

June 15, 2018

Mr. Ed Charkowicz  
Safety and Enforcement Division  
California Public Utilities Commission  
2nd Floor  
505 Van Ness Ave.  
San Francisco, Ca. 94102

**Subject: Response to Data Request - Central Valley Gas Storage R15-01-008 2018 Annual Report**

Dear Mr. Charkowicz,

Central Valley Gas Storage, LLC (CVGS) hereby submits information as requested in Data Request Central Valley Gas Storage R15-01-008 2018 Annual Report (“Data Request”). The files included with this submittal include the Natural Gas Leakage Abatement Report, in partial fulfillment of Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno, and the following Appendices, which are submitted with the Natural Gas Leakage Abatement Report:

- Appendix 1: Transmission Pipeline Rev. 3/31/18
- Appendix 2: Transmission MR Stations Rev. 3/31/18
- Appendix 7: Storage Facilities Rev. 3/31/18
- Appendix 8: Template Summary Rev. 3/31/18

The Natural Gas Leakage Abatement Report is in the format provided in Attachment 3 of the Data Request. Appendices 1, 2, 7, and 8 are in the format using the report templates you provided with the Data Request. Calculations in Appendix 2 use a component emission factor taken from Appendix 9 (Rev. 3/31/18). CVGS did not complete, and is not submitting, Appendices 3, 4, 5, or 6 because the information sought by those Appendices do not apply to CVGS’ facilities, which do not include any Transmission Compressor Stations, Distribution Main or Services, Distribution M&R Stations, or Customer Meters.

In addition to the material submitted herewith, CVGS is submitting the same documents through the “Supporting Documents” feature on the Commission’s Electronic Filing System and will post a version of the response with locational data redacted, if necessary, on its web site.

All Data Request response materials have been prepared under the direction of, and reviewed by, Stephen Wassell, Vice President Storage and Peaking Operations responsible for the operations of CVGS.

The objectives of Southern Company Gas, and of CVGS, are to operate their businesses in a safe and reliable manner and in compliance with applicable laws, rules and regulations. If there are any questions concerning this Data Request response, please contact me at (630) 245-7825 or e-mail me at [jboehme@southernco.com](mailto:jboehme@southernco.com).

Sincerely,

/s/

John Boehme  
Manager, Regulatory Affairs

cc: Stephen Wassell  
Dennis Chappell  
Keith Bodger  
Terrel Ferreira – California Air Resources Board



**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing  
Commission Regulated Natural Gas Pipelines and Facilities to Reduce  
Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**

# Central Valley Gas Storage, LLC

## Natural Gas Leakage Abatement Report

In partial fulfillment of

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing  
Commission Regulated Natural Gas Pipelines and Facilities to Reduce  
Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

And In Response to Data Request  
Central Valley Gas Storage R15-01-008 2018  
Annual Report

**By: Stephen Wassell  
Vice President Storage and Peaking Operations**

**Date: 6/15/18**

## Introduction

The following data<sup>1</sup> have been prepared to comply with Senate Bill 1371 (Leno, 2014), Section 2, Article 3, Order Instituting Rulemaking (OIR) 15-01-008, and to provide our responses to Data Requests Central Valley Gas Storage R15-01-008 2018 Annual Report.

Pursuant to SB 1371, Leno - Natural gas: leakage abatement, the California Public Utilities Commission (CPUC) requests that the following information be transmitted to the CPUC and the State Air Resources Board (ARB):

- (1) A summary of changes to utility leak and emission management practices from January 1st, 2017 to December 31st, 2017. The report must include a detailed summary of changes, including the reasoning behind each change and an explanation of how each change will reduce methane leaks and emissions.

Response:

**Central Valley Gas Storage, LLC (CVGS) was designed and constructed using a number of best management practices for limiting methane emissions consistent with the U.S. EPA Natural Gas STAR program and use of these measures have resulted in the very low emissions documented in the spreadsheet Appendices. CVGS' measures already in place are successfully limiting methane emissions and total annual natural gas emissions for the facility remain below 1000 Mscf.**

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<sup>1</sup> As described in Data Request Central Valley Gas Storage R15-01-008 2018 Annual Report

**As discussed in CVGS' response to Data Request Central Valley Gas Storage R15-01-008 2017 Annual Report, CVGS took specified additional measures for 2017 to facilitate continued reduction of leaks and emissions.**

- 1. Measure: CVGS conducted daily inspections of every well following a leak inspection protocol provided to the California Department of Conservation - Division of Oil, Gas and Geothermal Resources.**

**Reasoning: CVGS has been required to conduct the daily leak inspections since the adoption of Emergency Regulations in February, 2016.**

**Methane Reduction Impact: No additional leaks were identified in 2017, but CVGS can quickly remediate or resolve any leaks that may develop.**

- 2. Measure: CVGS replaced the rod packing on one of its compressors substantially reducing for 2017 a source of emissions during pressurized idle periods that had been reported during 2017 (for 2016 emissions) and 2016 (for 2015 emissions.)**

**Reasoning: New rod packing would significantly reduce the amount of gas emitted through compressor rod packing.**

**Methane Reduction Impact: CVGS had not detected gas being emitted during pressurized idle periods through rod packing on two of its three compressors. However, on the third compressor, CVGS noted and calculated emissions of 398 Mscf in 2015 and 238 Mscf in 2016. By replacing the packing, this emissions source was substantially reduced in 2017 as documented in Appendix 7.**

**Note that CVGS had not previously measured or estimated emissions from its compressors during pressurized operating periods, believing such emissions were minimal. Following discussions during 2017 with the compressor manufacturer and with CPUC staff regarding the possibility of vented emissions during pressurized operating periods, CVGS procured and installed vent line meters in 2018 to better ascertain this emissions source. The emissions reports in Appendix 7 and Appendix 8 include calculations for compressor vented emissions during 2017 pressurized operating and idle periods using factors developed (per the method described in Appendix 9) by measuring compressor emissions during pressurized periods after the meter installation. It is anticipated that the calculation factors for estimating such emissions will become more accurate with additional measurements during 2018 and that pressurized operating and idle emissions reported for 2019 will be substantially or entirely based on direct measurement.**

- (2) A list of new graded and ungraded gas leaks discovered, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered and annual volume of gas leaked for each, by month, from January 1<sup>st</sup>, 2017 through December 31<sup>st</sup>, 2017.

Response:

**See Appendix 1 - Note that CVGS conducted leak surveys during 2017 but did not identify any leaks for tracking during the year.**

- (3) A list of graded and ungraded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1<sup>st</sup>, 2017 through December 31<sup>st</sup>, 2017. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, date of repair, annual volume of gas leaked for each and the number of days from the time the leak was discovered until the date of repair.

Response:

**See Appendix 1 - Note that CVGS conducted leak surveys during 2017 but did not identify any leaks for tracking during the year.**

- (4) A list of ALL open graded and ungraded leaks, regardless of when they were found, tracked by geographic location in a Geographic Information System (GIS) or best equivalent that are being monitored, or are scheduled to be repaired, by month, from January 1<sup>st</sup>, 2017 through December 31<sup>st</sup>, 2017. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of gas leaked for each.

Response:

**See Appendix 1 - CVGS had no known open and unrepaired leaks from January 1<sup>st</sup>, 2017 through December 31<sup>st</sup>, 2017.**

Central Valley Gas Storage, LLC  
Natural Gas Leakage Abatement Report In Partial Fulfillment Rulemaking (R.) 15-01-008 to Adopt Rules  
and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce  
Natural Gas Leaks Consistent with Senate Bill 1371, Leno, and In Response to Data Request  
Central Valley Gas Storage R15-01-008 2018 Annual Report  
6/15/2018

(5) System-wide gas leak and emission rate data, along with any data and computer models used in making that calculation, for the 12 months ending December 31st, of the reporting year.

Response:

**See Appendix 8.**

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Central Valley Gas Storage R15-01-008 2018 Annual Report for the 12 months ending December 31<sup>st</sup>, 2017.

Response:

**See Appendices 1, 2 and 7.**



Central Valley Gas Storage, 06-15-2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.  
 In Response to Data Request, R15-01-008 - 2018 June Report  
 Appendix 1 - Rev. 03/31/18

Notes:

Emissions included in the Report are based on miles of transmission pipeline. Therefore provide the miles of transmission pipeline in your system here.  
 The following data on transmission pipeline leaks is for information purposes and will not be used to report transmission pipeline leak emissions this year.  
 Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.  
 At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

Transmission Pipeline Leaks:

ID	Geographic Location	Pipe Material	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Scheduled Repair Date (MM/DD/YY)	Reason for Not Scheduling a Repair	Number of Days Leaking	Emission Factor (Mscf/Day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970	PC	24	72	1040	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	No leaks found during 2017
CVGS	95970	PC	16	72	1456	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	No leaks found during 2017
CVGS	95970	PC	16	72	1456	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	No leaks found during 2017

Sum total 0

Central Valley Gas Storage, 06-15-2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

In Response to Data Request, R15-01-008 - 2018 June Report

Appendix 1 - Rev. 03/31/18

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

**Transmission Pipeline Damage (3rd party dig-ins, natural disasters, etc.):**

ID	Geographic Location	Damage Type	Pipe Material	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Number of Days Leaking	Emission Factor (Mscf/Day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970	PC	PC	24	72	1040	N/A	N/A	N/A	N/A	N/A	N/A	0	No damages during 2017
CVGS	95970	PC	PC	16	72	1456	N/A	N/A	N/A	N/A	N/A	N/A	0	No damages during 2017
CVGS	95970	PC	PC	16	72	1456	N/A	N/A	N/A	N/A	N/A	N/A	0	No damages during 2017

Sum total 0

## Central Valley Gas Storage, 06-15-2018

### Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

#### In Response to Data Request, R15-01-008 - 2018 June Report

#### Appendix 1 - Rev. 03/31/18

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

#### Transmission Pipeline Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
Pig Launcher	95970	2	3.7985	Blowdown each of two 16-inch pig launchers
Pig Receiver	95970	2	3.7985	Blowdown each of two 16-inch pig receivers

Sum total

7.597

## Central Valley Gas Storage, 06-15-2018

### Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno. In Response to Data Request, R15-01-008 2018 June Report Appendix 1; Rev. 03/31/17

Notes:  
 Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.  
 At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange  
 The emissions captured on this tab represent the emissions associated with the operational design and function of the component. Any intentional release of natural gas for safety or maintenance purposes should be included in the Blowdowns worksheet.

#### Transmission Pipeline Component Vented Emissions:

Total Number of Devices	Device Type	Bleed Rate	Manufacturer	Emission Factor (Mscf/day)	Annual Emission (Mscf)	Explanatory Notes / Comments
0	N/A	N/A	N/A	N/A	0	No pipeline components emitting gas by design on the CVGS pipelines

Sum total 0

**Central Valley Gas Storage, 06-15-2018**

**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**

**In Response to Data Request, R15-01-008 2018 June Report**

**Appendix 1; Rev. 03/31/17**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

The emissions captured on this tab represent the emissions associated unintentional leaks that if repaired would not leaking. If the component is releasing gas or "bleeding" as a result of its design or function then it is not to be captured in this tab.

**Transmission Pipeline Component Fugitive Leaks:**

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Number of Days Leaking	Emission Factor (Mscf/day)	Annual Emission (Mscf)	Explanatory Notes / Comments
N/A		95970 N/A	N/A	N/A	N/A	N/A	0	N/A	0	No leaking components found on Transmission Lines

Sum total 0

## Central Valley Gas Storage, 06-15-2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks  
Consistent with Senate Bill 1371, Leno.

In Response to Data Request, R15-01-008 2018 June Report

Appendix 1; Rev. 03/31/17

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

### Transmission Pipeline Odorizers:

ID	Geographic Location	Number of Units	Emission Factor (Mscf/yr)	Annual Emission (Mscf)	Explanatory Notes / Comments
N/A	95970	0	N/A	0	No odorizers on site.

Sum total

0

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**Central Valley Gas Storage, 06-15-2018**

**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**

**In Response to Data Request, R15-01-008 - 2018 June Report  
Appendix 2 - Rev. 03/31/18**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

Facilities emissions that are based on a population count times an emission factor (See Appendix 9 for guidance).

**Transmission M&R Station Total Leaks and Emissions:**

<b>Number of Stations</b>	<b>Station Classification</b>	<b>Emission Factor (Mscf/yr)</b>	<b>Annual Emission (Mscf)</b>	<b>Explanatory Notes / Comments</b>
1	T	N/A	0	Interconnect Station was thoroughly surveyed for leaks during 2017 ; none were identified and none are awaiting repair.

0

## Central Valley Gas Storage, 06-15-2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

In Response to Data Request, R15-01-008 - 2018 June Report  
Appendix 2 - Rev. 03/31/18

Note:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value. At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

### Transmission M&R Station Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
Station 401	39.362000, -122.260	0	0	No CVGS M&R Station blowdowns during 2017

0



## Central Valley Gas Storage, 06-15-2018

### Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

#### In Response to Data Request, R15-01-008 - 2018 June Report Appendix 2 - Rev. 03/31/18

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

The emissions captured on this tab represent the emissions associated with the operational design and function of the component. Any intentional release of natural gas for safety or maintenance purposes should be included on the Blowdowns worksheet.

#### Transmission M&R Station Component Vented Emissions:

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Number of Days Emitting	Annual Emissions (Mscf)	Explanatory Notes / Comments
Station 401	39.362000, -122.2	P	I	Becker	365	21.024	

One device at M&R Station; calculation using Emission Factor for device as per Intermittent Bleed device number (0.0576 Mscf/day) in Appendix 9 posted by the CPUC.

21.024

**Central Valley Gas Storage, 06-15-2018**

**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**

**In Response to Data Request, R15-01-008 - 2018 June Report  
Appendix 2 - Rev. 03/31/18**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

The emissions captured on this tab represent the emissions associated unintentional leaks that if repaired would not leaking. If the component is releasing gas or "bleeding" as a result of its design or function then it is not to be captured in this tab.

**Transmission M&R Station Component Fugitive Leaks:**

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Number of Days Leaking	Annual Emissions (Mscf)	Explanatory Notes / Comments
Station 401	39.362000, -122.2	N/A	N/A	N/A	N/A	N/A	0	0	Interconnect Station components were thoroughly surveyed for leaks in 2017 and none were identified.

0

**Central Valley Gas Storage, 06-15-2018**  
**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**  
**In Response to Data Request, R15-01-008 2018 June Report**  
**Appendix 7; Rev. 03/31/18**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

Use the Population based emission factor if facility is not surveyed. Use Leaker based emission factor if facility is surveyed, and report only the found leaking components.

**Underground Storage Facility Leaks and Emissions:**

ID	Geographic Location	Source	Number of Sources	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970 N/A		0		0	0 No leaks identified during 2017 from wellheads, casing or pipelines associated with the storage wells
			Sum Total		0	

**Central Valley Gas Storage, 06-15-2018**  
**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**  
**In Response to Data Request, R15-01-008 2018 June Report**  
**Appendix 7; Rev. 03/31/18**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

The emissions captured on this tab represent the emissions associated with the operational design and function of the compressor. Any intentional release of natural gas for safety or maintenance purposes should be included on the Blowdowns worksheet.

**Underground Storage Facility Compressor Vented Emissions (see note above):**

ID	Geographic Location	Compressor Type	Prime Mover	Number of Cylinders in Compressor	Number of Seals	Seal Type	Operating Mode: Pressurized Operating (hours)	Operating Mode: Pressurized Idle (hours)	Operating Mode: Depressurized Idle (hours)	Emission Factor: Pressurized Operating (scf/hr)	Emission Factor: Pressurized Idle (scf/hr)	Emission Factor: Depressurized Idle (scf/hr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
Unit #1	95970	R	C	6	N/A	N/A	1115	3711	3930	12	12.6	0	60.1866	Venting is based on observations from the Unit 3 flow meter and is being conservatively applied to each of the other compressors
Unit #2	95970	R	C	6	N/A	N/A	2374	1403	4983	12	12.6	0	46.1658	Venting is based on observations from the Unit 3 flow meter and is being conservatively applied to each of the other compressors
Unit #3	95970	R	C	6	N/A	N/A	973	2237	5550	12	12.6	0	39.8622	Venting is based on observations from the Unit 3 flow meter and is being conservatively applied to each of the other compressors

Sum Total **146.2146**

CVGS recently installed flow meters on the vent lines of each compressor. To estimate vented emissions during 2017, we assessed a representative day of venting measured by the meters when running and a representative day of venting when pressurized-idle. We applied the result of one compressor to all three compressors. To be conservative, we used the Unit 3 flow meter readings to develop the factor because that unit had the most run-hours with the existing rod packing in place and the highest measurements while pressurized. (Unit 1 had slightly lower measurements and Unit 2 has not operated since the flow meters were installed.)

Calculation of Factor using Unit 3 measurements

Measured emissions during one full 24 hour period Pressurized Operating 288.0 scf.  
 Measured emissions during one full 24 hour period Pressurized Idle Hours: 302.4 scf

Pressurized Operating Factor = 288.0 scf/24 hours operating = 12.0 scf/hr.  
 Pressurized Idle Factor = 302.4 scf/24 hours pressurized but idle = 12.6 scf/hr.

## Central Valley Gas Storage, 06-15-2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks  
Consistent with Senate Bill 1371, Leno.

In Response to Data Request, R15-01-008 2018 June Report

Appendix 7; Rev. 03/31/18

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

### Underground Storage Blowdowns:

ID	Geographic Location	Source	Compressor Type	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970 C	R		11	170.354	Compressor Blowdowns
CVGS	95970 O		N/A	13	19.50464	13 well temperature logging events in 2016.
CVGS	95970 O		N/A	1	125.56	Station blowdown from ESD event
				Sum Total	315.41864	

**Central Valley Gas Storage, 06-15-2018**

**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.  
In Response to Data Request, R15-01-008 2018 June Report  
Appendix 7; Rev. 03/31/18**

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

The emissions captured on this tab represent the emissions associated with the operational design and function of the component. Any intentional release of natural gas for safety or maintenance purposes should be included on the Blowdowns worksheet.

**Underground Storage Component Vented Emissions (See note above):**

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Pressure (psi)	Survey Date (MM/DD/YY)	Number of Days Emitting	Emission Factor, Engineering or Manufacturer's based Estimate of Emissions (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	There were no component vented emissions during 2017
								Sum Total	0	

**Central Valley Gas Storage, 06-15-2018**

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

In Response to Data Request, R15-01-008 2018 June Report

Appendix 7; Rev. 03/31/18

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

The emissions captured on this tab represent the emissions associated unintentional leaks that if repaired would not leaking. If the component is releasing gas or "bleeding" as a result of its design or function then it is not to be captured in this tab.

**Underground Storage: Compressor and Component Fugitive Leaks (see note above):**

12/31/2017      1/1/2017

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Pressure (psi)	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Prior Survey Date (MM/DD/YY)	Number of Days Leaking	Emission Factor or Engineering Estimate (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
CVGS	95970	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	No leaks identified during 2017

Sum Total

0

**Central Valley Gas Storage, 06-15-2018**

**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**

**In Response to Data Request, R15-01-008 2018 June Report  
Appendix 7; Rev. 03/31/18**

Pursuant to SB 1371, Leno - Natural gas: leakage abatement, the California Public Utilities Commission (CPUC) requests that the following information be transmitted to the CPUC and the State Air Resources Board (ARB):  
Note - Definitions in Data Request, R15-01-008 2018 June Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#7):  
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request R15-01-008 2018 June Report.

Notes:  
Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.  
At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange

**Underground Storage Dehydrator Vented Emissions:**

ID	Geographic Location	Type of Dehydrator (Glycol or Desiccant)	Vapor Recovery Unit AND Thermal Oxidizer (Y/N)	Annual Volume of Gas Withdrawn (Mscf)	Emission Factor (Y/N)	Engineering Estimate (Y/N)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A	95970	Glycol	Y	10492075.8	0	0	0	0 Dehydrators are vented to Vapor Recover Units with Thermal Oxidizer so no methane is emitted.
					Sum Total		0	



**Central Valley Gas Storage, 06-15-2018**  
**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.**  
**In Response to Data Request, R15-01-008 2018 June Report**  
**Appendix 8; Rev. 03/31/18**

**Summary Tables:**

System Categories	Emission Source Categories	Fugitive or Vented	For Reference Only: 2015 Baseline Emissions (Mscf)	2016 Total Annual Volume of Leaks & Emissions (Mscf)	2016 Total Annual Count of Leak & Emission Items	2017 Total Annual Volume of Leaks & Emissions (Mscf)	2017 Total Annual Count of Leak & Emission Items	Emission Change for Year Over Year Comparison from 2016 to 2017	Percentage Change for Year Over Year Comparison from 2016 to 2017	Count Change for Year Over Year Comparison from 2016 to 2017	Percentage Change for Year Over Year Comparison from 2016 to 2017	Explanation for Significant Percentage Change for Year Over Year Comparison from 2016 to 2017
Transmission Pipelines	Pipeline Leaks	Fugitive		0	0	0	0	-		-		
	All Damages	Fugitive		0	0	0	0	-		-		
	Blowdowns	Vented	18.0	16.6	3	7,597	4	(9)	(54.2%)	1	33.3%	2016 volumes were from pig launchers on 24" line; 2017 volumes were from launchers on 16" lines.
	Component Emissions	Vented		0	0	0	0	-		-		
	Component Leaks	Fugitive		0	0	0	0	-		-		
	Odorizers	Vented		N/A	N/A	N/A	N/A	-		-		
Transmission M&R Stations	Station Leaks & Emissions	Fugitive		0	0	0	0	-		-		
	Blowdowns	Vented		0	0	0	0	-		-		
	Component Emissions	Vented	21.024	21.082	1	21.024	1	(0)	(0.3%)	-	0.0%	
	Component Leaks	Fugitive		0	0	0	0	-		-		
Transmission Compressor Stations	Compressor Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
	Compressor Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Blowdowns	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Storage Tank Leaks & Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
Distribution Main & Service Pipelines	Pipeline Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
	All Damages	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Blowdowns	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
Distribution M&R Stations	Station Leaks & Emissions	Fugitive		N/A	N/A	N/A	N/A	-		-		
	All Damages	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Blowdowns	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
	Component Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
Customer Meters	Meter Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
	All Damages	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Vented Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
	Above Ground MSA Leaks	Fugitive		N/A	N/A	N/A	N/A	-		-		
	Component Emissions	Vented		N/A	N/A	N/A	N/A	-		-		
Underground Storage	Storage Leaks & Emissions	Fugitive	0	0	0	0	0	-		-		
	Compressor Emissions	Vented	-	0	-	146.215	-	146	100.0%	-		Vented emissions are being estimated for the first time in 2017. See Appendix 7 explanation.
	Compressor Leaks	Fugitive	398	238,449	1	0	0	(238)	(100.0%)	(1)	(100.0%)	Packing vent leakage that was present in 2016 on Unit 2 was repaired by replacing rod packing.
	Blowdowns	Vented	368,083	187,994	29	315,419	25	127	67.8%	(4)	(13.8%)	One emergency shut-down in 2017 due to a flame detector malfunction released ~125 mscf.
	Component Emissions	Vented	-	0	0	0	0	-		-		
	Component Leaks	Fugitive	0.797	2,421	3	0	0	(2)	(100.0%)	(3)	(100.0%)	No component leaks identified through regular screening in 2017; no repairs were necessary.
Dehydrator Vent Emissions	Fugitive	0	0	0	0	0	-		-			
Unusual Large Leaks	(Description)		0	0	0	0	0	0		0%		
<b>Total</b>			<b>805.904</b>	<b>466.546</b>	<b>37</b>	<b>490.254</b>	<b>30</b>		<b>5%</b>	<b>(7)</b>		

**Central Valley Gas Storage, 06-15-2018**  
**Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated**  
**Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371,**  
**In Response to Data Request, R15-01-008 2018 June Report**  
**Appendix 8; Rev. 03/31/18**

## System Wide Leak Rate Data

1/1/2017 - 12/31/2017

The highlighted cells show the volumes that are summed together as the throughput for calculating the system wide leak rate.

**Gas Storage Facilities:**

Average Close of the Month Cushion Gas Storage Inventory (Mscf)	Average Close of the Month Working Gas Storage Inventory (Mscf)	Total Annual Volume of Injections into Storage (Mscf)	Total Annual Volume of Gas Used by the Gas Department (Mscf)	Total Annual Volume of Withdrawals from Storage (Mscf)	Explanatory Notes / Comments
1,380,000	6287087.213	9440495.42	105252.6	10492075.8	

**Transmission System:**

Total Annual Volume of Gas Used by the Gas Department (Mscf)	Total Annual Volume of Gas Transported to or for Customers* in State (Mscf)	Total Annual Volume of Gas Transported to or for Customers* out of State (Mscf)	Total Annual Volume of Gas Transported to utility-owned or third-party storage fields for injection into storage (Mscf)	Explanatory Notes / Comments
0	10492075.8	0	0	

**Distribution System:**

Total Annual Volume of Gas Used by the Gas Department (Mscf)	Total Annual Volume of Gas Transported to or for Customers* in State (Mscf)	Total Annual Volume of Gas Transported to or for Customers* out of State (Mscf)	Explanatory Notes / Comments
N/A	N/A	N/A	

\*The term customers includes anyone that the utility is transporting gas for, including customers who purchase gas from the utility.

Customers can be anyone including residential, businesses, other utilities, gas transportation companies, etc.

# Central Valley Gas Storage, 06-15-2018

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Appendix 8; Rev. 03/31/18

## Summary Tables:

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Natural Gas Properties	Average Mole Percent	Explanatory Notes / Comments
Methane		We are storing gas delivered by PG&E.
Carbon Dioxide		
Ethane		
C3+		
C6+		
Oxygen		
Hydrogen		
Sulfur		
Water		
Carbon Monoxide		
Particulate Matter		
Inert Gas		
Odorant		