PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION **RESOLUTION G-3538**
October 11, 2018

R E S O L U T I O N

Resolution G-3538. Forecast requests for Utility Natural Gas Leak Abatement Program Memorandum and Balancing Accounts.

PROPOSED OUTCOME:

- Approval of the utilities' Compliance Plans and forecasts as filed with modifications.

SAFETY CONSIDERATIONS:

- Reducing methane emission by repairing or replacing pipes and associated infrastructure advances both policy goals of natural gas pipeline safety and integrity and reducing emissions of greenhouse gases.

ESTIMATED COST:

- For the two-year program:
  - Pacific Gas and Electric Company (PG&E) forecast of $66 million
  - Southern California Gas Company (SoCalGas) forecast of $234 million
  - San Diego Gas & Electric Company (SDG&E) forecast of $12.3 million
  - Southwest Gas Corporation (Southwest or SWG) forecast of $2.4 million

By Pacific Gas and Electric Company (PG&E) Advice Letter (AL)3902-G, Filed on October 31, 2017.

By PG&E Supplemental AL 3902-G-A, Filed on March 15, 2018.

By San Diego Gas & Electric Company (SDG&E) AL 2621-G, Filed on October 31, 2017.

By SDG&E Supplemental AL 2621-G-A, Filed on March 14, 2017.

By SDG&E Supplemental AL 2621-G-B, Filed on July 31, 2018.

By Southern California Gas Company (SoCalGas) AL 5211-G, Filed on October 31, 2017.

By SoCalGas Supplement AL 5211-G-A, Filed March 14, 2018.

By SoCalGas Supplement AL 5211-G-B, Filed July 31, 2018.

By Southwest Gas Corporation (Southwest or SWG) AL 1055-G, Filed on October 31, 2017.

By Southwest Supplemental AL 1055-G-A, Filed on April 20, 2018.

By Southwest Supplemental AL 1055-G-B, Filed on August 9, 2018.

SUMMARY

This Resolution approves the utilities' Compliance Plans and forecasts as filed in their Advice Letters with generally minor modifications. However, given the excessive costs to repair the Grade 3[1] leak backlog in PG&E's service territory, PG&E's budget for Best Practice 21 will be limited to no more than half the requested ratepayer funding for its proposed Grade 3 leak backlog in this initial period.

[1] A Grade 1 leak represents an existing or probable hazard to persons or property and requires prompt action, immediate repair, or continuous action until conditions are no longer hazardous. A Grade 2 leak is recognized as being not hazardous at the time of detection but justifies scheduled repair based on the potential for creating a future hazard. A Grade 3 is not hazardous at the time of detection and can reasonably be expected to remain not hazardous.

All proposed Pilot and Research and Development (R&D) programs will be subject to regular progress review by the Commission Safety and Enforcement Division (SED) staff with utility representatives not less than every six months with the first review to occur before December 30, 2018. SED may direct the utilities to discontinue any project that is determined to be no longer in the ratepayers' interest as described in Public Utilities Code Section 740.1. Each utility shall submit a written evaluation of the result of each Pilot and R&D project prior to submitting the next Compliance Plan, which shall be shared with SED, other utilities, and other interested parties. These Compliance Plans have a limited term through 2020 subject to re-evaluation every two years.

BACKGROUND

The California Public Utilities Commission (CPUC) opened the Order Instituting Rulemaking (R.) 15-01-008 on January 22, 2015, to implement the provisions of Senate Bill (SB) 1371, which required the adoption of rules and procedures to minimize natural gas leakage from Commission-regulated natural gas pipeline facilities. 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.

After several workshops with parties and the California Air Resources Board (CARB), SED issued a staff report with the prospective list of Best Practices addressing leak surveys, patrols, leak survey technology, leak prevention, leak reduction, leak repair, and required repair times for graded leaks.

On June 15, 2017, the Commission adopted Decision (D.) 17-06-015 which identified and adopted 26 Best Practices (BPs) for the Natural Gas Leak Abatement Program.In addition, D.17-06-015 directed the utilities, on or prior to October 31, 2017, to file a Tier 3 Advice Letter to provide the 2018 and 2019 incremental annual revenue requirement forecasts and caps for the Natural Gas Leak Abatement Program.

Pursuant to Ordering Paragraph 10 of D.17-06-015, PG&E, SoCalGas, SDG&E and Southwest were required to submit the following in their Tier 3 Advice Letter filings:

a) Identify the costs for 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 Public Utility Code § 740.1.
c) The proposed allocation methodology for amortization of the account and the corresponding Commission decision authorizing the allocation methodology.

In addition, Ordering Paragraph 11 of D.17-06-015 authorized the Director of Energy Division to recommend a process for reviewing cost forecasts, including the development of cost limits, and the methods for cost recovery related to the incremental costs of Best Practices in two-way balancing account, and costs related to Pilot Projects and R&D recorded in the one-way balancing accounts.

D.17-06-015 also ordered SED and Energy Division to convene a Technical Working Group and conduct a workshop to refine the scope and detail of the Compliance Plans and Tier 3 Advice Letters pertaining to forecasts, cost tracking and recovery. Furthermore, in cooperation with CARB, SED would complete a formal evaluation of Compliance Plans and provide a written response and direction for improvements as well as recommendations on the content and format of the Compliance Plans.

SED held a workshop on August 1, 2017 to develop a standardized template for the Compliance Plans and to review the Commission requirements for R&D and Pilot Projects.On March 15, 2018, PG&E, SDG&E, SoCalGas and Southwest submitted a Methane Leak Compliance plan as directed by D.17-06-015. SED held a second workshop on April 19, 2018 to review the Compliance Plans submitted on March 15, 2018.

NOTICE

Notices of AL 3902-G/3902-G-A, AL 2621-G/2621-G-A,AL 5211-G/5211-G-A/5211-G-B, AL 1055-G/1055-G-A/1055-G-B were made by publication in the Commission's Daily Calendar.PG&E, SDG&E, SoCalGas, and Southwest state that copies of their Advice Letters were mailed and distributed in accordance with Section IV of General Order 96-B.

PROTESTS

On November 20, 2018, PG&E AL 3902-G, SDG&E AL 2621-G, and SoCalGas AL 5211-G were protested by the Coalition of California Employees (CUE) and the Environmental Defense Fund (EDF). EDF also protested SoCalGas AL 5211-G-B and SDG&E AL 2621-G-B. Southwest's Advice Letters were not protested.

CUE argues in its protest to PG&E AL 3902-G that while the overall scope of the program is consistent with D.17-06-015, PG&E's implementation plan for BP 21 ("Find It/Fix It") is not. In its protest to SDG&E AL 2621 and SoCalGas AL 5211-G, CUE argues that SDG&E and SoCalGas are not in compliance with BP 15 (Gas Distribution Leak Surveys). CUE states that SDG&E and SoCalGas fail to submit a breakdown of cost estimates or emission reduction figures for compliance with BP 15 and that the utilities' proposed alternative to survey plastic pipe (Aldyl-A) on a one-year inspection cycle would be more cost effective.

EDF argues in its protest to PG&E AL 3902-G that PG&E does not provide enough detail to evaluate whether the funding for the implementation of individual best practices is appropriate. EDF asks that more details be provided publicly on how the money is spent to allow parties to offer more concrete recommendations. In addition, while EDF recognizes that "super emitter" leaks should be prioritized, EDF recommends that Grade 3 backlog leaks should also be scheduled for repair if they are above a certain level.

In its reply to the protests filed November 29, 2018, PG&E agreed that prioritizing the repair of super emitter leaks for the 2018-2019 period is reasonable. PG&E states that it is currently targeting its larger emission sources. Going forward,the utility will review its portfolio of existing emissions and prioritize implementing the solutions that maximize its methane emission reductions, in accordance withany cost effectiveness model that may be established in Phase 2 of the Natural Gas Leak Abatement Program proceeding. PG&E also states that it plans to further address the reduction of the backlog of older leaks in its next (2020-2021) compliance plan filing, which will refine its analysis to reduce larger emission sources.

In its protests to SoCalGas AL 5211-G and SDG&E AL 2621-G, EDF argues that SoCalGas' and SDG&E's proposal to continue the five-year leak survey cycle for all but a subset of their pipelines is contrary to the finalized best practices in D.17-06-015. In addition, EDF argues that focusing increased leak surveys on pre-1986 pipelines will not ensure that plastic pipes will be in compliance with

General Order 112-F. Finally, EDF requests additional details justifying costs provided by SoCalGas and SDG&E in their AL filings.

On August 20, 2018, EDF filed a protest to SoCalGas' Supplemental AL filing 5211-G-B and SDG&E's Supplemental AL filing 2621-G-B. The Supplemental AL filings updated the total cost estimates in previous filings, due in part to the delayed implementation of their proposed two-year Compliance Plans which would now go beyond 2019. EDF reiterated its argument that SoCalGas and SDG&E do not provide enough details to evaluate the cost estimates associated with each BP in the Compliance Plans and references several areas of cost difference between previous filings and the Supplemental. EDF also argues that SoCalGas and SDG&E's proposal for BP 15 does not comply with the Commission's directive.

In its replies to the protests filed November 29, 2018, SoCalGas and SDG&E state that the emissions reduction associated with moving from a five- to a three-year survey cycle will likely be small and costly compared to other activities. SDG&E and SoCalGas argue that this approach is consistent with the BP 15 requirement which states "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."[2]

In its August 24, 2018 reply to EDF's August 20 protest, SoCalGas provides several explanations for items included in EDF's protest, many of which were related to financial calculation and forecasting alignments. With respect to BP 15 on the three year leak survey cycle, SoCalGas states that EDF's concerns were previously included in its November 20 protest and addressed in SoCalGas' earlier reply. With this Supplemental AL filing, SoCalGas states that the most recent cost estimates include more accurate estimation methodologies and assumptions not yet available in previous filings.

No protests were filed on Southwest AL 1055-G.

[2] D.17-06-015, Appendix B, page B10.

DISCUSSION

Energy Division has reviewed the ALs filed by the utilities as well as SED's evaluation reports. SED's evaluation reports were completed in collaboration with CARB and are included in this resolution as Attachments A, B, C and D. As ordered in D.17-06-015, each utility discusses its approach in its Compliance Plan on achieving a 40% reduction of emissions levels by 2030 and what level of reduction would be achieved by 2020.

Energy Division recommends approval of the utilities' Compliance Plans and forecasts as filed in their Advice Letters with modifications to the utilities' proposals as discussed. We agree. All proposed Pilot and R&D programs will be subject to regular progress review by SED staff with utility representatives not less than every six months with the first review to occur before December 30, 2018. SED may direct the utilities to discontinue any project that is determined to be no longer in the ratepayers' interest as described in Public Utilities Code Section 740.1. Each utility shall submit a written evaluation of the result of each Pilot and R&D project prior to submitting the next Compliance Plan, which shall be shared with SED, other utilities, and other interested parties.

With respect to EDF's and CUE's argument that the utilities did not include enough details in the utilities' Compliance Plans, the Advice Letters filed in November were preliminary. The utilities filed additional detailed information in supplemental filings in March, April and August of 2018. The utilities also presented a review of the major elements of their individual Compliance Plans at the April 19th workshop, which was attended by both EDF and CUE.

We should no longer delay implementation of the Compliance Plans. The utilities need to begin implementation of the program in order to gain additional insight and accuracy of the emissions reductions, the methodology to increase the reductions, and the cost effectiveness of the proposals. We share EDF's concerns regarding cost effectiveness, however, SED has the authority to discontinue any project determined to be no longer in the ratepayers' interest. As EDF noted in its comments to the draft resolution, we acknowledge that these Compliance Plans have a limited term through 2020 subject to re-evaluation every two years.

SED also plans to convene a public workshop on BP 20b, Geographic Tracking of Leaks, in order to develop a similar methodology to improve geographic

evaluation and tracking of leaks between the utilities. Balances in all accounts authorized for recovery are subject to audit, verification, and adjustment.

PG&E

PG&E's two-year plan projects a 17% reduction of the 2015 baseline by 2020. The largest emission reduction proposals are the Super Emitter program and the adoption of a three-year leak survey cycle. PG&E's 2018 Methane Leak Abatement Compliance Plan is approved with the conditions as noted in SED's evaluation report. In particular, PG&E's Grade 3 underground leak repair program for BP 21 requires modification.

As adopted in D.17-06-015, BP 21 calls for the repair of all pipeline leaks no more than three years after discovery, without regard to the leak's classification as non-hazardous (Grade 3) by General Order 112F standards. Exceptions are allowed for leaks that are costly to repair relative to the size of the leak. In addition, the decision required utilities to eliminate their backlog of leaks within three years of the effective date of the decision with the same exemption for cost-prohibitive repairs included in BP 21.

In response to BP 21, PG&E proposed three programs in its Compliance Plan: 1) a "Super-Emitter" leak reduction program, 2) a program to reduce the backlog of Grade 3 underground leaks, and 3) prompt repair of all new Above-Ground Grade 3 leaks. The "Super-Emitter" program is an application of recently-developed methods that can determine the approximate flow rate of a leak, accurately enough to categorize the leak as larger than a threshold value. PG&E proposes to find those largest, "super-emitter" leaks with a dedicated survey and repair them promptly no matter the leak Grade.

However, pursuant to D.17-06-015, Ordering Paragraph 5,[3] PG&E's proposal to reduce its leak backlog of Grade 3 underground leaks appears to be excessively

[3] D.17-06-015, Ordering Paragraph 5: Respondents shall eliminate their backlog of leaks within three years of the effective date of this decision, unless the Commission's Safety and Enforcement Division grants an exemption for cost prohibitive repairs included in BP 21 "Find It/Fix It" and leaks under more stringent schedules according to GO 112-F.

costly relative to the expected emission reduction, particularly in comparison with SoCalGas' proposal as discussed in their section. PG&E estimates its backlog reduction program to be approximately $591/MCF[4] while SoCalGas estimates its reduction program to cost approximately $138/MCF. Admittedly, in its Compliance Plan, PG&E states that its Super Emitter program is 27 times more cost effective than its Backlog Reduction program from a $/MCF perspective.[5] Comparatively, PG&E's average cost for these "Super Emitters" would be $22/MCF while SoCalGas' average cost would be $12/MCF for a similar program.

Given the seemingly excessive costs to repair the Grade 3 leak backlog in PG&E's service territory and the comparatively small methane emission reduction estimate, we limit PG&E's budget in this program to no more than half the requested ratepayer funding for its proposed Grade 3 leak backlog in this initial period. Public Utilities Code (PUC) Section 975 and D.17-06-015 recognized the potential rate impacts on ratepayers when including the language "with priority given to safety, reliability, and ***affordability*** of service" (emphasis added). D.17-06-015 allowed for exemptions for cost-prohibitive repairs. We acknowledge EDF's drive to eliminate the utilities' Grade 3 backlog leaks, but we are concerned about the continued increasing rates imposed on ratepayers.

In keeping with the intent of Section 975 to reduce emissions, we expect PG&E to prioritize these repairs based on the highest expected emission reduction, where possible. Therefore, we find it reasonable to limit PG&E's Grade 3 leak repair backlog program to no more than half the requested ratepayer funding of its proposed Grade 3 leak backlog for this two-year period. We also require PG&E to track the incremental costs for its Super Emitter leak program and Grade 3 leak backlog separately. We will reevaluate the program after we have had the opportunity to review this pilot in 2020.

As well as the modification to BP 21, PG&E shall also make the following modification identified in the SED evaluation report and submit a revised plan to SED within 30 days. For BP 3 on Pressure Reduction before Venting, a summary

[4] thousand standard cubic feet

[5] PG&E March 15, 2018 Compliance Plan, ACH1-185, BP 21-4, page 186.

of the post-event evaluation and analysis after every event will be included in the next Compliance Plan to determine if further procedural changes are necessary.

SoCalGas

SoCalGas' proposed activities for the two-year compliance period include policy and procedure development, training development and deployment, increased leak surveys, installation of methane sensing technologies, faster leak repair times, capture of blowdown gas, replacement of high-bleed pneumatic devices, expansion of dig-alert programs, back-office information technology projects, and development of tools to support monitoring, record-keeping, and reporting.

As documented in their Compliance Plans, SoCalGas and SDG&E propose to participate in most of the same projects. Though estimated reductions for the proposed two-year program are provided, both SoCalGas and SDG&E note the challenges of reaching the 40% reduction target by 2030 cannot be accurately estimated before they are put into practice. We expect the 2020 Compliance Plans to provide a comprehensive, in-depth analysis for additional details for meeting the 2030 goal. SoCalGas'2018 Methane Leak Abatement Compliance Plan is approved with the conditions as noted in SED's evaluation report.

Under BP 15, Gas Distribution Leak Surveys, the utilities are directed to either conduct three-year leak surveys or to propose a less-frequent interval based on risk assessment if that will provide a more cost-effective emission reduction. SoCalGas has analyzed the effectiveness of various survey intervals for different pipe material types in their network. That analysis supports the SoCalGas proposal to adopt more frequent, ***annual*** surveys for the most leak-prone pipe materials such as unprotected steel pipe (as opposed to three-year surveys) and continue five-year leak surveys on the least leak-prone materials such as state-of-the-art plastic. This approach will focus personnel on locating more leaks than can be found with a uniform three-year leak survey. SoCalGas estimates that the emission reduction for the proposed practice will be 1.26 million MCF through 2030. The cost effectiveness forecast of SoCalGas' alternative proposal is $34/MCF versus the blanket three-year survey cost of $470/MCF. SED has reviewed and approves of the proposed alternative. We agree with SED's recommendation and approve the proposed alternative.

SoCalGas' proposed plan to address BP 20a, Leak Quantification, is to develop methods to identify "large" leaks (defined as having an emissions rate of 10 CFH[6] or greater, similar to PG&E's Super Emitters). As with PG&E, these large leaks would be prioritized for prompt repair, thereby reducing the emission volume quickly. SoCalGas' estimated costs effectiveness of $12/MCF compares favorably versus PG&E's $22/MCF. We approve SoCalGas' proposed large leak repair program, but again caution that, should the program fail to achieve the targeted results, a more stringent approach may be adopted in the future.

Over the two-year period, PG&E and SoCalGas estimate reducing methane emissions from these larger Grade 3 leaks by almost 300,000 MCF/year at a reasonable cost.

Under BP 18, utilizing Stationary Methane Detectors for early leak detection, SoCalGas proposes two options: 1) limited installation of currently available devices in recommended locations (compressor stations, terminals, gas storage facilities, city-gates, and metering and regulating stations) to better understand cost effectiveness; or 2) full installation of current devices without gauging cost effectiveness or consideration of research into emerging technologies that may be more effective. Given the cost uncertainty of Option 2, we approve Option 1. This approval also applies to SDG&E's proposal for BP 18.

SoCalGas provided updated forecasts in its Supplemental filing dated July 31, 2018. Due to the delay in approval of this two-year program, some activities have shifted forward in time with forecasts now continuing into 2020. SoCalGas' most current General Rate Case is actively in progress, while the next General Rate Case filing will be submitted, at the earliest, for Test Year 2022. SoCalGas' Supplemental was filed to bridge the program funding to the next ratemaking application. We approve SoCalGas' request to extend the two-year program funding into 2020.

<u>SDG&E</u>
SDG&E proposes to participate in most of the same activities and research projects as SoCalGas. Similar to SoCalGas' Compliance Plan, SDG&E's Compliance Plan includes estimated reduction by 2020 but does not discuss how

[6] CFH = cubic feet per hour

the 40% by 2030 reduction will be impacted. SDG&E should provide a comprehensive in-depth analysis in its 2020 Compliance Plan on meeting the 2030 goals, possibly including new ideas beyond the 26 BPs and more accurate forecasts from the proposed pilots and R&D projects for discussion in workshops by interested parties and CARB. SED identified some typographical errors as noted in its evaluation report of SDG&E's Compliance Plan that should be corrected but do not change the outcome of the evaluation. SDG&E's 2018 Methane Leak Abatement Compliance Plan is approved with the conditions as noted in SED's evaluation report.

SDG&E proposes to adopt a three-year leak survey for all distribution pipelines except for certain high leakage materials. SDG&E will survey these high leakage materials annually. SDG&E estimates an average cost of $243/MCF for this proposal.

For BP 20a on Leak Quantification, SDG&E presents a program similar to SoCalGas and PG&E, which would identify "large" Grade 3 leaks and repair them promptly. However, due to a smaller Grade 3 leak backlog resulting in a lower emission reduction, SDG&E's estimated cost for this program is $3,457/MCF. Given the limited reduction potential of 162 MCF/year and the excessively high cost, SDG&E does not recommend pursuing this program. SED agrees that this program is not cost effective. We agree that SDG&E should not proceed with this program.

For BP 21 requiring repair of gas leaks within three years of discovery, SDG&E proposes to adopt this policy with an exception for some repairs that require blowdown emissions exceeding the leak emission itself or that may otherwise be excessively costly. SED agrees with this recommendation, but expects these exceptions to be detailed in the biennial Compliance Plan.

Updated forecasts were provided by SDG&E in its Supplemental filing dated July 31, 2018. Due to the delay in approval of this two-year program, some activities have shifted forward in time with forecasts now continuing into 2020. SDG&E's most current General Rate Case is actively in progress, while the next General Rate Case filing will be submitted, at the earliest, for Test Year 2022. SDG&E's Supplemental was filed to bridge the program funding to the next ratemaking application. We approve SDG&E's request to extend the two-year program funding into 2020.

Southwest
Southwest estimates that emissions will be reduced by approximately 111 MCF during the reporting period of January 1, 2018, through December 31, 2019. Unlike PG&E, SoCalGas, and SDG&E, Southwest Gas is a Class B utility as defined by D.17-06-015, as its total annual methane emissions are between 50,000 MCF and 500,000 MCF. Southwest states it has already adopted many of the Best Practices, therefore, much of its potential emission reductions have been achieved from prior adoption.

According to Southwest, a number of Best Practices had been adopted by Southwest prior to SB 1371: BP 8, BP 10, BP 15, BP 16, BP 19, and BPs 23-25. In addition, as a Class B operator, Southwest has requested exemption from BP 14, BP 17, and BP 20a, as permitted under D.17-06-015 for Class B operators. Southwest's 2018 Methane Leak Abatement Compliance Plan is approved with the conditions as noted in SED's evaluation report.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

Comments to the Draft Resolution were filed on October 1, 2018 by PG&E, SoCalGas, SDG&E, CUE and EDF. Revisions were made in response to the comments received as discussed below.

SoCalGas and SDG&E support the draft resolution with a minor revision to provide additional guidance on potential confidential information related to the Pilot and R&D projects. EDF support the draft resolution with minor revisions to provide additional guidance on the term of these Compliance Plans and the continued implementation of SB 1371. The resolution has been revised to reflect these issues.

CUE opposes the draft resolution's requirement limiting PG&E's Grade 3 backlog repair budget to 50%. As discussed in the resolution, we find the forecasts for this repair excessively costly relative to the expected emission reduction. As mentioned earlier, these Compliance Plans have a limited term through 2020 subject to re-evaluation every two years which will allow the Commission to revisit PG&E's Grade 3 backlog repair.

PG&E included a number of clarifying modifications in its comments. Revisions were incorporated to clarify the resolution's requirement to reduce PG&E's proposal to repair its Grade 3 leak repair backlog. Additional language is also included clarify SED's evaluation and review of Pilot and R&D projects.

In addition, PG&E proposes language to accommodate the Annual Gas True-Up (AGT) advice letter. While we understand that the timing of the issuance of this resolution will conflict with the timing of the AGT advice letter process, which sets rates effective January 2, 2019, the AGT advice letter process is a forecast and not an exact science. The balancing account mechanism allows for true-ups to account for over- and under- collections from year to year. As noted in Ordering Paragraph 5 of this resolution requiring a Tier 1 Advice Letter filing, PG&E may include, given this resolution's limitation to the Grade 3 leak backlog repairs, minor modifications to its tariff sheets to reflect its proposal to recover or refund the balance in the balancing accounts and refund any underspent balance for rates effective January 1, 2020.

Given this resolution's intention to revisit PG&E's Grade 3 leak repair obligations, PG&E also requests that this resolution allow PG&E to continue the use of the New Environmental Regulation Balancing Account (NERBA) Distribution subaccount to track BP 21 costs for Grade 3 leak repairs in 2020, 2021 and 2022. PG&E argues that the reevaluation of PG&E's program in 2020 will not provide the necessary notice to include the costs in PG&E's 2020 GRC application. This draft resolution is not the appropriate venue to make that determination. Continuation of the balancing account beyond this two year period should be determined in either Phase II of R.15-01-008 or PG&E's 2020 GRC proceeding.

FINDINGS

1. D.17-06-015 adopted policies and guidelines for a natural gas leak abatement program consistent with SB 1371.
2. D.17-06-015 identified and adopted 26 Best Practices for the Natural Gas Leak Abatement Program.
3. Pursuant to Ordering Paragraph 10 of D.17-06-015, PG&E, SoCalGas, SDG&E, and Southwest filed Tier 3 Advice Letters to provide the 2018 and 2019 incremental annual revenue requirement forecasts and caps for the Natural Gas Leak Abatement Program.
4. Workshops were held August 1, 2017, and April 19, 2018.
5. EDF and CUE filed protests on PG&E, SDG&E, and SoCalGas' Advice Letter filings.
6. As ordered in D.17-06-015, each utility includes information in its Compliance Plans on how to achieve a 40% reduction of emissions levels by 2030 and what level of reduction would be achieved by 2020.
7. PUC Section 975 and D.17-06-015 recognized the rate impacts on ratepayers by including the language "with priority given to safety, reliability, and ***affordability*** of service" (emphasis added).
8. D.17-06-015 allows for exemptions for cost prohibitive repairs included in BP 21.
9. SED has completed evaluation reports on each of the utilities' Compliance Plans in collaboration with CARB.
10. SED may direct the utilities to discontinue any project that is determined to be no longer in the ratepayers' interest.
11. Energy Division recommends approval of the utilities' Compliance Plans and forecasts as filed in their Advice Letters with modifications to the utilities' proposals as discussed.
12. PG&E's proposal to reduce its leak backlog of Grade 3 underground leaks is excessively costly relative to the expected emission reduction.
13. Given the excessive costs to repair the Grade 3 leak backlog in PG&E's service territory, PG&E's budget in this program will be limited to no more than half the requested ratepayer funding for its proposed Grade 3 leak backlog in this initial period.

14. Class B and C utilities may request exemptions from certain BPs subject to SED's review and approval
15. Southwest is a Class B utility and has asked for exemptions from BP 14, BP 17, and BP 20a.

THEREFORE IT IS ORDERED THAT:

1. The request of Pacific Gas and Electric Company (PG&E) for approval of its Natural Gas Leak Abatement Program Compliance Plan and forecast as filed in Advice Letter 3902-G-A is granted subject to the minor modifications described in this resolution, the attached Evaluation Report by the Safety Enforcement Division, and the following modifications described below:
    - PG&E shall limit the Grade 3 leak repair backlog to no more than half the requested ratepayer funding for its proposal for this two-year period.
    - PG&E shall track the incremental costs for its Super Emitter leak program and its Grade 3 leak repair backlog separately.
2. The request of Southern California Gas Company (SoCalGas) for approval of its Natural Gas Leak Abatement Program Compliance Plan and forecast as filed in Advice Letter 5211-G-B is granted with modifications as described in this resolution and the attached Evaluation Report by the Safety Enforcement Report.
    - SoCalGas shall track the incremental costs for its large leak program proposed in Best Practice 20a and its below-ground distribution main Grade 3 leak repair backlog under Best Practice 21 separately.
3. The request of San Diego Gas & Electric Company for approval of its Natural Gas Leak Abatement Program Compliance Plan and forecast as filed in Advice Letter 2621-G-B is granted subject to the minor modifications as described in this resolution and the attached Evaluation Report by the Safety Enforcement Division.
4. The request of Southwest Gas Corporation for approval of its Natural Gas Leak Abatement Program Compliance Plan and forecasts as filed in Advice Letter 1055-A for its Northern California and South Lake Tahoe service territories and in Advice Letter 1055-G-B for its Southern California service territory is granted.

5. Within 30 days of this resolution, Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Gas Company, and Southwest Gas Corporation are required to submit a Tier 1 Advice Letter with revised tariff sheets to recover forecasted costs in the Natural Gas Leak Abatement Program Balancing Account for 2018. The balance in the two-way balancing account shall be subject to refund or recovery from customers in the following year through the Annual Gas True up advice letter filing.
6. For 2019 cost recovery of the Natural Gas Leak Abatement Program Balancing Account, Pacific Gas and Electric Company, San Diego Gas & Electric Company, Southern California Gas Company, and Southwest Gas Corporation will include the authorized cost forecast and cost limit in their gas transportation rates in connection with their consolidated rate update submittal for rates effective January 1, 2019. The balance in the two-way balancing account shall be subject to refund or recovery from customers in the following year through the Annual Gas True up advice letter filing.
7. For 2020 cost recovery of the Natural Gas Leak Abatement Program Balancing Account, Southern California Gas and San Diego Gas & Electric may include the authorized cost forecast and cost limit to bridge the funding gap of the two year Leak Abatement Compliance Plan with their consolidated rate update submittal for rates effective January 1, 2020. The balance in the two-way balancing account will be subject to refund or recovery from customers in the following year through the Annual Gas True up advice letter filing.
8. All proposed Pilot and Research & Development projects will be subject to regular progress reviews by Safety Enforcement Division staff with utility representatives not less than every six months with the first review to occur before December 30, 2018.
9. The Safety Enforcement Division may direct the utilities to discontinue any Pilot or Research & Development project that is determined to be no longer in the ratepayers' interest as described in Public Utilities Code Section 740.1.
10. Each utility shall prepare and submit a written evaluation of the result or status of each Pilot and Research & Development project prior to submitting the next Compliance Plan, which shall be shared with the Safety Enforcement Division, other utilities, and other interested parties. In accordance with Decision 17-09-023, the utilities may submit potentially confidential information under the process established in General Order 66-D.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on October 11, 2018; the following Commissioners voting favorably thereon:

/s/ *ALICE STEBBINS*
ALICE STEBBINS
Executive Director

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Attachment A
SED Evaluation Report
For Pacific Gas and Electric Company
2018 Leak Abatement Compliance Plan

SED EVALUATION REPORT

FOR PACIFIC GAS AND ELECTRIC COMPANY

2018 LEAK ABATEMENT COMPLIANCE PLAN

I) EXECUTIVE SUMMARY

On March 15, 2018, Pacific Gas and Electric Company (PG&E) submitted a Methane Leak Compliance Plan, as directed by Commission decision (D.) 17-06-015 in R. 15-01-008, the Rulemaking to Adopt Rules and Procedures Governing Commission-Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leakage Consistent with Senate Bill 1371.[7] Pursuant to D. 17-06-015, the Commission's Safety and Enforcement Division, in cooperation with the CA Air Resources Board, has evaluated the Compliance Plan and provides this written response. PG&E shall make the modifications to its Plan that are identified herein by the Safety and Enforcement Division (SED) and submit a revised Plan to SED within 30 days. (D.17-06-015, ¶ 6(a)2. at p. 159; ¶¶10 – 13 at pp. 161-162).

PG&E and other gas utilities participated in an April 19, 2018 workshop to review major elements of their Compliance Plans, especially proposals for Pilot/Research & Development (R&D) programs and plans for addressing the 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training, as detailed in D. 17-06-015.

SED has evaluated and approves the PG&E 2018 Methane Leak Abatement Compliance Plan, with the following key observations or modifications:

<u>Pilot and R&D Projects:</u> SED approves the proposed Pilot and R&D projects as clarified in the set of Pilot/R&D Summaries which have been provided in a Data Request response, according to a Project Summary template mutually developed with SEMPRA and PG&E. All such projects will be subject to regular progress review by SED and CARB Staff with PG&E R&D representatives not less than every six months, the first review to occur before December 30, 2018.

<u>Emission Reduction by 2030</u>

1. [7] The Plan is available online at http://www.cpuc.ca.gov/riskassessment/

PG&E has discussed the goal of a 40% reduction by 2030 in the Compliance Plan by identifying the largest sources where reductions can be achieved and discussing the challenges in realizing those reductions. To reach the goal, PG&E plans to conduct R&D studies to develop new technologies, refine the emission-factor approach for more accurate emissions reporting, and evaluate whether reduction activities are meaningful and cost-effective. SED expects the 2020 Plan will incorporate the lessons learned during the first Compliance Plan period to provide a more comprehensive reduction plan.

BP-3 Pressure Reduction Before Venting: The procedures for non-emergency venting must include post-event evaluation and analysis, after every event, to determine if further procedural changes should be adopted. A summary of these evaluations must be included in the following Compliance Plan. This change to BP-3 must be implemented in 2018.

BP-20b Geographic Tracking of Leaks: SED staff plans to host a workshop later in 2018 to facilitate the collaboration of the utilities in developing a similar methodology to improve geographic evaluation and tracking of leaks, as required In the Decision. PG&E shall use this common methodology in its implementation of BP-20b.

BP-21 "Find-it/Fix-It": SED is concerned that the Grade 3 below-ground leak backlog repair program is excessively costly relative to the expected emission reduction, especially compared to the Super Emitter program. As explained further below, SED recommends that PG&E should modify BP-21 so that the Grade 3 below-ground program will spend no more than half the requested ratepayer funding while collecting data on repair costs and emissions reduction for evaluation of cost effectiveness for remaining backlog repairs in the next compliance plan period.

II) INTRODUCTION

BACKGROUND: D. 17-06-015 ordered jurisdictional gas pipeline operators to file a Biennial Compliance Plan, detailing how they would adopt the Decision's 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training. The Compliance Plans were required to be part of the operator's annual Gas Safety Plan under CPUC General Order (GO) 112-F. Some of the Best Practices included allowance for Pilot or R&D programs to evaluate the cost-effectiveness of potential methods and technologies and application to the utility's specific operating conditions before adoption.

EVALUATION APPROACH: SED reviewed the PG&E Compliance Plan in collaboration with California Air Resources Board (CARB) and considered comments received from members of the

Best Practices Working Group[8]. Elements of the Compliance Plan which raised concerns and require modification will be discussed in detail in below.

III) EMISSION REDUCTION ESTIMATES

The Decision ordered that the "Compliance Plans shall include information on how each Respondent plans to achieve a 40% reduction of emissions below 2013 levels by 2030, what level of reduction would be achieved by 2020, and how they plan to achieve the 2020 reduction level." (D.17-06-015, ¶6(c) at p. 160). D.17-06-015 established that the 2013 baseline will be represented by the 2015 emissions inventory as reported in the annual Leak Inventory, since 2015 is the first year that the emissions inventory was compiled.

In the Compliance Plan Summary, PG&E projects a 17% reduction of the 2015 baseline by 2020. That will be a significant step towards the 40% reduction by 2030 target. The largest components of the reduction are expected from fewer blowdown emissions, the Super Emitter program, and adoption of a three-year leak survey cycle.

However, PG&E does not specify how the 40% by 2030 reduction will be achieved as required in the Decision. SED expects the 2020 Compliance plan will provide a more comprehensive analysis for how PG&E plans to meet the 2030 goal, possibly including new ideas beyond the 26 Best Practices.

Included in the analysis, PG&E may propose alternative means of determining emission volumes that currently rely on emissions factors, such as the application of results from the pilot and R&D projects. These proposals to change the emission measurement methods would be reviewed by interested parties in Workshops and if uniformly applicable would be approved for use by CARB.

IV) BEST PRACTICES COMPLIANCE

BP-1 to BP-9 Policies and Procedures

SED finds these BP statements are consistent with D. 17-06-015. BP-3 should be amended to include a requirement to conduct a post-blowdown evaluation and analysis, to determine if further revisions to procedures are warranted. The amendment should be made before the

2. [8] Working Group members who gave informal comments are the Environmental Defense Fund (EDF) and the Coalition for Utility Employees (CUE).

end of 2018, and a summary of the evaluations performed shall be included in the 2020 Compliance Plan.

BP-7 Blowdown Reduction. PG&E estimates reduction of 0.24 BCF (billion cubic feet of natural gas) for the years 2018-2019, which initially seemed too large since it is greater than the total blowdown emissions reported in 2015 and 2016. In response to a data request, however, PG&E said it expects a greater level of pipeline maintenance activity in 2018-2019 so this reduction is consistent with that greater level of activity. However, this estimated reduction is not necessarily an accurate estimate of reductions achieved by implementing this BP in future years due to changing levels of maintenance activities.

BP-16 Special Leak Surveys: PG&E's initial choice of vintage pipe materials for special leak surveys based on integrity-management analysis is a good place to start. For future special leak surveys, PG&E has proposed an R&D project to develop advanced risk-based targeting method incorporating Picarro mobile leak measurements with other data analysis. PG&E must conduct the R&D project according to the details supplied in response to SED's data request.

BP-18 Stationary Methane Detection

PG&E proposes to leverage the work required to comply with the CARB Oil and Gas Rule[9] for leak monitoring at compressor and storage facilities, to serve as a pilot study to evaluate performance and cost factors of current commercial devices before deployment at other locations such as M&R stations. PG&E also expects to use the sensor measurements to refine emission factors for Regulation Stations, providing a more accurate leak inventory.

In addition, PG&E will participate in an OTD (Operations Technology Development) collaborative project to study the capabilities of newly-developed stationary methane detectors, to determine which would be most cost-effective for fixed-point monitoring of gas facilities. OTD is a non-profit research organization that serves the natural gas utility community.

SED approves this two-pronged approach to stationary methane detection which should determine the most cost-effective solution for PG&E's facilities.

BP-20a Leak Quantification.

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3. [9] Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities.

PG&E has proposed a major program based on leak quantification technology newly developed: the Super Emitter program. While not exact, the current method is capable of quantifying leaks as super-sized. For further development of quantification, PG&E plans to participate in collaborative research projects with OTD and NYSEARCH (a research branch of the Northeast Gas association).

BP-20b Geographic Tracking of Leaks

PG&E states it is collaborating with the Environmental Defense Fund (EDF) to develop a publicly available leak map to display leak information by zip code or similar location with a "tentative launch in 2018 or as soon as practicable". However, Staff notes that the BP requires utilities to "work together, with CPUC and CARB, to agree on a similar methodology to improve geographic evaluation and tracking of leaks". SED staff will convene a public workshop so that agreement on methodology can be reached. PG&E shall use the common methodology to implement this BP.

BP-21 "Find-it/Fix-it"

This BP requires repair of any gas leak within 3 years after discovery, with reasonable exceptions for leaks that are costly to repair relative to the estimated size of the leak. The targeted leaks are those that don't already require prompt repair under existing safety regulations. These leaks are usually referred to as "Grade 3" leaks.

PG&E proposes three programs under this BP: 1) a "Super-Emitter" leak reduction program, 2) a program to reduce the backlog of Grade 3 below-ground leaks, and 3) prompt repair of above-ground Grade 3 leaks. The Super-Emitter program has a very attractive cost effectiveness estimate of $22/MCF of emissions abated while the Grade 3 Underground program is significantly more expensive at $591/MCF.

The Super-Emitter program is a novel application of recently-developed methods that can determine the approximate flow rate of a leak, accurate enough to categorize the leak as larger than a threshold value. Studies have shown that a small percentage of gas pipeline leaks have very large emissions compared to the others. PG&E proposes to find those largest, "super-emitter", leaks with a dedicated survey program and repair them promptly no matter what the leak Grade is. The emissions reduction estimate for the first two years of this program is 248,000 MCF for an estimated 400 underground repairs. The projected cost effectiveness is $22/MCF.

The Grade 3 below-ground program proposes to reduce the backlog of other below-ground Grade 3 leaks, which have remained open for extended periods (as permitted under GO-112 regulations) at an advanced pace of about 2000 leaks per year, which would reduce the backlog

by about 70% by 2020. The average cost to locate and repair an underground leak is about the same for any size of leak. But the potential emissions reduction from this category is small compared to the Super Emitter program. PG&E estimates the cost effectiveness of this program is $591/MCF, or 27 times more expensive than the Super-Emitter program.

SED is concerned that the Grade 3 below-ground leak repair program is too costly relative to the size of the leaks. PG&E has stated its corporate goal of eliminating the backlog of Grade 3 leaks, unless SED provides an exemption due to high cost. It is not clear that funding for these repairs should be borne by gas utility ratepayers due to the relatively high cost and low emission reduction forecasted. There are other sources of methane emissions in California which may be more economical to abate. In addition, before authorizing the proposal in full, it is prudent to first evaluate why PG&E's estimate of costs to repair Grade 3 leaks is so much higher than Southern California Gas estimate ($591/MCF vs. $138/MCF) and why the estimate of methane reductions for PG&E's Grade 3 leak program is so much lower than SoCalGas' estimate.

Further evaluation will also allow comparison with other ways to reduce methane emissions that may be identified through the R&D/pilots, and that may be more cost-effective. Therefore, pursuant to D.17-06-015, SED grants an exemption to the goal of eliminating the backlog of Grade 3 leaks within 3 years due to costly repairs (Order, ¶ 5 at p.159) and recommends that the Commission should authorize one-half the requested funds for this program. With those funds, PG&E should prioritize repairs of Grade 3 leaks based on highest emission reduction for lowest cost, where possible. The remaining backlog of Grade 3 leaks should be addressed in the 2020 Compliance Plan based on actual cost-effectiveness experience learned from this initial effort, combined with information gained from the various research projects.

PG&E also expects to fix many above-ground Grade 3 leaks, which are Meter Set Assembly (MSA) leaks. The expected number of these repairs is about 19,500 per year, which should significantly reduce the backlog of these leaks. According to the 2017 Leak Inventory report, PG&E repaired 15,684 MSA leaks in 2017, some of which had been open for more than 3 years, with only 518 MSA leaks remaining open for 3 years or longer. No cost estimate is provided in the Compliance Plan for this work, so it is assumed to be included within GRC-funded Operations and Maintenance budgets. The reported emissions for MSA leaks in 2016-2017 of 640,000 MCF average per year is not tied to the actual number of MSA leaks but is based on the population of 4.5 million MSAs times a fixed emission factor. SED is aware that CARB has recently conducted a special study of MSA emission factors in Northern and Southern California, so it is hoped that future Leak Inventory reports will provide a more accurate estimate of emissions for the category.

PG&E has not estimated an emission reduction from the above-ground repairs. It will be difficult to quantify the emission reduction results since the individual MSA leak volumes are currently based on population count rather than actual measurements. SED notes that PG&E has proposed an R&D project to study threaded Pipe Fitting Specifications under BP-22, which should apply to MSA emissions since meter set assemblies contain many threaded pipe fittings. If the study shows that different pipe fitting specifications will reduce leaking, PG&E may propose a change to MSA emission factors based on a program to replace MSA fittings. Other research into leak quantification may also help to obtain accurate emission figures.

BP-23 Minimize Emissions from Operations and Maintenance

This BP is focused primarily on the replacement of "high-bleed" pneumatic devices that routinely release gas to the atmosphere by design. PG&E proposes to replace most of these devices by 2020, with the remainder to be replaced in the following two years. Given that these devices are working components of complex gas facilities that can be difficult to replace without affecting gas operations, the proposed pace is satisfactory.

V) PILOT AND R&D PROGRAMS

Ordering Paragraph 10, part b, of Decision 17-06-015 requires that justifications for proposed R&D and Pilot projects are consistent with criteria in Pub. Util. Code Section 740.1.

SED reviewed the proposed Pilot and R&D projects according to PU Code 740.1 and considered suggestions and comments made by interested parties. SED asked PG&E to present detailed Project Summaries to provide project information in a standardized format developed jointly by SED, PG&E, and SCG. PG&E has summarized 19 projects in their data request response and this information is available online at: http://www.cpuc.ca.gov/riskassessment/ The proposed R&D cost of $4.6 Million is 7 % of the total Compliance Plan incremental cost.

SED finds that all the proposed projects meet the required criteria.

SED and CARB will be conducting review meetings with the PG&E R&D team to assess progress and results of these projects. These project reviews will examine progress towards meeting milestones and discuss whether to continue or cease projects based on trigger points. SED may direct PG&E to discontinue a project that SED determines is no longer in the ratepayers' interest.

Attachment B
SED Evaluation Report
For San Diego Gas & Electric Company
2018 Leak Abatement Compliance Plan

SED EVALUATION REPORT

FOR SAN DIEGO GAS & ELECTRIC COMPANY

2018 LEAK ABATEMENT COMPLIANCE PLAN

I) EXECUTIVE SUMMARY

On March 15, 2018, San Diego Gas and Electric Company (SDG&E) submitted a Methane Leak Compliance Plan, as directed by Commission decision (D.) 17-06-015 in R. 15-01-008, the Rulemaking to Adopt Rules and Procedures Governing Commission-Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leakage Consistent with Senate Bill 1371.[10] Pursuant to D. 17-06-015, the Commission's Safety and Enforcement Division, in cooperation with the CA Air Resources Board, has evaluated the Compliance Plan and provides this written response.

SDG&E representatives and other gas utilities participated in an April 19 workshop to review major elements of the Compliance Plan, especially proposals for Pilot/Research & Development programs and plans for addressing the 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training, as detailed in D. 17-06-015.

SED has evaluated and approves the SDG&E 2018 Methane Leak Abatement Compliance Plan, with the following key observations or conditions:

Emission Reduction by 2030

SED expects the 2020 Compliance plan will provide a comprehensive in-depth analysis for how SDG&E plans to meet the 2030 goal. While the 2018 Plan discusses best-practice reduction programs and gives short-term reduction estimates, the steps to achieve the 40% reduction by 2030 goal are not sufficiently addressed. There should be a continuing effort to identify new opportunities for reduction including ideas that go beyond the current set of Best Practices. SED expects the 2020 Compliance plan will provide a comprehensive in-depth analysis for how SDG&E plans to meet the 2030 goal.

BP-15 Three-Year Leak Survey

SDG&E proposes to adopt a 3-year leak survey for all distribution pipeline except for certain high-leakage materials, which they will survey annually. SED approves this proposal.

BP-18 Stationary Methane Detection

SDG&E proposes two options under this best practice but has requested funding for Option 1, a pilot program to evaluate cost effectiveness, in the Advice Letter. SED approves Option 1.

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4. [10] The Plan is available online at http://www.cpuc.ca.gov/riskassessment/

BP-20a Leak Quantification

Like PG&E and SoCalGas, SDG&E has identified a program to quantify Grade 3 leaks and promptly repair "large" leaks above a certain volume threshold. However, the program cost of $3,457 per thousand cubic feet (MCF) is quite high compared to other utilities' costs. SDG&E recommends that it not pursue this program. SED agrees that this program should not be supported by the Commission.

BP-21 Find-It/Fix-It

SDG&E states that some underground Grade 3 pipeline leak repairs may require blowdown emissions significantly greater than the leak volumes themselves, and that other Grade 3 leaks may be quite costly to repair relative to the emission abated. SDG&E suggests that repair exception requests should be made in the annual Leak Inventory report. SED agrees and further recommends that requested exceptions should also be detailed in future Compliance Plans.

Pilot and R&D Projects

SDG&E proposes to participate in most of the same research projects as SoCalGas which have been documented in the SoCalGas Amended Compliance Plan of July 20, 2018.

II) INTRODUCTION

BACKGROUND: D. 17-06-015 ordered jurisdictional gas pipeline operators to file a Biennial Compliance Plan, detailing how they would adopt the Decision's 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training. The Compliance Plans were required to be part of the operator's annual Gas Safety Plan under CPUC GO 112-F. Some of the Best Practices included allowance for Pilot or R&D programs to evaluate potential methods and technologies for cost effectiveness and application to the utility's specific operating conditions before adoption.

EVALUATION APPROACH: SED reviewed the SDG&E Compliance Plan in collaboration with California Air Resources Board (CARB) and considered comments received from members of the Best Practices Working Group[11]. Elements of the Compliance Plan which raised concerns will be discussed in detail in below.

III) EMISSION REDUCTION ESTIMATES

The Decision orders that the "Compliance Plans shall include information on how each Respondent plans to achieve a 40% reduction of emissions below 2013 levels by 2030, what level of reduction would be achieved by 2020, and how they plan to achieve the 2020 reduction level." It has been established that

5. [11] Working Group members who gave informal comments are the Environmental Defense Fund (EDF) and the Coalition for Utility Employees (CUE).

the 2013 baseline will be represented by the 2015 emissions inventory as reported in the annual Leak Inventory Report under D. 17-06-015, since 2015 is the first year that the emissions inventory was compiled for.

Staff notes that the 2015 Baseline emissions for SDG&E are 282,047 MCF. The total 2015 Baseline leak inventory for all ten California gas utilities was 6,601,200 MCF. A 40% reduction of SDG&E's baseline would provide a 1.7% reduction in the total baseline.

While estimated reductions by 2020 are presented, SDG&E does not discuss how the 40% by 2030 reduction will be achieved as required in the Decision. SED expects the 2020 Compliance plan will provide a comprehensive in-depth analysis for how SDG&E plans to meet the 2030 goal, possibly including new ideas beyond the 26 Best Practices. Included in that analysis, SDG&E may propose alternative means of determining emission volumes that currently rely on emissions factors, such as the application of results from the pilot and R&D projects. These proposals to change the emission measurement methods would be reviewed by interested parties in Workshops and if uniformly applicable would be approved for use by CARB.

Staff has identified some typographical errors in Table 1 of the Compliance Plan which should be corrected but do not change the outcome of this evaluation.

1) For BP-20a, the 2018-2019 reduction figure should be 162 MCF not 1944 (which is the total for 12 years).
2) The column heading: "Estimated Compound Emission Reduction 2018-2030" should be in units of MCF, not dollars as shown.

IV) BEST PRACTICES COMPLIANCE

BP-1 to BP-13 Policies, Procedures, and Training

SDG&E proposes to modify existing operating procedures and company policies to minimize emissions of methane as a greenhouse gas, and to ensure that employees are trained in these policies and procedures. There are no emission reductions directly attributable to these Best Practices. The effect of blow-down emission reduction policies is captured in the section on BP-23, Operations and Maintenance. SED finds these BP proposals are consistent with D. 17-06-015 expectations.

BP-15 Three-Year Leak Survey

SDG&E proposes to adopt a 3-year leak survey for all distribution pipeline except for certain high-leakage materials, which it will survey annually. SDG&E has already proposed annual surveys for Aldyl-A and other vintage plastic pipelines in the current General Rate Case. Under this Compliance Plan, SDG&E is also proposing annual surveys for pre-1950 steel pipe. SDG&E states that the cost effectiveness of the proposed surveys will be similar, on average $243/MCF. SED approves of this best practice.

BP-16 Special Leak Surveys

The company proposes annual surveys on pre-1950 steel pipe as a special leak survey. SED approves of this best practice.

BP-18 Stationary Methane Detection

Both SoCalGas and SDG&E offer two options in the Compliance Plans. Option One is a pilot program with limited installation of currently available devices to better understand cost effectiveness. Option Two is full implementation of current devices without regard for cost effectiveness or consideration of research into emerging technologies which may be more effective. SED approves the first option.

BP-20a Leak Quantification

Like SoCalGas and PG&E, SDG&E presents a program to identify "large" Grade 3 leaks which would otherwise remain open and repair them promptly. However, SDG&E gives a cost effectiveness figure of $3,457/MCF. In comparison the SoCalGas estimated cost is $12/MCF while PG&E's "Super Emitter" cost is $22/MCF. SED has clarified that SDG&E does not recommend pursuit of this program which has a very limited reduction potential of 162 MCF per year. SED agrees that this program is not cost effective and that SDG&E should not proceed with it.

BP20b Geographic Tracking of Leaks

Staff notes that this BP requires all operators to work together on a common approach. SED Staff will host a workshop to focus on this topic. SDG&E shall use this common approach for its mapping.

BP-21 "Find-it/Fix-it"

This BP requires repair of any gas leak within 3 years after discovery, with reasonable exceptions for leaks that are costly to repair relative to the estimated size of the leak. The targeted leaks are those that don't already require prompt repair under existing safety regulations. These leaks are usually referred to as "Grade 3" leaks.

SDG&E proposes to adopt this policy but makes special note of situations where some repairs may require blowdown emissions far exceeding the leak emission itself or may otherwise be very costly compared to the emission saved. SDG&E recommends that requests for reasonable exceptions for such repairs should be entered in the annual Leak Inventory report. SED Staff agrees with this recommendation but also expects such requests for exception should be detailed in the biennial Compliance Plan.

BP-23 Minimize Emissions from Operations and Maintenance

SDG&E estimates reductions for blowdown activities and replacement of high-bleed pneumatics. The blowdown proposal has a high cost while the pneumatic device replacement appears quite economical.

SDG&E reports that some practices are already in place for minimizing blowdown emissions. It now proposes to capture additional blowdown emissions with mobile equipment to create compressed natural gas for storage and re-introduction into the system. The original anticipated cost effectiveness was $1,413/MCF, which seemed quite high compared to a similar program for SoCalGas. SED Staff contacted SEMPRA and found the estimate was based on the average emission reduction from all projects, many of which have small estimated emissions. When restricted to only the larger projects, the cost effectiveness is $98/MCF. SED approves the proposed practice for those larger projects.

Another cost-effective program is the proposal to replace high-bleed gas-operated pneumatic devices with low-bleed or no-bleed devices at a cost of $9/MCF. SED staff approves this program.

BP-24 Dig-Ins and Public Education

SDG&E proposes to expand the Public Awareness program to cover previously underserved communities. The estimated cost effectiveness is $212 /MCF based on analysis of the number of pipeline damage events compared to Public Awareness campaign dollars spent. SED approves the proposed program for the initial Compliance plan but recommends that a more rigorous model for the effect of spending on dig-ins, such as the one adopted in the SoCalGas Amended Compliance Plan, should be used by SDG&E in future.

V) PILOT AND R&D PROJECTS.

Ordering Paragraph 10, part b, of Decision 17-06-015 requires that justifications for proposed R&D and Pilot projects are consistent with criteria in Pub. Util. Code Section 740.1. SED reviewed the proposed Pilot and R&D projects according to PU Code 740.1 and considered suggestions and comments made by interested parties.

Overall, SDG&E proposes to take part in most of the same collaborative research projects that SoCalGas has proposed, further sharing the research costs over several operating companies from around the country. Many of these projects are led by national research organizations including Operations Technology Development (OTD) and NYSEARCH. SED has received updated project descriptions from SoCalGas which describes the projects in enough detail to satisfy criteria.

SED and CARB will be conducting review meetings with the SEMRPA and SDG&E R&D team. These project reviews will examine progress towards meeting milestones and discuss whether to continue or cease projects based on trigger points. SED may direct SDG&E to discontinue a project that SED determines is no longer in the ratepayers' interest.

Attachment C
SED Evaluation Report
For Southern California Gas Company
2018 Leak Abatement Compliance Plan

SED EVALUATION REPORT

FOR SOUTHERN CALIFORNIA GAS COMPANY

2018 LEAK ABATEMENT COMPLIANCE PLAN

I) EXECUTIVE SUMMARY

On March 15, 2018, Southern California Gas Company (SoCalGas) submitted a Methane Leak Compliance Plan, as directed by Commission decision (D.) 17-06-015 in R. 15-01-008, the Rulemaking to Adopt Rules and Procedures Governing Commission-Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leakage Consistent with Senate Bill 1371.[12] Pursuant to D. 17-06-015, the Commission's Safety and Enforcement Division, in cooperation with the CA Air Resources Board, has evaluated the Compliance Plan and provides this written response.

SoCalGas and other gas utilities participated in an April 19 workshop to review major elements of their Compliance Plans, especially proposals for Pilot/Research & Development programs and plans for addressing the 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training, as detailed in D. 17-06-015.

Based on subsequent communications with staff of the Safety & Enforcement Division and the California Air Resources Board (CARB), and in response to comments and inquiries from Working Group members[13], SoCalGas on July 20 submitted an amended Compliance Plan.

SED has evaluated and approves the SoCalGas 2018 Methane Leak Abatement Amended Compliance Plan, with the following key observations:

Emissions Reduction Estimate. SoCalGas has discussed the 2030 emission reduction goal in its Amended Plan including a review of the practical challenges to projecting attainment. Meeting the goal will depend on the results of R&D projects, less reliance on emission-factor estimates, and incalculable effects of the proposed policy changes. SED expects the 2020 Plan will incorporate the lessons learned during the first Compliance Plan period to provide a more comprehensive reduction plan.

Pilot and R&D Projects: SED approves the proposed Pilot and R&D projects as clarified in the set of Pilot/R&D Summaries, which have been provided in a Data Request response, according to a Project Summary template mutually developed with Pacific Gas & Electric and SED. All such projects will be

6. [12] The Plan is available online at http://www.cpuc.ca.gov/riskassessment/

7. [13] Working Group members who gave informal comments are the Environmental Defense Fund (EDF) and the Coalition for Utility Employees (CUE).

subject to regular progress review by SED and CARB Staff with SoCalGas R&D representatives not less than every six months, the first review to occur before December 30, 2018.

Best Practice 15: SED approves the proposed alternative to a blanket three-year leak survey for those pipelines currently under a five-year survey interval per GO-112F. SoCalGas has analyzed the effectiveness of various survey intervals for different pipe material types in their network. That analyses supports the SoCalGas proposal to adopt more-frequent, annual surveys for the most leak-prone pipe materials and to continue five-year surveys on the least leak-prone materials. This approach will focus personnel on inspection of pipes that have the most leaks.

SED cautions that should the program fail to achieve targeted reductions, there might be a more stringent approach adopted for the future.

BP-18 Stationary Methane Detection

SoCalGas proposes two options under this best practice but has requested funding for Option 1, a pilot program to evaluate cost effectiveness, in the Advice Letter. SED approves Option 1.

II) INTRODUCTION

BACKGROUND: D. 17-06-015 ordered jurisdictional gas pipeline operators to file a Biennial Compliance Plan, detailing how they would adopt the Decision's 26 Best Practices for methane emissions methane emissions detection, quantification and reduction, as well as for operations and training. The Compliance Plans were required to be part of the operator's annual Gas Safety Plan under CPUC GO 112-F. Some of the Best Practices included allowance for Pilot or R&D programs to evaluate potential methods and technologies for cost effectiveness and application to the utility's specific operating conditions before adoption.

EVALUATION APPROACH: SED reviewed the SoCalGas Compliance Plan in collaboration with California Air Resources Board (CARB) and considered comments received from members of the Best Practices Working Group. Elements of the Compliance Plan which raised concerns will be discussed in detail in below.

III) EMISSIONS REDUCTION

The Decision ordered that the "Compliance Plans shall include information on how each Respondent plans to achieve a 40% reduction of emissions below 2013 levels by 2030, what level of reduction would be achieved by 2020, and how they plan to achieve the 2020 reduction level." For convenience of measurement, it has been established that the baseline will be represented by the 2015 emissions inventory as reported in the annual Leak Inventory under D. 17-06-015, since 2015 was the first year that the comprehensive emissions inventory was compiled.

In the Amended Compliance Plan, SoCalGas estimates a 14% annual reduction by 2020 and discusses challenges in meeting the 40% reduction target and provides descriptions of how the 2020 reductions will be achieved. SoCalGas notes that the effects of some of the Best Practices cannot be accurately

estimated before they are put into practice. Further, SoCalGas points out that a significant portion of the baseline emissions inventory was calculated from a population-based emissions factor (for example, emissions from residential meter sets was determined by multiplying the number of meter sets times a CARB-determined emissions factor). Those emissions inventory figures will remain the same until the emissions factors are changed or alternative methods of measuring those emissions are used.

Another consideration is that SoCalGas has been active in the US EPA Energy STAR program to reduce methane emissions since 1993, as described in the historical section of BP 23. SoCalGas reports that cumulative reduction from this program through 2016 was 2.6 Billion cubic feet. The average reduction over 22 years is 119 Million cubic feet or 119,000 MCF. The steady-state annual reduction from the Energy STAR program is probably greater than this average, but a conservative estimate of 119,000 MCF represents about 4% of the baseline emissions inventory.

SED recognizes the challenges faced by SoCalGas in reaching the 40% reduction target. SED notes that some of the proposed Pilot/R&D programs aim to establish better methods for determining emission factors that represent actual performance on the SoCalGas system.

However, SoCalGas does not specify how the 40% by 2030 reduction will be achieved as required in the Decision. SED expects the 2020 Compliance plan will provide a more comprehensive analysis for how SoCalGas plans to meet the 2030 goal, possibly including new ideas beyond the 26 Best Practices.

Included in the analysis, SoCalGas may propose alternative means of determining emission volumes that currently rely on emissions factors, such as the application of results from the pilot and R&D projects. These proposals to change the emission measurement methods would be reviewed by interested parties in Workshops and if uniformly applicable would be approved for use by CARB.

IV) BEST PRACTICES

BP-1 to BP-8. Policies and Procedures

The first eight best practices are largely policy and procedure statements. SED finds these BP statements are consistent with D. 17-06-015 expectations. In BP-1, SoCalGas discusses the challenges of meeting the 40% reduction target.

BP-9. Recordkeeping

As a recordkeeping improvement to better track leak reduction activity, SoCalGas proposes a major database integration program that will require three to four years to fully implement. The program will begin in 2018-2019 but will extend into the 2020 compliance period. SoCalGas plans to request funding to finish the project in the 2020 Compliance Plan period.

BP-10 to BP-13. Personnel Training.

SoCalGas proposes to develop new training programs to educate their numerous staff about the methane leak abatement best practices and policies. This training would be delivered using on-line

methods rather than a traditional classroom format to more quickly instruct the employees than would be possible with their space-limited central classroom location. SoCalGas also points out that classroom training at a central location requires travel expense for many of the technical service employees who are based in the field.

SED Staff notes that on-line training is a newer and more cost-effective technology, as emphasized by SB 1371, which is more likely to reach the large number of employees affected in a shorter time than traditional classroom instruction. SoCalGas has written that the proposed on-line training will include a final hands-on observation by the instructor of employees performing the activities in the field. SED approves the training programs as proposed in the Compliance Plan.

BP-14. Job Classifications.

SoCalGas reviewed current job classifications to assess adequacy in addressing methane emissions reduction and best practices. SoCalGas found the current job profiles do not require changes. SED Staff agrees that the jobs of gas leak detection and gas pipeline repair already address methane, since any activity involving natural gas automatically involves methane.

BP-15 Gas Distribution Leak Surveys

This best practice allows operators to choose between blanket 3-year leak surveys, or a less-frequent interval based on risk-assessment if that will provide a more cost-effective emission reduction.

SoCalGas used a risk-assessment approach to determine that instead of a blanket three-year survey, annual surveys of the most leak-prone pipelines, combined with five-year surveys of the best-performing pipelines, will yield superior emissions reduction and cost effectiveness compared to a uniform 3-year approach.

The estimated emission reduction for the proposed practice is 1.26 million MCF (1000 standard cubic feet) through 2030, compared to the much lower three-year survey estimate of 193,000 MCF. The cost effectiveness of the proposal is $34/MCF versus the blanket three-year cost of $470/MCF. The increased survey frequency for leak-prone materials might also be considered as a Special Leak Survey under BP-16 rather than BP-15, but the systematic continuing nature of the practice is more consistent with BP-15.

In terms of annual emissions reduction, the MCF estimates for each category compared to the total SoCalGas Baseline of 2,779,000 MCF are:

Pipeline Material	Proposed Survey Change	Baseline Emissions	2030 Estimate	Reduction from Baseline	% Reduction of Total Baseline	Cost per MCF
Unprotected Steel	3-year to 1-year	268,043	152,785	115,258	4.1%	$34
Aldyl-A	5-year to 1-year	154,695	58,515	96,180	3.5%	*
Protected Steel	5-year to 3-year (not recc.)	15,554	10,659	4895	0.2%	$611
State of Art Plastic	5-year to 3-year (not recc.)	44,126	30,252	13,874	0.5%	$421

**Costs for the Aldyl-A survey are covered in the SoCalGas GRC; however, cost effectiveness is expected to be like the unprotected steel result.*

The analysis shows that the proposed survey plan is expected to produce an 7.6% reduction from the baseline level, a significant part of the total 40% reduction target, at greater cost effectiveness.

SED approves the proposed approach to BP 15, but cautions that should the program fail to achieve targeted reductions, there might be a more stringent approach adopted for the future.

BP-16. Special Leak Surveys

Under BP-16, SoCalGas proposes to move the current 3-year survey for unprotected steel to an annual survey as part of the alternative BP-15 proposal. This practice should really be considered part of BP-15, since the idea of a "special leak survey" is a temporary, focused program for a limited segment of the system rather than a permanent practice that involves a substantial portion of their pipeline. SED approves the proposed BP.

BP-18 Stationary Methane Detection

Both SoCalGas and SDG&E offer two options in the Compliance Plans. Option One is a pilot program with limited installation of currently available devices to better understand cost effectiveness. Option Two is full implementation of current devices without regard for cost effectiveness or consideration of research into emerging technologies which may be more effective. SED approves the first option.

BP-20a Leak Quantification

SoCalGas proposes to develop and use leak quantification methods to identify "large" leaks: defined as having an emissions rate of 10 CFH or greater. These large leaks would then be prioritized for repair within a short time, reducing the amount of time the leak is open and so reducing the emission volume.

While the proposed technical approach differs from PG&E's proposal, the results are similar: 121,815 MCF vs. PG&E's 129,000 MCF annual reductions for its "super emitter" program. SoCalGas' estimated cost effectiveness of $12/MCF compares favorably to PG&E's $22/MCF.

Traditional leak measurement has focused on leak location and concentration but not the gas flow rate. Leak quantification methods have been under development by various researchers recently. Although PG&E reports that their mobile quantification approach has enough accuracy to screen out the "super" leaks (initially defined as greater than 10 CFH), SoCalGas reports that the Southern California service territory presents challenges to mobile measurement. Background environmental levels of methane and industrial gas sources have produced excessive false positive measurements when mobile quantification studies have been done.

Nevertheless, SoCalGas is committed to further research projects to overcome those challenges as part of their proposal. In the meantime, they plan an approach that makes use of all available information to the surveyor for differentiating large leaks from smaller leaks.

SED approves the proposed BP but cautions that should the program fail to achieve targeted reductions, there might be a more stringent approach adopted for the future.

BP-21 "Find-It/Fix-It"

This BP calls for the repair of all pipeline leaks no more than three (3) years after discovery, without regard to the leak's classification as non-hazardous (Grade 3) by GO-112F standards. Exceptions are allowed for leaks that are costly to repair relative to the size of the leak.

SoCalGas proposes to eliminate their current backlog of below-ground distribution main Grade 3 leaks and then repair all future leaks within three years of discovery. The program will begin in 2019 with repair of approximately 3,500 leaks to eliminate the backlog of leaks older than three years. The estimated emission reduction is 120,685 MCF per year. Program cost is $17.1 million annually, less the cost of gas saved, which gives a cost effectiveness of $138/MCF abated. Costs include direct repair and the incremental survey costs for leaks discovered through BP's 15, 16, 18, and 19. This program cost appears quite favorable compared to PG&E's estimated $591/MCF.

SED approves the proposed practice.

BP-23 Reduce Emissions from Operations.

One of the main areas for this best practice is elimination of "high-bleed" gas-actuated pneumatic devices. In the Amended Plan, SoCalGas notes they have nine remaining devices in their gas system. Eight of them will be replaced between 2018 and 2019 with the last one to be replaced as part of a major project in 2020. This was a substantive amendment from the initial Compliance Plan, which projected a much higher number of devices to be replaced at a greater cost.

SED approves the proposed practice.

BP-24. Expand Public Awareness Programs

This BP requires incremental efforts to publicize the Call-Before-You-Dig 811 damage prevention program, and to provide excavation guidelines to contractors, to reduce emissions from pipeline damage.

SoCalGas proposes to expand their programs to audiences beyond the currently covered High Consequence Area communities. SoCalGas will hire two full time employees and to purchase more advertising materials and media time. SoCalGas' practice also includes distribution of the required contractor guidelines. The program is expected to reduce the number of pipeline dig-ins and thus reduce emissions.

SoCalGas provides an estimate of the emission reduction, and a cost effectiveness figure for this BP. The Amended Compliance Plan improves on their initial analysis of Public Awareness spending vs. pipeline dig-in damages. SoCalGas now incorporates the construction-related metrics of housing starts and precipitation data to better correlate the effect of Public Awareness spending on damage incidents, and thus estimate emissions reduced per dollar spent.

SED approves the proposed implementation of this best practice.

V) PILOT AND R&D PROGRAMS

Ordering Paragraph 10, part b, of Decision 17-06-015 requires that justifications for proposed R&D and Pilot projects are consistent with criteria in Pub. Util. Code Section 740.1.

SED reviewed the proposed Pilot and R&D projects according to PU Code 740.1 and considered suggestions and comments made by interested parties. SED asked SoCalGas to present detailed Project Summaries to provide project information in a standardized format, developed jointly by SED, PG&E and SoCalGas. In the Amended Compliance Plan, SoCalGas has summarized 30 projects using the adopted template. The summaries are consistent with descriptions provided in Advice Letter 5211-A.

SED observes that most of projects are focused on advanced leak measurement and leak quantification, which are appropriate studies needed to advance the practice of leak abatement. The R&D/Pilot funds requested in the Advice Letter for 2018 and 2019 represent about 5.5% of the total request to implement the Compliance Plan. Total incremental funding for the Compliance Plan is $167.6 million, of which $9.3 million is for the R&D/Pilot projects. SoCalGas has proposed rate increases of 1.2% and 2.5% in 2018 and 2019 to fund the total Compliance Plan activities, so the 5.5% R&D/Pilot portion is a very small increase to the ratepayer. SED finds that all the proposed projects meet the required criteria.

SED and CARB will be conducting review meetings with the SoCalGas R&D team to assess progress and results of these projects. These project reviews will examine progress towards meeting milestones and discuss whether to continue or cease projects based on trigger points. SED may direct SoCalGas to discontinue a project that SED determines is no longer in the ratepayers' interest.

Attachment D
SED Evaluation Report
For Southwest Gas Corporation
2018 Leak Abatement Compliance Plan

SED EVALUATION REPORT
FOR SOUTHWEST GAS COMPANY

2018 LEAK ABATEMENT COMPLIANCE PLAN

I) EXECUTIVE SUMMARY

On March 15, 2018, Southwest Gas Company (SWG) submitted a Methane Leak Compliance Plan, as directed by Commission decision (D.) 17-06-015 in R. 15-01-008, the Rulemaking to Adopt Rules and Procedures Governing Commission-Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leakage Consistent with Senate Bill 1371.[14] Pursuant to D. 17-06-015, the Commission's Safety and Enforcement Division, in cooperation with the California Air Resources Board, has evaluated the Compliance Plan and provides this written response.

SWG and other gas utilities participated in an April 19 workshop to review major elements of the Compliance Plan, especially proposals for Pilot/Research & Development programs and plans for addressing the 26 Best Practices for methane emissions detection, quantification and reduction, as well as for operations and training, as detailed in D. 17-06-015.

SED has evaluated and approves the SWG 2018 Methane Leak Abatement Compliance Plan, with the following key observations or modifications:

Best Practices Compliance

Southwest Gas states it had adopted many of the Best Practices prior to the Decision. The company began a three-year leak survey cycle (BP-15) in 2012. SWG currently perform special leak surveys (BP-16) on leak-prone segments identified through their integrity management program. 100% of the excavators in the service territory are aware of the Call-Before-You-Dig program (BP-24). Five additional best practices are already part of the standard procedures.

Emissions Reduction

While the SWG Plan indicates difficulty in estimating future reductions as required by the Decision, SED expects the 2020 Compliance plan will provide a comprehensive in-depth analysis for how SWG plans to meet the 2030 goal, possibly including new ideas beyond the current 26 Best Practices and alternatives to the emission factor methods now in use.

Pilot and R&D Projects

8. [14] The Plan is available online at http://www.cpuc.ca.gov/riskassessment/

SWG proposes to research techniques which address the two largest contributors to the leak inventory, which could lead to changes in the emission factors. SED approves the proposed Pilot and R&D projects. All such projects will be subject to regular progress review by SED Staff with SWG R&D representatives not less than every six months, the first review to occur before December 30, 2018.

Exemptions from Best Practices

The Decision permits exemptions from certain best practices for those operators classified as Class B or C due to the lower annual emissions reported on the Leak Inventory. SWG is a Class B operator and has requested exemption from BP-14, BP-17, and BP-20a, which are permitted for Class B. SED approves this request.

II) INTRODUCTION

BACKGROUND: D. 17-06-015 ordered jurisdictional gas pipeline operators to file a Biennial Compliance Plan, detailing how they would adopt the Decision's 26 Best Practices for methane emissions methane emissions detection, quantification and reduction, as well as for operations and training. The Compliance Plans were required to be part of the operator's annual Gas Safety Plan under CPUC GO 112-F. Some of the Best Practices included allowance for Pilot or R&D programs to evaluate potential methods and technologies for cost effectiveness and application to the utility's specific operating conditions before adoption.

EVALUATION APPROACH: SED reviewed the SWG Compliance Plan in collaboration with California Air Resources Board (CARB) and considered comments received from members of the Best Practices Working Group. Elements of the Compliance Plan which raised concerns will be discussed in detail in below.

III) EMISSION REDUCTION ESTIMATES

The Decision orders that the "Compliance Plans shall include information on how each Respondent plans to achieve a 40% reduction of emissions below 2013 levels by 2030, what level of reduction would be achieved by 2020, and how they plan to achieve the 2020 reduction level." For convenience of measurement, it has been established that the 2013 baseline will be represented by the 2015 emissions inventory as reported in the annual Leak Inventory Report under D. 17-06-015, since 2015 is the first year that the emissions inventory was compiled for.

SWG has made a very modest, 111 MCF, estimate of emission reduction for the two years 2018-2019, and states they are unable to estimate long-term emissions reductions through 2030 due to unpredictable economic growth.

Staff notes that SWG has already adopted some of the Best Practices. The 2015 Baseline emissions for SWG were 214,315 MCF, 3% of the 2015 Baseline leak inventory for all ten California gas utilities. A 40% reduction from SWG's baseline would provide a 1.3% reduction in the total California gas utility emissions.

Staff analysis of the 2015 Baseline emissions finds that 98.6 percent of the SWG emissions were based on fixed emissions factors determined by the California Air Resources Board, a method established to provide an estimate of emissions when direct measurements are impractical. For example, emissions estimates for customer meter set assemblies is calculated from the count of meter sets times a fixed emissions factor. If there is no change in the method of measuring these emissions, the reported emissions will remain the same every year.

SWG does not discuss how it expects the 40% by 2030 reduction will be achieved, as required in the Decision. SED expects the 2020 Compliance plan will provide a comprehensive in-depth analysis for how SWG plans to meet the 2030 goal, possibly including new ideas beyond the 26 Best Practices, and proposals for more direct emission measurements to replace the current reliance on estimates based on emissions factors.

Included in the analysis, SWG may propose alternative means of determining emission volumes that currently rely on emissions factors, such as the application of results from the pilot and R&D projects. These proposals to change the emission measurement methods would be reviewed by interested parties in Workshops and if uniformly applicable would be approved for use by CARB.

IV) BEST PRACTICES COMPLIANCE

BP-1 to BP-13 Policies and Procedures

SED finds these BP statements are consistent with D. 17-06-015 expectations.

BP-15 Three-Year Leak Survey

SWG reports it adopted a three-year survey cycle instead of the minimum five-year requirement for their distribution pipelines in 2012. The more frequent cycle coincided with the three-year survey requirement for atmospheric corrosion and SWG found it more efficient to conduct leak surveys at the same time.

BP-16 Special Leak Surveys:

SWG identifies candidates for special leak surveys with their on-going Integrity Management program as required by existing safety regulations. Current examples are vintage pipeline materials including Aldyl-A and PVC plastics.

BP-18 Stationary Methane Detection

A pilot program is proposed to evaluate stationary methane detection at some of the M&R stations in California. The study will be conducted by GTI-OTD with participation by several gas operating companies around the country, which will minimize SWG's funding requirement. Staff agrees a pilot study is appropriate to determine the most effective approach to stationary methane measurement.

BP20b Geographic Tracking of Leaks

SWG reports it already has an internal mapping practice and proposes to make this information available to the public. However, Staff notes that this BP requires all operators to work together on a common approach. SED Staff will host a workshop to focus on this topic.

BP-21 "Find-it/Fix-it"

This BP requires repair of any gas leak within 3 years after discovery, with reasonable exceptions for leaks that are costly to repair relative to the estimated size of the leak. The targeted leaks are those that don't already require prompt repair under existing safety regulations. These leaks are usually referred to as "Grade 3" leaks.

SWG reports it currently has two open Grade 3 leaks. The estimated emissions for these leaks is 44.8 MCF. The cost estimate for these repairs is $265,000 which has a high cost to benefit ration of $5,915/MCF of reductions. By comparison, the SoCalGas program to repair 'large" Grade 3 leaks has an estimated effectiveness of $12/MCF. However, the absolute cost of $265,000 will not have a significant impact on ratepayers as shown in the SWG Advice Letter. The proposal will remove all open Grade 3 leaks. SED approves of this proposal.

BP-23 Minimize Emissions from Operations and Maintenance

This BP is focused primarily on the replacement of "high-bleed" pneumatic devices that routinely release gas to the atmosphere by design. SWG reports no high-bleed devices in its system and said it will adopt a policy that such devices will not be selected in the future.

SWG also reports all estimated reductions from the group of blowdown-related policy BPs under BP-23, because of the related improvements in operations and maintenance practices. The figure of 66.5 MCF was estimated from an expected reduction in blowdown emissions by reducing pressure before blowdown on planned maintenance projects.

V) PILOT AND R&D PROJECTS.

Ordering Paragraph 10, part b, of Decision 17-06-015 requires that justifications for proposed R&D and Pilot projects are consistent with criteria in Pub. Util. Code Section 740.1. SED reviewed the proposed Pilot and R&D projects according to PU Code 740.1 and considered suggestions and comments made by interested parties. SED finds that all the proposed projects meet the required criteria.

Staff notes that the proposed projects are aligned with the two largest contributors to the SWG leak inventory: M&R station emissions and customer meter set emissions. Stationary methane monitors at M&R stations operating at 300 psi and above (BP-18) will help with actual measurement of emissions and could reduce reliance on the fixed emissions factors to determine emissions from this source. Once the actual volume of emissions can be measured, appropriate cost-effective solutions for reduction can be designed and applied. For stationary monitoring, SWG proposes to do a pilot study at selected M&R stations their own while also participating in a national GTI-OTD research project.

Research into pipe-fitting specification (BP-22) can help with meter-set assembly (MSA) emissions since each MSA includes many fittings such as pipe unions and tees; leaks can occur from loose fittings. If the proposed research shows that superior fitting specifications can reduce leaks, a case could be made for reduction of the standard CARB emission factor for MSAs.

SED and CARB will be conducting review meetings with the SWG R&D team. These project reviews will examine progress towards meeting milestones and discuss whether to continue or cease projects based on trigger points.