (7) pounds per million standard cubic feet. For gas delivered at a pressure exceeding of eight hundred (800) psig, the gas shall have a water dew point not exceeding 20 degrees F at delivery pressure.
- c. Hydrogen Sulfide: The gas shall not contain more than twenty-five hundredths (0.25) of one (1) grain of hydrogen sulfide, measured as hydrogen sulfide, per one hundred (100) standard cubic feet (4 ppm). The gas shall not contain any entrained hydrogen sulfide treatment chemical (solvent) or its by-products in the gas stream.
- d. Mercaptan Sulfur: The gas shall not contain more than three tenths (0.3) grains of mercaptan sulfur, measured as sulfur, per hundred standard cubic feet (5 ppm).
- e. Total Sulfur: The gas shall not contain more than seventy-five hundredths (0.75) of a grain of total sulfur compounds, measured as sulfur, per one hundred (100) standard cubic feet (12.6 ppm). This includes COS and CS₂, hydrogen sulfide, mercaptans and mono, di and poly sulfides.
- f. Carbon Dioxide: The gas shall not have a total carbon dioxide content in excess of three percent (3%) by volume.
- g. Oxygen: The gas shall not have an oxygen content in excess of two-tenths of one percent (0.2%) by volume, and customer will make every reasonable effort to keep the gas free of oxygen.
- h. Inerts: The gas shall not contain in excess of four percent (4%) total inerts (the total combined carbon dioxide, nitrogen, oxygen and any other inert compound) by volume.
- i. Hydrocarbons: For gas delivered at a pressure of 800 psig or less, the gas hydrocarbon dew point is not to exceed 45 degrees F at 400 psig or at the delivery pressure if the delivery pressure is below 400 psig. For gas delivered at a pressure higher than 800 psig, the gas hydrocarbon dew point is not to exceed 20 degrees F measured at a pressure of 400 psig.

(Continued)

(TO BE INSERTED BY UTILITY)
ADVICE LETTER NO. 4822
DECISION NO. 15-06-004

ISSUED BY
Dan Skopec
Vice President
Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)
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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

I. Gas Delivery Specifications (Continued)

3. (Continued)

- j. Merchantability: The gas shall not contain dust, sand, dirt, gums, oils and other substances at levels that would be injurious to Utility facilities or that would cause gas to be unmarketable.
- k. Hazardous Substances: The gas must not contain hazardous substances (including but not limited to toxic and/or carcinogenic substances and/or reproductive toxins) at concentrations which would prevent or restrict the normal marketing of gas, be injurious to pipeline facilities, or which would present a health and/or safety hazard to Utility employees and/or the general public.
- l. Delivery Temperature: The gas delivery temperature is not to be below 50 degrees F or above 105 degrees F.
- m. Interchangeability: The gas shall have a minimum Wobbe Number of 1279 and shall not have a maximum Wobbe Number greater than 1385. The gas shall meet American Gas Association's Lifting Index, Flashback Index and Yellow Tip Index interchangeability indices for high methane gas relative to a typical composition of gas in the Utility system serving the area.

Acceptable specification ranges are:

- * Lifting Index (IL)
IL \leq 1.06
- * Flashback Index (IF)
IF \leq 1.2
- * Yellow Tip Index (IY)
IY \geq 0.8

- n. Liquids: The gas shall contain no liquids at or immediately downstream of the receipt point.

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

I. Gas Delivery Specifications (Continued)

4. The Utility, at its option, may refuse to accept any gas tendered for transportation by the customer or on his behalf if such gas does not meet the specifications at the time of delivery as set out in I. 2, I. 3, and J.5, as applicable.
5. The Utility will grant specific deviations to California production from the gas quality specifications defined in Paragraph I.3 above, if such gas will not have a negative impact on system operations. Any such deviation will be required to be filed through Advice Letter for approval prior to gas actually flowing in the Utility system.
6. The Utility will post on its EBB and/or general website information regarding the available real-time Wobbe Number of gas at identified operational locations on its system.
7. Gas monitoring and enforcement hardware and software including, but not limited to, a gas chromatograph and all related equipment, communications facilities and software, identified in Exhibit A to Schedule No. G-CPS, are required, and shall be installed at each interconnection meter site where a California Producer delivers natural gas into the Utility's gas transportation system. The gas chromatograph shall monitor non-hydrogen sulfide constituents in the gas delivered, and deny access to gas that does not comply with the gas specifications set forth in the Gas Delivery Specifications, Section I.1 or I.3 above. Compliance shall be assessed using the 4- to 8-minute monitoring interval adopted in D.07-08-029 and D.10-09-001.
8. The gas chromatograph and all related equipment and software, identified in Exhibit A to Schedule No. G-CPS, shall monitor and enforce the gas quality specifications, using the 4- to 8-minute monitoring interval adopted in D.07-08-029 and D.10-09-001. Access shall be denied by the Utility on a non-latching basis after a second consecutive monitoring interval results in an alarm for gas which exceeds the non-hydrogen sulfide specifications. The gas chromatograph and all related equipment and software shall also enable the Utility to remotely gather and retain gas quality and alarm data. Where additional measures are necessary to promote or enhance safety, SoCalGas may request a deviation from the aforementioned monitoring interval requirements established by the CPUC.
9. For California Producers currently delivering gas into the Utility's transportation system without a gas chromatograph and all related equipment and software in place, as required in Rule No. 39, non-hydrogen sulfide constituents of gas will, on an interim basis, continue to be monitored and access denied under the methods currently in place, until such time as a gas chromatograph and all related equipment and software are installed and operational, subject to Rule No. 39 conditions.

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications

1. Biogas refers to untreated gas produced through the anaerobic digestion of organic waste material. Biomethane refers to biogas that has been treated to comply with this Rule No. 30.
2. Biomethane delivered, except as defined in Section I.1, must meet the gas quality specifications set out in Section I and the biomethane-specific specifications set out in this Section J. The terms and conditions contained in Section J apply solely to suppliers of biomethane and are incremental to Section I gas quality requirements.
3. Biomethane must not contain constituents at concentrations which would prevent or restrict the normal marketing of biomethane, be at levels that would be injurious to pipeline facilities, or be at levels that would present a health and/or safety hazard to Utility employees and/or the general public.
 - a. Health Protective Constituents are constituents that may impact human health and include carcinogenic constituents (“Carcinogenic Constituents”) and non-carcinogenic constituents (“Non-Carcinogenic Constituents”).
 - b. Pipeline Integrity Protective Constituents are constituents that may impact pipeline system integrity.
4. The party interconnected to the Utility pipeline system for purposes of delivering biomethane (“Biomethane Interconnector”) shall be responsible for costs associated with periodic biomethane testing requirements contained in this Section J, but shall not be responsible for the Utility’s discretionary biomethane testing or monitoring.
5. Biomethane Quality Specifications: Biomethane to be accepted and transported in the Utility pipeline system shall be subject to periodic testing and monitoring based on the biogas source. The Trigger Level is the level where additional periodic testing and analysis of the constituent is required. The Lower Action Level, where applicable, is used to screen biomethane during the initial biomethane quality review and as an ongoing screening level during the periodic testing. The Upper Action Level, where applicable, establishes the point at which the immediate shut-off of the biomethane supply occurs.

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

5. Biomethane Quality Specifications: (Continued)

Constituent	Trigger Level mg/m ³ (ppm _v) ⁱ	Lower Action Level mg/m ³ (ppm _v)	Upper Action Level mg/m ³ (ppm _v)
<i>Health Protective Constituent Levels</i>			
<u>Carcinogenic Constituents</u>			
Arsenic	0.019 (0.006)	0.19 (0.06)	0.48 (0.15)
p-Dichlorobenzenes	5.7 (0.95)	57 (9.5)	140 (24)
Ethylbenzene	26 (6.0)	260 (60)	650 (150)
n-Nitroso-di-n-propylamine	0.033 (0.006)	0.33 (0.06)	0.81 (0.15)
Vinyl Chloride	0.84 (0.33)	8.4 (3.3)	21 (8.3)
<u>Non-Carcinogenic Constituents</u>			
Antimony	0.60 (0.12)	6.0 (1.2)	30 (6.1)
Copper	0.060 (0.02)	0.6 (0.23)	3 (1.2)
Hydrogen Sulfide	30 (22)	300 (216)	1500 (1080)
Lead	0.075 (0.009)	0.75 (0.09)	3.8 (0.44)
Methacrolein	1.1 (0.37)	11 (3.7)	53 (18)
Toluene	904 (240)	9000 (2400)	45000 (12000)
Alkyl Thiols (mercaptans)	(12)	(120)	(610)
<i>Pipeline Integrity Protective Constituent Levelsⁱⁱ</i>			
Siloxanes	0.01 mg Si/m ³	0.1 mg Si/m ³	-
Ammonia	0.001 vol%	-	-
Hydrogen	0.1 vol%	-	-
Mercury	0.08 mg/m ³	-	-
Biologicals	4 x 10 ⁴ /scf (qPCR per APB, SRB, IOB ⁱⁱⁱ group) and commercially free of bacteria of >0.2 microns	-	-

Notes: i) The first number in this table are in milligrams per cubic meter of air (mg/m³), while the second number () is in parts per million by volume (ppm_v). ii) The Pipeline Integrity Protective Constituent Lower and Upper Action Limits not provided above will be established in the Commission's next AB1900 update proceeding. Until that time, Biomethane supplies that contain Pipeline Integrity Protective Constituents exceeding the Trigger Level, but lacking a Lower or Upper Action Level, will be analyzed and addressed on a case-by-case basis based on the biomethane's potential impact on pipeline system integrity. iii) APB – Acid producing Bacteria; SRB – Sulfate-reducing Bacteria; IOB – Iron-oxidizing Bacteria

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

6. Biomethane Constituent Testing shall be based on the biomethane source:

- a. Biomethane from landfills shall be tested for all Health Protective Constituents and the Pipeline Integrity Protective Constituents.
- b. Biomethane from dairies shall be tested for Ethylbenzene, Hydrogen Sulfide, n-Nitroso-di-n-propylamine, Mercaptans, Toluene, and the Pipeline Integrity Protective Constituents.
- c. Other organic waste sources, including biomethane from publicly owned treatment works (i.e., water treatment and sewage treatment plants) shall be tested for p-Dichlorobenzene, Ethylbenzene, Hydrogen Sulfide, Mercaptans, Toluene, Vinyl Chloride, and the Pipeline Integrity Protective Constituents.

7. Collective Health Risk

- a. Group 1 Compounds are Constituents with a concentration below the test detection level or below the Trigger Level.
- b. Group 2 Compounds are Constituents with a concentration at or above the Trigger Level.
- c. For Health Protective Group 2 Compounds, the collective cancer and non-cancer risk from Carcinogenic and Non-carcinogenic Constituents must be calculated by summing the Group 2 Compounds' risk.
 - i. Cancer Risk: The potential cancer for Group 2 compounds can be estimated by summing the individual potential cancer risk for each carcinogenic constituent of concern. Specifically, the cancer risk can be calculated using the ratio of the concentration of the constituent in the biomethane to the health protective ("trigger") concentration value corresponding to one in a million cancer risk for that specific constituent and then summing the risk for all the Group 2 constituents. (For reference, see CARB/OEHHA Report submitted in R.13-02-008, p. 67.)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

7. Collective Health Risk (Continued)

c. (Continued)

ii. Non-Cancer Risk: The non-cancer risk can be calculated using the ratio of the concentration of the constituent in biomethane to the health protective concentration value corresponding to a hazard quotient of 0.1 for that specific non-carcinogenic constituent, then multiplying the ratio by 0.1, and then summing the non-cancer chronic risk for these Group 2 Compounds. (For reference, see CARB/OEHHA Report submitted in R.13-02-008 p. 67.)

Collective from Carcinogenic and non-Carcinogenic Constituents			
Risk Management Levels	Potential Risk from Carcinogenic Constituents (chances in a million)	Hazard Index from Non-Carcinogenic Constituents	Action
Trigger Level ¹¹	≥ 1.0	≥ 0.1	Periodic Testing Required
Lower Action Level ²	≥ 10.0	≥ 1.0	Supply shut-in after three exceedances in 12-month period in which deliveries occur
Upper Action Level	≥ 25.0	≥ 5.0	Immediate supply shut-in

1. For any Health Protective Constituent.
 2. Sum of the Health Protective Constituents exceeding the trigger level.

8. Biomethane Pre-Interconnection Testing:

a. Prior to the injection of biomethane, the Biomethane Interconnector shall conduct two tests over a two- to four-week period for the constituents identified for that biomethane source (see Section J.6).

(Continued)

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

8. Biomethane Pre-Interconnection Testing: (Continued)

- b. Pre-interconnection testing will be performed by the Biomethane Interconnect using independent certified third party laboratories (Environmental Laboratory Accreditation Program (ELAP) certified, where applicable). The Utility shall be notified of the biomethane sampling and tests and have the option to observe the samples being taken. Test results will be shared with the Utility within five calendar days of the test results being received by the Biomethane Interconnector.
- c. During pre-injection testing, the Biomethane's collective potential cancer risk and non-cancer risk is calculated by summing the individual risk for each Health Protective Group 2 Compound. If the collective potential cancer risk or non-cancer risk is at or above the Lower Action Level (the cancer risk Lower Action Level is > 10 in a million and the non-cancer risk Lower Action Level is a Hazard Index of > 1), the biomethane cannot be accepted or transported by the Utility's pipeline system. The Biomethane Interconnector shall make necessary modifications to lower the collective potential cancer risk or non-cancer risk below the Lower Action Level and restart pre-injection testing. If the Health Protective Constituents are found to be below the Trigger Level or the collective cancer or non-cancer risk from the Health Protective Group 2 Compounds is below the Lower Action Level in both pre-injection tests, then the biomethane may be injected subject to compliance with the periodic testing requirements specified below.
- d. If during the pre-injection testing, any Pipeline Integrity Protective Constituents are found to be above the Lower Action Level, if applicable, the biomethane cannot be accepted or transported by the Utility's pipeline system. The Biomethane Interconnector shall make necessary modifications to lower the Pipeline Integrity Protective Constituents below the Lower Action Level and restart pre-injection testing. If the Pipeline Integrity Protective Constituents are found to be below the Trigger Level in both pre-injection tests, then the biomethane may be injected subject to compliance with the periodic testing requirements specified below.

9. Biomethane Periodic Testing:

a. Group 1 Constituent Testing

- i. A Group 1 Compound shall be tested once every 12-month period in which deliveries occur. Thereafter, if the Group 1 Compound is found below the Trigger Level during two consecutive annual periodic tests, the Group 1 Compound may be tested once every two year-period in which deliveries occur.
- ii. A Group 1 Compound will become a Group 2 Compound if testing indicates a concentration at or above the Trigger Level.

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

9. Biomethane Periodic Testing: (Continued)

b. Group 2 Compound Testing

- i. A Group 2 Compound shall be tested quarterly (at least once every three- month period in which deliveries occur).
- ii. A Group 2 Compound will become a Group 1 Compound if testing indicates a concentration below the Trigger Level during four consecutive tests.

c. Collective Risk from Carcinogenic and Non-carcinogenic Constituents:

- i. If four consecutive quarterly tests demonstrate that the Health Protective Group 2 Compound's collective cancer and non-cancer risk is below the Lower Action Level, monitoring can be reduced to once every 12-month period in which deliveries occur.
- ii. If annual testing demonstrates that the Health Protective Group 2 Compound's collective cancer or non-cancer risk is at or above the Lower Action Level, then testing will revert to quarterly.

10. Biomethane Shut-Off and Restart Procedures: The Biomethane Interconnector may be shut-off when the following occurs:

- a. The CPUC determines that a change in the biogas source at the facility or the upgrading equipment will potentially increase the level of any constituent over the previously measured baseline levels.
- b. Testing indicates constituents are exceeding allowable concentration levels:
 - i. The collective cancer or non-cancer risk from Health Protective Group 2 Compounds is found at or above the Lower Action Level three times in a 12-month period in which deliveries occur.
 - ii. The collective cancer or non-cancer risk from Health Protective Group 2 Compounds is found at or above the Upper Action Level.
 - iii. If applicable, a Pipeline Integrity Protective Constituent is found at or above the Lower Action Level three times in a 12-month period in which deliveries occur.

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

10. Biomethane Shut-Off and Restart Procedures (Continued)

b. (Continued)

iv. The biomethane contains constituents at concentrations which prevent or restrict the normal marketing of biomethane, are at levels that are injurious to pipeline facilities, or are at levels that present a health and/or safety hazard to Utility employees and/or the general public.

c. In order to restart injection after a Biomethane Interconnector has been shut-off, the Biomethane Interconnector shall test the biomethane using independent certified third party laboratories (ELAP certified where applicable). Deliveries can then resume, subject to the periodic testing requirements in Section J.9, if the test indicates: (1) the biomethane complies with the gas quality specifications contained in Section I of this Rule; (2) the collective cancer and non-cancer risk of Health Protective Group 2 Compounds is below the Lower Action Level; and, if applicable, (3) the Pipeline Integrity Protective Constituents are below the Lower Action Level. Thereafter, constituents shall be reevaluated by the Utility for eligibility for less frequent testing.

11. Testing Procedures: The Utility shall collect samples at the receipt point utility meter. The Biomethane Interconnector shall collect samples upstream of the utility meter. Samples will be analyzed by independent certified third party laboratories (ELAP certified where applicable). Testing for Health Protective Constituents shall be by the methods specified in Table V-4 of CARB/OEHHA Report submitted in R.13-02-008 and adopted in D.14-01-034. Testing for Pipeline Integrity Protective Constituents shall be by the methods approved in D.14-01-034. Retesting shall be allowed to verify and validate the results. The cost of retesting shall be borne by the entity requesting the retest.

12. Continuous Monitoring of Upgrading Process Integrity: Absent an agreement otherwise, the Biomethane Interconnector's compliance with the Utility's continuously monitored Section I gas quality specifications shall be used as an indicator that the upgrading system is effectively conditioning and upgrading the biomethane. If the indicator(s) used to continuously monitor biomethane constituent levels indicates the biomethane has not been sufficiently conditioned and upgraded, the Utility may accelerate the biomethane periodic testing schedule and initiate testing. Accelerated periodic testing shall count toward the recommended periodic testing requirements described in Section J.9.

13. Recordkeeping and Reporting Requirements will be as prescribed in Commission D.14-01-034 and as specified in the CARB/OEHHA Report submitted in R.13-02-008.

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

J. Biomethane Delivery Specifications (Continued)

14. Prohibition of Biomethane from Hazardous Waste Landfills: Hazardous waste landfills ("Hazardous Waste Landfills") include all contiguous land and structures, and other appurtenances and improvements, on the land used for the treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous waste. The facility may consist of one or more treatment, transfer, storage, resource recovery, disposal, or recycling hazardous waste management units, or combinations of these units. Biomethane from Hazardous Waste Landfills, including landfills permitted by the Department of Toxic Substances Control, will not be purchased, accepted or transported. Before a Biomethane Interconnector can interconnect with the Utility's system, the Biomethane Interconnector must demonstrate and certify to the Utility's satisfaction that the biogas was not collected from a Hazardous Waste Landfill.
15. The biomethane rules in this section are intended to implement D.14-01-034, including rules regarding constituent concentration standards, monitoring and testing requirements, and reporting and recordkeeping requirements.

K. Termination or Modification

1. If the customer breaches any terms and conditions of service of the customer's service agreement or the applicable tariff schedules and does not correct the situation within thirty (30) days of notice, the Utility shall have the right to cease service and immediately terminate the customer's applicable service agreement.
2. If the contract is terminated, either party has the right to collect any quantities of gas or money due them for transportation service provided prior to the termination.

L. Regulatory Requirements

1. Any gas transported by the Utility for the customer which was first transported outside the State of California shall have first been authorized under Federal Energy Regulatory Commission (FERC) regulations, as amended. Both parties recognize that such regulations only apply to pipelines subject to FERC jurisdiction, and do not apply to the Utility. The customer shall not take any action which would subject the Utility to the jurisdiction of the FERC, the Economic Regulatory Administration or any succeeding agency. Any such action shall be cause for immediate termination of the service arrangement between the customer and the Utility.
2. Transportation service shall not begin until both parties have received and accepted any and all regulatory authorizations necessary for such service.

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TRANSPORTATION OF CUSTOMER-OWNED GAS

(Continued)

M. Warranty and Indemnification

1. The customer warrants to the Utility that the customer has the right to deliver gas hereunder and that such gas is free from all liens and adverse claims of every kind. Customer will indemnify, defend and save the Utility harmless against all loss, damage, injury, liability and expense of any character where such loss, damage, injury, liability or expense arises directly or indirectly out of any demand, claim, action, cause of action or suit brought by any person, association or entity asserting ownership of or any interest in the gas tendered for transportation hereunder, or on account of royalties, payments or other charges applicable before or upon delivery of gas hereunder.
2. The customer shall indemnify, defend and save harmless the Utility, its officers, agents, and employees from and against any and all loss, costs (including reasonable attorneys' fees), damage, injury, liability, and claims for injury or death of persons (including any employee of the customer or the Utility), or for loss or damage to property (including the property of the customer or the Utility), which occurs or is based upon an act or acts which occur while the gas is deemed to be in the customer's control and possession or which results directly or indirectly from the customer's performance of its obligations arising pursuant to the provisions of its service agreement and the Utility's applicable tariff schedules, or occurs based on the customer-owned gas not meeting the specifications of Sections I or J of this rule.

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Rule No. 41
UTILITY SYSTEM OPERATION

Sheet 1

The Utility's operational organization, procedures, and reporting requirements are described herein.

STRUCTURE, PROCEDURES, AND PROTOCOLS

1. The mission of the Utility System Operator is to maintain system reliability and integrity while minimizing costs at all times.
2. The term "Utility System Operator" as defined in Rule No.1 denotes all of the applicable departments within Southern California Gas Company and San Diego Gas & Electric Company responsible for the physical and commercial operation of the pipeline and storage systems specifically excluding the Utility Gas Procurement Department.

The activities involved in meeting any physical flowing gas supply requirements as determined by the Gas Control Department are conducted by the Operational Hub.

3. The Gas Control Department is the sole authority for: operating the pipeline and storage system, developing the system sendout (i.e., demand) forecasts to be used for purposes of determining on a daily basis Southern System minimum flow requirements, and for issuing Operational Flow Orders ("OFOs").
4. The Gas Control Department will fully utilize storage injection capacity prior to issuing a High OFO. The Gas Control Department is responsible for calculating forecasted sendout and physical storage injection capacity. For every nomination cycle, the Gas Scheduling Department shall calculate the system capacity as the sum of forecasted sendout, physical storage injection capacity, and off-system scheduled quantities. The forecasted system capacity shall then be compared to the latest on-system scheduled quantities. The following table summarizes which scheduled quantities are used in each cycle for the High OFO calculation for both on-system and off-system volumes:

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Rule No. 41

Sheet 2

UTILITY SYSTEM OPERATION

(Continued)

STRUCTURE, PROCEDURES, AND PROTOCOLS (Continued)

4. (Continued)

<u>Cycle</u>	<u>Quantity Used for OFO Calculation</u>
1) Timely	Prior Flow Day - Evening Cycle Scheduled Quantity
2) Evening*	Current Flow Day - Timely Cycle Scheduled Quantity
3) Intraday 1	Current Flow Day - Evening Cycle Scheduled Quantity
4) Intraday 2	Current Flow Day - Intraday 1 Cycle Scheduled Quantity

A High OFO may be issued only if the level of quantities, from the table above, exceeds the forecasted system capacity. System linepack will not be part of the formula used to determine when a High OFO shall be issued. The conditions for issuing a High OFO are summarized below.

A High OFO is issued if Forecasted System Capacity < On-system Scheduled Quantities.

Where,

$$\begin{aligned} \text{Forecasted System Capacity} = & \text{Forecasted Sendout} \\ & + \text{Physical Storage Injection Capacity} \\ & + \text{Off-System Scheduled Quantities} \end{aligned}$$

* The Utility will provide a minimum one-hour notice prior to the Evening Cycle nomination deadline when calling an Evening Cycle High OFO.

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Rule No. 41

Sheet 3

UTILITY SYSTEM OPERATION

(Continued)

STRUCTURE, PROCEDURES, AND PROTOCOLS (Continued)

5. SoCalGas will issue a Low OFO if, on a day prior to this Gas Day, in the sole judgment of Gas Control, the system forecast of storage withdrawal used for balancing exceeds the withdrawal capacity allocated to the balancing function. When a Low OFO is issued customers financially responsible for managing and clearing transportation imbalances (Balancing Agent) will be required to balance supply and demand on a daily basis within a specified tolerance band or be subject to charges for noncompliance. SoCalGas may elect not to issue a Low OFO for a Gas Day if the system forecast for the following gas day indicates the use of storage withdrawal used for system balancing will return to reasonable levels without the assistance of a Low OFO.

System linepack will not be part of the formula used by Gas Control to determine when a Low OFO should be issued.

The criteria for determining Low OFOs may be revised as needed by SoCalGas to maintain the safety and reliability of the pipeline system. These changes, along with a supporting explanation, will be posted as a regular notice on the SoCalGas Envoy EBB.

6. Should SoCalGas' implementation of a Low OFO prove to be inadequate to ensure system integrity, SoCalGas may implement other measures including, but not limited to, implementing an Emergency Flow Order (EFO).

SoCalGas may invoke EFOs when a forecast or an actual supply and/or capacity shortage threatens deliveries to End-Use Customers. An EFO will normally be invoked following a Low OFO but SoCalGas may invoke an EFO without previously invoking a Low OFO if, in SoCalGas' judgment, emergency operating conditions exist. There shall be no minimum notice period for EFOs: however SoCalGas will attempt to provide as much notification to Customers as practicable under the circumstances.

7. The minimum flowing supply for the Southern System is a function of the forecasted gas demand for the Southern System, including SDG&E demand, less the capability to provide additional supplies to the Southern System from the Northern System or storage, and other factors, such as but not limited to: the state of the Southern System, demand and supply available on the remainder of the Utility system, and expectations of changing demand patterns. The Gas Control Department estimates the level of demand and the capability to transport supply from the Northern System or storage each day. The Utility System Operator will use all of its available transmission facilities to move gas from the Northern System to the Southern System.

(Continued)

(TO BE INSERTED BY UTILITY)
ADVICE LETTER NO. 4822
DECISION NO. 15-06-004

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Regulatory Affairs

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Rule No. 41
UTILITY SYSTEM OPERATION

Sheet 4

(Continued)

STRUCTURE, PROCEDURES, AND PROTOCOLS (Continued)

8. The Operational Hub will use the tools authorized by the Commission to support the Southern System minimum flow requirement, including the purchase/sale of spot gas supplies, and the issuance of "Requests For Offers" (RFOs) for proposals to enable the Utility to manage its minimum flow requirements to the Southern System delivery points (in accordance with Sections 9 and 10 below), and the movement of supplies between the Blythe and Otay Mesa Southern System delivery points. All purchases and sales of spot gas to support the minimum flow requirement will be made subject to Sections 11 and 12 below, and the movement of supplies between the Blythe and Otay Mesa Southern System delivery points will be made subject to Section 15 below. The initial daily quantity of needed supplies will be determined by the Gas Control Department based on the following formula:

Minimum Flowing Supply Requirement minus

Best Available Scheduled Quantities Reflecting Customer Flows into the Southern System =

Additional Supplies Needed by the Gas Control Department

"Best Available Scheduled Quantities" are the last available scheduled quantities. The last available scheduled quantities will be adjusted by the Gas Control Department to account for revised customer nominations for a particular day if the last available scheduled quantities cannot be achieved on the day in question. On those days a lower number would be utilized to reflect expected deliveries. The same would apply if the Gas Control Department becomes aware of pipeline issues such as approaching maintenance or lack of upstream pipeline/supplier performance, in which case the last available scheduled quantities would be reduced to reflect the expected deliveries.

9. Whenever the Gas Control Department determines that additional supplies are needed for the Southern System, the Gas Control Department will promptly contact the Operational Hub for assistance. The Operational Hub will attempt to acquire needed supplies in accordance with Sections 9 through 19 below.

(Continued)

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Rule No. 41
UTILITY SYSTEM OPERATION

Sheet 5

(Continued)

STRUCTURE, PROCEDURES, AND PROTOCOLS (Continued)

10. The Gas Control Department shall be physically separated from those departments engaging in marketing/sales activities, shall have no knowledge of or involvement in any marketing/sales activities, and shall be strictly concerned with the operation, safety, and integrity of the pipeline and storage system. The Operational Hub shall have no access to non-public customer-specific information other than the information it obtains through its own contracts, negotiations, and discussions with customers. The Gas Control Department may communicate with the Operational Hub to discuss changes to the Southern System minimum flow requirements, circumstances that might require the Operational Hub to obtain supplies, and options to ensure minimum flowing supplies requirements are met. Discussions may also take place with regard to short-term operational needs for flowing supplies to support system reliability elsewhere on the system that may arise to support operations and maintenance (O&M) activities, related pipeline integrity work, or to address a force majeure event such as a line breakage or failure.

PURCHASES AND SALES TO MANAGE MINIMUM FLOW SUPPLIES

11. The Utility shall issue an RFO at least annually for proposals enabling the Utility to manage its minimum flow requirements to the Southern System delivery points for system reliability. The Utility, at its sole discretion, may enter into transactions with one or more RFO respondents to provide the best value to the Utility's customers based upon the Utility's evaluation criteria. The RFO shall not be a binding offer by the Utility to enter into a contract for any product(s) or service(s). The Utility shall reserve the right to reject any or all offers submitted in response to the RFO.

12. Any contract with an RFO respondent will be conditioned on the Utility obtaining the prior approval of the California Public Utilities Commission (CPUC) acceptable to the Utility. Respondent offers will be considered non-binding until a definitive agreement is reached between the respondent and the Utility, and the CPUC issues an order approving the definitive agreement memorializing the terms and conditions of the transaction between the respondent and the Utility.

13. Except for transactions related to the Utility Gas Procurement Department's role as "provider of last resort" (addressed below in Section 12), any gas commodity purchases and sales between the Operational Hub and the Utility Gas Procurement Department or an affiliate of Sempra Energy will occur through an Independent Party, where the counterparties are not known until after the transaction is completed. "Independent Party" refers to gas trading exchanges such as the Intercontinental Exchange (ICE), gas brokers who have been instructed to provide no preference to Sempra affiliates or to the Utility Gas Procurement Department, or open auctions available to all qualified parties conducted by the Operational Hub, in which gas purchases or sales are made with counter-parties that are not known until after the transaction is completed.

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UTILITY SYSTEM OPERATION

Sheet 6

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PURCHASES AND SALES TO MANAGE MINIMUM FLOW SUPPLIES (Continued)

- 14. The Utility Gas Procurement Department will act on a best-efforts basis to provide gas supplies based on the Operational Hub’s request if called upon as a provider of last resort. “Provider of last resort” relates to the circumstance in which the Operational Hub has attempted to use all other available tools, has entered the open market for gas commodity purchases, has been unsuccessful in meeting its need to receive a required volume of flowing supplies at a specific location, and system reliability is therefore jeopardized. If the Operational Hub has exhausted its other options available to acquire the required flowing supplies, it will contact the Utility Gas Procurement Department and request that it provide gas to meet the remaining minimum flow requirement. Such requests will occur as soon as possible during the actual flow day. The Utility Gas Procurement Department will charge the Operational Hub the actual incremental costs incurred to provide the specific supplies. Verification that the Utility has followed this procedure will be included in the annual compliance report provided to the CPUC in conjunction with the Advice Letter addressed in Section 25 below.
- 15. Standards and criteria for spot purchases or sales of gas commodity for which standards and criteria are not specified in CPUC-approved contracts shall be as follows:
 - a. Should it be necessary for the Operational Hub to purchase or sell spot supplies of gas in the day-ahead market, the Operational Hub shall be deemed to have made reasonable (1) spot purchases if the purchase price is less than or equal to 110% of the ICE Wtd Avg Index for the flow date for the relevant trading point and (2) spot sales if the sale price is greater than or equal to 90% of the ICE Wtd Avg Index for the flow date for the relevant trading point.
 - b. Should it be necessary for the Operational Hub to purchase or sell spot supplies of gas in the intraday market, the Operational Hub shall be deemed to have made reasonable (1) spot purchases if the purchase price is less than or equal to 110% of the ICE High for the current flow date for the relevant trading point and (2) spot sales if the sale price is greater than or equal to 90% of the ICE Low for the current flow date for the relevant trading point.

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PURCHASES AND SALES TO MANAGE MINIMUM FLOW SUPPLIES (Continued)

16. Purchases or sales at prices that are outside the ranges specified in Section 13 (a) and (b) above shall nevertheless be deemed reasonable if the Operational Hub abides by the following procedure: When the Gas Control Department determines that spot purchases are necessary to meet minimum flow requirements, the Operational Hub shall monitor ICE and record the relevant price information, if available, for deliveries of gas at all relevant trading points. If volumes available on ICE meet or exceed the minimum flow requirements, transactions for the volumes offered through ICE shall be deemed reasonable. The Operational Hub may also post an offer/bid on ICE for volumes. When less than the required volumes are available on ICE, the Operational Hub shall contact gas suppliers (other than the Utility Gas Procurement Department or affiliates), request offers for the necessary supplies, and record their offers for gas delivered to the relevant trading points to ensure at least three offers from three different suppliers are available for comparison. The Operational Hub shall compare prices posted on ICE and, if applicable, prices quoted by its supplier contacts, and select the best prices available to meet the quantities required to meet minimum flow requirements. Verification that the Operational Hub has followed this procedure shall be provided to the CPUC in the Annual Compliance Report described in Section 25 below.
17. When the Gas Control Department determines that deliveries at Otay Mesa are necessary to meet minimum flow requirements, such requirements may be satisfied either through spot purchases at Otay Mesa or through the movement of supplies from Blythe to Otay Mesa. Standards and criteria for spot purchases are set forth above. Should it be necessary for the Operational Hub to move supplies from Blythe to Otay Mesa, the movement shall be deemed to be reasonable if (1) the cost of moving the supplies is less than or equal to the difference between the ICE Wtd Avg Index for the Blythe and the cost of spot gas available for purchase at Otay Mesa for the relevant flow date, or (2) if sufficient spot supplies are not available for purchase at Otay Mesa for the relevant flow date, and the movement fills some or all of the shortfall between supplies needed at Otay Mesa and supplies available for purchase at Otay Mesa.
18. Purchases and sales other than those described in Sections 14 and 15 above will not be deemed unreasonable but shall be subject to review and any requests for explanation by the CPUC Energy Division in conjunction with the Annual Compliance Report described in Section 25 below.
19. Standards, criteria and procedures set forth in Sections 13, 14, 15 and 16 apply to Operational Hub's purchases and sales as of April 1, 2009.
20. Should the Operational Hub deem it necessary or advisable to enter into baseload contracts for Southern System support at one or more of the Southern System receipt points, the Operational Hub shall be deemed to have made reasonable baseload purchases if: (1) the total cumulative baseload volumes at any time are less than or equal to 255,000 Dth/day; (2) the price is less than or equal to

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UTILITY SYSTEM OPERATION

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PURCHASES AND SALES TO MANAGE MINIMUM FLOW SUPPLIES (Continued)

20. (Continued)

NGI's Bidweek average for "Southern Cal. Bdr. Avg." plus 8.2 cents/Dth for the relevant baseload month(s); (3) the term is for the December - March period, or any subset of that period; and (4) the baseload contracts can only be made for one season at a time and only within the nine month period directly preceding that season. The Operational Hub shall be deemed to have made reasonable sales of such baseload gas if: (1) for baseload sales, the sale price is greater than or equal to 90% of NGI's Bidweek average for "SoCal Citygate" for the relevant baseload month(s); and (2) for spot sales, the sale price is greater than or equal to 90% of the ICE Wtd Avg Index for the relevant trading point and trading period. This provision shall expire on March 31, 2016, unless extended by the Commission. SoCalGas may seek extension or modification of this provision by standard advice filing or application.

21. The Utility shall seek CPUC authority for any additional tools (other than system modifications that can be completed without an application under current rules) necessary to meet the Southern System minimum flow requirement through an application. Any contracts that are not obtained through an RFO process relating to already-approved tools (i.e., gas purchases, gas exchanges) will be submitted to the CPUC for approval by Advice Letter. Advice Letters seeking approval of the Operational Hub contractual arrangements shall identify the order in which contracts will be implemented to ensure system reliability and integrity at least cost.

ACCOUNTING TREATMENT

22. The cost and revenues of Operational Hub transactions (e.g., natural gas purchases, sales, or exchanges resulting from approved contracts) that are necessary to meet minimum flow requirements shall be recorded in the System Reliability Memorandum Account (SRMA). Prospective changes to the types of the Operational Hub natural gas transactions ("tools") to meet minimum flow requirements shall be considered in conjunction with the annual Utility Customer Forum described below.

UTILITY CUSTOMER FORUM

23. The Utility shall hold an annual Utility Customer Forum (the "Forum"), which shall be held around April - May. The Forum will provide an opportunity for the Utility to provide information on, and to address, the following matters with interested parties:

- i. Review of the timing, method, formulas, and all inputs to formulas by which OFO events are triggered;
- ii. Review of requests for the Operational Hub to acquire additional supplies to meet minimum flow requirements;

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UTILITY CUSTOMER FORUM (Continued)

- iii. Review of Operational Hub purchases/actions to meet minimum flow requirements and plans for the coming year by providing information regarding the individual transactions, including transactions executed pursuant to the Operational Hub contractual arrangements. Transaction-specific information shall identify price, volume, date, delivery/receipt points, and any special terms;
 - iv. Review the need for any additional minimum flow requirements on the Utility system beyond then-current defined requirements;
 - v. Review potential additional tools to support system operations and potential system improvements to reduce or eliminate the need for any minimum flowing supply requirements.
 - vi. Review of the priority rules set forth in Rule No. 30, Section D.3. in the 2012 Forum only.
24. To facilitate an informed discussion of the issues identified in Section 21 above, the Utility shall prepare an annual report (Report) of system reliability issues. The Report shall: (a) identify the need for new minimum flow requirements, (b) identify potential tools and/or infrastructure improvements that can be used to mitigate new or existing reliability problems (e.g. minimum flow requirements and OFOs), and (c) provide information on the matters identified in Section 21 (i) through (v) above.
25. The Utility and participants in each Forum shall collaborate in good faith to develop a post-Forum report. Each post-Forum report shall summarize the matters discussed at the relevant Forum and shall identify any action items, tariff changes and/or procedural modifications that were found to be necessary by parties participating in the Forum. The post-Forum report shall include descriptions of the proposals presented by parties. If a party's proposal is rejected by the Utility, the post-Forum report shall provide the basis for the rejection of the proposal. If any party is dissatisfied with the description of its proposal set forth in the post-Forum report or with the Utility's basis for the rejection of the proposal, the Utility shall include that party's own description of its proposal and comments on the rejection of the proposal in an appendix to the post-Forum Report.

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CPUC REPORTING REQUIREMENTS

26. The Utility shall file each post-Forum report resulting from the Forum with the CPUC by Advice Letter no later than 60 days after conclusion of the relevant Forum. The Utility shall also submit any tariff changes proposed in the Forum and agreed-to by the Utility for the CPUC approval by Advice Letter no later than 60 days after conclusion of each Forum.

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CPUC REPORTING REQUIREMENTS (Continued)

27. On October 1 of each year, the Utility shall provide a report (“Annual Compliance Report”) demonstrating that the Operational Hub’s procurement activities during the preceding twelve months ending August 31 were in compliance with the standards, criteria and procedures described in Sections 9 through 19 above. The Annual Compliance Report shall be submitted to the Energy Division by Advice Letter and shall be subject to comment or protest. Upon Energy Division review and verification of the Annual Compliance Report and the CPUC Resolution approving the Annual Compliance Report, all the transactions entered into the SRMA balance for the year in question that are found reasonable by the Energy Division shall be amortized in customer transportation rates over the following year.

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(Continued)

(TO BE INSERTED BY UTILITY)
 ADVICE LETTER NO. 4822
 DECISION NO. 15-06-004

ISSUED BY
Dan Skopec
 Vice President
 Regulatory Affairs

(TO BE INSERTED BY CAL. PUC)
 DATE FILED Jun 29, 2015
 EFFECTIVE Dec 3, 2015
 RESOLUTION NO. _____

ATTACHMENT B

Advice No. 4822

Forecasting Model

Flow Date	Actual negative Imbalance	Forecasted Negative Imbalance Cycle 2 (Dth)	Forecasted Negative Imbalance Cycle 3 (Dth)	Actual Low OFO	Forecasted Low OFO	Hit	Near Hit
6/16/2014	-414436	-182619	-257931	1	0	0	0
6/17/2014	0	0	0	0	0	0	0
6/18/2014	0	0	0	0	0	0	0
6/19/2014	0	0	0	0	0	0	0
6/20/2014	0	0	0	0	0	0	0
6/21/2014	-148812	0	0	0	0	0	0
6/22/2014	-3505	-134755	-138092	0	0	0	0
6/23/2014	-267749	-71828	-33399	0	0	0	0
6/24/2014	0	0	0	0	0	0	0
6/25/2014	-214696	0	0	0	0	0	0
6/26/2014	-153252	0	-83069	0	0	0	0
6/27/2014	-16689	-44279	-183120	0	0	0	0
6/28/2014	-17290	0	0	0	0	0	0
6/29/2014	-295729	0	-92452	0	0	0	0
6/30/2014	-837494	-108886	-282598	1	0	0	0
7/1/2014	0	0	0	0	0	0	0
7/2/2014	0	0	0	0	0	0	0
7/3/2014	0	0	0	0	0	0	0
7/4/2014	-49358	-110039	-165160	0	0	0	0
7/5/2014	-227949	0	-130933	0	0	0	0
7/6/2014	-219658	0	-16765	0	0	0	0
7/7/2014	-587152	-291433	-425453	1	1	1	1
7/8/2014	-74480	0	0	0	0	0	0
7/9/2014	-350258	0	-241035	1	0	0	0
7/10/2014	-10995	0	-89089	0	0	0	0
7/11/2014	-7153	0	-18721	0	0	0	0
7/12/2014	-196007	0	0	0	0	0	0
7/13/2014	-395483	-29225	-239429	1	0	0	1
7/14/2014	-805646	-270033	-477240	1	1	1	1
7/15/2014	0	0	0	0	0	0	0
7/16/2014	0	0	0	0	0	0	0
7/17/2014	0	0	0	0	0	0	0
7/18/2014	-276786	-53036	-480213	0	1	0	0
7/19/2014	0	-351008	-300370	0	1	0	0
7/20/2014	0	0	0	0	0	0	0
7/21/2014	0	-1240	-10711	0	0	0	0
7/22/2014	-61315	0	0	0	0	0	0
7/23/2014	-311437	0	0	0	0	0	0
7/24/2014	-480665	-137455	-306713	1	0	0	0
7/25/2014	-414986	-122822	-277788	1	0	0	0
7/26/2014	-419055	-58917	-290399	1	0	0	0
7/27/2014	-222185	-108707	-287541	0	0	0	0
7/28/2014	-445912	-487246	-638734	1	1	1	1
7/29/2014	-131609	0	-223763	0	0	0	0

7/30/2014	-431685	-109571	-258670	1	0	0	0
7/31/2014	-369007	-59488	-132846	1	0	0	0
8/1/2014	0	0	0	0	0	0	0
8/2/2014	0	0	0	0	0	0	0
8/3/2014	0	0	0	0	0	0	0
8/4/2014	0	0	0	0	0	0	0
8/5/2014	0	0	0	0	0	0	0
8/6/2014	0	0	0	0	0	0	0
8/7/2014	0	0	0	0	0	0	0
8/8/2014	0	0	0	0	0	0	0
8/9/2014	-191731	0	0	0	0	0	0
8/10/2014	-235132	0	-653	0	0	0	0
8/11/2014	-582898	-213284	-299130	1	0	0	0
8/12/2014	-278884	0	-85292	0	0	0	0
8/13/2014	-447	0	-83722	0	0	0	0
8/14/2014	-144332	0	0	0	0	0	0
8/15/2014	-185929	0	0	0	0	0	0
8/16/2014	-263069	0	0	0	0	0	0
8/17/2014	-265243	0	-92490	0	0	0	0
8/18/2014	-598646	-109957	-460132	1	1	1	1
8/19/2014	0	-49907	-267876	0	0	0	0
8/20/2014	0	0	0	0	0	0	0
8/21/2014	-112307	0	0	0	0	0	0
8/22/2014	0	0	0	0	0	0	0
8/23/2014	0	0	0	0	0	0	0
8/24/2014	-175902	0	0	0	0	0	0
8/25/2014	-303435	-32053	-270186	0	0	0	0
8/26/2014	-55306	-53254	-221572	0	0	0	0
8/27/2014	0	-34782	-38606	0	0	0	0
8/28/2014	0	0	-54506	0	0	0	0
8/29/2014	0	0	0	0	0	0	0
8/30/2014	-24630	0	0	0	0	0	0
8/31/2014	-55685	0	0	0	0	0	0
9/1/2014	0	-89654	-183917	0	0	0	0
9/2/2014	-23809	-25439	-51807	0	0	0	0
9/3/2014	0	0	0	0	0	0	0
9/4/2014	-4725	0	0	0	0	0	0
9/5/2014	0	0	0	0	0	0	0
9/6/2014	-365289	0	0	1	0	0	0
9/7/2014	-220880	0	0	0	0	0	0
9/8/2014	0	-146501	-261945	0	0	0	0
9/9/2014	0	0	0	0	0	0	0
9/10/2014	0	0	0	0	0	0	0
9/11/2014	0	0	-98150	0	0	0	0
9/12/2014	-135960	0	0	0	0	0	0
9/13/2014	0	0	-60915	0	0	0	0
9/14/2014	-48208	0	-138462	0	0	0	0
9/15/2014	-395607	-121877	-239485	1	0	0	0
9/16/2014	-233370	0	0	0	0	0	0

9/17/2014	-358845	0	-33373	1	0	0	0
9/18/2014	0	0	0	0	0	0	0
9/19/2014	0	0	0	0	0	0	0
9/20/2014	-98257	-66484	-183193	0	0	0	0
9/21/2014	-76008	0	-109052	0	0	0	0
9/22/2014	0	-43986	-132571	0	0	0	0
9/23/2014	0	0	0	0	0	0	0
9/24/2014	-181572	0	0	0	0	0	0
9/25/2014	-77087	0	0	0	0	0	0
9/26/2014	0	0	0	0	0	0	0
9/27/2014	-181850	0	0	0	0	0	0
9/28/2014	-108466	-77517	-32470	0	0	0	0
9/29/2014	-59375	-158386	-236516	0	0	0	0
9/30/2014	-182574	0	0	0	0	0	0
10/1/2014	0	-249769	-232730	0	0	0	0
10/2/2014	0	0	-265578	0	0	0	0
10/3/2014	0	0	0	0	0	0	0
10/4/2014	0	0	-42444	0	0	0	0
10/5/2014	0	0	0	0	0	0	0
10/6/2014	0	0	0	0	0	0	0
10/7/2014	-204096	0	0	0	0	0	0
10/8/2014	0	0	-158897	0	0	0	0
10/9/2014	0	0	0	0	0	0	0
10/10/2014	0	0	0	0	0	0	0
10/11/2014	-45595	0	0	0	0	0	0
10/12/2014	0	0	0	0	0	0	0
10/13/2014	-20398	0	-60268	0	0	0	0
10/14/2014	0	0	0	0	0	0	0
10/15/2014	0	0	0	0	0	0	0
10/16/2014	0	0	0	0	0	0	0
10/17/2014	0	0	0	0	0	0	0
10/18/2014	-281505	0	0	0	0	0	0
10/19/2014	0	-131013	-167175	0	0	0	0
10/20/2014	-169506	-259639	-301109	0	0	0	0
10/21/2014	0	0	0	0	0	0	0
10/22/2014	-397729	0	-12754	1	0	0	1
10/23/2014	-457655	-197374	-423509	1	1	1	1
10/24/2014	-210687	0	-241866	0	0	0	0
10/25/2014	0	-155367	-763534	0	1	0	0
10/26/2014	0	-373134	-194907	0	1	0	0
10/27/2014	-170506	-517632	-399651	0	1	0	0
10/28/2014	0	0	0	0	0	0	0
10/29/2014	0	0	0	0	0	0	0
10/30/2014	-9184	-223983	0	0	0	0	0
10/31/2014	0	0	0	0	0	0	0
11/1/2014	0	0	0	0	0	0	0
11/2/2014	0	0	0	0	0	0	0
11/3/2014	-306304	-427961	-235965	0	1	0	0
11/4/2014	-24978	0	0	0	0	0	0

11/5/2014	-257851	0	-186551	0	0	0	0
11/6/2014	0	-33557	-170012	0	0	0	0
11/7/2014	-102857	0	0	0	0	0	0
11/8/2014	0	0	0	0	0	0	0
11/9/2014	0	0	0	0	0	0	0
11/10/2014	0	-540477	-691094	0	1	0	0
11/11/2014	0	-174735	-259195	0	0	0	0
11/12/2014	-351564	-298835	-262002	1	0	0	0
11/13/2014	-421925	0	0	1	0	0	0
11/14/2014	-116297	0	-124452	0	0	0	0
11/15/2014	-87075	-387211	-602198	0	1	0	0
11/16/2014	-382633	-344729	-404595	1	1	1	1
11/17/2014	-776872	-212637	-393618	1	1	1	1
11/18/2014	-789487	-140762	-326964	1	0	0	1
11/19/2014	-594627	-496955	-746614	1	1	1	1
11/20/2014	-876233	-959158	-862797	1	1	1	1
11/21/2014	-363875	-390512	-483021	1	1	1	1
11/22/2014	0	-83102	-216180	0	0	0	0
11/23/2014	0	0	-63429	0	0	0	0
11/24/2014	0	-283939	-192047	0	0	0	0
11/25/2014	0	0	-12239	0	0	0	0
11/26/2014	0	-448122	-193358	0	1	0	0
11/27/2014	0	0	-106294	0	0	0	0
11/28/2014	0	-196606	-327332	0	0	0	0
11/29/2014	-71069	-154415	0	0	0	0	0
11/30/2014	-295593	-207931	-402592	0	1	0	0
12/1/2014	-184850	0	-98275	0	0	0	0
12/2/2014	-86314	0	-6932	0	0	0	0
12/3/2014	0	0	0	0	0	0	0
12/4/2014	0	0	0	0	0	0	0
12/5/2014	-118597	0	0	0	0	0	0
12/6/2014	0	0	0	0	0	0	0
12/7/2014	-5288	0	0	0	0	0	0
12/8/2014	0	-181065	-341290	0	0	0	0
12/9/2014	-38285	0	-42578	0	0	0	0
12/10/2014	0	0	0	0	0	0	0
12/11/2014	0	0	0	0	0	0	0
12/12/2014	0	-90491	-180424	0	0	0	0
12/13/2014	0	-173372	-267895	0	0	0	0
12/14/2014	-196746	0	-99637	0	0	0	0
12/15/2014	-320549	-341258	-672989	0	1	0	0
12/16/2014	-391824	0	0	1	0	0	1
12/17/2014	-234294	0	0	0	0	0	0
12/18/2014	0	0	-64111	0	0	0	0
12/19/2014	0	0	0	0	0	0	0
12/20/2014	-58220	-202685	-270082	0	0	0	0
12/21/2014	0	0	0	0	0	0	0
12/22/2014	0	-63666	-99957	0	0	0	0
12/23/2014	0	0	-223555	0	0	0	0

12/24/2014	0	-79682	-79378	0	0	0	0
12/25/2014	-256577	0	0	0	0	0	0
12/26/2014	-721333	-235403	-289470	1	0	0	1
12/27/2014	-1138448	-455804	-493698	1	1	1	1
12/28/2014	-617044	0	-325910	1	0	0	1
12/29/2014	0	-442252	-485251	0	1	0	0
12/30/2014	0	0	-38566	0	0	0	0
12/31/2014	0	0	0	0	0	0	0
1/1/2015	-22909	-267722	-316466	0	0	0	0
1/2/2015	-229049	-654804	-379152	0	1	0	0
1/3/2015	-190757	-436533	0	0	1	0	0
1/4/2015	-242797	-123818	-57444	0	0	0	0
1/5/2015	-111224	-175635	-200783	0	0	0	0
1/6/2015	-86271	0	0	0	0	0	0
1/7/2015	0	0	-190285	0	0	0	0
1/8/2015	0	0	-121286	0	0	0	0
1/9/2015	0	0	0	0	0	0	0
1/10/2015	0	0	0	0	0	0	0
1/11/2015	0	0	0	0	0	0	0
1/12/2015	0	-166985	0	0	0	0	0
1/13/2015	0	0	0	0	0	0	0
1/14/2015	-459979	0	0	1	0	0	0
1/15/2015	0	0	-213986	0	0	0	0
1/16/2015	0	0	0	0	0	0	0
1/17/2015	0	0	0	0	0	0	0
1/18/2015	0	0	0	0	0	0	0
1/19/2015	-168549	0	0	0	0	0	0
1/20/2015	-81643	0	0	0	0	0	0
1/21/2015	0	0	0	0	0	0	0
1/22/2015	-50066	0	0	0	0	0	0
1/23/2015	-330493	0	0	0	0	0	0
1/24/2015	0	-98500	-353636	0	1	0	0
1/25/2015	0	-190718	-382847	0	1	0	0
1/26/2015	-240028	-259648	-125204	0	0	0	0
1/27/2015	0	0	-52911	0	0	0	0
1/28/2015	0	0	0	0	0	0	0
1/29/2015	0	0	-71944	0	0	0	0
1/30/2015	0	0	0	0	0	0	0
1/31/2015	0	-128558	-273817	0	0	0	0
2/1/2015	0	-375742	-185287	0	1	0	0
2/2/2015	0	-167823	-277436	0	0	0	0
2/3/2015	0	0	0	0	0	0	0
2/4/2015	-35604	0	0	0	0	0	0
2/5/2015	0	-106526	-373877	0	1	0	0
2/6/2015	0	0	0	0	0	0	0
2/7/2015	0	-288405	-306036	0	0	0	0
2/8/2015	0	-101002	-102145	0	0	0	0
2/9/2015	0	-95379	-194314	0	0	0	0
2/10/2015	-138042	0	0	0	0	0	0

2/11/2015	0	0	0	0	0	0	0
2/12/2015	0	-107334	-201982	0	0	0	0
2/13/2015	0	0	0	0	0	0	0
2/14/2015	-40665	0	0	0	0	0	0
2/15/2015	-185830	-88814	-217810	0	0	0	0
2/16/2015	-251238	-219804	-101801	0	0	0	0
2/17/2015	-60400	-64134	-334057	0	0	0	0
2/18/2015	-410933	0	-36986	1	0	0	0
2/19/2015	-47436	0	-69453	0	0	0	0
2/20/2015	0	0	-94334	0	0	0	0
2/21/2015	-150704	0	0	0	0	0	0
2/22/2015	-269668	-381458	-370006	0	1	0	0
2/23/2015	-867854	-567638	-575955	1	1	1	1
2/24/2015	-13791	-199556	-34603	0	0	0	0
2/25/2015	-105308	0	-267879	0	0	0	0
2/26/2015	-133704	-8370	-279980	0	0	0	0
2/27/2015	-193163	-162238	-237967	0	0	0	0
2/28/2015	0	-39347	-281095	0	0	0	0
3/1/2015	-638669	-43876	-153983	1	0	0	1
3/2/2015	-1092365	-87542	-418301	1	1	1	1
3/3/2015	-44705	-469876	-617098	0	1	0	0
3/4/2015	-453945	-541523	-718736	1	1	1	1
3/5/2015	-49365	-350086	-483413	0	1	0	0
3/6/2015	-213424	0	0	0	0	0	0
3/7/2015	0	-305492	-489019	0	1	0	0
3/8/2015	0	-281926	-326467	0	0	0	0
3/9/2015	-66712	-197755	0	0	0	0	0
3/10/2015	-322046	0	-353381	0	1	0	0
3/11/2015	0	0	-349717	0	0	0	0
3/12/2015	0	-484977	-406887	0	1	0	0
3/13/2015	0	-183534	-164738	0	0	0	0
3/14/2015	0	0	0	0	0	0	0
3/15/2015	0	-260314	-369199	0	1	0	0
3/16/2015	0	-342374	-421371	0	1	0	0
3/17/2015	0	0	-38367	0	0	0	0
3/18/2015	0	0	0	0	0	0	0
3/19/2015	0	-184410	-175717	0	0	0	0
3/20/2015	0	0	0	0	0	0	0
3/21/2015	0	0	0	0	0	0	0
3/22/2015	0	-398062	-391107	0	1	0	0
3/23/2015	-11976	-343353	-395818	0	1	0	0
3/24/2015	-113676	-68353	-269692	0	0	0	0
3/25/2015	-74770	0	0	0	0	0	0
3/26/2015	-86317	-161307	-123419	0	0	0	0
3/27/2015	0	0	-88240	0	0	0	0
3/28/2015	0	0	0	0	0	0	0
3/29/2015	0	0	0	0	0	0	0
3/30/2015	-184562	-128636	-172324	0	0	0	0
3/31/2015	0	0	0	0	0	0	0

4/1/2015	-203378	-199673	-504915	0	1	0	0
4/2/2015	-172643	0	0	0	0	0	0
4/3/2015	0	-32518	-65407	0	0	0	0
4/4/2015	-90167	0	0	0	0	0	0
4/5/2015	0	0	0	0	0	0	0
4/6/2015	-250844	-183853	-274094	0	0	0	0
4/7/2015	-62123	-343541	-296375	0	0	0	0
4/8/2015	0	0	0	0	0	0	0
4/9/2015	0	0	0	0	0	0	0
4/10/2015	0	0	0	0	0	0	0
4/11/2015	-41027	0	0	0	0	0	0
4/12/2015	-363046	-285902	-412655	1	1	1	1
4/13/2015	-141432	-163910	-169493	0	0	0	0
4/14/2015	-47115	0	-36480	0	0	0	0
4/15/2015	-351407	0	-754	1	0	0	0
4/16/2015	-559614	0	-164083	1	0	0	0
4/17/2015	-374081	0	-42848	1	0	0	0
4/18/2015	-142877	0	0	0	0	0	0
4/19/2015	-93685	-432875	-597395	0	1	0	0
4/20/2015	-51560	-265935	-321771	0	0	0	0
4/21/2015	0	-314040	-267238	0	0	0	0
4/22/2015	-71334	0	0	0	0	0	0
4/23/2015	0	0	0	0	0	0	0
4/24/2015	0	0	0	0	0	0	0
4/25/2015	-351714	0	0	1	0	0	1
4/26/2015	0	-284358	-475931	0	1	0	0
4/27/2015	0	-169366	-408319	0	1	0	0
4/28/2015	-23752	0	0	0	0	0	0
4/29/2015	0	0	0	0	0	0	0
4/30/2015	0	0	0	0	0	0	0
5/1/2015	0	0	0	0	0	0	0
5/2/2015	0	0	-267071	0	0	0	0
5/3/2015	0	0	-135068	0	0	0	0
5/4/2015	0	0	0	0	0	0	0
5/5/2015	0	-4515	-71739	0	0	0	0
5/6/2015	0	-296770	0	0	0	0	0
5/7/2015	-272505	-49189	-285190	0	0	0	0
5/8/2015	-49518	0	-153894	0	0	0	0
5/9/2015	0	-137093	-141994	0	0	0	0
5/10/2015	-87311	-9176	0	0	0	0	0
5/11/2015	-56194	-189592	-302170	0	0	0	0
5/12/2015	0	0	-243942	0	0	0	0
5/13/2015	-365373	-88522	0	1	0	0	0
5/14/2015	-488953	0	-55119	1	0	0	0
5/15/2015	0	0	-309178	0	0	0	0
5/16/2015	0	-279219	-347662	0	0	0	0
5/17/2015	0	0	-35827	0	0	0	0
5/18/2015	-49747	-17651	-171393	0	0	0	0
5/19/2015	-20577	0	0	0	0	0	0

5/20/2015	-75093	0	0	0	0	0	0
5/21/2015	0	-59801	0	0	0	0	0
5/22/2015	0	0	-166670	0	0	0	0
5/23/2015	-62963	0	0	0	0	0	0
5/24/2015	-63307	-333249	0	0	0	0	0
5/25/2015	0	0	0	0	0	0	0
5/26/2015	-191882	0	0	0	0	0	0
5/27/2015	-56464	-360810	-1072425	0	1	0	0
5/28/2015	-132766	-451671	-377754	0	1	0	0
5/29/2015	-146253	0	0	0	0	0	0
5/30/2015	-36703	-141815	-364168	0	1	0	0
5/31/2015	-17415	-324894	-286225	0	0	0	0
6/1/2015	-28865	0	0	0	0	0	0
6/2/2015	0	0	0	0	0	0	0
6/3/2015	0	-279829	-424719	0	1	0	0
6/4/2015	0	0	0	0	0	0	0
6/5/2015	-86505	0	0	0	0	0	0
6/6/2015	-32370	0	0	0	0	0	0
6/7/2015	-71583	0	-194821	0	0	0	0
6/8/2015	-790620	-12091	-150919	1	0	0	0
6/9/2015	0	0	-4804	0	0	0	0
6/10/2015	0	0	0	0	0	0	0
6/11/2015	0	0	0	0	0	0	0
6/12/2015	0	0	-382577	0	1	0	0
6/13/2015	0	0	0	0	0	0	0
6/14/2015	0	0	0	0	0	0	0
6/15/2015	-27682	0	-571	0	0	0	0

	FORECASTED			
	Actual	Cycle 2	Cycle 3	Total
Summer OFOs	27	7	18	20
Winter OFOs	18	18	28	32
Total OFOs	45	25	46	52

	% Backcasts on Actual Trigger Days		
	Exact Hits	No. Actuals	Percentage
Summer OFOs	6	27	22%
Winter OFOs	9	18	50%
Total OFOs	15	45	33%

	% Backcasts on Actual Trigger Days or one day later/earlier		
	Approx. Hits	No. Actuals	Percentage
Summer	9	27	33%
Winter	14	18	78%
Total	23	45	51%

Trigger: -350,200 ← User Input (Dth)