

Pacific Gas and Electric Company



California Gas Transmission

OFO Report

Third Quarter 2018

(July -- September, 2018)

OFO Report: Third Quarter 2018

Table of Contents

I. BACKGROUND.....	1
II. OFO EVENTS DURING THE QUARTER.....	1
A. OFO Event Summary.....	1
B. Receipt Point Capacity Allocation Events.....	4
III. DETAILED IMBALANCE DATA	4
IV. DISCUSSION.....	5
A. Frequency of OFOs during Third Quarter of 2018.....	5
B. Recommendations Regarding OFOs	5
APPENDIX A: DETAILED OFO IMBALANCE REPORT BY BALANCING ENTITY.....	6
1. Definition of End-Use Balancing Entity Types.....	6
2. Imbalance Data Elements	6
APPENDIX B: DETAILED PIPELINE OPERATING DATA	8
1. Data Background:	8
2. Data Elements.....	8

Table of Figures

Table 1: OFO Event Summary.....	1
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OFO Report: Third Quarter 2018

OFO Report: Third Quarter 2018

I. BACKGROUND

PG&E is providing this Operational Flow Order (OFO) Report as specified in its OFO Settlement Agreement¹ and as part of its continued commitment to keep the California natural gas market participants informed. This Report covers July 1 through September 30, 2018. The OFO Report documents “the number and causes of each customer-specific and system-wide OFO, EFO and ‘trimming’ occasion (‘Event’) within the prior three months.”²

The OFO Settlement has been in effect since April 1, 2000. As demonstrated in the previous quarterly reports, this Settlement has generally been successful in reducing the market impacts of OFOs. This, and future, quarterly reports will focus on providing the data specified in the Settlement. Background information and discussion on the OFO process is available from the Pipe Ranger web site, located on the Internet at <http://pge.com/pipeline/library/>.

II. OFO EVENTS DURING THE QUARTER

A. OFO Event Summary

During the quarter ending September 30, 2018, PG&E called a total of nineteen OFO events. All nineteen events were system-wide OFOs. Fourteen OFO events were a result of high pipeline inventory and five were a result of low pipeline inventory. There were no EFO events during this quarter. Table 1 provides a summary of each OFO event.

Table 1: OFO Event Summary

No.	Date	Type	Cause / Comments
1	Tuesday, July 3, 2018	<ul style="list-style-type: none">• System-Wide• <u>High Inventory</u>• Stage 1 at \$0.25/Dth• Tolerance Band: 5%	<ul style="list-style-type: none">• Projected ending inventory of 4,315 MMcf was above the pipeline operating limit of 4,300 MMcf• Customer-Specific OFO not called because of PG&E gas pipeline operations’ concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.

¹ PG&E’s OFO Settlement was approved by the CPUC in Decision 00-02-050 on February 17, 2000. The Settlement tariffs were effective April 1, 2000.

² See Section C.1.f, page 5 of the OFO Settlement.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

No.	Date	Type	Cause / Comments
2	Wednesday, July 4, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,355 MMcf was above the pipeline operating limit of 4,300 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
3	Thursday, July 12, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,434 MMcf was above the pipeline operating limit of 4,300 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
4	Thursday, July 19, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,353 MMcf was above the pipeline operating limit of 4,300 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
5	Sunday, July 22, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,431 MMcf was above the pipeline operating limit of 4,300 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
6	Tuesday, July 24, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>Low Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 3,795 MMcf was below the pipeline operating limit of 4,000 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the low inventory pipeline condition.
7	Sunday, July 29, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,409 MMcf was above the pipeline operating limit of 4,300 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
8	Thursday, August 9, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>Low Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 3,767 MMcf was below the pipeline operating limit of 4,000 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the low inventory pipeline condition.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

No.	Date	Type	Cause / Comments
9	Tuesday, August 14, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>Low Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 6% 	<ul style="list-style-type: none"> ● Projected ending inventory of 3,782 MMcf was below the pipeline operating limit of 3,850 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the low inventory pipeline condition.
10	Saturday, August 18, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,253 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
11	Thursday, August 30, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 13% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,153 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
12	Saturday, September 1, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,297 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
13	Thursday, September 4, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>Low Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 3,745 MMcf was below the pipeline operating limit of 3,850 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the low inventory pipeline condition.
14	Saturday, September 8, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,191 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
15	Wednesday, September 12, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 8% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,181 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

No.	Date	Type	Cause / Comments
16	Tuesday, September 18, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>Low Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 3,435 MMcf was below the pipeline operating limit of 3,850 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the low inventory pipeline condition.
17	Friday, September 28, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,423 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
18	Saturday, September 29, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 9% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,172 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.
19	Sunday, September 30, 2018	<ul style="list-style-type: none"> ● System-Wide ● <u>High Inventory</u> ● Stage 1 at \$0.25/Dth ● Tolerance Band: 5% 	<ul style="list-style-type: none"> ● Projected ending inventory of 4,291 MMcf was above the pipeline operating limit of 4,150 MMcf ● Customer-Specific OFO not called because of PG&E gas pipeline operations' concern that a Customer-Specific OFO would not alleviate the high inventory pipeline condition.

B. Receipt Point Capacity Allocation Events

There were no receipt point capacity allocation events during the quarter.

III. DETAILED IMBALANCE DATA

Appendix A shows the imbalance detail for each end-use balancing entity for each OFO day and the three days prior to the OFO.³ This includes the daily supply, usage and imbalance quantities based on billing data.⁴

Appendix A also indicates which entities were targeted during a customer-specific OFO event and which entities met the following criteria for “significant contributors” to each OFO event:

³ See Section C.1.f.(1), page 5, of the OFO Settlement.

⁴ The billing data for Core Procurement Groups (CPGs) is based on their “Determined Usage”, which is the forecast on the morning of flow day.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

- Total imbalance on 3-prior days exceeded 10 percent, 5,000 Dth, or both. (This definition of “significant contributor” is specified in Section B.3.b of the OFO Settlement.)
- During a Customer-Specific OFO, both the imbalance and the supply increased during a high inventory OFO (or decreased during a low inventory OFO) by over 5,000 Dth on the OFO day.

Appendix B contains detailed data for each OFO event for pipeline imbalances, net market center imbalances, pipeline balancing provided by allocated “balancing” storage, and pipeline inventory levels based on operating data.⁵ Also included is a description of each data element shown in the tables.

IV. DISCUSSION

This section of the OFO Report provides PG&E’s comments and observations of the data presented, and also offer PG&E’s recommendations for possible change.⁶

A. Frequency of OFOs during Third Quarter of 2018

The nineteen OFOs during the third quarter of 2018 were slightly higher than Q3 2017. In 2017, we experienced fifteen OFO events during the third quarter.

B. Recommendations Regarding OFOs

PG&E is not recommending any further changes to the existing OFO or balancing service procedures and methodologies in this quarterly report.

⁵ This data is required by Sections C.1.f.(2), (3), (4), and (5) of the OFO Settlement.

⁶ The OFO Settlement Agreement specified that the quarterly OFO report would contain “any proposed changes to any OFO and balancing procedures and/or methodology addressed in this Settlement.” See Section C.1.f.6, page 5.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

Appendix A: Detailed OFO Imbalance Report by Balancing Entity

1. Definition of End-Use Balancing Entity Types

There are three types of end-use customer Balancing Entities on the PG&E system. The first type is a Core Procurement Group (CPG), which includes PG&E's Core Procurement Department and all Core Transport Agents (CTAs) – also called Gas Energy Service Providers. These are indicated as 'CTARGAS' or "CTA Storage".

The second type is an agent or gas marketer managing a Noncore Balancing Aggregation Agreement (NBAA). These are indicated as "NBAA." An NBAA aggregates a group of noncore end-use customers into one entity for balancing purposes. An NBAA group can range from several customers up to over one hundred individual end-use customers. The NBAA agent is financially responsible for all imbalance charges, including OFO noncompliance charges.

The third type is an individual noncore end-use customer. These individual customers maintain an imbalance account under their Natural Gas Service Agreement, indicated as "NGSA." Sometimes the balancing for these NGSAs is managed by the end-use customer, and sometimes by an agent or marketer; however, each is required to balance individually during an OFO event.

2. Imbalance Data Elements

The data in this Appendix is organized by each of the OFO events during the quarter. This includes the daily supply, usage and imbalance quantities for the OFO Day and 3-days-prior for each balancing entity. Also, targeted entities during customer-specific OFOs and various calculations of significant contributor are included, along with a summary of these by balancing entity for all OFOs combined.

The following describes the data elements in the Appendix A tables:

Balancing Entity ID #: Each balancing entity is identified by a numerical identifier and the type of balancing entity, and not by name. If a customer operates two separate balancing entity accounts (e.g. an NBAA and a CPG (or CTARGAS)), the same numerical identifier is used for each entity.

Balancing Entity Type: (See discussion above.)

Supply Scheduled Volume: The quantity of gas supply, in decatherms (Dths), received into the PG&E system for delivery to the end-use customer(s) for that balancing entity. This quantity is the result of the gas supply nomination process. This process is the same for all types of balancing entities.

Usage: The quantity of gas, in decatherms (Dths), that is delivered off the PG&E system to the end-use customer(s) for that balancing entity. This is the demand deemed to be used, in order to determine the daily imbalance. For noncore customers (i.e., NBAA or NGSA), the usage is equal to the actual daily meter reading quantities. For core customers (i.e. CTA Storage) the usage is equal to the

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

Determined Usage⁷. It is important to note that both the Determined Usage and the 24-Hour Forecast are forecasts that are made 24-hours and 48-hours prior to the end of the gas day, respectively.

Daily Imbalance: This is simply the *Supply Scheduled Volume* minus the *Usage*. A positive number indicates an over-delivery of supply (more supply than demand) and a negative number indicates an under-delivery of supply (less supply than demand).

3-Day Prior Net Imbalance: The sum of the *Daily Imbalances* for the three days prior to the OFO Day.

3-Day Prior Percentage Imbalance: The *3-Day Prior Net Imbalance* divided by the total *Usage* for the three days prior to the OFO Day. This represents the average percentage imbalance for these three days.

Targeted under Customer-Specific OFO: This column indicates those balancing entities that were targeted under each customer-specific OFO.

Significant Contributor: Two significant contributor columns are shown. The first indicates those balancing entities with total imbalances greater than 5,000 Dth and 10 percent of its usage in the three days leading up to each system-wide or customer-specific OFO, as defined in the OFO Settlement.⁸ The second significant contributor column identifies those balancing entities which increased both their supply and imbalance by more than 5,000 Dth on the OFO day, during a customer-specific OFO.

⁷ Effective January 1, 2004, the Determined Usage is used on all days, including use to measure compliance with OFO orders. Prior to this date, the 24-Hour Forecast was used to determine core customer usage on OFO days and the Determined Usage was used on non-OFO days.

⁸ OFO Settlement, Section B.3.b, page 3.

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

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1. Data Background:

All data in this Appendix related to gas volumes are expressed in thousands of decatherms (Mdth) and are for the gas day, which begins at 7:00 AM on the date and ends at 7:00 AM on the following day. This is operating data that is compiled approximately 4 hours after the end of the gas day and represents the best information about flows, volumes, and inventories available at that time.

The ending inventory on the OFO day will often not exceed the criteria for an OFO. OFOs are called using the forecast of the ending inventory on the OFO day, and for this reason, the actual ending inventory will likely be different than the forecast ending inventory if the OFO has been effective.

The following sign convention has been employed in the spreadsheet. Any activity that decreases the pipeline system inventory such as a negative customer imbalance or a storage injection is shown with a (-) sign. Activities that increase the pipeline system inventory are positive and are shown without a sign.

2. Data Elements

Beginning Inventory: The calculated volume of gas in the PG&E pipeline system at the beginning of the gas day.

Ending Inventory: The calculated volume of gas in the PG&E pipeline system at the end of the gas day. This forecast of ending inventory is used to determine whether an OFO is called, and is forecast and reported on the Pipe Ranger 5 times each day.

Pipeline Storage Balancing: The PG&E storage that was used to reduce the effect of imbalances on changes in the pipeline system inventory. This value is calculated by subtracting the scheduled storage activity including core, noncore, and Golden Gate Market Center (GGMC) Park/Lend activity from the net PG&E storage activity. There is 75 MMcf of daily storage injection and 75 MMcf of daily storage withdrawal assigned to the pipeline storage balancing activity.

Total Customer Imbalance: The total customer imbalance is the total supply scheduled for on-system customers minus the total on-system customer usage. The usage for noncore customers is based on operational meters. The usage for core customers is based on the Determined Usage. The Core Determined Usage is derived from the core load forecast prepared at approximately 7:30 AM at the beginning of the gas day.

Pipeline Imbalance Detail: This calculation is provided to show the contribution of core load forecast error on the day of gas flow to the total pipeline imbalance.

Due to Core Forecast Differences: This is the difference between the Core Determined Usage which is forecast at the beginning of the gas day and the Core calculated usage. The Core usage is calculated approximately four hours after the

OFO Report: Third Quarter 2018

Appendix B – Detailed Pipeline Operating Data

end of the gas day using daily data on interconnect and storage volumes, noncore daily usage volumes from the Automatic Meter Reading (AMR) system, and the change in the pipeline system inventory.

All Other Causes: This represents the sum of all the other contributors to pipeline imbalances including imbalances with interconnecting pipelines and storage facilities (other than PG&E), imbalance in California Gas Well production, shrinkage over or under collection.

GGMC Net Scheduled Pack Draft: This value is the net sum of the scheduled nominations for PG&E storage activity for scheduled GGMC Parks, Repays, Lends, and Unparks for the gas day. When the value is a negative (-) it means that storage injection is required to offset a net Pack (Park or Repay) position.

GGMC Net Pack Allocated: This is the PG&E storage injection capacity available to GGMC to facilitate their daily parking (Parks and Repays) activity. The amount of daily parking is limited to this quantity so that this activity does not adversely increase the pipeline system inventory and represents one of the measures to determine whether there was an imbalance created by the GGMC on any given day.

GGMC Net Draft Allocated: This is the PG&E storage withdrawal capacity available to GGMC to facilitate their daily lending activity. The amount of daily lending is limited to this quantity so that this activity does not adversely decrease the pipeline system inventory and represents one of the measures to determine whether there was an imbalance created by the GGMC on any given day.

GGMC Imbalance: This is determined by calculating the amount the GGMC Scheduled Pack Draft is outside the Allocated Pack-Draft range. These values represent the impact of the GGMC on the pipeline system inventory on any given day.