

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



October 19, 2018

**Advice Letter 5211
5211-B**

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

SUBJECT: 2018 and 2019 Ratemaking Forecasts for Natural Gas Leak Abatement Program Memorandum Account (NGLAPMA), Natural Gas Leak Abatement Program Balancing Account (NGLAPBA), and Natural Gas Leak Abatement Program Subaccount (NGLAP) in the New Environmental Regulation Balancing Account (NERBA)

Dear Mr. van der Leeden:

Advice Letter 5211 and supplemental 5211-B are effective as of October 11, 2018 per Resolution G-3538 Ordering Paragraphs.

Sincerely,

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

Edward Randolph
Director, Energy Division



Ronald van der Leeden

Director

Regulatory Affairs

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

Tel: 213.244.2009

Fax: 213.244.4957

RvanderLeeden@semprautilities.com

July 31, 2018

Advice No. 5211-B
(U 904 G)

Public Utilities Commission of the State of California

Subject: Supplement – 2018, 2019, and 2020 Ratemaking Forecasts for Natural Gas Leak Abatement Program Memorandum Account (NGLAPMA), Natural Gas Leak Abatement Program Balancing Account (NGLAPBA), and Natural Gas Leak Abatement Program Subaccount (NGLAP) in the New Environmental Regulation Balancing Account (NERBA)

Purpose

Pursuant to Energy Division's request on July 16, 2018, Southern California Gas Company (SoCalGas) hereby submits a supplement to its 2018 and 2019 Ratemaking Forecasts for NGLAPMA, NGLAPBA, and NGLAP in the NERBA previously submitted in compliance with Ordering Paragraph (OP) 10 of the California Public Utilities Commission's (CPUC or Commission) Decision (D.) 17-06-015 to add its forecast for 2020, included as Attachment B.

This supplemental Advice Letter (AL) replaces AL 5211-A in its entirety, submitted on March 14, 2018. This supplemental submittal is necessary to update the total cost estimates in AL 5211-A and include cost estimates for 2020.

This supplemental AL provides a proposal to address future costs for the Natural Gas Leak Abatement Program in future ratemaking application.

Background

On January 22, 2015, the CPUC issued Rulemaking (R.) 15-01-008 to implement provisions of Senate Bill (SB) 1371. Phase I of R.15-01-008 was established to specifically address the overall policies and guidelines for a natural gas leak abatement program consistent with SB 1371 and included the following program development activities: 1) information gathering, measurement, and Best Practices; 2) targets,

compliance, and reporting; and 3) training and enforcement. On June 15, 2017, the Commission adopted D.17-06-015 which, among other things, directed SoCalGas on or prior to October 31, 2017 to submit a Tier 3 AL to provide the following to establish 2018 and 2019 revenue requirement forecasts and caps for the Natural Gas Leak Abatement Program:

- a) Identify the incremental costs associated with each individual Best Practice, Pilot Projects and Research & Development (R&D), broken down by type of expenditure including capital, operations and maintenance, and administrative.
- b) Provide the justifications consistent with the criteria to evaluate Pilot Projects and R&D in Pub. Util. Code § 740.1.
- c) The proposed allocation methodology for amortization of the account and the corresponding Commission decision authorizing the allocation methodology.¹

On October 31, 2017, in compliance with D.17-06-015, SoCalGas submitted its Tier 3, AL 5211. After the total cost estimates were finalized for AL 5211, SoCalGas identified updates that were needed to the cost estimates. SoCalGas submitted supplemental AL 5211-A to update the cost estimates on March 14, 2018.

D.17-06-015, OP 10 directs PG&E, SoCalGas, SDG&E, and Southwest Gas to submit Tier 3 ALs to provide their respective 2018 and 2019 ratemaking forecasts and caps for the Natural Gas Leak Abatement Program. OP 11 authorizes the Director of Energy Division to recommend a process for reviewing cost forecasts and the methods for cost recovery in response to the Tier 3 ALs. OP 12 states the ratemaking forecasts and caps that the Commission approves in response to the Tier 3 ALs shall apply until ratemaking amounts and treatment for the Natural Gas Leak Abatement Program for 2020 and beyond, including Best Practices, Pilot Projects and R&D, are reviewed and established in each utility's next general rate case (GRC) or other gas ratemaking proceeding. A number of SoCalGas' proposed Best Practices are likely to extend beyond 2019 prior to SoCalGas' next GRC and approval of SoCalGas' next biennial compliance plan submittal, creating a possible gap between SoCalGas' 2018/2019 Leak Abatement Compliance Plan and its 2020/2021 Leak Abatement Compliance Plan. SoCalGas' next GRC is expected to be for Test Years 2022 or 2023.²

On July 17, 2018, Energy Division instructed PG&E, SoCalGas, SDG&E, and Southwest Gas to submit a supplemental Tier 3 AL by July 31, 2018 to address this possible gap, if applicable. As described above, SoCalGas expects a gap in funding from its 2018/2019 Leak Abatement Compliance Plan to its next GRC and to its 2020/2021 Leakage Abatement Compliance Plan approval. Therefore, this supplemental AL is submitted to provide:

¹ D.17-06-015 at pp. 161-162, OP 10.

² In its current GRC, SoCalGas proposed a four-year GRC cycle.

- 1) Forecasted costs for 2018, 2019, 2020, and associated Best Practice;
- 2) Expected upcoming ratemaking application (GRC, TCAP, etc.) to address future costs for the Natural Gas Leak Abatement Program and predicted date of application.

SoCalGas' Forecasted Costs for 2018, 2019, 2020, and Associated Best Practices

Updated forecasts are provided in Tables 1-6. Due to a delay in approval, implementation of activities shifted forward in time for some Best Practices. Some activities initially planned for 2018 implementation are now planned for 2019 or 2020. Some implementation activities that are expected to continue in the 2020 Compliance Plan were forecasted into 2020 to provide program continuity. In addition to this shift in timeline, forecasted costs were updated for some Best Practice activities. Early implementation activities for some Best Practices has provided more information to generate more accurate cost forecasts. Updates were made to costs for activities in Best Practices 9, 21, and 23. Those updates are detailed in Tables 1 and 2 and Appendix B.

Table 1: Updated O&M Costs and Assumptions compared with AL 5211-A for 2-Way Balancing Account by Best Practice in Loaded 2018 Dollars (\$000)

Best Practice	Total 2-Way O&M (Loaded 2018 \$000)						Explanation of change
	2018		2019		2020		
	As-filed	Updated	As-filed	Updated	As-filed	Updated	
9 Recordkeeping	0	0	1,259	1,259	0	918	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval Forecasted cost for emissions data IT project was increased to more accurately reflect project cost estimate.
11 Methane Emissions Minimization Policies Training	61	0	100	64	0	105	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval
12 Knowledge Continuity Training Programs	54	0	54	57	0	57	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval
13 Performance Focused Training Programs	897	0	2,028	926	0	2,057	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval
15 Gas Distribution Leak Surveys	0	0	4,696	4,696	0	4,676	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
16 Special Leak Surveys	0	0	2,458	1,844	0	2,458	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
17 Enhanced Methane Detection	70	0	279	279	0	279	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
18 Stationary Methane Detectors	584	0	2,389	2,795	0	2,279	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
19 Above Ground Leak Surveys	1,019	0	766	766	0	709	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20a Quantification	1,269	0	1,269	1,269	0	2,123	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20b Geographic Tracking	11,683	241	10,714	8,736	0	10,409	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
21 Find It Fix It	2,712	1,712	17,870	23,093	0	21,215	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan. Code 3 steel leak repair costs were updated The number of code three steel leaks forecasted for repair was updated Year of detection for leak repair was updated to 2017. Leaks detected in 2016 or earlier will be repaired with GRC funding. Above ground leak repair was updated to include labor, vehicle, and equipment costs. The previous forecast only included materials for leak repairs. Transmission leak repair forecast was updated based on historical leak findings
22 Pipe Fitting Specifications	0	0	0	0	0	0	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval
23 Minimize Emissions from Operations, Maintenance, and other Activities	4,193	140	5,194	3,619	0	3,072	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan. Equipment costs were updated for blowdown capture activities Forecasts were updated for vapor recovery systems
24 Dig-Ins Public Education Program	0	0	1,302	1,302	0	1,302	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
25 Dig-Ins Company Standby Monitors	0	0	751	751	0	751	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
26 Dig-Ins Repeat Offenders	0	0	229	229	0	229	<ul style="list-style-type: none"> Forecast timeline was adjusted into 2020 due to delayed approval

Table 2: Updated Capital Costs and Assumptions compared with AL 5211-A for 2-Way Balancing Account by Best Practice in Loaded 2018 Dollars (\$000)

Best Practice	Total Capital 2-Way (Loaded 2018 \$000)						Explanation of change
	2018		2019		2020		
	As-filed	Updated	As-filed	Updated	As-filed	Updated	
9 Recordkeeping	0	0	3,413	4,070	0	3,822	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval •Forecasted cost for emissions data IT project was increased to more accurately reflect project cost estimate.
11 Methane Emissions Minimization Policies Training	0	0	0	0	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval
12 Knowledge Continuity Training Programs	0	0	0	0	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval
13 Performance Focused Training Programs	86	0	0	86	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval
15 Gas Distribution Leak Surveys	0	0	863	863	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
16 Special Leak Surveys	0	0	713	713	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
17 Enhanced Methane Detection	143	0	0	143	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
18 Stationary Methane Detectors	0	0	1,448	931	0	1,862	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
19 Above Ground Leak Surveys	0	0	238	238	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20a Quantification	285	0	0	143	0	428	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20b Geographic Tracking	1,087	0	76	1,033	0	109	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
21 Find It Fix It	32,948	2,117	28,762	30,091	0	20,477	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan. •Code 3 steel leak repair costs were updated •The number of code three steel leaks forecasted for repair was updated •Year of detection for leak repair was updated to 2017. Leaks detected in 2016 or earlier will be repaired with GRC funding. •Above ground leak repair was updated to include labor, vehicle, and equipment costs. The previous forecast only included materials for leak repairs. •Transmission leak repair forecast was updated based on historical leak findings
22 Pipe Fitting Specifications	233	0	789	233	0	789	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval
23 Minimize Emissions from Operations, Maintenance, and other Activities	3,594	1,947	7,428	17,199	0	16,582	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan. •Equipment costs were updated for blowdown capture activities •Forecasts were updated for vapor recovery systems
24 Dig-Ins Public Education Program	0	0	0	0	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
25 Dig-Ins Company Standby Monitors	0	0	0	0	0	0	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
26 Dig-Ins Repeat Offenders	0	0	2,594	0	0	2,594	<ul style="list-style-type: none"> •Forecast timeline was adjusted into 2020 due to delayed approval

Table 3: Updated Costs and Assumptions for 1-Way Balancing Account by Best Practice in Loaded 2018 Dollars (\$000)

Best Practice	Total 1-Way O&M (Loaded 2018 \$000)						Explanation of change
	2018		2019		2020		
	As-filed	Updated	As-filed	Updated	As-filed	Updated	
16 Special Leak Surveys	135	135	697	697	0	198	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
17 Enhanced Methane Detection	745	402	1,005	1,189	0	302	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
18 Stationary Methane Detectors	252	252	293	293	0	198	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20a Quantification	2,480	1,242	2,173	2,206	0	1,403	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
20b Geographic Tracking	43	43	244	244	0	198	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
22 Pipe Fitting Specifications	159	159	225	225	0	198	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.
23 Minimize Emissions from Operations, Maintenance, and other Activities	172	172	656	656	0	338	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.

Table 4: Updated Costs and Assumptions for Memorandum Account by Best Practice in Loaded 2018 Dollars (\$000)

Best Practice	Memorandum O&M (Loaded 2018 \$000)						Explanation of change
	2018		2019		2020		
	As-filed	Updated	As-filed	Updated	As-filed	Updated	
1 Compliance Plan	1,191	1,191	1,088	1,373	198	1,088	•Forecast timeline was adjusted into 2020 due to delayed approval. Ongoing work is expected to continue in the 2020 Compliance Period and those costs were forecasted based on the current Compliance Plan.

Table 5 below shows SoCalGas' updated best approximation of the incremental costs associated with administering the SB 1371 Compliance Program for each Best Practice, pilot project, and research and development project for 2018, 2019, and 2020. This table is shown in thousands of 2018 loaded dollars. The costs in the table have not been escalated. The total fully loaded and escalated costs of the program (excluding AFUDC) is \$234 million. SoCalGas looks forward to continuing to work with all stakeholders in R.15-01-008 to align assumptions and overall goals.

Table 5: Updated Estimated Capital and O&M Costs by Best Practice in (\$000)

Best Practice	2-Way Balancing Account						1-Way Balancing Account			Memorandum Account		
	O&M			Capital			O&M			O&M		
	2018	2019	2020	2018	2019	2020	2018	2019	2020	2018	2019	2020
1	0	0	0	0	0	0	0	0	0	1,191	1,373	1,088
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	1,259	919	0	4,070	3,822	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	64	105	0	0	0	0	0	0	0	0	0
12	0	57	57	0	0	0	0	0	0	0	0	0
13	0	926	2,057	0	86	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	4,696	4,676	0	863	0	0	0	0	0	0	0
16	0	1,844	2,458	0	713	0	135	697	198	0	0	0
17	0	279	279	0	143	0	402	1,189	302	0	0	0
18	0	2,795	2,279	0	931	1,862	252	293	198	0	0	0
19	0	766	709	0	238	0	0	0	0	0	0	0
20a	0	1,269	2,123	0	143	428	1,242	2,206	1,403	0	0	0
20b	242	8,736	10,409	0	1,033	109	43	244	198	0	0	0
21	1,712	23,093	21,215	2,117	30,091	20,477	0	0	0	0	0	0
22	0	0	0	0	233	789	159	225	198	0	0	0
23	140	3,619	3,072	1,947	17,199	16,582	172	656	338	0	0	0
24	0	1,302	1,302	0	0	0	0	0	0	0	0	0
25	0	751	751	0	0	0	0	0	0	0	0	0
26	0	229	229	0	0	2,594	0	0	0	0	0	0
Total	2,094	51,685	52,640	4,064	55,743	46,663	2,405	5,510	2,835	1,191	1,373	1,088

The assumptions for these cost estimates can be found in Attachment B, which has been updated with all changes in assumptions since AL 5211-A was submitted on March 14, 2018. This attachment is organized by cost accounting and not all best practices appear chronologically.

Two-way balancing account: BPs 1-26	Pages 1-41
One-Way balancing account: BPs 16-23	Pages 42-57
Memorandum account: BP 1	Pages 58-59
Loaded costs for all Best Practices	Pages 60-67
Direct costs for all Best Practices	Pages 68-76

Allocation Methodology for Amortization of the Account and Corresponding Commission Decision Authorizing the Allocation Methodology

SoCalGas proposes to allocate the projected year-end balances pertaining to natural gas leak abatement programs using the Equal Percent of Authorized Margin (EPAM) method. The EPAM method allocates the balance in an account across customer classes based on each customer class' share of the total GRC base margin allocated to that customer class. This proposed method is consistent with how a regulatory account balance that benefits all customer classes is allocated in a GRC.³

Updated rate impacts can be found in Attachment A.

Table 6 below summarizes the revenue requirement impacts by class of service for Years 2018, 2019, and 2020.

³ For example, pursuant to D.16-06-054 (decision addressing SoCalGas' 2016 GRC), the balance in the Research, Development and Demonstration Expense Account (RDDEA) is allocated across all customer classes using the EPAM method. The balance in this account reflects costs associated with activities to benefit all customer classes.

Table 6: Revenue Requirement Impact by Class of Service (includes FF&U)⁴

Class of Service	Applicable Rate Schedules	Year 2018	Year 2019	Year 2020
		Million\$ (Includes FF&U) Increase/(Decrease)	Million\$ (Includes FF&U) Increase/(Decrease)	Million\$ (Includes FF&U) Increase/(Decrease)
Core	GR, GS, GM, GO-AC, G-NGVR, GL, G10, G-AC, G-EN, G-NGV	\$5.8	\$58.2	\$65.5
Noncore	GT-NC, G-TLS	\$0.3	\$3.2	\$3.6
Backbone Transportation Service (BTS) and Other Services	G-BTS, G-TLS	\$0.0	\$0.3	\$0.4
System Total		\$6.1	\$61.7	\$69.5

Future Costs for the Natural Gas Leak Abatement Program

Future costs for the Natural Gas Leak Abatement Program for SoCalGas will be incorporated into the next GRC, which will be submitted for TY 2022 or 2023, depending on the outcome of SoCalGas' pending request to extend its GRC cycle from three years to four years. Forecasts included in this supplemental AL include forecasted cost associated with the 2018 and 2019 Leak Abatement Compliance Plan, which is expected to extend into 2020. To bridge program funding to the next ratemaking application, SoCalGas anticipates submitting a future Tier 3 AL forecasting costs for the remainder of 2020, 2021, and 2022 to align cost forecasts with the 2020/2021 Leak Abatement Compliance Plan at the same time the Compliance Plan is submitted, unless directed otherwise by the Commission.

Protests

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 received within 20 days of the date of this AL, which is August 20, 2018. The address for mailing or delivering a protest to the Commission is:

⁴ Revenue Requirement Impact is based on net amount of SoCalGas' Program Year (PY) 2018, PY 2019, & PY 2020 Ratemaking Forecasts and Caps for the NERBA.

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

Copies of the protest should also be sent via e-mail to 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: Ray B. Ortiz
Tariff Manager - GT14D6
555 West Fifth Street
Los Angeles, CA 90013-1011
Facsimile No.: (213) 244-4957
E-mail: ROrtiz@SempraUtilities.com

Effective Date

OP 10 of D.17-06-015 directs SoCalGas to submit this AL as Tier 3 pursuant to General Order (GO) 96-B and, as such, requires a Resolution to be issued by the Commission. SoCalGas respectfully requests that it be approved by the Commission at the earliest opportunity.

Notice

A copy of this AL is being sent to SoCalGas' GO 96-B service list and the Commission's service list in R.15-01-008. Address change requests to the GO 96-B service list should be directed by e-mail to tariffs@socalgas.com or call 213-244-2837. For changes to all other service lists, please contact the Commission's Process Office at 415-703-2021 or by e-mail at Process_Office@cpuc.ca.gov.

Ronald van der Leeden
Director – Regulatory Affairs

Attachments

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER SUBMITTAL SUMMARY ENERGY UTILITY

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

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

Utility type:

ELC

GAS

PLC

HEAT

WATER

Contact Person: Ray B. Ortiz

Phone #: (213) 244-3837

E-mail: ROrtiz@semprautilities.com

EXPLANATION OF UTILITY TYPE

ELC = Electric

GAS = Gas

PLC = Pipeline

HEAT = Heat

WATER = Water

(Date Submitted/ Received Stamp by CPUC)

Advice Letter (AL) #: 5211-B

Subject of AL: Supplement – 2018, 2019, 2020 Ratemaking Forecasts for Natural Gas Leak Abatement Program Memorandum Account (NGLAPMA), Natural Gas Leak Abatement Program Balancing Account (NGLAPBA), and Natural Gas Leak Abatement Program Subaccount (NGLAP) in the NERBA

Keywords (choose from CPUC listing): GRC, Balancing/Memorandum Accounts, Transportation Rates

AL type: Monthly Quarterly Annual One-Time Other _____

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

D.17-06-015

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL No.: N/A

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

Does AL request confidential treatment? If so, provide explanation: N/A

Resolution Required? Yes No

Tier Designation: 1 2 3

Requested effective date: Upon Commission Approval

No. of tariff sheets: 0

Estimated system annual revenue effect (%): 0.2% for 2018; 2.3% for 2019; 2.6% for 2020

Estimated system average rate effect (%): 0.2% for 2018; 2.3% for 2019; 2.6% for 2020

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: N/A

Service affected and changes proposed¹: See Advice Letter

Pending advice letters that revise the same tariff sheets: N/A

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, 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: Ray B. Ortiz

555 West 5th Street, GT14D6

Los Angeles, CA 90013-1011

ROrtiz@semprautilities.com

Tariffs@socalgas.com

¹ Discuss in AL if more space is needed.

ATTACHMENT A

Advice No. 5211-B

**Natural Gas Transportation Rate Revenues
Southern California Gas Company
2018, 2019, and 2020 Rates**

Attachment A
Advice No. 5211-B
Natural Gas Transportation Rate Revenues
Southern California Gas Company
2018 Rates

	Present Rates			Proposed Rates			Changes		
	Jul-1-18	Average	Jul-1-18	2018	Proposed	2018	Revenue	Rate	% Rate
	Volumes	Rate	Revenues	Volumes	Rate	Revenues	Change	Change	change
	Mth	\$/therm	\$000's	Mth	\$/therm	\$000's	\$000's	\$/therm	%
	A	B	C	D	E	F	G	H	I
CORE									
Residential	2,435,160	\$0.74844	\$1,822,559	2,435,160	\$0.75044	\$1,827,436	\$4,877	\$0.00200	0.3%
Commercial & Industrial	1,023,186	\$0.32464	\$332,163	1,023,186	\$0.32541	\$332,955	\$792	\$0.00077	0.2%
NGV - Pre SempraWide	157,095	\$0.12882	\$20,237	157,095	\$0.12913	\$20,285	\$48	\$0.00031	0.2%
SempraWide Adjustment	157,095	(\$0.00166)	(\$260)	157,095	(\$0.00167)	(\$263)	(\$3)	(\$0.00002)	1.1%
NGV - Post SempraWide	157,095	\$0.12716	\$19,977	157,095	\$0.12745	\$20,022	\$45	\$0.00029	0.2%
Gas A/C	772	\$0.15436	\$119	772	\$0.15464	\$119	\$0	\$0.00029	0.2%
Gas Engine	20,699	\$0.16141	\$3,341	20,699	\$0.16141	\$3,341	\$0	\$0.00000	0.0%
Total Core	3,636,911	\$0.59890	\$2,178,159	3,636,911	\$0.60047	\$2,183,874	\$5,715	\$0.00157	0.3%
NONCORE COMMERCIAL & INDUSTRIAL									
Distribution Level Service	865,102	\$0.07674	\$66,392	865,102	\$0.07692	\$66,546	\$154	\$0.00018	0.2%
Transmission Level Service (2)	660,238	\$0.02441	\$16,114	660,238	\$0.02444	\$16,137	\$22	\$0.00003	0.1%
Total Noncore C&I	1,525,339	\$0.05409	\$82,506	1,525,339	\$0.05421	\$82,683	\$176	\$0.00012	0.2%
NONCORE ELECTRIC GENERATION									
Distribution Level Service									
Pre Sempra Wide	285,096	\$0.08176	\$23,310	285,096	\$0.08196	\$23,368	\$58	\$0.00020	0.2%
Sempra Wide Adjustment	285,096	(\$0.00626)	(\$1,784)	285,096	(\$0.00629)	(\$1,793)	(\$9)	(\$0.00003)	0.5%
Distribution Level Post Sempra Wide	285,096	\$0.07550	\$21,525	285,096	\$0.07567	\$21,574	\$49	\$0.00017	0.2%
Transmission Level Service (2)	2,392,699	\$0.02064	\$49,379	2,392,699	\$0.02067	\$49,460	\$81	\$0.00003	0.2%
Total Electric Generation	2,677,795	\$0.02648	\$70,904	2,677,795	\$0.02653	\$71,034	\$130	\$0.00005	0.2%
TOTAL RETAIL NONCORE	4,203,134	\$0.03650	\$153,411	4,203,134	\$0.03657	\$153,717	\$307	\$0.00007	0.2%
WHOLESALE & INTERNATIONAL (excluding SDG&E)	325,403	\$0.02035	\$6,623	325,403	\$0.02039	\$6,634	\$11	\$0.00003	0.2%
OTHER SERVICES (SDG&E, UBS, & BTS)	1,251,556		\$300,585	1,251,556		\$300,617	\$33		
SYSTEM TOTAL w/BTS	9,417,004	\$0.28021	\$2,638,777	9,417,004	\$0.28086	\$2,644,843	\$6,066	\$0.00064	0.2%
EOR Revenues	231,570	\$0.05313	\$12,303	231,570	\$0.05324	\$12,330	\$27	\$0.00012	0.2%
Total Throughput w/EOR Mth/yr	9,648,574			9,648,574					

1) These rates are for Natural Gas Transportation Service from "Citygate to Meter." The BTS rate is for service from Receipt Point to Citygate.

2) All rates include Franchise Fees & Uncollectible charges.

Attachment A
Advice No. 5211-B
Natural Gas Transportation Rate Revenues
Southern California Gas Company
2019 Rates

	Present Rates			Proposed Rates			Changes		
	Jul-1-18	Average	Jul-1-18	2019	Proposed	2019	Revenue	Rate	% Rate
	Volumes	Rate	Revenues	Volumes	Rate	Revenues	Change	Change	change
	Mth	\$/therm	\$000's	Mth	\$/therm	\$000's	\$000's	\$/therm	%
	A	B	C	D	E	F	G	H	I
CORE									
Residential	2,435,160	\$0.74844	\$1,822,559	2,435,160	\$0.76880	\$1,872,147	\$49,587	\$0.02036	2.7%
Commercial & Industrial	1,023,186	\$0.32464	\$332,163	1,023,186	\$0.33251	\$340,216	\$8,054	\$0.00787	2.4%
NGV - Pre SempraWide	157,095	\$0.12882	\$20,237	157,095	\$0.13194	\$20,728	\$491	\$0.00312	2.4%
SempraWide Adjustment	157,095	(\$0.00166)	(\$260)	157,095	(\$0.00186)	(\$292)	(\$32)	(\$0.00020)	12.4%
NGV - Post SempraWide	157,095	\$0.12716	\$19,977	157,095	\$0.13008	\$20,436	\$459	\$0.00292	2.3%
Gas A/C	772	\$0.15436	\$119	772	\$0.15728	\$121	\$2	\$0.00292	1.9%
Gas Engine	20,699	\$0.16141	\$3,341	20,699	\$0.16141	\$3,341	\$0	\$0.00000	0.0%
Total Core	3,636,911	\$0.59890	\$2,178,159	3,636,911	\$0.61488	\$2,236,261	\$58,102	\$0.01598	2.7%
NONCORE COMMERCIAL & INDUSTRIAL									
Distribution Level Service	865,102	\$0.07674	\$66,392	865,102	\$0.07856	\$67,959	\$1,567	\$0.00181	2.4%
Transmission Level Service (2)	660,238	\$0.02441	\$16,114	660,238	\$0.02475	\$16,339	\$225	\$0.00034	1.4%
Total Noncore C&I	1,525,339	\$0.05409	\$82,506	1,525,339	\$0.05527	\$84,299	\$1,792	\$0.00117	2.2%
NONCORE ELECTRIC GENERATION									
Distribution Level Service									
Pre Sempra Wide	285,096	\$0.08176	\$23,310	285,096	\$0.08384	\$23,902	\$592	\$0.00208	2.5%
Sempra Wide Adjustment	285,096	(\$0.00626)	(\$1,784)	285,096	(\$0.00660)	(\$1,881)	(\$96)	(\$0.00034)	5.4%
Distribution Level Post Sempra Wide	285,096	\$0.07550	\$21,525	285,096	\$0.07724	\$22,021	\$496	\$0.00174	2.3%
Transmission Level Service (2)	2,392,699	\$0.02064	\$49,379	2,392,699	\$0.02098	\$50,194	\$816	\$0.00034	1.7%
Total Electric Generation	2,677,795	\$0.02648	\$70,904	2,677,795	\$0.02697	\$72,216	\$1,311	\$0.00049	1.8%
TOTAL RETAIL NONCORE	4,203,134	\$0.03650	\$153,411	4,203,134	\$0.03724	\$156,514	\$3,104	\$0.00074	2.0%
WHOLESALE & INTERNATIONAL (excluding SDG&E)	325,403	\$0.02035	\$6,623	325,403	\$0.02069	\$6,734	\$111	\$0.00034	1.7%
OTHER SERVICES (SDG&E, UBS, & BTS)	1,251,556		\$300,585	1,251,556		\$300,919	\$334		
SYSTEM TOTAL w/BTS	9,417,004	\$0.28021	\$2,638,777	9,417,004	\$0.28676	\$2,700,428	\$61,651	\$0.00655	2.3%
EOR Revenues	231,570	\$0.05313	\$12,303	231,570	\$0.05430	\$12,574	\$271	\$0.00117	2.2%
Total Throughput w/EOR Mth/yr	9,648,574			9,648,574					

1) These rates are for Natural Gas Transportation Service from "Citygate to Meter." The BTS rate is for service from Receipt Point to Citygate.
2) All rates include Franchise Fees & Uncollectible charges.

Attachment A
Advice No. 5211-B
Natural Gas Transportation Rate Revenues
Southern California Gas Company
2020 Rates

	Present Rates			Proposed Rates			Changes			
	Jul-1-18	Average	Jul-1-18	2020	Proposed	2020	Revenue	Rate	% Rate	
	Volumes	Rate	Revenues	Volumes	Rate	Revenues	Change	Change	change	
	Mth	\$/therm	\$000's	Mth	\$/therm	\$000's	\$000's	\$/therm	%	
	A	B	C	D	E	F	G	H	I	
1	CORE									
2	Residential	2,435,160	\$0.74844	\$1,822,559	2,435,160	\$0.77139	\$1,878,454	\$55,895	\$0.02295	3.1%
3	Commercial & Industrial	1,023,186	\$0.32464	\$332,163	1,023,186	\$0.33351	\$341,241	\$9,078	\$0.00887	2.7%
4										
5	NGV - Pre SempraWide	157,095	\$0.12882	\$20,237	157,095	\$0.13234	\$20,790	\$553	\$0.00352	2.7%
6	SempraWide Adjustment	157,095	(\$0.00166)	(\$260)	157,095	(\$0.00191)	(\$300)	(\$40)	(\$0.00025)	15.4%
7	NGV - Post SempraWide	157,095	\$0.12716	\$19,977	157,095	\$0.13043	\$20,490	\$513	\$0.00327	2.6%
8										
9	Gas A/C	772	\$0.15436	\$119	772	\$0.15765	\$122	\$3	\$0.00329	2.1%
10	Gas Engine	20,699	\$0.16141	\$3,341	20,699	\$0.16141	\$3,341	\$0	\$0.00000	0.0%
11	Total Core	3,636,911	\$0.59890	\$2,178,159	3,636,911	\$0.61691	\$2,243,648	\$65,489	\$0.01801	3.0%
12	NONCORE COMMERCIAL & INDUSTRIAL									
13	Distribution Level Service	865,102	\$0.07674	\$66,392	865,102	\$0.07879	\$68,159	\$1,766	\$0.00204	2.7%
14	Transmission Level Service (2)	660,238	\$0.02441	\$16,114	660,238	\$0.02479	\$16,366	\$251	\$0.00038	1.6%
15	Total Noncore C&I	1,525,339	\$0.05409	\$82,506	1,525,339	\$0.05541	\$84,524	\$2,018	\$0.00132	2.4%
16										
17	NONCORE ELECTRIC GENERATION									
18	Distribution Level Service									
19	Pre Sempra Wide	285,096	\$0.08176	\$23,310	285,096	\$0.08410	\$23,977	\$667	\$0.00234	2.9%
20	Sempra Wide Adjustment	285,096	(\$0.00626)	(\$1,784)	285,096	(\$0.00666)	(\$1,898)	(\$114)	(\$0.00040)	6.4%
21	Distribution Level Post Sempra Wide	285,096	\$0.07550	\$21,525	285,096	\$0.07744	\$22,079	\$553	\$0.00194	2.6%
22	Transmission Level Service (2)	2,392,699	\$0.02064	\$49,379	2,392,699	\$0.02102	\$50,290	\$911	\$0.00038	1.8%
23	Total Electric Generation	2,677,795	\$0.02648	\$70,904	2,677,795	\$0.02703	\$72,369	\$1,464	\$0.00055	2.1%
24										
25	TOTAL RETAIL NONCORE									
26		4,203,134	\$0.03650	\$153,411	4,203,134	\$0.03733	\$156,893	\$3,482	\$0.00083	2.3%
27										
28	WHOLESALE & INTERNATIONAL (excluding SDG&E)									
29		325,403	\$0.02035	\$6,623	325,403	\$0.02073	\$6,747	\$124	\$0.00038	1.9%
30	OTHER SERVICES (SDG&E, UBS, & BTS)									
31		1,251,556		\$300,585	1,251,556		\$300,961	\$376		
32	SYSTEM TOTAL w/BTS	9,417,004	\$0.28021	\$2,638,777	9,417,004	\$0.28759	\$2,708,249	\$69,471	\$0.00738	2.6%
33	EOR Revenues	231,570	\$0.05313	\$12,303	231,570	\$0.05444	\$12,606	\$303	\$0.00131	2.5%
34	Total Throughput w/EOR Mth/yr	9,648,574			9,648,574					

1) These rates are for Natural Gas Transportation Service from "Citygate to Meter." The BTS rate is for service from Receipt Point to Citygate.
2) All rates include Franchise Fees & Uncollectible charges.

ATTACHMENT B

Advice No. 5211-B

Assumptions for Costs Estimates

BP 1

Category: Policies and Procedures

Title: Compliance Plan

Description: Written Compliance Plan identifying the policies, programs, procedures, instructions, documents, etc. used to comply with the Final Decision in this Proceeding (R.15-01-008). Exact wording TBD by the company and approved by the CPUC, in consultation with CARB. Compliance Plans shall be signed by company officers certifying their company's compliance. Compliance Plans shall include copies of all policies and procedures related to their Compliance Plans. Compliance Plans shall be filed biennially (i.e. every other year) to evaluate best practices based on progress and effectiveness of Companies' natural gas leakage abatement and minimization of methane emissions.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

Aside from the administrative costs (shown on a separate page), at this time, SoCalGas and SDG&E don't anticipate other incremental costs associated with this best practice.

BP 2

Category: Policies and Procedures

Title: Methane GHG Policy

Description: Written company policy stating that methane is a potent Green House Gas (GHG) whose emissions to the atmosphere must be minimized. Include reference to SB 1371 and SB 1383. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 3

Category: Policies and Procedures

Title: Pressure Reduction Policy

Description: Written company policy stating that pressure reduction to the lowest operationally feasible level in order to minimize methane emissions is required before non-emergency venting of high-pressure distribution (above 60 psig), transmission and underground storage infrastructure consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 4

Category: Policies and Procedures

Title: Project Scheduling Policy

Description: Written company policy stating that any high pressure distribution (above 60 psig), transmission or underground storage infrastructure project that requires evacuating methane will build time into the project schedule to minimize methane emissions to the atmosphere consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Projected schedules of high pressure distribution (above 60 psig), transmission or underground storage infrastructure work, requiring methane evacuation, shall also be submitted to facilitate audits, with line venting schedule updates TBD. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 5

Category: Policies and Procedures

Title: Methane Evacuation Procedures

Description: Written company procedures implementing the BPs approved for use to evacuate methane for non-emergency venting of high pressure distribution (above 60 psig), transmission or underground storage infrastructure and how to use them consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 6

Category: Policies and Procedures

Title: Methane Evacuation Work Orders Policy

Description: Written company policy that requires that for any high pressure distribution (above 60 psig), transmission or underground storage infrastructure projects requiring evacuating methane, Work Planners shall clearly delineate, in procedural documents, such as work orders used in the field, the steps required to safely and efficiently reduce the pressure in the lines, prior to lines being vented, considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 7

Category: Policies and Procedures

Title: Bundling Work Policy

Description: Written company policy requiring bundling of work, whenever practicable, to prevent multiple venting of the same piping consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Company policy shall define situations where work bundling is not practicable. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 8

Category: Policies and Procedures

Title: Company Emergency Procedures

Description: Written company emergency procedures which describe the actions company staff will take to prevent, minimize and/or stop the uncontrolled release of methane from the gas system or storage facility consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 9

Category: Recordkeeping

Title: Recordkeeping

Description: Written Company Policy directing the gas business unit to maintain records of all SB 1371 Annual Emissions Inventory Report methane emissions and leaks, including the calculations, data and assumptions used to derive the volume of methane released. Records are to be maintained in accordance with G.O. 112 F and succeeding revisions, and 49 CFR 192. Currently, the record retention time in G.O. 112 F is at least 75 years for the transmission system. 49 CFR 192.1011 requires a record retention time of at least 10 years for the distribution system. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Data Management Software Package for Greenhouse Gas & Annual License			-			-		80,280	80,280			-		28,800	28,800			
Update IT systems to capture emissions data required by SB 1371. Development, testing, and reporting.			-			-	344,250		344,250	1,350,000	450,000	1,800,000	344,250		344,250	675,000	225,000	900,000
Project manager for new and updated SB1371 software			-			-	120,000		120,000			-	120,000		120,000			-
Engineering Data Analytics & Performance Optimization (EDAPO)			-			-			-	300,000	300,000	600,000			-	608,000	912,000	1,520,000
Transfer data into new systems so that we can apply new governance rules to it			-			-		240,000	240,000			-			-			-
Total SoCalGas	-	-	-	-	-	-	464,250	320,280	784,530	1,650,000	750,000	2,400,000	464,250	28,800	493,050	1,283,000	1,137,000	2,420,000

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Update IT systems to capture emissions data required by SB 1371			-			-	38,250		38,250	150,000	50,000	200,000	38,250		38,250	75,000	25,000	100,000
Total SDG&E	-	-	-	-	-	-	38,250	-	38,250	150,000	50,000	200,000	38,250	-	38,250	75,000	25,000	100,000

Assumptions and Supporting Calculations

Data Management Software Package for Greenhouse Gas & Annual License:
 Estimate was based on a draft proposal from a contractor.
 Estimated costs for the software and setup (2019): \$80,280
 Estimated costs for ongoing annual licensing (2020, ongoing): \$28,800

Update IT systems to capture emissions data required by SB 1371
 Estimated work includes the following activities:

- Update existing forms
- Modify existing reports
- Integrate changes with other systems
- Gather data
- Application Development and Testing
- Training and Post-Support
- Project and Program Manager time

Assumptions:

- Split: 90% SoCalGas, 10% SDG&E
- 67% of the costs are anticipated happen in 2019, and the remaining 33% will happen in 2020.
- Labor estimate based on \$50 / hr. and estimated hours.

BP 9

Category: Recordkeeping

Title: Recordkeeping

- Non-labor estimate based on \$100 / hr. for contract labor and estimated hours.

Engineering Data Analytics & Performance Optimization (EDAPO):

SoCalGas is planning to provide capabilities to support advanced analytics for Gas Operations & System Integrity and Transmission & Storage. Advanced analytics will provide actionable insights on gas assets' current and future performance. Advanced analytics will be necessary to manage compliance requirements such as those of recently enacted Senate Bill (SB) 1371 "Natural Gas Leakage Abatement". One of SB1371's requirements is the installation of hundreds of new continuous methane sensors throughout the service area along with the required analysis of sensor data. The EDAPO Program will implement the tools, infrastructure and resources to drive the improvement of our business operations and enable the proactive management of gas assets.

The cost estimate was derived by evaluating other comparable information technology projects. This estimate is the first phase of a larger project.

Project manager for new and updated SB1371 software

One project manager is needed to manage the new and updated software being developed for SB 1371 records. Salary is estimated to be \$120,000.

Other Activities

In addition, the following activities are expected to support this best practice. These activities are funded through the General Rate Case, and are not incremental for this best practice.

High Pressure Maintenance and Inspection System (Maximo) Enhancements:

SoCalGas is planning to improve reliability of the mission critical operations systems to enhance meeting company's compliance with Federal and State regulatory requirements. This project includes developing Condition Based Maintenance and Predictive maintenance capabilities. Also, improve the systems infrastructure to Tier 1 to enable high availability environment for Maximo and related Cognos BI environments.

Gas Operations RDMS (Records and Document Management System):

SoCalGas is in process of consolidating multiple systems that are currently used for Records and Document Management into a centralized platform. The new RDMS will provide enhanced governance capabilities and enable business units to uniformly manage their records and documents which is consistent with the corporate records management policies. The project will implement departmental records and document management libraries to provide robust record management capabilities. The RDMS platform will provide capabilities for document management, records management, digital asset management, image capture, collaboration, auto classification, and federated search.

Gas Operations OSI/PI (Centralized Process Historian) system enhancements:

SoCalGas has implemented a robust centralized process historian to track and analyze various elements of operations in a real-time manner. This project will improve the capabilities of the system and provide additional capabilities to meet regulatory and system security requirements. This phase of the project will provide capabilities data for:

- Additional Regulatory Reports,
- Quarterly and Annual GO 112F reports,
- Operational Over and Under pressure information for CPUC incident reporting,
- MOP Pressure System Reports for Pipeline Integrity group,
- Security Risk Mitigation - Establish DMZ around PI Servers to prevent external hacking risks,
- Database enhancements for Distribution Pressure System Database,
- GIS Portal Integration,
- Implement Production, Development and Disaster Recovery environments to enhance integration of OSI/PI and GIS systems – which provides many critical data through GIS portal including Aliso Canyon fence line methane data to public, etc.

New Engineering Data Analytics & Performance Optimization (EDAPO) Team

In Gas Engineering's General Rate Case, five incremental employees have been included for a new Engineering Data Analytics and Performance Optimization team.

BP 10

Category: Training
Title: Minimize Uncontrolled Natural Gas Emissions Training

Description: Training to ensure that personnel know how to use company emergency procedures which describe the actions staff shall take to prevent, minimize and/or stop the uncontrolled release of natural gas from the gas system or storage facility. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company's General Rate Case (GRC) and/or Collective Bargaining Unit (CBC) processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

This Best Practice is in line with existing emergency procedures at both utilities. During emergencies, our first priority is to ensure safety, our second priority is to provide continuity of service to customers, and third, control methane emissions. No changes are required to existing policies or trainings as a result of this best practice.

BP 11

Category: Training
Title: Methane Emissions Minimization Policies Training

Description: Ensure that training programs educate workers as to why it is necessary to minimize methane emissions and abate natural gas leaks. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company's GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Equipment			-		-	-		7,200	7,200			-		1,200	1,200			-
Continuous training			-			-	25,200		25,200			-	25,200		25,200			-
Train employees on new SB 1371 module			-			-			-			-	25,200		25,200			-
Total SoCalGas	-	-	-	-	-	-	25,200	7,200	32,400	-	-	-	50,400	1,200	51,600	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Training development, instructional design			-			-		18,000	18,000			-			-			-
Training development, SME			-			-	3,000		3,000			-			-			-
Equipment			-		-	-		7,200	7,200			-		1,200	1,200			-
Continuous training			-			-	12,000		12,000			-	12,000		12,000			-
Total SDG&E	-	-	-	-	-	-	15,000	25,200	40,200	-	-	-	12,000	1,200	13,200	-	-	-

Assumptions and Supporting Calculations

SoCalGas

Training development, instructional design: Development of competency based training for BPs 11-13 is combined in Best Practice 13
 Training development, SME: 50 hours of curriculum development support by SME.
 Equipment: Purchase equipment used for training (same equipment as in the field).
 Continuous training: One hour of instruction for 400 employees.
 Train employees on new SB 1371 module: Training for 400 employees on new one-hour SB 1371 training module.
 Hourly training rate = \$50, \$35 per hour in labor plus \$15 to account for commuting time
 Current Employees: 386 (16 Transmission, 63 Storage, 266 Distribution, 41 Measurement & Regulation), rounded to 400 due to hiring proposed for SB 1371

SDG&E

Training development, instructional design: 300 hours of training module development by agency instructional designer
 Training development, SME: 50 hours of training module development by subject matter expert
 Equipment: 20 hours of work by agency instructional designer. Development of visual aids, handouts, course materials, tests.
 Continuous training: Purchase new equipment to use during demonstrations and hands-on testing.
 200 employees to be trained for one hour.

BP 12

Category Training

Title: Knowledge Continuity Training Programs

Description: Knowledge Continuity (Transfer) Training Programs to ensure knowledge continuity for new methane emissions reductions best practices as workers, including contractors, leave and new workers are hired. Knowledge continuity training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company's GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Equipment			-			-		1,200	1,200			-		1,200	1,200			-
Continuous training			-			-	25,200		25,200			-	25,200		25,200			-
Total SoCalGas	-	-	-	-	-	-	25,200	1,200	26,400	-	-	-	25,200	1,200	26,400	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Training development, instructional design			-			-		30,000	30,000			-			-			-
Training development, SME			-			-	12,000		12,000			-			-			-
Equipment			-			-		1,200	1,200			-		1,200	1,200			-
Continuous training			-			-	12,000		12,000			-	12,000		12,000			-
Total SDG&E	-	-	-	-	-	-	24,000	31,200	55,200	-	-	-	12,000	1,200	13,200	-	-	-

Assumptions and Supporting Calculations

SoCalGas

Training development, instructional design: Development of competency based training for BPs 11-13 is combined in Best Practice 13
 Equipment: 20 hours of work by vendor instructional designer. Development of visual aids, handouts, course materials,
 Continuous training: One hour of instruction for 400 employees.

SDG&E

Training development, instructional design: 500 hours of training module development by agency instructional designer
 Training development, SME: 200 hours of training module development by subject matter expert
 Equipment: 20 hours of work by agency instructional designer. Development of visual aids, handouts, course materials, tests.
 Continuous training: 200 employees to be trained for one hour.

Other Activities

In addition, the following activity is expected to support this best practice. This activity is funded through the General Rate Case, and is not incremental for this best practice.

Web Refresh

BP 12

Category Training

Title: Knowledge Continuity Training Programs

Gas Operations Departmental Website redesign:

Gas Operations maintains multiple intranet websites to provide departmental specific content to over 5000 company employees. SoCalGas is intending to enhance the departmental websites to improve knowledge transfer and help meeting governmental compliance and regulatory requirements. This project plans to leverage existing SharePoint platform to develop and stand-up new websites across Gas Engineering, empower content owners to maintain their sites by providing them the required tools and training guides, and enable enhanced searching capabilities to locate all the relevant information for documents, links, points of contact, project status, etc. This project will create an integrated SharePoint framework for managed web content under Gas Engineering departments that include Gas Infrastructure, Tools & Materials, Regulatory & Compliance, Knowledge Management, Frequently Asked Question, and Department and Team Definitions, Roles and Responsibilities.

BP 13

Category: Training

Title: Performance Focused Training Programs

Description: Create and implement training programs to instruct workers, including contractors, on how to perform the BPs chosen, efficiently and safely. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company's GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Training development, web and video based training			-			-		744,512	744,512			-		1,511,696	1,511,696			-
Train-the-trainer seminars													201,720					
Equipment			-			-		1,200	1,200		72,000	72,000		1,200	1,200			-
Continuous training			-			-	25,200		25,200			-	25,200					-
Total SoCalGas	-	-	-	-	-	-	25,200	745,712	770,912	-	72,000	72,000	25,200	1,714,616	1,538,096	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Training development, instructional design			-			-		30,000	30,000			-			-			-
Training development, SME			-			-	12,000		12,000			-			-			-
Equipment			-			-		1,200	1,200		72,000	72,000		1,200	1,200			-
Continuous training			-			-	12,000		12,000			-	12,000					-
Total SDG&E	-	-	-	-	-	-	24,000	31,200	55,200	-	72,000	72,000	12,000	1,200	13,200	-	-	-

Assumptions and Supporting Calculations

SoCalGas

Training development, instructional design: Develop a comprehensive, multimedia, competency-based training system including self-paced, individualized, modular instruction, eLearning, just-in-time training, structured on-the-job training and mentoring.

Training development, SME: 200 hours of training module development consultation, writing

Equipment: 20 hours of work by vendor instructional designer.

Purchase equipment used for training (same equipment as in the field). This includes a mobile methane mapping vehicle (\$30,000) and Optical Methane Detector (\$30,000).

Continuous training: One hour of instruction for 400 employees.

SDG&E

Training development, instructional design: 500 hours of training module development by agency instructional designer

Training development, SME: 200 hours of training module development by subject matter expert

Equipment: 20 hours of work by agency instructional designer. Development of visual aids, handouts, course materials, tests.

Purchase new equipment to use during demonstrations and hands-on testing. This includes a mobile methane mapping vehicle (\$30,000) and Optical Methane Detector (\$30,000).

Continuous training: 200 employees to be trained for one hour.

BP 13**Category:** Training**Title:** Performance Focused Training Programs

After the total cost estimates were finalized for the Tier 3 Advice Letter, the following update was made:

- Specific incremental equipment was identified for this best practice, which increased the 2018 capital estimate. Incremental equipment includes a mobile methane mapping vehicle (\$30,000) and Optical Methane Detector (\$30,000).
- Costs were updated to include 20% contingency
- A competency based training program is proposed to include instructional design for Best Practices 11-13, which will include development of video and online training modules to allow training to be facilitated at all locations, removing limitations of instructor availability, and mileage and hotel costs.

BP 14

Category: Experienced, Trained Personnel

Title: Formal Job Classifications

Description: Create new formal job classifications for apprentices, journeyman, specialists, etc., where needed to address new methane emissions minimization and leak abatement best practices, and filed as part of the Compliance Plan filing, to be approved by the CPUC, in consultation with CARB.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SoCalGas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SDG&E	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Assumptions and Supporting Calculations

At this time, SoCalGas and SDG&E don't anticipate incremental costs associated with this best practice.

BP 15

Category: Leak Detection

Title: Gas Distribution Leak Surveys

Description: Utilities should conduct leak surveys of the gas distribution system every 3 years, not to exceed 39 months, in areas where G.O. 112-F, or its successors, requires surveying every 5 years. In lieu of a system-wide three-year leak survey cycle, utilities may propose and justify in their Compliance Plan filings, subject to Commission approval, a risk-assessment based, more cost-effective methodology for conducting gas distribution pipeline leak surveys at a less frequent interval. However, utilities shall always meet the minimum requirements of G.O. 112-F, and its successors.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Incremental leak survey field employees			-			-	1,038,259	14,574	1,052,833			-	1,038,259	14,574	1,052,833			-	
Incremental leak survey office employees			-			-	341,952	4,800	346,752			-	341,952	4,800	346,752			-	
Incremental leak survey supervisors			-			-	360,000	3,600	363,600			-	360,000	3,600	363,600			-	
Incremental QA employees			-			-	360,000	3,600	363,600			-	360,000	3,600	363,600			-	
Heath RMLDs			-			-			-		381,655	381,655			-			-	
Heath DPIRs			-			-			-		181,740	181,740			-			-	
Vehicles for field employees			-			-			-		109,306	109,306			-			-	
Vehicles for supervisors and QA			-			-			-		54,000	54,000			-			-	
System updates/enhancements to SAP and GIS			-			-	9,057		9,057			-			-			-	
Total SoCalGas			-			-	2,109,268	26,574	2,135,842		726,701	726,701	2,100,211	26,574	2,126,785			-	

SDG&E	2018						2019						2020						
	O&M			Capital			O&M			Capital			O&M			Capital			
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	
Brief Description of Activity under This BP																			
Incremental leak survey field employees			-			-	210,454	2,954	213,408			-	210,454	2,954	213,408			-	
Incremental leak survey office employees			-			-	85,488	1,200	86,688			-	85,488	1,200	86,688			-	
Incremental leak survey supervisors			-			-	120,000	1,200	121,200			-	120,000	1,200	121,200			-	
Heath RMLDs			-			-			-		62,037	62,037			-			-	
Heath DPIRs			-			-			-		29,541	29,541			-			-	
Vehicles for field employees			-			-			-		22,156	22,156			-			-	
Vehicles for supervisors and QA			-			-			-		9,000	9,000			-			-	
System updates/enhancements to SAP and GIS			-			-	896		896			-			-			-	
Total SDG&E			-			-	416,837	5,354	422,191		122,735	122,735	415,942	5,354	421,296			-	

Assumptions and Supporting Calculations

Leak Survey

SoCalGas	Value
Costs using labor assumptions	
Feet surveyed per day per person	6,114
Feet surveyed annually per field employee	1,271,712
Feet currently surveyed on 5-year cycle	115,837,920
Current annual feet surveyed associated with 5 year cycle	23,167,584
Annual surveys based on moving 5 year to 3 year	38,612,640
Incremental annual feet surveyed	15,445,056
Incremental leak survey field FTEs	12
Incremental leak survey office employees	4
Supervisors	3
QA employees	3

BP 15

Category: Leak Detection
Title: Gas Distribution Leak Surveys

SDG&E Assumptions and Calculations	
Costs using labor assumptions	Value
Feet surveyed per day per person	6,114
Feet surveyed annually per field employee	1,271,712
Feet currently surveyed on 5-year cycle	23,480,160
Current annual feet surveyed associated with 5 year cycle	4,696,032
Annual surveys based on moving 5 year to 3 year	7,826,720
Incremental annual feet surveyed	3,130,688
Incremental leak survey field FTEs	2
Incremental leak survey office employees	1
Supervisors	1
QA employees	0

Survey Measures	
Survey/Day (ft./day)	6114
Represented Rate (/hr.)	\$34.25

Equipment & Vehicles	
Heath RMLD	\$ 21,000
Heath DPIR	\$ 10,000
Average Annual Vehicle Cost	\$ 7,500

Every field employee and QA employee will need an RMLD, DPIR, and vehicle. Supervisors will need vehicles.

Software & Reporting Upgrades/Enhancements

150 total estimated hours across various departments @ \$55.29/hr., 91/9 split between utilities

Non-Labor O&M is estimated to be \$1,000 per employee. This accounts for miscellaneous tooling/supplies

In addition to the incremental items identified above, the following activity is also expected to support this best practice. This activity is funded through the General Rate Case, and is not an incremental cost for this best practice.

Enhanced Leak Survey - Early Vintage Plastic Pipe

SoCalGas and SDG&E plan to increase survey cycle requirements for all pre-1986 plastic pipe (Aldyl-A) from a five-year survey cycle to an annual cycle. Aldyl-A is a polyethylene plastic pipe material widely used in the gas industry. Early vintages of this material (1970s and 1980s) can experience brittleness as it ages, increasing the risk for leakage.

BP 16

Category: Leak Detection

Title: Special Leak Surveys

Description: Utilities shall conduct special leak surveys, possibly at a more frequent interval than required by G.O. 112-F (or its successors) or BP 15, for specific areas of their transmission and distribution pipeline systems with known risks for natural gas leakage. Special leak surveys may focus on specific pipeline materials known to be susceptible to leaks or other known pipeline integrity risks, such as geological conditions. Special leak surveys shall be coordinated with transmission and distribution integrity management programs (TIMP/DIMP) and other utility safety programs. Utilities shall file in their Compliance Plan proposed special leak surveys for known risks and proposed methodologies for identifying additional special leak surveys based on risk assessments (including predictive and/or historical trends analysis). As surveys are conducted over time, utilities shall report as part of their Compliance Plans, details about leakage trends. Predictive analysis may be defined differently for differing companies based on company size and trends.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Accelerated leakage survey for unprotected steel pipe (3-year to 1-year)			-			-	833,508		833,508			-	1,111,344		1,111,344			-
Leak Survey Equipment			-			-			-		600,600	600,600			-			-
Total SoCalGas	-	-	-	-	-	-	833,508	-	833,508	-	600,600	600,600	1,111,344	-	1,111,344	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Accelerated leakage survey for pre-1950 steel pipe (5-year to 1-year)			-			-	64,116		64,116			-	85,488		85,488			-
Leak Survey Equipment			-			-			-		46,200	46,200			-			-
Total SDG&E	-	-	-	-	-	-	64,116	-	64,116	-	46,200	46,200	85,488	-	85,488	-	-	-

SoCalGas Assumptions and Supporting Calculations

SoCalGas Additional miles of main survey required annually	3066
SDG&E Additional miles of main survey required annually	266

Survey Measures	
Survey/Day (ft./day)	6114
Represented Rate (/hr.)	\$34.25
Daily Survey (hr./day)	6.5

Equipment & Vehicles	
Heath RMLD	\$ 21,000
Heath DPIR	\$ 10,000
Average Annual Vehicle Cost	\$ 7,500

SoCalGas	
Costs using labor assumptions	Value

BP 16

Category: Leak Detection

Title: Special Leak Surveys

Feet surveyed per day per person	6,114
Feet surveyed annually per field employee	1,271,712
Incremental annual feet surveyed	16,188,480
Incremental leak survey field FTEs	13

SDG&E	
Costs using labor assumptions	Value
Feet surveyed per day per person	6,114
Feet surveyed annually per field employee	1,271,712
Incremental annual feet surveyed	1,404,480
Incremental leak survey field FTEs	1

Other Activities

In addition to the incremental items identified above, the following activity is also expected to support this best practice. This activity is funded through the General Rate Case, and is not an incremental cost for this best practice.

Enhanced Leak Survey - Early Vintage Plastic Pipe

SoCalGas and SDG&E plan to increase survey cycle requirements for all pre-1986 plastic pipe (Aldyl-A) from a five-year survey cycle to an annual cycle. Aldyl-A is a polyethylene plastic pipe material widely used in the gas industry. Early vintages of this material (1970s and 1980s) can experience brittleness as it ages, increasing the risk for leakage.

BP 17

Category: Leak Detection

Title: Enhanced Methane Detection

Description: Utilities shall utilize enhanced methane detection practices (e.g. mobile methane detection and/or aerial leak detection) including gas speciation technologies.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Methane Speciation (EAC Van)			-			-	115,979	19,206	135,185		120,000	120,000	115,979	19,206	135,185			-
Total SoCalGas	-	-	-	-	-	-	115,979	19,206	135,185	-	120,000	120,000	115,979	19,206	135,185	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Methane Speciation (EAC Van)			-			-	57,989	16,206	74,195		120,000	120,000	57,989	16,206	74,195			-
Total SDG&E	-	-	-	-	-	-	57,989	16,206	74,195	-	120,000	120,000	57,989	16,206	74,195	-	-	-

Assumptions and Supporting Calculations

Project Description

Expand the capacity of the Engineering Analysis Center (EAC) to respond to requests from Operations for leak speciation where methane source is in question. Current on-site identification of methane emissions is very robust. The lower detection limits of new advanced leak detection instrumentation plus increased level of leak survey activities being driven by SB-1371 requires an expansion of these resources.

Assumptions

Estimated that one additional resource needed for SoCalGas and ½ resource for SDG&E. Non-labor and capital expenditures are associated with equipment, consumables and vehicles.

BP 18

Category: Leak Detection

Title: Stationary Methane Detectors

Description: Utilities shall utilize Stationary Methane Detectors for early detection of leaks. Locations include: Compressor Stations, Terminals, Gas Storage Facilities, City Gates, and Metering & Regulating (M&R) Stations (M&R above ground and pressures above 300 psig only). Methane detector technology should be capable of transferring leak data to a central database, if appropriate for location.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020							
	O&M			Capital			O&M			Capital			O&M			Capital				
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total		
Brief Description of Activity under This BP																				
Install stationary methane LEL sensors at Compressor Stations			-			-	48,000		-	48,000	7,200	39,600	46,800			-	14,400	79,200	93,600	
Install stationary methane LEL sensors at Terminals			-			-	48,000		-	48,000	98,400	144,000	242,400			-	196,800	288,000	484,800	
Install stationary methane LEL sensors at City Gates			-			-	48,000		-	48,000	30,000	108,000	138,000			-	60,000	216,000	276,000	
Install stationary methane LEL sensors at Gas Storage Facilities			-			-	48,000		-	48,000	7,200	39,600	46,800			-	14,400	79,200	93,600	
Install stationary methane LEL sensors at Metering & Regulating (M&R) Stations (above ground and pressures above 300 psig only)			-			-	48,000		-	48,000	108,000	30,000	138,000			-	216,000	60,000	276,000	
Transmission, 3 incremental FTEs for O&M and alarm response			-			-	360,000		-	360,000			-	360,000		-			-	
Storage, 3 incremental FTEs for O&M and alarm response			-			-	360,000		-	360,000			-	360,000		-			-	
Distribution, 2 incremental FTEs for O&M and alarm response			-			-	240,000		-	240,000			-	240,000		-			-	
Major Projects, 1 incremental FTE for program planning and oversight			-			-	120,000		-	120,000			-	120,000		-			-	
Total SoCalGas	-	-	-	-	-	-	1,320,000		-	1,320,000	250,800	361,200	612,000	1,080,000		-	1,080,000	501,600	722,400	1,224,000

SDG&E	2018						2019						2020							
	O&M			Capital			O&M			Capital			O&M			Capital				
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total		
Brief Description of Activity under This BP																				
Install stationary methane LEL sensors at Metering & Regulating (M&R) Stations (above ground and pressures above 300 psig only)			-			-	24,000		-	24,000	60,000	18,000	78,000			-	120,000	36,000	156,000	
Install stationary methane LEL sensors at Compressor Stations			-			-	6,000		-	6,000	24,000	60,000	84,000			-	24,000	60,000	84,000	
Crew time to investigate alarms - Transmission (10% of SoCalGas)			-			-	43,200		-	43,200			-	43,200		-			-	
Crew time to investigate alarms - Distribution (28% of SoCalGas)			-			-	120,960		-	120,960			-	120,960		-			-	
Total SDG&E	-	-	-	-	-	-	194,160		-	194,160	84,000	78,000	162,000	164,160		-	164,160	144,000	96,000	240,000

Assumptions and Supporting Calculations

Stationary Methane LEL Sensors

SoCalGas			Year	2019	2020	2021
			Dist	24	48	48
			Trans	20	40	40
			Storage	3	6	6
Department	QTY	Unit Price		20%	40%	40%

BP 18

Category: Leak Detection
Title: Stationary Methane Detectors

Distribution	121	\$ 6,500	\$ 786,500	\$157,300	\$314,600	\$314,600
Transmission	100	\$11,000	\$ 1,100,000	\$220,000	\$440,000	\$440,000
Storage	15	\$11,000	\$ 165,000	\$ 33,000	\$ 66,000	\$ 66,000
Subtotal	236		\$2,051,500	\$410,300	\$820,600	\$820,600
Upgrades to capture data into centralized system				\$100,000		
Total				\$510,000	\$821,000	\$821,000

SDG&E			Year		
			2019	2020	2021
			Dist	7	14
			Trans	2	2
Department	QTY	Unit Price	20%	40%	40%
Distribution	34	\$ 6,500	\$ 221,000	\$ 44,200	\$ 88,400
Transmission	6	\$15,000	\$ 90,000	\$ 30,000	\$ 30,000
Total			\$ 311,000	\$ 74,200	\$118,400
Upgrades to capture data into centralized system			\$ 61,000		
Total			\$135,000	\$118,000	\$118,000

The 2018 O&M is the estimated labor for project management to start planning the 2019 installations.

CARB Ruling - Upwind/Downwind per Storage Field

\$260k for upwind/downwind sensors (1 storage field & 2 sites)

Cost based on potential methane analyzers with requirements of enclosure/shed, climate control, sample system, etc. for the installs.

Crew Time Estimates

SoCalGas

Hourly Cost (2-Man Crew)	\$200
Estimated Hours per Month:	
SoCalGas Transmission	8
SoCalGas Distribution	8
SoCalGas Storage	4

SDG&E

Estimated by on comparing the 2019 Methane Sensors to be installed by SDG&E to SoCalGas.

SDG&E Percentage for Distribution	28%
SDG&E Percentage for Transmission	10%

BP 19

Category: Leak Detection

Title: Above Ground Leak Surveys

Description: Utilities shall conduct frequent leak surveys and data collection at above ground transmission and high pressure distribution (above 60 psig) facilities including Compressor Stations, Gas Storage Facilities, City Gates, and Metering & Regulating (M&R) Stations (M&R above ground and pressures above 300 psig only). At a minimum, above ground leak surveys and data collection must be conducted on an annual basis for compressor stations and gas storage facilities.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Distribution Regression Testing			-			-	43,200		43,200			-	43,200		43,200			-
Distribution Training			-			-	25,920		25,920			-			-			-
Distribution Leak Detection Units			-			-			-		137,280	137,280			-			-
Distribution Calibration Stations			-			-			-		47,040	47,040			-			-
Distribution Calibration Gas			-			-			-		16,296	16,296			-			-
Distribution Calibration Gas Annually			-			-		13,968	13,968			-		13,968	13,968			-
Distribution Incremental on site cost annually			-			-	270,000		270,000			-	270,000		270,000			-
Total SoCalGas	-	-	-	-	-	-	339,120	13,968	353,088	-	200,616	200,616	313,200	13,968	327,168	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Distribution Training			-			-	5,184		5,184			-	-		-			-
Distribution Leak Detection Units			-			-			-		20,592	20,592			-			-
Distribution Calibration Stations			-			-			-		3,360	3,360			-			-
Distribution Calibration Gas			-			-			-		1,164	1,164			-			-
Distribution Calibration Gas Annually			-			-		1,164	1,164			-		1,164	1,164			-
Distribution Incremental on site cost annually			-			-	37,800		37,800			-	37,800		37,800			-
Total SDG&E	-	-	-	-	-	-	42,984	1,164	44,148	-	25,116	25,116	37,800	1,164	38,964	-	-	-

Assumptions and Supporting Calculations

While both SB1371 and the CARB Oil and Gas regulations are aimed at preventing or reducing fugitive emissions associated with oil and gas operations, they take different approaches in doing so. The CARB Oil and Gas regulation specifically applies to Transmission and Storage facilities and has the implementation of Leak Detection and Repair (LDAR) as a key requirement. The “leak detection” portion of LDAR is similar to SB1371 Best Practice #19 – Aboveground Leak Surveys. The CARB regulation requires quarterly leak surveys while SB1371 specifies above-ground surveys be conducted at least annually. Funding for the quarterly leak surveys at compressor stations and underground storage facilities required to meet the requirements of CARB Oil and Gas as well as SB 1371 was requested in the 2019 GRC in the testimony of Mr. Darrell Johnson. 2018 costs will be recorded to the CARB Oil and Gas program costs.

Transmission Surveys

Contractor Estimate to Survey All Compressor Stations Quarterly	\$ 40,000
SoCalGas Portion (Based on Number of Compressor Stations)	91%
SDG&E Portion	9%

BP 19

Category: Leak Detection
Title: Above Ground Leak Surveys

Storage Surveys

2017 Cost for Annual Leak Survey at Aliso Canyon and Honor Rancho Facilities	\$ 97,722
Estimated Cost to Add 3 Facilities (Smaller Facilities / Less Survey) - Approximately 75% of Aliso Canyon and Honor Rancho	\$ 75,000
Total Cost of Annual Leak Surveys at 5 Storage Fields	\$ 172,722
Quarterly Surveys at 5 Storage Fields	\$ 690,887

Distribution Surveys

	SoCalGas Distribution		SDG&E Distribution	
Leak Detection Unit w/ Accessories	\$	1,430	\$	1,430
Calibration Station	\$	2,800	\$	2,800
Calibration Station Gases (165 Calibrations)	\$	970	\$	970
 Complete System	\$	5,200	\$	5,200
 Data Points	#	Hourly Pay	#	Hourly Pay
M&R Technicians	120	\$ 45.00	24	\$ 45.00
M&R Trucks	80		12	
M&R Bases with Calibration Station	14		1	
Calibration Gas Bottles Annually @ \$165 / bottle	12		1.0	
Inspections Annually	10000		1400	
Incremental on Site Time per Inspection	0.5		0.5	
 Cost Estimate	O&M	Capital	O&M	Capital
Regression Testing	\$ 36,000		0	
Training @ 4 hours	\$ 21,600		\$ 4,320	
Leak Detection Units		\$ 114,400		\$ 17,160
Calibration Stations at 14 Bases		\$ 39,200		\$ 2,800
Calibration Gas		\$ 13,580		\$ 970
Total	<u>\$ 57,600</u>	<u>\$ 167,180</u>	<u>\$ 4,320</u>	<u>\$ 20,930</u>
		<u>\$ 224,780</u>		<u>\$ 25,250</u>
 On Going O&M Cost				
Calibration Gas Annually	\$	11,640	\$	970
Incremental on Site Cost Annually	\$	225,000	\$	31,500
	<u>\$</u>	<u>236,640</u>	<u>\$</u>	<u>32,470</u>

BP 20a

Category: Leak Detection

Title: Quantification

Description: Utilities shall develop methodologies for improved quantification and geographic evaluation and tracking of leaks from the gas systems. Utilities shall file in their Compliance Plan how they propose to address quantification. Utilities shall work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve emissions quantification of leaks to assist demonstration of actual emissions reductions.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
ID (decisions tree) & Measurement (surface expression) of large leaks			-			-	536,134	70,968	607,102		120,000	120,000	960,000		960,000		360,000	360,000
Total SoCalGas	-	-	-	-	-	-	536,134	70,968	607,102	-	120,000	120,000	960,000	-	960,000	-	360,000	360,000

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
ID (decisions tree) & Measurement (surface expression) of large leaks			-			-	152,088	17,742	169,830			-	152,088	17,742	169,830		120,000	120,000
Total SDG&E	-	-	-	-	-	-	152,088	17,742	169,830	-	-	-	152,088	17,742	169,830	-	120,000	120,000

Assumptions and Supporting Calculations

Project Description

Develop a method to differentiate leak locations with potential larger leak rates and to conduct leak quantification resulting in leak repairs prioritized by leak rate.

Assumptions

Labor resource estimate is based on two-man crew to perform surface expression measurements at the identified leak sites. For SoCalGas it is estimated that the equivalent of four full time crews would be needed (8 FTEs) and for SDG&E ½ of a full time crew would be needed (1 FTE). In addition, 1 shared services Project Manager to manage the overall program and data analytics. Non-labor and capital expenditures are associated with equipment, consumables and vehicles.

BP 20b

Category: Leak Detection

Title: Geographic Tracking

Description: Utilities shall develop methodologies for improved geographic tracking and evaluation of leaks from the gas systems. Utilities shall work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve geographic evaluation and tracking of leaks to assist demonstrations of actual emissions reductions. Leak detection technology should be capable of transferring leak data to a central database in order to provide data for leak maps. Geographic leak maps shall be publicly available with leaks displayed by zip code or census tract.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Business Analyst required to support new Electronic Leak Survey Application	24,297		24,297			-	101,556		101,556			-	101,556		101,556			-
Developer required to support new Electronic Leak Survey Application	24,297		24,297			-	101,556		101,556			-	101,556		101,556			-
Business Analysts and Developers required to support Maximo Mobile Interface to Electronic Leak Survey, Maximo / GIS Asset Sync and Leak Survey Tracker Interfaces	60,606		60,606			-	253,890		253,890			-	253,890		253,890			-
Maximo Open Form Software Subscriptions required to support Maximo Mobile Interface to Electronic Leak Survey			-			-		109,200	109,200			-		109,200	109,200			-
Storage Field Scanning/GIS data capture application/AVEVA application cost estimate			-			-	357,600	828,000	1,185,600	360,000	240,000	600,000			-			-
Storage Field Scanning/GIS data capture application/AVEVA application ongoing support			-			-	240,000		240,000			-	240,000		240,000			-
Storage Field Scanning/GIS data capture application/AVEVA application -- GIS data capture			-			-	200,000		200,000			-	200,000		200,000			-
Back-modeling all the storage fields and compressor stations in AVEVA			-			-	686,000	2,254,000	2,940,000	9,333	30,667	40,000	1,372,000	4,508,000	5,880,000	18,667	61,333	80,000
IT System Improvements to integrate third party leak inspection records with existing systems where follow-up mitigation is tracked.			-			-	60,000	240,000	300,000			-			-			-
Training employees			-			-	138,000		138,000			-	138,000		138,000			-
Total SoCalGas	109,200	-	109,200	-	-	-	2,138,602	3,431,200	5,569,802	369,333	270,667	640,000	2,407,002	4,617,200	7,024,202	18,667	61,333	80,000

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Business Analyst required to support new Electronic Leak Survey Application	2,403		2,403			-	10,044		10,044			-	10,044		10,044			-
Developer required to support new Electronic Leak Survey Application	2,403		2,403			-	10,044		10,044			-	10,044		10,044			-
Business Analysts and Developers required to support Maximo Mobile Interface to Electronic Leak Survey, Maximo / GIS Asset Sync and Leak Survey Tracker Interfaces	5,994		5,994			-	25,110		25,110			-	25,110		25,110			-
Maximo Open Form Software Subscriptions required to support Maximo Mobile Interface to Electronic Leak Survey			-			-		10,800	10,800			-		10,800	10,800			-
Total SDG&E	10,800	-	10,800	-	-	-	45,198	10,800	55,998	-	-	-	45,198	10,800	55,998	-	-	-

Assumptions and Supporting Calculations

BP 20b

Category: Leak Detection
Title: Geographic Tracking

Business Analyst and Application Developer required to support new Electronic Leak Survey and Application Business Analysts and Developers required to support Maximo Mobile Interface to Electronic Leak Survey

	Hourly Rate	Hours			Total Labor			SoCalGas (91%)			SDG&E (9%)		
		2018 Hours	2019 Hours	2020 Hours	2018 Labor	2019 Labor	2020 Labor	2018 Labor	2019 Labor	2020 Labor	2018 Labor	2019 Labor	2020 Labor
Business Analyst required to support new Electronic Leak Survey Application	\$ 50	445	1860	1860	\$ 22,250	\$ 93,000	\$ 93,000	\$ 20,248	\$ 84,630	\$ 84,630	\$ 2,003	\$ 8,370	\$ 8,370
Developer required to support new Electronic Leak Survey Application	\$ 50	445	1860	1860	\$ 22,250	\$ 93,000	\$ 93,000	\$ 20,248	\$ 84,630	\$ 84,630	\$ 2,003	\$ 8,370	\$ 8,370
Business Analysts and Developers required to support Maximo Mobile Interface to Electronic Leak Survey, Maximo / GIS Asset Sync and Leak Survey Tracker Interfaces	\$ 50	1110	4650	4650	\$ 55,500	\$232,500	\$ 232,500	\$ 50,505	\$ 211,575	\$211,575	\$ 4,995	\$20,925	\$ 20,925

Maximo Open Form Software Subscriptions required to support Maximo Mobile Interface to Electronic Leak Survey

\$100,000 for ongoing incremental software licensing that will begin in 2019. (91% SoCalGas, 9% SDG&E)

IT System Improvements to integrate third party leak inspection records with existing systems where follow-up mitigation is tracked

Estimates are based on a combination of estimated hours of work and experiences with the similar projects, and assumes the use of currently existing technologies.

Storage Field Scanning / GIS data capture application / AVEVA application

System improvements to geospatially locate and track information on above ground facility components. Identify components that are leaking or have emissions and calculate internal gas volumes for blowdown calculations. Identify trends in leaking components.

	2018		2019		2020	
	O&M	Capital	O&M	Capital	O&M	Capital
Field Scanning (non-labor, O&M)			\$ 490,000			
Scanning PM & Support (20% of field scanning) (labor, O&M)			\$ 98,000			
Maximo tag data cleanup (50 % labor/50% non-labor, O&M))			\$ 400,000			
GIS Portal/Dashboard development (2 people 6 months) (labor, Capital)				\$ 100,000		
GIS data capture application development (50% labor/50%non-labor, Capital)				\$ 400,000		
Subtotal - Storage Field Scanning/GIS data capture application/AVEVA application cost estimate			\$ 988,000	\$ 500,000		
Engineering component & line class specifications (\$ 200,000 Capital, 23% Labor / 77% Non-Labor, 3-year project)				\$ 66,667		\$ 66,667
AVEVA P&ID conversion (~4800 P&IDs) (\$ 7,000,000 O&M, 23% Labor / 77% Non-Labor, 3-year project)			\$ 1,166,667		\$ 2,333,333	
AVEVA Engineering data capture (\$ 200,000 O&M, 23% Labor / 77% Non-Labor, 3-year project)			\$ 33,333		\$ 66,667	
3D back model- AVEVA E3D (\$ 3,600,000 O&M, 23% Labor / 77% Non-Labor, 3-year project)			\$ 600,000		\$ 1,200,000	
Application admins & support (\$ 2,500,000 O&M, 23% Labor / 77% Non-Labor, 3-year project)			\$ 416,667		\$ 833,333	

BP**20b**

Category:
Title:

Leak Detection
Geographic Tracking

Contingency for record search (\$ 1,400,000 O&M, 23% Labor / 77% Non-Labor, 3-year project)			\$ 233,333		\$ 466,667	
Subtotal - Back-modeling all the storage fields and compressor stations in AVEVA (3-year project)			\$ 2,450,000	\$ 66,667	\$ 4,900,000	\$ 66,667
Ongoing support for GIS and AVEVA(Cost per year 2 people) (labor, O&M)			\$ 200,000		\$ 200,000	
GIS data capture in UPDM (Convert and capture, in 3D, facilities including laterals) (Labor, O&M, 3-year project)			\$ 166,667		\$ 166,667	
Total			\$ 3,804,667	\$ 566,667	\$ 5,266,667	\$ 66,667

Training employees
1 FTE for will be needed to perform training seminars for 6 months, 210 users need training for 6 hours each on how to use the new technology and ipad mapping system.

BP 21

Category: Leak Repairs

Title: "Find It/Fix It"

Description: Utilities shall repair leaks as soon as reasonably possible after discovery, but in no event, more than three (3) years after discovery. Utilities may make reasonable exceptions for leaks that are costly to repair relative to the estimated size of the leak.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Code 3 Steel Leak Inventory - Main Leak Repairs	432,000	648,000	1,080,000	-	-	-	3,024,000	4,536,000	7,560,000	-	-	-	3,024,000	4,536,000	7,560,000	-	-	-
Code 3 Steel Leak Inventory - Service Replacements			-	387,300	903,700	1,291,000			-	852,060	1,988,140	2,840,200			-	852,060	1,988,140	2,840,200
Above Ground Leak Inventory			-			-	380,927	2,742,324	3,123,251			-	507,903	914,108	1,422,011			-
SoCalGas Software & Reporting Upgrades/Enhancements			-			-	13,270		13,270			-			-			-
Projected additional main leak repairs and service replacements for accelerated leakage survey from 5-year to 3-year survey cycles (BP 15)			-			-	116,640	1,320,960	1,437,600	331,529	773,567	1,105,096	116,640	1,320,960	1,437,600	331,529	773,567	1,105,096
Projected additional main leak repairs and service replacements for accelerated leakage survey for unprotected steel pipe (BP 16)			-			-	908,561	1,362,841	2,271,402	558,549	1,303,280	1,861,829	908,561	1,362,841	2,271,402	558,549	1,303,280	1,861,829
Vehicles for Distribution crews working on incremental leaks from accelerated leak surveys (BPs 15 & 16)			-			-			-		2,148,300	2,148,300			-			-
Storage repairs of above ground leaks associated with increased leak survey at above ground facilities (BP 19)			-			-	800,000	80,000	880,000	576,000	10,944,000	11,520,000	800,000	80,000	880,000	288,000	5,472,000	5,760,000
Transmission repairs of minor leaks associated with increased leak survey at above ground facilities (BP 19)			-			-	120,000	50,000	170,000	300,000	3,600,000	3,900,000	120,000	50,000	170,000	300,000	3,600,000	3,900,000
Total SoCalGas	432,000	648,000	1,080,000	387,300	903,700	1,291,000	5,363,397	10,092,125	15,455,523	2,618,138	20,757,287	23,375,425	5,477,104	8,263,909	13,741,013	2,330,138	13,136,987	15,467,125

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Transmission repairs of above ground leaks associated with increased leak survey at above ground facilities (BP 19)			-			-	12,000	5,000	17,000	30,000	360,000	390,000	12,000	5,000	17,000	30,000	360,000	390,000
Total SDG&E			-			-	12,000	5,000	17,000	30,000	360,000	390,000	12,000	5,000	17,000	30,000	360,000	390,000

Assumptions and Supporting Calculations

SoCalGas Code 3 Steel Leak Inventory
 Projected 2018 Code 3 Steel Leak Mitigation Forecast: 650 (Approximately 400 Repairs; 250 Svc Rpl)
 Projected 2019 Code 3 Steel Leak Mitigation Forecast: 3,500
 Projected 2020 Code 3 Steel Leak Mitigation Forecast: 3,500
 Code 3 Steel Leaks Repaired via O&M (80% Repairs): 2,800 per year
 • Assumes \$2,700 O&M cost per leak repair order
 • Assumes Labor/Non Labor (40%/60%)
 • FTE: 16 leaks a month x 10 months x 18 crews; 18 2-person crews = 36 FTEs
 Code 3 Steel Leaks Resolved via Capital Svc Replacements (20% Replacements): 700 per year
 • Assumes \$5,164 avg svc repl cost;
 • Assumes Labor/Non Labor (30%/70%)
 • FTE: (\$1,084,440)/(2,088 hours)/(\$38.54) = 13.4 FTE

SoCalGas AG Minor MSA Leak Inventory
 Projected 2019 AG Minor MSA Leak Repair Mitigation Forecast: 4,000 leaks
 Projected 2020 AG Minor MSA Leak Repair Mitigation Forecast: 4,000 leaks
 • Assumes \$103 O&M direct cost per repair order (Historical)
 • Estimate include AG Minor repairs as well since we only code AG Minor on the MSA
 • Assumes Labor/Non Labor (90%/10%)
 • FTE: 5,479/(30 leaks a month x 10 months) = 18 FTEs (1 Person crew)
 • 2 Supervisor FTEs
 • 20 trucks

BP 21

Category: Leak Repairs
Title: "Find It/Fix It"
 • Assumes \$80K per FTE; \$100K per standard company truck

SoCalGas Software & Reporting Upgrades/Enhancements
 200 total estimated hours across various departments @ \$55.29/hr.

Additional Leak Repairs (main) for accelerated leakage survey from 5 to 3 survey cycles (Steel, Medium Pressure Only)

- O&M Repair Projections:
- Forecasted 108 Leaks Found on Main (Repairs)
 - Cost Per Repair: \$2,700; 40% Labor/60% NL
 - FTE: 108 leaks = 1 crew (2 FTEs)
 - Assumes \$80K per FTE; \$222K per crew truck
- Capital Svc Repl Projections:
- Forecasted 214 Leaks Found on Services (Replacements)
 - \$5,164 a svc repl; 30% Labor/70% NL
 - FTE: $(\$331,529)/(2,088 \text{ hours})/(\$38.54) = 4.1$; (2 Crews)
 - Assumes \$80K per FTE; \$222K per crew truck

SDG&E anticipates that the Gas Distribution GRC forecast will account for incremental leak repairs associated with BP 15.

SoCalGas Projected additional main leak repairs and service replacements for accelerated leakage survey for unprotected steel pipe (BP 16)

The initiative to accelerate the survey of unprotected steel pipeline results in moving pipeline that is currently on a 3 year survey cycle to an annual survey cycle.

The calculation to determine the number of leaks found per year considered historical leak rate averages and the frequency for which the pipeline was surveyed. Using these average leak rates, the number of leaks found annually based on the last survey performed was estimated. The longer the period between surveys, the more leaks will be discovered on the subsequent survey. The period of each pipeline's last survey would vary from 1 year to 3 years and is considered when estimating the number leaks found during the initial year and subsequent years of implementing this initiative. Using the historic average leak rate and the period between pipeline survey cycles, the estimated number of additional leaks found in the first year was determined.

Additional miles of survey required annually	3066
Expected number of additional leaks found first year	2003

Leak Repair Costs by Facility Type		
	Main Repair	Service Replacement (Revised)
Labor	\$ 1,080.00	\$ 1,549.20
Non-labor	\$ 1,620.00	\$ 3,614.80
Total	\$ 2,700.00	\$ 5,164.00
% Leak Found - Facility (Based on historical data)	70%	30%

Vehicles for Distribution crews working on incremental leaks from accelerated leak surveys (BPs 15 & 16)

	Crews for Leak Repairs	Crew Trucks
Incremental leaks found during accelerated leakage survey from 5-year to 3-year survey cycles (BP 15)	6	6
Incremental leaks found during accelerated leakage survey for unprotected steel pipe (BP 16)	5	5
Total	11	11

Cost per Crew Truck	\$ 222,000
Years that the Vehicle Cost is Spread Across	8
Crew Truck Cost per Year	\$ 27,750
Leak Repair Tools & Materials for Each Crew Truck	\$ 135,000
Total Cost per Crew Truck in First Year	\$ 162,750

Transmission repairs of minor leaks associated with increased leak survey at above ground facilities (BP 19)

The SoCalGas Transmission estimate was based on the actual cost of incremental minor leak repairs made in 2017 and 2018. The SDG&E Transmission forecast was estimated to be 10% of the SoCalGas total.

Average cost of above ground capitalized minor leak repairs in 2017:	\$300,000
Average number of capitalized repairs of minor leaks per year:	12

SoCalGas Storage repairs of minor leaks associated with increased leak survey at above ground facilities (BP 19)

BP 21

Category: Leak Repairs
 Title: "Find It/Fix It"

Facility	Estimated Incremental FTEs	Daily Rate per FTE (~\$40/hr.)	Total Days	Total (260 days / yr.)
Aliso Canyon	4.0	\$ 320	260	\$332,800
Aliso Canyon OT	2.0	\$ 480	105	\$100,800
Honor Rancho	2.0	\$ 320	260	\$166,400
Playa del Rey	1.0	\$ 320	260	\$ 83,200
La Goleta	1.0	\$ 320	260	\$ 83,200
Total Annual Estimate				\$766,400

The O&M leak repair estimate for storage is based on estimated labor needs estimated based on incremental leaks found after implementing CARB Oil and Gas increased surveys. The capital repair estimates are very conservative and are based on a worst case scenario that would require replacement of critical capital infrastructure, such as compressors and valves. Actual spending will vary based on findings.

Other Activities

In addition to the incremental items identified above, the following activities are also expected to support this best practice. These activities are funded through the General Rate Case, and are not incremental costs for this best practice.

SoCalGas' Pre-2017 Code 3 Steel Leak Mitigation
 Projected YE 2017 Code 3 Steel Leak Inventory: 8,773 leaks
 Pre-2017 Code 3 Steel Leak Mitigation Funding Included in GRC

SoCalGas Leakage Inventory Reduction Project Organization
 Included in Gas Distribution GRC (2019-2022)
 In order to adequately manage the leak inventory reduction effort, SoCalGas is adding a project manager and three project advisors responsible for implementing leak analysis and process strategy.

Leak Repairs Associated with Incremental Early Vintage Plastic Pipe - Enhanced Leak Survey
 2019 TY Included in GRC Request (\$1.7M)

Increase in Leak Repairs Associated with Increased Leak Detection Rates
 Code 1, 2, 3 Plastic Routine Work Included in Gas Distribution's GRC Main Maintenance forecast with Trended Growth % Increases
 A 5-year linear trend was used to forecast main maintenance activities.

SoCalGas - % Change from 2016
 2017: 26%
 2018: 24%
 2019: 30%

SDG&E - Change from 2016
 2017: 4%
 2018: 5%
 2019: 15%

BP 22

Category: Leak Prevention

Title: Pipe Fitting Specifications

Description: Companies shall review and revise pipe fitting specifications, as necessary, to ensure tighter tolerance/better quality pipe threads. Utilities are required to review any available data on its threaded fittings, and if necessary, propose a fitting replacement program for threaded connections with significant leaks or comprehensive procedures for leak repairs and meter set assembly installations and repairs as part of their Compliance Plans. A fitting replacement program should consider components such as pressure control fittings, service tees, and valves metrics, among other things.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

<u>SoCalGas</u>	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
MSP Updates and Increased QC of incoming NPT threaded Materials Project			-			-			-	87,243	30,000	117,243			-	348,971		348,971
Total SoCalGas	-	-	-	-	-	-	-	-	-	87,243	30,000	117,243	-	-	-	348,971	-	348,971

<u>SDG&E</u>	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
MSP Updates and Increased QC of incoming NPT threaded Materials Project			-			-			-	32,047	30,000	62,047			-	128,190		128,190
Total SDG&E	-	-	-	-	-	-	-	-	-	32,047	30,000	62,047	-	-	-	128,190	-	128,190

Assumptions and Supporting Calculations

Project Description

Increase receiving inspection of threaded components used for Meter Set Assemblies (MSA) to improve assurance of compliance to pipe thread specification. Work with component manufacturers to align gaging practices and manufacturing process controls to maintain a high standard of pipe thread quality for products intended for use in Natural Gas applications. Review Company material specifications (MSP) and revise, if necessary to specify consistent requirements across component categories.

Assumptions

Estimated three additional personnel (2 SoCalGas, 1 SDG&E) to support additional quality control of incoming threaded materials and one engineer to support material specification modifications and work with manufacturers. Non-labor expenditures are associated with purchase of equipment and gages.

BP 23

Category: Leak Prevention
Title: Minimize Emissions from Operations, Maintenance and Other Activities

Description: Utilities shall minimize emissions from operations, maintenance and other activities, such as new construction or replacement, in the gas distribution and transmission systems and storage facilities. Utilities shall replace high-bleed pneumatic devices with technology that does not vent gas (i.e. no-bleed) or vents significantly less natural gas (i.e. low-bleed) devices. Utilities shall also reduce emissions from blowdowns, as much as operationally feasible.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Minimize Blowdowns in Transmission			-		240,000	240,000	240,000	6,000	246,000		2,280,000	2,280,000	240,000	6,000	246,000		1,920,000	1,920,000
Minimize Blowdowns in Distribution			-			-	240,000	6,000	246,000		480,000	480,000	240,000	6,000	246,000		480,000	480,000
Minimize Blowdowns in Storage			-	121,000	865,000	986,000	120,000	6,000	126,000	286,000	2,780,000	3,066,000	120,000	6,000	126,000	250,000	2,350,000	2,600,000
Improve Data Collection Tools & Software Upgrades			-			-	60,000	180,000	240,000									
Replace High Bleed Pneumatic Devices			-	36,000	228,000	264,000			-	36,000	228,000	264,000			-	36,000	228,000	264,000
Training & OpQual Resources Needed for Above Incremental Employees			-			-	120,000	6,000	126,000				240,000	12,000	252,000			-
Vehicles for Incremental Employees			-			-			-		33,600	33,600			-		76,800	76,800
Vapor Recovery Measurement and Design		120,000	120,000			-		120,000	120,000						-			-
Vapor Recovery Piping Changes -- Transmission			-			-			-	144,000	576,000	720,000			-	144,000	576,000	720,000
Vapor Recovery Piping Changes -- Storage			-			-			-	72,000	288,000	360,000			-	72,000	288,000	360,000
Vapor Recovery System Installations - Transmission			-	14,400		14,400				432,000	1,785,600	2,217,600			-	705,600	2,822,400	3,528,000
Vapor Recovery System Installations - Storage			-	7,200		7,200				108,000	460,800	568,800			-	460,800	1,843,200	2,304,000
Training & Development design and delivery of course material on minimizing Blowdowns in accordance with SB 1371			-			-		273,000	273,000						-			-
Centralized organization to handle gas capture operations			-			-	354,600	650,000	1,004,600	180,000	2,520,000	2,700,000	354,600	650,000	1,004,600	354,600		354,600
IT Project to changes CIS billing system to accommodate a calibration adjustment factor. Change CIS to credit the customer on the bill with a calibration adjustment factor to adjust for the variance in the meter accuracy over time. Avoid meter replacements.			-			-			-	360,000	360,000	720,000			-			-
Total SoCalGas	-	120,000	120,000	178,600	1,333,000	1,511,600	1,134,600	1,247,000	2,381,600	1,618,000	#####	13,410,000	1,194,600	680,000	1,874,600	2,023,000	10,584,400	12,607,400

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Minimize Blowdowns in Transmission			-		120,000	120,000			-		240,000	240,000			-		240,000	240,000
Replace High Bleed Pneumatic Devices			-	12,000	48,000	60,000									-			-
Training & Development design and delivery of course material on minimizing Blowdowns in accordance with SB 1371			-			-		27,000	27,000						-			-
Total SDG&E	-	-	-	12,000	168,000	180,000	-	27,000	27,000	-	240,000	240,000	-	-	-	-	240,000	240,000

Assumptions and Supporting Calculations

Minimize Blowdowns

Project Managers to Assist with and Coordinate Activities to Reduce Venting (\$100,000 O&M salary each with \$5,000 associated O&M non-labor expenses):

- 1 Project Manager for Transmission, Starting in 2018
- 1 Project Manager for Storage, Starting in 2019
- 1 Project Manager Distribution, Starting in 2019

Capital Dollars Associated with Incremental Project Costs to Reduce Venting:

BP 23

Category: Leak Prevention

Title: Minimize Emissions from Operations, Maintenance and Other Activities

Capital Dollars Associated with Increased Project Costs to Reduce Venting:
Estimated incremental cost per gas capture operation: \$100,000

Organization	Gas Capture Projects			Capital Cost Estimate		
	2018	2019	2020	2018	2019	2020
SoCalGas Transmission	2	19	16	\$200,000	\$1,900,000	\$1,600,000
SDG&E Transmission	1	2	2	\$100,000	\$ 200,000	\$ 200,000
SoCalGas Storage	2	19	16	\$200,000	\$1,900,000	\$1,600,000
SoCalGas Distribution	2	4	4	\$200,000	\$ 400,000	\$ 400,000

Improve Data Collection Tools & Software Upgrades

Estimates are based on a combination of estimated hours of work and experiences with the similar projects, and assumes the use of currently existing technologies.

Training & Operator Qualification (OpQual) Resources Needed for Above Incremental Employees

Two incremental instructors / field evaluators will be added to cover incremental employees hired. Salary was estimated to be \$100,000.

Vehicles Needed for Above Incremental Employees

Vehicles were estimated to be a mix of 1/2 ton trucks and 3/4 ton natural gas trucks at an average annual cost of \$8,000 per incremental field employee.

Training & Development design and delivery of course material on minimizing Blowdowns in accordance with SB 1371

Estimate was developed by comparing this effort to other new training programs. This program will need to be a large scale training effort for Distribution, Transmission, and Storage. May require contract service for Instructional Design

Company Split: 91% SoCalGas, 9% SDG&E

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

IT Project to changes CIS billing system to accommodate a calibration adjustment factor. Change CIS to credit the customer on the bill with a calibration adjustment factor to adjust for the variance in the meter accuracy over time. Avoid meter replacements.

Change CIS to credit the customer on the bill with a calibration adjustment factor to adjust for the variance in the meter accuracy over time. This change will avoid meter replacements, reducing venting associated with that work.

- CIS would need to be modified to recognize meter families.
- CIS would receive an annual update via an excel file or system interface, data on meter families that require a calibration adjustment factor to credit the customers for meters whose accuracy is outside an tolerance.
- CIS would apply this adjustment factor until a new factor is received or the meter is changed.
- The factor would adjust the as registered usage and would be shown on the customer bill.
- A combined factor would be used if another adjustment such as pressure factor or altitude factor is also needed to adjust the registered usage.
- CIS would calculate the combined factor as a product of all factors applicable.

These changes would require approximate 6,000 hours of effort (\$600K split evenly between labor and non-labor (contractors) and 9 months of time to implement.

Centralized organization to handle gas capture operations

The existing gas capture organization is used primarily for Pipeline Safety Enhancement Plan (PSEP) projects, and their activities are charged to those projects.

The existing organization to be moved from PSEP is approximately \$300,000 labor (50% O&M, 50% capital) and \$250,000 non-labor (O&M).

In 2018, the organization anticipates needing to purchase a new compressor at \$780,000 (capital).

In 2019, it is anticipated that the organization will expand to handle additional gas capture operations, and will include:

Vapor Recovery Systems at Compressor Stations

Vapor recovery system measurement and design will be performed by contractors, are estimated to cost \$100,000 (O&M) each year.

Other Activities

In addition, the following activity is expected to support this best practice. This activity is funded through the General Rate Case, and is not incremental for this best practice.

Test Rotary Meters Utilizing Differential Pressure (DP) Method

SoCalGas and SDG&E propose changing accuracy testing for rotary meters from the Transfer Proving method to utilizing the Differential Pressure (DP) method.

BP

23

Category: Leak Prevention

Title: Minimize Emissions from Operations, Maintenance and Other Activities

With 54,178 rotary meters with a rated capacity of more than 800 CFH in service, we currently perform a meter change on 51,667 with a rated capacity of 7000 cfh or less returning the changed meter to a centralized location for testing and perform a transfer prover test in the field on 2,511 meters with a rated capacity of greater than 7,000 cfh.

The transfer prover method whether performed in the field or at a central location requires blowing down the MSA.

The Differential Method (DP) allows the meter to remain in service and uses a high accuracy differential gauge to measure the difference in pressure across the meter under flow conditions. If the DP is found within acceptable limits the meters initial accuracy has been confirmed.

Under GOS8A these meters are required to be tested in accordance with accepted industry standards with no meter to remain in service more than 10 years from the time it was last tested.

12. Gas Meter Accuracy

c. All gas meters other than diaphragm meters shall be tested for accuracy in accordance with accepted industry standards and practices. Any such test results shall not register less than minus two percent (2%) error or more than plus one percent (1%) error. In order to obtain the accuracy range set forth in this section, orifice meters shall be manufactured and installed in accordance with all guidelines specified in the current edition of ANSI/API 2530 (AGA Report No. 3), Orifice Metering of Natural Gas

13. Periodic and Other Required Tests of Gas Meters

a. No gas meters hereafter installed shall be allowed to remain in service more than ten (10) years from the time when last tested without being retested in the manner herein provided, and if found inaccurate, each such meter shall, at the time of each test, be readjusted to be correct within the prescribed limits before being installed.

Both Transfer Proving and DP testing are approved by AGA and accepted as industry standard.

They are defined in the following documents:

AGA Gas Measurement Manual Report 12

- DP in section 12.3.19 to 12.3.20

ANSI B109.3

- DP in Part VII Appendix A

BP 24

Category: Leak Prevention

Title: Dig-Ins / Public Education Program

Description: Dig-Ins – Expand existing public education program to alert the public and third-party excavation contractors to the Call Before You Dig – 811 program. In addition, utilities must provide procedures for excavation contractors to follow when excavating to prevent damaging or rupturing a gas line.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Increase Advertising, outreach, notification, and education to the general public			-			-		200,640	200,640			-		200,640	200,640			-
Increase outreach and communication to contractors and excavators regarding dig-ins			-			-		100,320	100,320			-		100,320	100,320			-
Purchase and send out standards/procedures and/or other items for contractors to follow to prevent dig-ins			-			-		422,400	422,400			-		422,400	422,400			-
Incremental FTEs for Public Awareness program			-			-	240,000		240,000			-	240,000		240,000			-
Total SoCalGas	-	-	-	-	-	-	240,000	723,360	963,360	-	-	-	240,000	723,360	963,360	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Increase Advertising, outreach, notification, and education to the general public			-			-		27,360	27,360			-		27,360	27,360			-
Increase outreach and communication to contractors and excavators regarding dig-ins			-			-		13,680	13,680			-		13,680	13,680			-
Purchase and send out standards/procedures and/or other items for contractors to follow to prevent dig-ins			-			-		57,600	57,600			-		57,600	57,600			-
Total SDG&E	-	-	-	-	-	-	-	98,640	98,640	-	-	-	-	98,640	98,640	-	-	-

Assumptions and Supporting Calculations

- Increase Advertising, outreach, notification, and education to the general public
- \$190k = Incremental Public Awareness funding for additional outreach and education to general public.
 - Additional outreach and education to general public which includes homeowners and ethnic segments like Hispanic, Chinese, Vietnamese, Filipino and Korean. Outreach includes media TV PSA spots, endorsements on mainstream, sports and Hispanic radio, and digital ads in Hispanic and Asian markets.
 - Two additional TV PSA spots for approximately \$50K each and 3 radio PSA messaging for approximately \$30K each.
 - Split: 88% SoCalGas and 12% SDG&E. This is based on the number of Distribution services in each company.
- Increase outreach and communication to contractors and excavators regarding dig-ins

BP 24

Category: Leak Prevention

Title: Dig-Ins / Public Education Program

Increase outreach and communication to contractors and excavators regarding dig-ins

- \$95k = Incremental Public Awareness funding for additional outreach to contractors and excavators
- Additional outreach to contractors and excavators include communication to farmers; participation at targeted external events; display of The Big Shovel at local events and SoCalGas/SDG&E bases to promote safe digging.
- Five (5) additional SoCalGas excavator outreach events for spend of \$18K, additional two (2) targeted communication mailings for spend of \$45K, and Big Shovel display at various outreach events and company bases at approximately ten (10) placements at \$32K total.
- Split: 88% SoCalGas and 12% SDG&E. This is based on the number of Distribution services in each company.

Purchase and send out standards/procedures and/or other items for contractors to follow to prevent dig-ins

- \$400k = Added costs to incorporate and purchase safe digging procedural materials and other items and sending to 250,000 contractors at both utilities including postage costs, \$0.75 per book plus \$25k postage.; Divided between SoCalGas and SDG&E at 88% and 12%, respectively, which is percentage breakdown for Public Awareness shared service.
- Standards/Procedures include safe-digging procedural handbooks that could be mailed to excavators/contractors. Additional promotional items with safe-digging practices can also be distributed. Handbooks and other Items can be distributed alternately each year.
- Split: 88% SoCalGas and 12% SDG&E. This is based on the number of Distribution services in each company.

Incremental FTEs for Public Awareness Program

- \$200k = Two incremental FTEs to manage additional activities associated with BPs, coordinating additional data gathering, mailings, outreach effectiveness, collaborating with Customer Communications for new, fresh messaging.

BP 25

Category: Leak Prevention

Title: Dig – Ins / Company Standby Monitors

Description: Dig-Ins – Utilities must provide company monitors to witness all excavations near gas transmission lines to ensure that contractors are following utility procedures to properly excavate and backfill around transmission lines.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Incremental FTEs for standby activities			-			-	325,200	27,000	352,200			-	325,200	27,000	352,200			-
Total SoCalGas	-	-	-	-	-	-	325,200	27,000	352,200	-	-	-	325,200	27,000	352,200	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Incremental FTEs for standby activities			-			-	104,400	9,000	113,400			-	104,400	9,000	113,400			-
Total SDG&E	-	-	-	-	-	-	104,400	9,000	113,400	-	-	-	104,400	9,000	113,400	-	-	-

Assumptions and Supporting Calculations

Incremental employees to provide standby observation for increased construction jobs due to increase in construction activities and USA ticket prioritization application.
 Labor = 3.5 Full Time Employees (FTEs) at SoCalGas and 1 FTE at SDG&E.
 Non-Labor = 3 Vehicles for SoCalGas and 1 Vehicle for SDG&E at \$7,500 per Vehicle.

BP 26

Category: Leak Prevention

Title: Dig-Ins / Repeat Offenders

Description: Utilities shall document procedures to address Repeat Offenders such as providing post-damage safe excavation training and on-site spot visits. Utilities shall keep track and report multiple incidents, within a 5-year period, of dig-ins from the same party in their Annual Emissions Inventory Reports. These incidents and leaks shall be recorded as required in the recordkeeping best practice. In addition, the utility should report egregious offenders to appropriate enforcement agencies including the California Contractor's State License Board. The Board has the authority to investigate and punish dishonest or negligent contractors. Punishment can include suspension of their contractor's license.

Incremental Cost Estimates (Provided in 2018 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020							
	O&M			Capital			O&M			Capital			O&M			Capital				
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total		
Brief Description of Activity under This BP																				
IT upgrade to track offenders												0					2,184,000	2,184,000		
Incremental Employee			-			-	120,000			120,000			-	120,000			120,000	-		
Total SoCalGas	-	-	-	-	-	-	120,000	-	-	120,000	0	-	-	120,000	-	-	120,000	0	2,184,000	2,184,000

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
IT upgrade to track offenders			-			-						-					216,000	216,000
Total SDG&E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	216,000	216,000

Assumptions and Supporting Calculations

- One Incremental Employee at \$100,000 to:
- Identify, track, and document repeat offender contractors
 - Coordinate with Claims
 - Report repeat offenders to Contractors State Licensing Board
 - Work with new SB661 California Underground Facilities Safety Protection Board to go after repeat offenders
-
- IT project to track repeat offenders and generate reports, combining data from locate and mark activities with damage claims
 - 91/9 split between utilities

BP 16 (Pilots / R&D)

Category: Leak Detection

Title: Special Leak Surveys

Description: Utilities shall conduct special leak surveys, possibly at a more frequent interval than required by G.O. 112-F (or its successors) or BP 15, for specific areas of their transmission and distribution pipeline systems with known risks for natural gas leakage. Special leak surveys may focus on specific pipeline materials known to be susceptible to leaks or other known pipeline integrity risks, such as geological conditions. Special leak surveys shall be coordinated with transmission and distribution integrity management programs (TIMP/DIMP) and other utility safety programs. Utilities shall file in their Compliance Plan proposed special leak surveys for known risks and proposed methodologies for identifying additional special leak surveys based on risk assessments (including predictive and/or historical trends analysis). As surveys are conducted over time, utilities shall report as part of their Compliance Plans, details about leakage trends. Predictive analysis may be defined differently for differing companies based on company size and trends.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
CEC - Storage Research Project (GFO-16-508)	41,665		41,665			-	77,774	240,000	317,774			-			-			-
Pipeline Integrity Research Project: System Integrity Spatial Analysis of Risk & System Threats	6,338	24,992	31,330			-	7,646	24,992	32,638			-			-			-
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	48,003	24,992	72,995	-	-	-	152,393	307,895	460,289	-	-	-	66,973	42,904	109,876	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Pipeline Integrity Research Project: System Integrity Spatial Analysis of Risk & System Threats	661	2,608	3,269			-	798	2,608	3,406			-			-			-
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	661	2,608	3,269	-	-	-	6,437	6,522	12,959	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Descriptions

CEC - Storage Research Project (GFO-16-508)

Develop advanced risk assessment models including new tools, technologies, methods, methodologies, and approaches to improve underground natural gas storage infrastructure safety and integrity management in California.

Pipeline Integrity Research Project: System Integrity Spatial Analysis of Risk & System Threats

Develop a spatial risk model for all fugitive leaks with the goal of identifying locations where Special Leak Surveys would result in meaningful emissions reduction. The model would be designed to integrate with Pipeline Integrity TIMP, DIMP, & SIMP risk models.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

BP 16 (Pilots / R&D)

Category:

Leak Detection

Title:

Special Leak Surveys

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Whenever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 17 (Pilots / R&D)

Category: Leak Detection

Title: Enhanced Methane Detection

Description: Utilities shall utilize enhanced methane detection practices (e.g. mobile methane detection and/or aerial leak detection) including gas speciation technologies.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Aerial Leak Detection Research Project (5 R&D Projects)	30,792	93,991	124,783			-	61,584	170,864	232,447			-			-			-
Methane Detection Sensor & Systems Research Project (handheld and mobile devices)	10,000	154,298	164,298			-	62,377	204,502	266,878			-			-			-
Integrate Mobile Methane Mapping w/Mobile Leak Survey Research Project			-			-	18,109	60,000	78,109			-	18,109	54,330	72,440			-
Large Leak Detection - JPL Basin Monitoring Research Project	10,000	250	10,250			-	30,064	2,318	32,382			-			-			-
Below Ground Methane "background" concentration Study Research Project			-			-	40,617	8,568	49,185			-			-			-
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	50,792	248,540	299,331	-	-	-	279,723	489,155	768,878	-	-	-	85,082	97,234	182,316	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Aerial Leak Detection Research Project (5 R&D Projects)	3,213	9,809	13,022			-	6,427	17,830	24,257			-			-			-
Methane Detection Sensor & Systems Research Project (handheld and mobile devices)			-			-	6,509	15,875	22,384			-	6,509	16,102	22,611			-
Integrate Mobile Methane Mapping w/Mobile Leak Survey Research Project			-			-	1,890	60,000	61,890			-	1,890	5,670	7,559			-
Below Ground Methane "background" concentration Study Research Project			-			-	18,318	4,284	22,602			-			-			-
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	3,213	9,809	13,022	-	-	-	38,783	101,903	140,687	-	-	-	14,038	25,685	39,723	-	-	-

Assumptions and Supporting Calculations

Project Descriptions

Aerial Leak Detection Research Project (5 R&D Projects)

Unmanned Aerial System (UAs, aka Drones) R&D project is developing capability for aerial inspections and leak detection of Company's above- and below-ground facilities that are difficult or hazardous to access on the surface. The technology for both the aircraft and the payloads needed to perform the inspections are advancing and changing rapidly. Information management and development of processes to manage FAA regulatory requirements must also be developed.

BP 17 (Pilots / R&D)

Category: Leak Detection

Title: Enhanced Methane Detection

Large Leak Detection - JPL Basin Monitoring Research Project

Collaborate with JPL to leverage the JPL LA basin monitoring (Tower network and CLARS) plus airborne data (AVIRIS, HyTES, or new imaging technologies) to detect and rapidly respond to indications of potential large leaks on the system. This effort will also look at the possibility of leveraging other Company datasets such as Odor Complaints and Advanced Meter data.

Below Ground Methane "background" concentration Study Research Project

Determine background methane concentration ranges below ground (in soil) by collecting below ground samples across service territory in locations without the presence of a leak. Data will be used for establishing lower threshold for leak designation to assist with leak detection.

Methane Detection Sensor & Systems Research Project (handheld and mobile devices)

Assess the ability of highly sensitive methane/ethane detection systems with ppb level sensitivity integrated with GPS and Wind (speed & direction) data to quickly detect, identify and locate the source of natural gas leakage.

Integrate Mobile Methane Mapping w/Mobile Leak Survey Research Project

Increase the leak detection capabilities of mobile methane mapping by integrating multiple methane detection systems to increase lower detection limit and minimize false-positive indications.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

BP 17 (Pilots / R&D)

Category: Leak Detection

Title: Enhanced Methane Detection

Vehicle Cost Assumptions

Whenever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 18 (Pilots / R&D)

Category: Leak Detection

Title: Stationary Methane Detectors

Description: Utilities shall utilize Stationary Methane Detectors for early detection of leaks. Locations include: Compressor Stations, Terminals, Gas Storage Facilities, City Gates, and Metering & Regulating (M&R) Stations (M&R above ground and pressures above 300 psig only). Methane detector technology should be capable of transferring leak data to a central database, if appropriate for location.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Stationary Methane Detectors Research Project (5 RD&D Projects)	25,152	168,424	193,576			-	25,203	33,685	58,887			-						
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	25,152	168,424	193,576	-	-	-	92,175	76,588	168,763	-	-	-	66,973	42,904	109,876	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Stationary Methane Detectors Research Project (5 RD&D Projects)	2,625	17,576	20,201			-	2,630	3,515	6,145			-						
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	2,625	17,576	20,201	-	-	-	8,269	7,429	15,698	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Description

Stationary Methane Detectors Research Project (5 RD&D Projects)

Evaluate advanced stationary methane monitoring systems (point sensors and distributed systems) for early notification of leakage at above-ground facilities such as Compressor Stations, Gas Storage Facilities, Metering & Regulating Stations, Residential Buildings, etc.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

BP 18 (Pilots / R&D)

Category: Leak Detection

Title: Stationary Methane Detectors

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Wherever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 20a (Pilots / R&D)

Category: Leak Detection

Title: Quantification

Description: Utilities shall develop methodologies for improved quantification and geographic evaluation and tracking of leaks from the gas systems. Utilities shall file in their Compliance Plan how they propose to address quantification. Utilities shall work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve emissions quantification of leaks to assist demonstration of actual emissions reductions.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Facility Emissions Quantification Study Research Project			-			-	132,405	467,257	599,662			-	33,101	116,814	149,915			-
Quantification of small leaks and define practical lower emission threshold Research Project (OTD 7.17.d)	11,409	38,613	50,022			-	41,409	33,180	74,589			-						-
System Emissions using mass balance with Advanced Meter Technology Research Project	10,000		10,000			-	207,038	74,400	281,438			-	197,038	74,400	271,438			-
New Mobile Methane Quantification Technologies Research Project			-			-	59,502	205,364	264,866			-	59,502	292,292	351,795			-
PE Leak Growth Rate from Slow Crack Growth Research Project	6,288	32,598	38,886			-	6,288	32,598	38,886			-						-
CEC San Joaquin Valley Methane Study Research Project	5,555		5,555			-	30,848	2,568	33,416			-						-
Validation Study of Advanced Technologies for natural gas Transmission and Storage Leak Detection and Emissions Quantification	96,847	745,865	842,712			-			-			-			-			-
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	130,100	817,076	947,175	-	-	-	544,463	858,270	1,402,734	-	-	-	356,614	526,410	883,024	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Facility Emissions Quantification Study Research Project	14,560	6,912	21,472			-	58,241	27,647	85,888			-						-
Quantification of small leaks and define practical lower emission threshold Research Project (OTD 7.17.d)	2,756	4,029	6,785			-	2,756	3,462	6,218			-						-
New Mobile Methane Quantification Technologies Research Project	6,209	17,980	24,189			-	6,209	8,908	15,118			-						-
PE Leak Growth Rate from Slow Crack Growth Research Project	656	3,402	4,058			-	656	3,402	4,058			-						-
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	24,182	32,322	56,504	-	-	-	73,502	47,333	120,835	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Descriptions

BP

20a (Pilots / R&D)

Category: Leak Detection

Title: Quantification

PE Leak Growth Rate from Slow Crack Growth Research Project

Advance industry understanding of how leak rates tend to grow over time on plastic (PE) pipe once the leak has initiated. Prior work in this area was focused on the process of crack initiation up until a leak occurred. This knowledge will assist in improving system leakage estimate and emission factors, and help to optimize leak survey intervals based on projected emissions growth rates.

New Mobile Methane Quantification Technologies Research Project

Evaluate mobile methane detection and quantification technologies that can effectively quantify non-hazardous methane emissions in an urban environment. This will enable the prioritization of leak repairs based on emission rates.

System Emissions using mass balance with Advanced Meter Technology Research Project

Develop the ability to detect and quantify emissions from the Distribution Main and Service network by leveraging the Advanced Meter Analytics, comparing the gas supplied with the gas consumed for a defined service area.

Quantification of small leaks and define practical lower emission threshold Research Project (OTD 7.17.d)

Develop a simple method of quantifying methane emissions from small aboveground leaks using the response of the leak to a soap test. This may provide the basis for moving away from the current facility-based emission factor for MSAs to a leak-based factor.

CEC San Joaquin Valley Methane Study Research Project

Field study to identify, quantify and mitigate methane emissions in the southern part of the San Joaquin Valley.

Facility Emissions Quantification Study Research Project

Field studies to identify and quantify methane emissions from buried and aboveground facilities. Results may support refinement of emission factors to reduce the uncertainty of existing emission factors.

Validation Study of Advanced Technologies for Storage Leak Detection and Emissions Quantification

SoCalGas had a joint meeting on December 21, 2017 with SED and CARB regarding beginning research projects for this best practice on January 17, 2018. The following project scope for the purpose of technology assessment and comparison of aerial, ground-based mobile and hand-held technologies was provided to SED and CARB on January 16th, 2018 and representatives from SED are expected to come observe the research project.

Project Scope

Southern California Gas Company is preparing to conduct a SB1371 RD&D (Research, Development & Demonstration) project for the purpose of technology assessment and comparison of aerial, ground-based mobile and hand-held technologies in the first Quarter of 2018. This study will assess the capability of various technologies for:

- SB-1371 Best Practice 17 Enhanced Methane Detection Emissions Source Pin-Pointing
- SB1371 Best Practice 20a Quantification & Geographic Tracking Emissions Flux Rate Measurement from multiple sources within defined study areas of Underground Storage and/or Transmission Station facilities

The technologies currently being evaluated and compared are:

- Picarro's Emissions Quantification (EQ™) ground-based mobile system for emissions quantification and emissions source pin pointing
- SeekOps System using UAS (Drone) with JPL Methane Sensor payload for emissions quantification and emissions source pin pointing
- SoCalGas System using UAS (Drone) with Pergam Methane Sensor payload for emissions source pin pointing
- Bacharach/Heath Hi Flow Sampler™ for direct measurement at source for emissions quantification

The first phase of the study will be conducted as a double-blind study using controlled (metered) natural gas releases within defined study areas. The controlled releases will include single and multiple release points, and release rates will range from 0.1 SCFH to 300 SCFH. The technologies will be assessed across this broad range of flow rates. Controlled releases upwind and outside the study area will also be included to demonstrate the ability to parse out emissions within the study area from other nearby methane emission sources. The overall volume of natural gas planned to be released for this study is expected to be on the order of 15,000 SCF over a 6 to 8-week period.

There will be multiple defined study areas within Transmission and Storage Operating Facilities where controlled release studies will be conducted that represent varied geological environments. The environmental conditions will also be varied as to time of day, temperature, wind, humidity, cloud cover and barometric pressure (to the extent possible within study period). Environmental variables will be measured and recorded as part of the study.

The study is commenced on Jan 17th with the controlled release part (Phase 1) of the study, weather permitting and barring operational constraints. We expect this portion of the study to extend through the middle to late February. A minimum of 12 study days will be needed for the controlled-release portion of the study, with 3 to 4 study days per week.

Depending on the results of the first phase of the study additional study areas will be defined that have varied operational complexities to study the

BP 20a (Pilots / R&D)

Category: Leak Detection

Title: Quantification

performance and effectiveness of selected technologies on actual system emissions from vented and fugitive emissions.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Wherever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 20b (Pilots / R&D)

Category: Leak Detection

Title: Geographic Tracking

Description: Utilities shall develop methodologies for improved geographic tracking and evaluation of leaks from the gas systems. Utilities shall work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve geographic evaluation and tracking of leaks to assist demonstrations of actual emissions reductions. Leak detection technology should be capable of transferring leak data to a central database in order to provide data for leak maps. Geographic leak maps shall be publicly available with leaks displayed by zip code or census tract.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
GIS Platform & Data Model for Mobile Data Collection (OTD 8.17.e) Research Project	6,338	24,992	31,330			-	7,646	24,992	32,638			-						-
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	6,338	24,992	31,330	-	-	-	74,619	67,895	142,514	-	-	-	66,973	42,904	109,876	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
GIS Platform & Data Model for Mobile Data Collection (OTD 8.17.e) Research Project	661	2,608	3,269			-	798	2,608	3,406			-						-
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	661	2,608	3,269	-	-	-	6,437	6,522	12,959	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Description

GIS Platform & Data Model for Mobile Data Collection (OTD 8.17.e) Research Project

Develop a component-based software system to enable the field collection of methane emissions data and importing into the Company's GIS platform.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

BP 20b (Pilots / R&D)

Category: Leak Detection

Title: Geographic Tracking

These figures do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2000 hours/year.

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Whenever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 22 (Pilots / R&D)

Category: Leak Prevention

Title: Pipe Fitting Specifications

Description: Companies shall review and revise pipe fitting specifications, as necessary, to ensure tighter tolerance/better quality pipe threads. Utilities are required to review any available data on its threaded fittings, and if necessary, propose a fitting replacement program for threaded connections with significant leaks or comprehensive procedures for leak repairs and meter set assembly installations and repairs as part of their Compliance Plans. A fitting replacement program should consider components such as pressure control fittings, service tees, and valves metrics, among other things.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Study Quality of Existing Pipe Fitting Inventory Research Project (NYSEARCH)	51,156	38,867	90,022			-	5,030	13,583	18,613			-						-
Repeating Research Activity Level			-			-	66,973	42,904	109,876			-	66,973	42,904	109,876			-
Total SoCalGas	51,156	38,867	90,022	-	-	-	72,003	56,486	128,489	-	-	-	66,973	42,904	109,876	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
Brief Description of Activity under This BP	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Study Quality of Existing Pipe Fitting Inventory Research Project (NYSEARCH)	12,056	13,738	25,795			-	525	1,417	1,942			-						-
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	12,056	13,738	25,795	-	-	-	6,164	5,331	11,495	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Description

Study Quality of Existing Pipe Fitting Inventory Research Project (NYSEARCH)

Determine emission rates associated with threaded connections created with current National Pipe Thread (NPT) tolerances. Consider alternatives to eliminate emission rate.

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

BP 22 (Pilots / R&D)

Category: Leak Prevention

Title: Pipe Fitting Specifications

These estimates do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2000 hours/year.

SB 1371 RD&D Administration

80 hours per project per year is estimated to manage the incremental documentation, recordkeeping and reporting requirements for SB 1371.

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Whenever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 23 (Pilots / R&D)

Category: Leak Prevention
Title: Minimize Emissions from Operations, Maintenance and Other Activities

Description: Utilities shall minimize emissions from operations, maintenance and other activities, such as new construction or replacement, in the gas distribution and transmission systems and storage facilities. Utilities shall replace high-bleed pneumatic devices with technology that does not vent gas (i.e. no-bleed) or vents significantly less natural gas (i.e. low-bleed) devices. Utilities shall also reduce emissions from blowdowns, as much as operationally feasible.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Develop Methods to Mitigate Gas Blown to Atmosphere Research Project (OTD 5.16.n)	32,964	63,822	96,786			-	32,964	66,321	99,285			-						-
Methane Oxidation Catalyst Research Project (NYSEARCH)	5,030	11,953	16,983			-	37,268	72,595	109,862			-						-
Repeating Research Activity Level			-			-	66,973	162,904	229,876			-	66,973	162,904	229,876			-
Total SoCalGas	37,994	75,775	113,769	-	-	-	137,204	301,819	439,023	-	-	-	66,973	162,904	229,876	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
Develop Methods to Mitigate Gas Blown to Atmosphere Research Project (OTD 5.16.n)	3,440	6,660	10,100			-	3,440	6,921	10,361			-						-
Methane Oxidation Catalyst Research Project (NYSEARCH)	525	1,247	1,772			-	525	1,247	1,772			-						-
Evaluate Rod Packing Impact on Emissions							4,800	2,400	7,200									
Repeating Research Activity Level			-			-	5,639	3,914	9,553			-	5,639	3,914	9,553			-
Total SDG&E	3,965	7,907	11,872	-	-	-	14,404	14,482	28,886	-	-	-	5,639	3,914	9,553	-	-	-

Assumptions and Supporting Calculations

Project Descriptions

Develop Methods to Mitigate Gas Blown to Atmosphere Research Project (OTD 5.16.n)

Investigate traditional planned blowdown procedures of venting natural gas to the atmosphere and compare them to alternative methods such as flaring and re-capture of the blowdown gas, to determine viable options. Assessment includes environmental impacts.

Methane Oxidation Catalyst Research Project (NYSEARCH)

Design and test novel catalytic materials for low-temperature methane oxidation (combustion – thermal oxidizer) as an alternative to flaring of pipeline gas.

Evaluate Rod Packing Impact on Emissions

Evaluate impact of rod packing on emissions from compressor stations over a multi-year period to observe variation in effectiveness in emission reduction over time.

BP 23 (Pilots / R&D)

Category: Leak Prevention

Title: Minimize Emissions from Operations, Maintenance and Other Activities

Research & Development Assumptions (Best Practices 16, 17, 18, 20a, 20b, 22, 23)

Shared Service Percent Allocation and Methodology

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Labor Rate

Three labor rates were utilized for the cost estimates based upon the salaries associated with the typical positions performing the type of work involved.

Engineer \$101,900/year

Project Management (Sr. Engineer/Project Manager/Sr. Advisor) \$120,365/year

Operations Represented Employee (Grade 7) \$96,649/year

These dollars do not include vacation and sick time. All Full Time Equivalent (FTE) estimates are based on 2080 hours/year.

SB 1371 RD&D Administration

Project Assumptions

Field Demonstrations and Field Studies

Labor and non-labor requirements to support methane emission field studies were developed based actual labor and non-labor expenditures for projects completed in 2017.

R&D Project Costs

Where available actual project costs were included in the estimates. Where actual project costs were not available the costs were estimated based upon projects with similar levels of effort and work. Research projects have been performed by universities, national labs, private industry and by the Utilities themselves. Projects may be proposed through industry RD&D consortiums and government agencies which often provides opportunity for collaboration and sharing of costs amongst stakeholders.

Vehicle Cost Assumptions

Wherever incremental vehicles are required the vehicle cost was estimated using the 2016 Total Cost/vehicle per year provided by fleet, which includes the cost for lease and maintenance. 2016 Total Cost/Vehicle/yr.: \$11,005 (\$8,708 + Maintenance Cost per Vehicle \$2297)

BP 1 (Administrative Costs)

Category: Policies and Procedures

Title: Compliance Plan

Description: Written Compliance Plan identifying the policies, programs, procedures, instructions, documents, etc. used to comply with the Final Decision in this Proceeding (R.15-01-008). Exact wording TBD by the company and approved by the CPUC, in consultation with CARB. Compliance Plans shall be signed by company officers certifying their company's compliance. Compliance Plans shall include copies of all policies and procedures related to their Compliance Plans. Compliance Plans shall be filed biennially (i.e. every other year) to evaluate best practices based on progress and effectiveness of Companies' natural gas leakage abatement and minimization of methane emissions.

Incremental Cost Estimates (Provided in 2017 Dollars and Direct Costs (No Loaders))

SoCalGas	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
SB 1371 Compliance Program Management	458,640	27,518	486,158			-	550,368	33,022	583,390	-	-	-	550,368	33,022	583,390	-	-	-
Develop Compliance Plans	144,000	8,640	152,640			-	144,000	8,640	152,640			-			-			-
Total SoCalGas	602,640	36,158	638,798	-	-	-	694,368	41,662	736,030	-	-	-	550,368	33,022	583,390	-	-	-

SDG&E	2018						2019						2020					
	O&M			Capital			O&M			Capital			O&M			Capital		
	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
Brief Description of Activity under This BP																		
SB 1371 Compliance Organization	45,360	2,722	48,082			-	54,432	3,266	57,698	-	-	-	54,432	3,266	57,698	-	-	-
Develop Compliance Plans	55,385	3,323	58,708			-	55,385	3,323	58,708			-			-			-
Total SDG&E	100,745	6,045	106,789	-	-	-	109,817	6,589	116,406	-	-	-	54,432	3,266	57,698	-	-	-

Assumptions and Supporting Calculations

SB 1371 Compliance Program Management

Activities include:

- Annual Emissions Reporting
- QA/QC of Emissions Data
- Oversight of Compliance Monitoring, Record-Keeping, and Reporting
- Coordinate Efforts on the Compliance Plan Development
- Participation in Workshops

Assumptions:

1 Manager at \$120,000 Labor

3 Project Managers at \$100,000 Labor Each

5% Associated Non-Labor

Company Split: 91% SoCalGas, 9% SDG&E

The percent split was calculated based upon the 2016 emission inventory (reported in 2017) for SDG&E and SoCalGas after deducting the emission from the Aliso Canyon SS-25 unusual large leak from the SoCalGas total. As a result, shared services are allocated 91% SoCalGas and 9% SDG&E.

Develop 2018 Compliance Plan

Average salary for Subject Matter Experts: \$120,000 (~\$58 per hour)

SoCalGas: 26 Best Practices * 80 hours each

SDG&E: 10 Additional hours for each Best Practice (26 Best Practices * 10 hours each)

5% Associated Non-Labor

BP 1 (Administrative Costs)

Category: Policies and Procedures

Title: Compliance Plan

SoCalGas & SDG&E

2 Yr Plan 2018-2019, extended into 2020

Capital Spending and O&M

Costs below are in loaded, unescalated 2018 dollars (no AFUDC, no CWIP property tax)

Project: SB 1371 Tier 3 Advice Letter - 2018 & 2019 Cost Estimates

BP#	Account	Company	Capital / O&M	Loaded Costs, 2018\$								
				2018			2019			2020		
				Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
1	Administrative Memorandum Account	SoCalGas	O&M	874,535	32,125	906,660	1,049,442	38,550	1,087,992	1,049,442	38,550	1,087,992
1	Administrative Memorandum Account	SoCalGas	O&M	274,579	10,086	284,666	274,579	10,086	284,666	-	-	-
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	93,719	-	-	33,621	-
									93,719			33,621
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	656,416	-	-	656,416	-	-
									656,416			656,416
9	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	2,601,315	534,375	-	1,300,658	267,188	-
									3,135,690			1,567,845
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	228,816	-	-	228,816	-	-
									228,816			228,816
9	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	578,070	356,250	-	1,171,555	1,083,000	-
									934,320			2,254,555
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	280,176	-	-	-	-
									280,176			-
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	8,405	-	8,405	1,401	-
									8,405			1,401
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	55,740	-	-	55,740	-	-
									55,740			55,740
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	-	-	48,051	-	-
									48,051			48,051
12	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	1,401	-	1,401	1,401	-
									1,401			1,401
12	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	55,740	-	-	55,740	-	-
									55,740			55,740
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	869,144	-	-	1,764,754	-
									869,144			1,764,754
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	-	-	-	235,488	-
									-		235,488	-
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	1,401	-	1,401	1,401	-
									1,401			1,401
13	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	85,500	-	85,500	-	-
									85,500			-
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	55,740	-	-	55,740	-	-
									55,740			55,740
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	2,296,513	17,014	-	2,313,527	2,296,513	17,014
									2,313,527			2,313,527
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	756,360	5,604	-	761,963	756,360	5,604
									761,963			761,963
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	796,280	4,203	-	800,482	796,280	4,203
									800,482			800,482
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	796,280	4,203	-	800,482	796,280	4,203
									800,482			800,482
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	453,216	-	453,216	-	-
									453,216			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	215,816	-	215,816	-	-
									215,816			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	129,800	-	129,800	-	-
									129,800			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	64,125	-	64,125	-	-
									64,125			-
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	20,032	-	-	20,032	-	-
									20,032			-
16	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	1,843,626	-	-	1,843,626	2,458,168	-
									1,843,626			2,458,168
16	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	713,213	-	713,213	-	-
									713,213			-
16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	92,158	-	92,158	172,028	280,176	-	452,204	-	-

16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	14,020	29,176		16,912	29,176		-	-	
						43,195			46,088			-
16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-	-	148,136	50,086	198,221	148,136	50,086	198,221
17	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	256,532	22,421	278,953	256,532	22,421	278,953
17	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	142,500	142,500	-	-	-
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	68,108	109,726		136,216	199,466		-	-	
						177,834			335,682			-
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	22,119	180,128		137,970	238,736		-	-	
						202,247			376,705			-
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		40,056	70,044		40,056	63,425	
						-			110,100			103,481
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	22,119	292		66,498	2,374		-	-	
						22,411			68,873			-
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		89,841	10,002		-	-	
						-			99,843			-
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		148,136	50,086	198,221	148,136	50,086	198,221
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		106,171	-		-	-	
						-			106,171			-
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		14,417	47,025		28,835	94,050	
						-			61,442			122,885
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		106,171	-		-	-	
						-			106,171			-
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		197,036	171,000		394,072	342,000	
						-			368,036			736,072
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		106,171	-		-	-	
						-			106,171			-
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		60,072	128,250		120,144	256,500	
						-			188,322			376,644
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		91,526	-		-	-	
						-			91,526			-
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		14,417	47,025		28,835	94,050	
						-			61,442			122,885
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		106,171	-		-	-	
						-			106,171			-
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		216,259	35,625		432,518	71,250	
						-			251,884			503,768
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		796,280	-		796,280	-	
						-			796,280			796,280
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		686,448	-		686,448	-	
						-			686,448			686,448
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		530,853	-		530,853	-	
						-			530,853			530,853
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		265,427	-		265,427	-	
						-			265,427			265,427
18	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	55,633	196,618		55,745	39,324		-	-	
						252,251			95,069			-
18	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		148,136	50,086	198,221	148,136	50,086	198,221

19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	95,554	-	95,554	95,554	-	95,554
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	57,332	-	57,332	-	-	-
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	163,020	163,020	-	-	-
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	55,860	55,860	-	-	-
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	19,352	19,352	-	-	-
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	16,306	16,306	-	16,306	16,306
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	597,210	-	597,210	597,210	-	597,210
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	955,536	756,475	1,712,011	6,688,749	5,295,326	11,984,076	6,688,749	5,295,326	11,984,076
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	1,043,650	1,073,144	-	2,296,029	2,360,916	-	2,296,029	2,360,916	-
						2,116,793				4,656,945		4,656,945
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	842,568	3,201,389	4,043,957	1,123,425	1,067,130	2,190,554
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	25,302	-	-	-	-	-
	2-Way Balancing Account for Best Practices		O&M	-	-	-	257,995	1,542,089	-	257,995	1,542,089	-
21		SoCalGas				-			1,800,083			1,800,083
	2-Way Balancing Account for Best Practices		Capital	-	-	-	893,365	918,611	-	893,365	918,611	-
21		SoCalGas				-			1,811,975			1,811,975
	2-Way Balancing Account for Best Practices		O&M	-	-	-	1,860,773	1,473,130	-	1,860,773	1,473,130	-
21		SoCalGas				-			3,333,903			3,333,903
	2-Way Balancing Account for Best Practices		Capital	-	-	-	1,020,117	1,048,946	-	1,020,117	1,048,946	-
21		SoCalGas				-			2,069,063			2,069,063
	2-Way Balancing Account for Best Practices		Capital	-	-	-	-	2,551,106	-	-	-	-
21		SoCalGas				-			2,551,106			-
	2-Way Balancing Account for Best Practices		O&M	-	-	-	1,525,440	93,392	-	1,525,440	93,392	-
21		SoCalGas				-			1,618,832			1,618,832
	2-Way Balancing Account for Best Practices		Capital	-	-	-	1,130,515	12,996,000	-	565,258	6,498,000	-
21		SoCalGas				-			14,126,515			7,063,258
	2-Way Balancing Account for Best Practices		O&M	-	-	-	228,816	58,370	-	228,816	58,370	-
21		SoCalGas				-			287,186			287,186
	2-Way Balancing Account for Best Practices		Capital	-	-	-	600,720	4,275,000	-	600,720	4,275,000	-
21		SoCalGas				-			4,875,720			4,875,720
	2-Way Balancing Account for Best Practices		Capital	-	-	-	197,353	35,625	-	789,412	-	-
22		SoCalGas				-			232,978			789,412
	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	113,151	45,373	-	11,127	15,856	-	-	-	-
22						158,524			26,983			-
	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-	-	148,136	50,086	198,221	148,136	50,086	198,221
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	457,632	7,004	464,636	457,632	7,004	464,636
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	285,000	285,000	-	2,707,500	2,707,500	-	2,280,000	2,280,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	457,632	7,004	464,636	457,632	7,004	464,636

23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	570,000	570,000	-	570,000	570,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	228,816	7,004	235,820	228,816	7,004	235,820
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	237,487	1,027,188	1,264,674	561,332	3,301,250	3,862,582	490,675	2,790,625	3,281,300
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	114,408	210,132	-	-	-	-
									324,540			-
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	83,620	270,750	354,370	83,620	270,750	354,370	83,620	270,750	354,370
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	228,816	7,004	-	457,632	14,009	-
									235,820			471,641
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	39,900	39,900	-	91,200	91,200
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	140,088	140,088	-	140,088	140,088	-	-	-
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	288,346	684,000	972,346	288,346	684,000	972,346
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	141,314	342,000	483,314	141,314	342,000	483,314
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	28,835	-	-	865,037	2,120,400	-	1,412,893	3,351,600	-
						28,835			2,985,437			4,764,493
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	14,131	-	14,131	211,972	547,200	759,172	904,412	2,188,800	3,093,212
	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	318,700	-	-	-	-
23						-			318,700			-
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	676,151	758,810	-	676,151	758,810	-
						-			1,434,961			1,434,961
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	351,018	2,992,500	-	691,505	-	-
						-			3,343,518			691,505
	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	693,684	427,500	-	-	-	-
23						-			1,121,184			-
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	72,912	74,506	147,418	72,912	77,423	150,335	-	-	-
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	11,127	13,954	25,080	82,432	84,747	167,179	-	-	-
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-	-	148,136	190,174	338,309	148,136	190,174	338,309
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	234,227	-	-	234,227	-
						-			234,227			234,227
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	117,114	-	-	117,114	-
						-			117,114			117,114
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	-	493,110	-	-	493,110	-
						-			493,110			493,110
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	457,632	-	457,632	457,632	-	457,632
25	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	719,306	31,520	750,826	719,306	31,520	750,826
26	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	-	-	-	2,593,500	2,593,500
26	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	228,816	-	228,816	228,816	-	228,816
20a	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-	-	1,185,869	82,848	-	2,123,412	-	-
						-			1,268,717			2,123,412
20a	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-	-	-	142,500	-	-	427,500	-
						-			142,500			427,500
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-	-	292,864	545,476	-	73,216	136,369	-
						-			838,340			209,585

20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	25,236	45,076		91,593	38,734		-	-	
						70,313			130,327			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	22,119	-		457,945	86,855		435,826	86,855	
						22,119			544,800			522,681
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		131,612	239,742		131,612	341,222	
						-			371,354			472,834
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	13,908	38,055		13,908	38,055		-	-	
						51,963			51,963			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	12,288	-		68,233	2,998		-	-	
						12,288			71,231			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	214,215	870,723		-	-		-	-	
						1,084,938			-			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		148,136	50,086		148,136	50,086	
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	53,742	-		224,630	-		224,630	-	
						53,742			224,630			224,630
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	53,742	-		224,630	-		224,630	-	
						53,742			224,630			224,630
20b	2-Way Balancing Account for Best Practices		O&M	134,054	-		561,576	-		561,576	-	
		SoCalGas				134,054			561,576			561,576
20b	2-Way Balancing Account for Best Practices		O&M	-	-		-	127,480		-	127,480	
		SoCalGas				-			127,480			127,480
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		790,971	966,607		-	-	
						-			1,757,578			-
20b	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		693,684	285,000		-	-	
						-			978,684			-
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		530,853	-		530,853	-	
						-			530,853			530,853
20b	2-Way Balancing Account for Best Practices		O&M	-	-		442,378	-		442,378	-	
		SoCalGas				-			442,378			442,378
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		1,517,355	2,631,320		3,034,710	5,262,639	
						-			4,148,675			8,297,350
20b	2-Way Balancing Account for Best Practices	SoCalGas	Capital	-	-		17,984	36,417		35,969	72,833	
						-			54,401			108,802
20b	2-Way Balancing Account for Best Practices		O&M	-	-		132,713	280,176		-	-	
		SoCalGas				-			412,889			-
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	-	-		305,241	-		305,241	-	
20b	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	14,020	29,176		16,912	29,176		-	-	
						43,195			46,088			-
20b	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	-	-		148,136	50,086		148,136	50,086	
1	Administrative Memorandum Account	SDG&E	O&M	84,678	3,879	88,557	101,614	4,655	106,269	101,614	4,655	106,269
1	Administrative Memorandum Account	SDG&E	O&M	103,392	4,737	108,129	103,392	4,737	108,129	-	-	-
9	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-		71,405	-		71,405	-	
						-			71,405			71,405

9	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	327,075	72,400	399,475	163,538	36,200	199,738
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	25,657	25,657	-	-	-
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	6,496	-	6,496	-	-	-
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	10,263	10,263	-	1,710	1,710
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	25,986	-	25,986	25,986	-	25,986
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	42,762	42,762	-	-	-
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	25,986	-	25,986	-	-	-
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	1,710	1,710	-	1,710	1,710
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	25,986	-	25,986	25,986	-	25,986
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	42,762	42,762	-	-	-
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	25,986	-	25,986	-	-	-
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	1,710	1,710	-	1,710	1,710
13	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	104,256	104,256	-	-	-
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	25,986	-	25,986	25,986	-	25,986
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	455,735	4,211	459,945	455,735	4,211	459,945
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	185,123	1,710	186,834	185,123	1,710	186,834
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	259,859	1,710	261,569	259,859	1,710	261,569
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	89,830	89,830	-	-	-
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	42,776	42,776	-	-	-
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	32,082	32,082	-	-	-
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	13,032	13,032	-	-	-
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	1,940	-	1,940	-	-	-
16	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	138,842	-	138,842	185,123	-	185,123
16	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	66,898	66,898	-	-	-
16	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	1,432	3,718	-	1,728	3,718	-	-	-	-
16						5,150			5,445			-
16	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	12,211	5,579	17,790	12,211	5,579	17,790
17	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	125,575	23,100	148,675	125,575	23,100	148,675
17	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	173,760	173,760	-	-	-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	6,958	13,981	-	13,917	25,416	-	-	-	-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	14,096	22,628	39,332	14,096	22,952	-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	-	-	36,724	-	-	37,047
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	4,092	85,524	89,616	4,092	8,082	12,174
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	39,668	6,106	45,775	-	-	-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	12,211	5,579	17,790	12,211	5,579	17,790
18	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	51,972	-	51,972	-	-	-
18	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	134,105	26,064	160,169	268,211	52,128	320,339
18	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	12,993	-	12,993	-	-	-

18	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	53,642	86,880	140,522	53,642	86,880	140,522
18	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	93,549	-	93,549	93,549	-	93,549
18	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	261,937	-	261,937	261,937	-	261,937
18	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	5,684	25,053	30,737	5,695	5,011	10,706	-	-	-
18	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	12,211	5,579	17,790	12,211	5,579	17,790
19	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	11,226	-	11,226	-	-	-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	29,817	29,817	-	-	-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	4,865	4,865	-	-	-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	1,685	1,685	-	-	-
19	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	1,659	1,659	-	-	-
19	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	81,855	-	81,855	81,855	-	81,855
19	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	22,402	7,127	22,402	22,402	7,127	-
21									29,529			29,529
21	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	60,072	427,500	60,072	60,072	427,500	427,500
21									487,572			487,572
22	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	81,060	43,440	124,500	324,241	-	324,241
22	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	26,108	19,583	45,691	1,137	2,020	3,157	-	-	-
22	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	12,211	5,579	17,790	12,211	5,579	17,790
23	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	173,760	173,760	-	347,520	347,520	-	347,520	347,520
23	2-Way Balancing Account for Best Practices	SDG&E	Capital	26,821	69,504	96,325	-	-	-	-	-	-
23	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	38,486	-	-	-	-
23									38,486			-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	7,449	9,493	16,943	7,449	9,865	17,314	-	-	-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	1,137	1,778	2,915	1,137	1,778	2,915	-	-	-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	10,394	3,421	13,815	-	-	-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-	-	12,211	5,579	17,790	12,211	5,579	17,790
24	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	38,999	38,999	-	38,999	38,999
24	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	19,499	19,499	-	19,499	19,499
24	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	-	82,103	82,103	-	82,103	82,103
24									82,103			82,103
25	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	226,077	12,829	238,906	226,077	12,829	238,906
26	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	-	-	-	312,768	312,768
20a	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-	-	329,345	25,289	354,635	329,345	25,289	354,635
20a	2-Way Balancing Account for Best Practices	SDG&E	Capital	-	-	-	-	-	-	-	173,760	173,760
20a									-			173,760

20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	31,530	9,852		126,121	39,407		-	-	-
						41,382			165,528			
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	5,968	5,744		5,968	4,935		-	-	-
						11,712			10,903			
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	13,446	25,628		13,446	12,698		-	-	-
						39,074			26,144			
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	1,421	4,849		1,421	4,849		-	-	-
						6,270			6,270			
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-		12,211	5,579		12,211	5,579	17,790
20b	2-Way Balancing Account for Best Practices	SDG&E	O&M	5,204	-		21,750	-		21,750	-	
						5,204			21,750			21,750
20b	2-Way Balancing Account for Best Practices	SDG&E	O&M	5,204	-		21,750	-		21,750	-	
						5,204			21,750			21,750
	2-Way Balancing Account for Best Practices	SDG&E	O&M	12,980	-		54,375	-		54,375	-	
20b						12,980			54,375			54,375
	2-Way Balancing Account for Best Practices	SDG&E	O&M	-	-		-	15,394		-	15,394	
20b						-			15,394			15,394
20b	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	1,432	3,718		1,728	3,718		-	-	-
						5,150			5,445			
20b	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	-	-		12,211	5,579		12,211	5,579	17,790
						-			17,790			

SoCalGas & SDG&E

2 Yr Plan 2018-2019, extended into 2020

Capital Spending and O&M

Costs below are in direct, unescalated 2018 dollars (no AFUDC, no CWIP property tax)

Project: SB 1371 Tier 3 Advice Letter - 2018 & 2019 Cost Estimates

BP#	Account	Company	Capital / O&M	Direct Costs, 2018\$								
				2018			2019			2020		
				Labor	Non-Labor	Total	Labor	Non-Labor	Total	Labor	Non-Labor	Total
1	Administrative Memorandum Account	SoCalGas	O&M	458,640	27,518	486,158	550,368	33,022	583,390	550,368	33,022	583,390
1	Administrative Memorandum Account	SoCalGas	O&M	144,000	8,640	152,640	144,000	8,640	152,640			-
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		80,280	80,280		28,800	28,800
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	344,250		344,250	344,250		344,250
9	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	1,350,000	450,000	1,800,000	675,000	225,000	900,000
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	120,000		120,000	120,000		120,000
9	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	300,000	300,000	600,000	608,000	912,000	1,520,000
9	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		240,000	240,000			-
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		7,200	7,200		1,200	1,200
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	25,200		25,200	25,200		25,200
11	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0			-	25,200		25,200
12	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		1,200	1,200		1,200	1,200
12	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	25,200		25,200	25,200		25,200
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		744,512	744,512		1,511,696	1,511,696
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0			-		201,720	201,720
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		1,200	1,200		1,200	1,200
13	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		72,000	72,000			-
13	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	25,200		25,200	25,200		25,200
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	1,038,259	14,574	1,052,833	1,038,259	14,574	1,052,833
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	341,952	4,800	346,752	341,952	4,800	346,752
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	360,000	3,600	363,600	360,000	3,600	363,600
15	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	360,000	3,600	363,600	360,000	3,600	363,600
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		381,655	381,655			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		181,740	181,740			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		109,306	109,306			-
15	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		54,000	54,000			-

15	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	9,057	9,057			-	
16	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	833,508	833,508	1,111,344		1,111,344	
16	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0		600,600	600,600		-	
16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	41,665			41,665	77,774	240,000	317,774		-	
16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
				6,338	24,992	31,330		7,646	24,992	32,638		-	
16	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	66,973	42,904	109,876	66,973	42,904	109,876
17	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	115,979	19,206	135,185	115,979	19,206	135,185
17	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0		120,000	120,000		-	
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
				30,792	93,991	124,783		61,584	170,864	232,447		-	
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
				10,000	154,298	164,298		62,377	204,502	266,878		-	
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	18,109	60,000	78,109	18,109	54,330	72,440
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
				10,000	250	10,250		30,064	2,034	32,098		-	
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	40,617	8,568	49,185		-	
17	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	66,973	42,904	109,876	66,973	42,904	109,876
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	48,000		48,000		-	
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0	7,200	39,600	46,800	14,400	79,200	93,600
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	48,000		48,000		-	
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0	98,400	144,000	242,400	196,800	288,000	484,800
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	48,000		48,000		-	
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0	30,000	108,000	138,000	60,000	216,000	276,000
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	48,000		48,000		-	
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0	7,200	39,600	46,800	14,400	79,200	93,600
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	48,000		48,000		-	
18	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0	108,000	30,000	138,000	216,000	60,000	276,000
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	360,000		360,000	360,000		360,000

18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	360,000		360,000	360,000		360,000		
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	240,000		240,000	240,000		240,000		
18	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	120,000		120,000	120,000		120,000		
18	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	25,152	168,424	193,576	25,203	33,685	58,887	-		
18	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	0	66,973	42,904	109,876	66,973	42,904	109,876		
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	43,200		43,200	43,200		43,200		
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	25,920		25,920			-		
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0		137,280	137,280			-		
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0		47,040	47,040			-		
19	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0		16,296	16,296			-		
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0		13,968	13,968		13,968	13,968		
19	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	270,000		270,000	270,000		270,000		
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	432,000	648,000	1,080,000	3,024,000	4,536,000	7,560,000	3,024,000	4,536,000	7,560,000
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	387,300	903,700	1,291,000	852,060	1,988,140	2,840,200	852,060	1,988,140	2,840,200
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	380,927	2,742,324	3,123,251	507,903	914,108	1,422,011		
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	13,270		13,270					-
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	116,640	1,320,960	1,437,600	116,640	1,320,960	1,437,600		
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0	331,529	773,567	1,105,096	331,529	773,567	1,105,096		
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	841,260	1,261,890	2,103,150	841,260	1,261,890	2,103,150		
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0	378,567	883,323	1,261,890	378,567	883,323	1,261,890		
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0		2,148,300	2,148,300					-
21	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	800,000	80,000	880,000	800,000	80,000	880,000		
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0	576,000	10,944,000	11,520,000	288,000	5,472,000	5,760,000		

21	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	120,000	50,000	170,000	120,000	50,000	170,000
21	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	300,000	3,600,000	3,900,000	300,000	3,600,000	3,900,000
22	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	87,243	30,000	117,243	348,971		348,971
22	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	51,156	38,867	90,022	5,030	13,583	18,613			-
22	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M			0	66,973	42,904	109,876	66,973	42,904	109,876
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	240,000	6,000	246,000	240,000	6,000	246,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital		240,000	240,000		2,280,000	2,280,000		1,920,000	1,920,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	240,000	6,000	246,000	240,000	6,000	246,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		480,000	480,000		480,000	480,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	120,000	6,000	126,000	120,000	6,000	126,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	121,000	865,000	986,000	286,000	2,780,000	3,066,000	250,000	2,350,000	2,600,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	60,000	180,000	240,000			-
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	36,000	228,000	264,000	36,000	228,000	264,000	36,000	228,000	264,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	120,000	6,000	126,000	240,000	12,000	252,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0		33,600	33,600		76,800	76,800
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M		120,000	120,000		120,000	120,000			-
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	144,000	576,000	720,000	144,000	576,000	720,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	72,000	288,000	360,000	72,000	288,000	360,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	14,400		14,400	432,000	1,785,600	2,217,600	705,600	2,822,400	3,528,000
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital	7,200		7,200	108,000	460,800	568,800	460,800	1,843,200	2,304,000
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0		273,000	273,000			-
23	2-Way Balancing Account for Best Practices	SoCalGas	O&M			0	354,600	650,000	1,004,600	354,600	650,000	1,004,600
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0	180,000	2,520,000	2,700,000	354,600		354,600
23	2-Way Balancing Account for Best Practices	SoCalGas	Capital			0						
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M			0	360,000	360,000	720,000			-
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	32,964	63,822	96,786	32,964	66,321	99,285			-
23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	5,030	11,953	16,983	37,268	72,595	109,862			-

23	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	66,973	162,904	229,876	66,973	162,904	229,876
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0		200,640	200,640		200,640	200,640
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0		100,320	100,320		100,320	100,320
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0		422,400	422,400		422,400	422,400
24	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	240,000		240,000	240,000		240,000
25	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	325,200	27,000	352,200	325,200	27,000	352,200
26	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0			-		2184000	2,184,000
26	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	120,000		120,000	120,000		120,000
20a	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	536,134	70,968	607,102	960,000		960,000
20a	2-Way Balancing Account for Best Practices	SoCalGas	Capital				0		120,000	120,000		360,000	360,000
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	132,405	467,257	599,662	33,101	116,814	149,915
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	11,409	38,613	50,022		41,409	33,180	74,589			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	10,000		10,000		207,038	74,400	281,438	197,038	74,400	271,438
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	59,502	205,364	264,866	59,502	292,292	351,795
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	6,288	32,598	38,886		6,288	32,598	38,886			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	5,555		5,555		30,848	2,568	33,416			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M										
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	96,847	745,865	842,712				-			-
20a	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	66,973	42,904	109,876	66,973	42,904	109,876
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	24,297		24,297		101,556		101,556	101,556		101,556
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	24,297		24,297		101,556		101,556	101,556		101,556
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M										
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	60,606		60,606		253,890		253,890	253,890		253,890
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0		109,200	109,200		109,200	109,200
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M				0	357,600	828,000	1,185,600			-

20b	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0	360,000	240,000	600,000	-														
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	240,000		240,000	240,000	240,000		240,000											
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	200,000		200,000	200,000	200,000		200,000											
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	686,000	2,254,000	2,940,000	1,372,000	4,508,000	5,880,000												
20b	2-Way Balancing Account for Best Practices	SoCalGas	Capital	0	9,333	30,667	40,000	18,667	61,333	80,000												
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	60,000	240,000	300,000															
20b	2-Way Balancing Account for Best Practices	SoCalGas	O&M	0	138,000		138,000	138,000		138,000												
20b	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M																			
20b	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M	6,338	24,992	31,330	7,646	24,992	32,638													
20b	1-Way Balancing Account for Pilots / R&D	SoCalGas	O&M				0	66,973	42,904	109,876	66,973	42,904	109,876									
1	Administrative Memorandum Account	SDG&E	O&M	45,360	2,722	48,082	54,432	3,266	57,698	54,432	3,266	57,698										
1	Administrative Memorandum Account	SDG&E	O&M	55,385	3,323	58,708	55,385	3,323	58,708													
9	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	38,250		38,250	38,250		38,250									
9	2-Way Balancing Account for Best Practices	SDG&E	Capital	0	150,000	50,000	200,000	75,000	25,000	100,000												
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				18,000	18,000													
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	3,000		3,000															
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				7,200	7,200		1,200	1,200										
11	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	12,000		12,000	12,000	12,000	12,000												
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				30,000	30,000													
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	12,000		12,000															
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				1,200	1,200		1,200	1,200										
12	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	12,000		12,000	12,000	12,000	12,000												
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				30,000	30,000													
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	12,000		12,000															
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	0				1,200	1,200		1,200	1,200										
13	2-Way Balancing Account for Best Practices	SDG&E	Capital	0				72,000	72,000													
13	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	12,000		12,000	12,000	12,000	12,000												
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	210,454	2,954	213,408	210,454	2,954	213,408												
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	85,488	1,200	86,688	85,488	1,200	86,688												
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	120,000	1,200	121,200	120,000	1,200	121,200												
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	0				62,037	62,037													
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	0				29,541	29,541													
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	0				22,156	22,156													
15	2-Way Balancing Account for Best Practices	SDG&E	Capital	0				9,000	9,000													
15	2-Way Balancing Account for Best Practices	SDG&E	O&M	0	896		896															

16	2-Way Balancing Account for Best Practices	SDG&E	O&M										
							0	64,116		64,116	85,488		85,488
16	2-Way Balancing Account for Best Practices	SDG&E	Capital				0		46,200	46,200			-
	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
16				661	2,608	3,269		798	2,608	3,406			-
16	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	5,639	3,914	9,553	5,639	3,914	9,553
17	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	57,989	16,206	74,195	57,989	16,206	74,195
17	2-Way Balancing Account for Best Practices	SDG&E	Capital				0		120,000	120,000			-
	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
17				3,213	9,809	13,022		6,427	17,830	24,257			-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	6,509	15,875	22,384	6,509	16,102	22,611
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	1,890	60,000	61,890	1,890	5,670	7,559
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	18,318	4,284	22,602			-
17	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	5,639	3,914	9,553	5,639	3,914	9,553
	2-Way Balancing Account for Best Practices	SDG&E	O&M										
18							0	24,000		24,000			-
18	2-Way Balancing Account for Best Practices	SDG&E	Capital				0	60,000	18,000	78,000	120,000	36,000	156,000
18	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	6,000		6,000			-
18	2-Way Balancing Account for Best Practices	SDG&E	Capital				0	24,000	60,000	84,000	24,000	60,000	84,000
18	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	43,200		43,200	43,200		43,200
18	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	120,960		120,960	120,960		120,960
18	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				2,625	17,576	20,201		2,630	3,515	6,145			-
18	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M				0	5,639	3,914	9,553	5,639	3,914	9,553
19	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	5,184		5,184			-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital				0		20,592	20,592			-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital				0		3,360	3,360			-
19	2-Way Balancing Account for Best Practices	SDG&E	Capital				0		1,164	1,164			-
19	2-Way Balancing Account for Best Practices	SDG&E	O&M				0		1,164	1,164			-
19	2-Way Balancing Account for Best Practices	SDG&E	O&M				0	37,800		37,800	37,800		37,800
	2-Way Balancing Account for Best Practices	SDG&E	O&M										
21							0	12,000	5,000	17,000	12,000	5,000	17,000

21	2-Way Balancing Account for Best Practices	SDG&E	Capital										
						0	30,000	360,000	390,000	30,000	360,000	390,000	
22	2-Way Balancing Account for Best Practices	SDG&E	Capital			0	32,047	30,000	62,047	128,190			128,190
22	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				12,056	13,738	25,795	525	1,417	1,942				-
22	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M			0	5,639	3,914	9,553	5,639	3,914	9,553	
23	2-Way Balancing Account for Best Practices	SDG&E	Capital										
						120,000	120,000	240,000	240,000		240,000	240,000	
23	2-Way Balancing Account for Best Practices	SDG&E	Capital										
				12,000	48,000	60,000							-
23	2-Way Balancing Account for Best Practices	SDG&E	O&M										
						0		27,000	27,000				-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				3,440	6,660	10,100	3,440	6,921	10,361				-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				525	1,247	1,772	525	1,247	1,772				-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M			0	4,800	2,400	7,200				-
23	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M			0	5,639	3,914	9,553	5,639	3,914	9,553	
24	2-Way Balancing Account for Best Practices	SDG&E	O&M										
						0		27,360	27,360		27,360	27,360	
24	2-Way Balancing Account for Best Practices	SDG&E	O&M										
						0		13,680	13,680		13,680	13,680	
24	2-Way Balancing Account for Best Practices	SDG&E	O&M										
						0		57,600	57,600		57,600	57,600	
25	2-Way Balancing Account for Best Practices	SDG&E	O&M			0	104,400	9,000	113,400	104,400	9,000	113,400	
26	2-Way Balancing Account for Best Practices	SDG&E	Capital			0							
						0							216,000
20a	2-Way Balancing Account for Best Practices	SDG&E	O&M										
						0	152,088	17,742	169,830	152,088	17,742	169,830	
20a	2-Way Balancing Account for Best Practices	SDG&E	Capital										
						0							120,000
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				14,560	6,912	21,472	58,241	27,647	85,888				-
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				2,756	4,029	6,785	2,756	3,462	6,218				-
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				6,209	17,980	24,189	6,209	8,908	15,118				-
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M										
				656	3,402	4,058	656	3,402	4,058				-
20a	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M			0	5,639	3,914	9,553	5,639	3,914	9,553	
20b	2-Way Balancing Account for Best Practices	SDG&E	O&M										
				2,403		2,403	10,044		10,044	10,044			10,044
20b	2-Way Balancing Account for Best Practices	SDG&E	O&M										
				2,403		2,403	10,044		10,044	10,044			10,044

20b	2-Way Balancing Account for Best Practices	SDG&E	O&M	5,994		5,994	25,110		25,110	25,110		25,110
20b	2-Way Balancing Account for Best Practices	SDG&E	O&M			0	10,800		10,800		10,800	10,800
20b	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M	661	2,608	3,269	798	2,608	3,406			-
20b	1-Way Balancing Account for Pilots / R&D	SDG&E	O&M			0	5,639	3,914	9,553	5,639	3,914	9,553