

ATTACHMENT 2

California Public Utilities Commission
Safety & Enforcement Division

Natural Gas Leakage Abatement Summary of Best Practices Working Group Activities And Revised Staff Recommendations

In partial fulfillment of

Senate Bill 1371 (Leno, 2014) &
Order Instituting Rulemaking (OIR) 15-01-008

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DISCLAIMER

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Introduction

This report is a revision and refinement of the previously issued “Summary of Best Practices Working Group Activities and Staff Recommendations” document developed in March 2016 as part of the California Public Utilities Commission’s Rulemaking 15-01-008, to implement Senate Bill 1371 (Leno-2014).

SB 1371 was signed by Governor Brown on September 21, 2014, to reduce methane emissions from leaks in the gas transmission, distribution and storage facilities in California. SB 1371 adds Article 3 (commencing with Section 975) to Chapter 4.5 of Part 1 of Division 1 of the Public Utilities Code. Included in Article 3 is Section 975(e)(4) which states, in part, that the Commission shall:

"(4) Establish and require the use of best practices for leak surveys, patrols, leak survey technology, leak prevention, and leak reduction. The commission shall consider in the development of best practices the quality of materials and equipment."

In addition, SB 1371 adds statutory text that requires, “with priority given to safety, reliability, and affordability of service”, “[n]ot later than January 15, 2015, the commission, in consultation with the State Air Resources Board, shall commence a proceeding to adopt rules and procedures for those commission-regulated pipeline facilities that are intrastate transmission and distribution lines. This directive resulted in the current rulemaking. SB 1371 also added Section 975(f) requiring that “[t]he rules and procedures, including best practices and repair standards, shall be incorporated into the safety plans required by Section 961 and the applicable general orders adopted by the commission.”

Staff issued a March 2016 report to identify and prioritize a set of common Best Practices (BPs), which described the procedural history of this Rulemaking and activities of the Staff-led BP working group. This document presents the changes that

Staff has made to its revised set of BPs after extensive consultations through workshops with stakeholders. Also, Staff has provided revised recommendations for implementation via gas company filings of Compliance Plans commencing March 15, 2018, which coincides with the 2018 required date for utilities to file Gas Safety Plans.

Disclaimer: Despite the effort to be inclusive and collaborative during the working group process, this document and its recommendations are not to be considered a consensus report. Instead it represents CPUC Staff proposals for adoption, and will be subject to comments by Parties to the rulemaking before being forwarded to the CPUC Commissioners for consideration. ARB has been consulted and involved in the process to date.

Identification of Best Practices

Since the issuance of the first version of Staff Recommendations for BPs, Parties to the proceeding have had several opportunities to comment, propose revised language and examine, via workshops, issues related to cost-effectiveness and viability of proposed measures.

Based on these comments, Staff reworked many of the recommended BPs in order to add clarity and to achieve more flexibility, particularly to account for uniqueness of each gas company's system and to support gas companies' responsibilities to safely and reliably operate their systems. In addition, Staff believes some proposed technologies for some BPs still have technological and/or potentially significant ratepayer impact challenges to address before wide-scale implementation by all utilities.

There has been no additional work to refine the larger BP spreadsheet that was included as Attachment A to the previous report. The spreadsheet is available on the SED Risk Assessment web site and is found at the link "[Attachment A – Best Practices](#)"

Consolidated Spreadsheet”.¹ As before, these techniques, practices and approaches may be employed as part of a compliance mechanism in addition to the 26 BPs detailed here, in order to achieve methane emissions reductions.

Adoption of best practices is fundamental to meeting the requirements of SB 1371, but Staff believes that the gas companies should be afforded flexibility in crafting the most effective portfolio of tools and techniques available to minimize methane emissions while ensuring appropriate level of reductions occur and while meeting statutory requirements. As technologies change and improve, as more information is collected about costs and effectiveness, existing best practices may need to be amended and additional best practices may be added.

Principles for Leak Abatement Best Practices

In commenting on the March 2016 Best Practices Report, parties provided comments on Staff’s initial Four Principles for Methane Leak Abatement Best Practices. Either through explicit statements of support or lack of comments, most parties expressed support for the Principles, except that Principle # 2 appeared to require additional clarification. Staff has incorporated these comments and based on Staff’s additional judgment, modified Principle # 2:

In addition to implementing best practices to meet the challenge of minimizing methane emissions to meet State goals, utilities must meet or exceed applicable industry safety standards. New information gained in the implementation of best practices may be incorporated into existing Commission regulated industry gas rules, when and if applicable.

¹ Refer to Risk Assessment website at: <http://www.cpuc.ca.gov/riskassessment/>

Principles for Methane Leak Abatement Best Practices

1. Best Practices go beyond technologies and tools to embody a new way of doing things. Policies, practices and education are as important as new technologies, and may provide additional methane reduction opportunities at lower cost (e.g., The “Find it, fix it” policy for fixing leaks when found, in some cases, may be more cost effective than monitoring or returning later to fix the leak).
2. In addition to implementing best practices to meet the challenge of minimizing methane emissions to meet State goals, utilities must meet or exceed applicable industry safety standards. New information gained in the implementation of best practices may be incorporated into existing Commission regulated industry gas rules, when and if applicable.
3. If we can use the most advanced, technologically feasible, cost-effective measures to further reduce methane emissions beyond established targets, we should.
4. Improved methane detection by itself isn’t enough; it should be coupled with better quantification and accurate categorization, and matched with a plan/timetable for mitigation in manners that are effective in minimizing the release of methane.

Development of Revised Best Practices

On March 24, 2016, the “Summary of Best Practices Working Group Activities and Staff Recommendations” was entered into the record by an ALJ Ruling. Comments were sought and received in May 2016. In consultation with ARB, Staff reviewed and incorporated many comments into a revised BP list that was issued with the November 21, 2016, ALJ ruling setting an additional technical workshop to clarify the Best Practices and attempt consensus. Participants at the workshop, held on December 12, 2016, made significant progress on wording for several BPs, but were unable to complete the entire list, so a continuation workshop was held December 21, 2016.

As a result of this collaborative effort, there were substantive changes to titles of several of the original BPs and language refinements of the original BPs. Additional flexibility to allow companies to request exemptions with appropriate justifications for specific BPs was added, as well as some flexibility to allow companies to propose Research & Development (R&D) and/or Pilot programs to gather more information.

Although the resulting list of BPs is not being proposed as a consensus document, Staff is grateful that the discussion was highly participatory with parties making extra effort to try to reach agreement.

Significant Modifications

One primary modification to the March 2016 list was that BP No. 1 would require Compliance Plans to be filed biennially (i.e. every other year), as proposed by EDF. Joint Utilities (SoCalGas/SDG&E/SWGas) had proposed an annual filing along with the Annual Emission Inventory Report but Staff recommends that the Commission adopt EDF's proposed biennial filing due to both the need for companies to have time to implement their practices and due to limited Staff resources for annual reviews. Staff's intent is to review Annual Emission Inventory Reports to ensure BPs are implemented and reductions are occurring.

Staff also incorporated references to BP No. 1 Compliance Plan filing in many other BPs so that policies and procedures, recordkeeping, training, experienced/trained personnel best practices would be filed as part of these biennial plans. In addition, other specific requirements in many leak detection, leak repair and leak prevention BPs are expected to be incorporated into the Compliance Plan filing.

For some leak detection and leak prevention BPs, Staff believes some technologies or practices were not ready for mandatory full-scale deployment due to technological and/or ratepayer affordability challenges in implementing best practices for all utilities. In these specific instances, Staff modified the language to allow companies to propose R&D and/or Pilot programs to gather more information, subject to approval.

For example, although Staff believes stationary methane detectors best practice (i.e. No. 18) will be ideal for early detection of leaks for compressor stations, gas storage facilities, City Gates, and Metering & Regulating (M&R) Stations, Staff also acknowledges that implementation of stationary methane detectors at certain facilities (i.e. M&R Stations) is still challenging and although detectors exist, less expensive versions are not commercially available but may be soon.

In addition, incorporating more advanced technologies to support leak data to be transferred to a central database is under development and may not be appropriate for all applications (i.e. M&R Stations). Hence, Staff expanded this best practice (No. 18) so that utilities could propose R&D and/or a pilot, subject to approval. Staff's intent is to review lessons learned and outcomes of any approved R&D and/or pilot programs with the intent to analyze whether full-scale deployment or other additional BPs or research may be desirable.

Another example is the leak prevention for pipe fitting specification (i.e. No. 22). Staff believes now that rather than the Commission mandating "revised pipe fitting specifications", it should be proposed by the utilities once the utilities have reviewed their own specifications to ensure tighter tolerance/better quality pipe threads. Further, a "fitting replacement program" should be proposed, if necessary, for threaded connections with significant leaks or comprehensive procedures for leak repairs and meter set assembly installations and repairs.

Staff Recommendations

After the exhaustive review of BPs described above, CPUC Staff makes the following BP recommendations. As stated in SB 1371, "The rules and procedures, including best practices and repair standards, shall be incorporated into the safety plans

required by Section 961 and the applicable general orders adopted by the commission.”² At this time, the only applicable general order adopted by the Commission is G.O. 112, Revision F and its successors. G.O. 112-F Section 123.2(k) requires all gas utilities to file a Gas Safety Plan consistent with Public Utilities Code Sections 961 and 963 as part of its Annual Report, and make changes as identified by the Safety and Enforcement Division.

Staff recommends it should be mandatory for all utilities to develop and file with the CPUC Compliance Plans and identify specific BPs they are either already using or propose to use in order to mitigate methane leaks and emissions. If a reasonable exemption is being requested and is allowed in the BP, that should be included. Several of the BPs recommended include provisions for conducting R&D or Pilots, in order to a) test the effectiveness of new technologies or practices, b) apply new methodologies or systems in a limited manner prior to widespread adoption, and/or c) collect data on cost and effectiveness of new practices or technologies. Staff has attempted to ensure that the revised BPs specifically include mitigation best practices aimed at all the largest categories of methane emissions and leaks as identified in the Annual Emissions Inventory Reports.

While every utility subject to this Rulemaking should be required to file a Compliance Plan that addresses the BPs listed below, Staff recognizes that each company is of a different size and has a different business model and different physical infrastructures and different operational & maintenance (O&M) practices. Currently, as written, the Compliance Plan (BP #1) requires companies to include those BPs mandated by the Commission, noting applicable exemptions and alternatives, and any

² SB 1371 Natural Gas: Leakage Abatement, Section 2: Article 3, Public Utilities Code Section 975(f)

additional measures proposed by each Company to abate natural gas leakage and reduce methane emissions. However, they must submit a Compliance Plan for approval by the CPUC, in consultation with CARB, to ensure that they are complying with the emission reduction goals and decisions of this proceeding and SB 1371 and other relevant statutory requirements.

At this time, based on confidential 2015 reported annual emissions data, Staff recommends that the Commission establish three classes of utilities to require three different levels of required BPs as follows³:

1. Class A: Utilities with 2015 baseline emissions equal or greater than 20% of the total aggregated annual emissions by all utilities (see Joint Staff report dated January 2017).
2. Class B: Utilities with 2015 baseline emissions between 1% and 20% of the total aggregated annual emissions.
3. Class C: Utilities with 2015 baseline emissions equal to or below 1% of the total aggregated annual emissions.

Staff recommends that 25 of the 26 BPs be required as mandatory, sometimes as R&D/pilots, for the Class A utilities (i.e., utilities with the largest baseline reported methane emissions). For these Class A utilities, the one BP that Staff advises the Commission to weigh the evidence on the record more thoroughly is for BP # 15, Gas Distribution Leak Survey. This BP would require gas distribution companies to transition from a 5-year leak survey cycle to a 3-year leak survey cycle for gas distribution systems outside business districts. Currently, 49 CFR §192.723(b)(2) states: “A leakage survey with leak detector equipment must be conducted outside business districts as frequently as necessary, but at least once every 5 calendar years at intervals not exceeding 63 months. However, for cathodically unprotected distribution lines subject to §192.465(e) on which electrical surveys for corrosion are impractical, a leakage

³ As this is currently confidential information, Staff can confirm directly with utilities which categories apply to their companies.

survey must be conducted at least once every 3 calendar years at intervals not exceeding 39 months.”

This leak detection BP (# 15) also allows for utilities to propose and justify a more technologically feasible and cost-effective substitute BP(s) for prioritizing gas distribution pipeline leak detection efforts in lieu of more frequent leak surveys.

But the BP also states that the substitute BP(s) should demonstrate comparable or better performance. At this time, it is unclear to Staff whether this substitution comparability should or should not potentially apply to other leak detection BPs that are included in the revised BPs including: Special Leak Surveys (BP # 16); Enhanced Methane Detectors (BP # 17); and/or Leak Quantification & Geographic Evaluation/Tracking (BP #20).

TURN has pointed out on the record that incremental methane emission reduction benefits may not be as easily projected to be linear in addition to any projected emission reductions resulting from any one leak detection BP (i.e., one may not be able to assume that estimated emission reductions will linearly add up if one adds up any singular estimated emissions reductions from specific BPs). Also, the Leak Repairs “Find-It / Fix-It Policy” (BP # 21), is the only BP that requires utilities to actually repair leaks. SoCalGas has proposed on the record to eliminate its backlog of leaks (above a meaningful threshold) in lieu of implementing a 3-year leak detection survey cycle at this time. SoCalGas has provided a cost estimate and estimated emissions reductions comparing these two practices.⁴

⁴ May 6, 2016, SoCalGas/SDG&E Opening Comments on the Staff Best Practices Report, pages 6-7.

In addition, other parties have provided cost estimates for transitioning into a 3-year leak detection survey cycle on the record, although utilities have cautioned Staff that these are rough estimates since thorough forecasts take extensive resources and time to develop for General Rate Case applications. Staff also comments that in the recent December 2016 workshops, utilities advocated for some BPs to apply to high-pressure distribution lines that are above 60 psi rather than to all distribution lines.

Staff now understands that typically, distribution mains generally operate between 50 psi and 60 psi. Hence, Staff advises the Commission that if it does decide to mandate a BP to transition to a survey cycle that is more often than 5-years for distribution lines that are not otherwise required to do so, it may want to consider focusing first on distribution mains (50+ psi) and high-pressure distribution lines (above 60 psi). By focusing on these medium to high pressure lines, any best practice would be more likely to find leaks that could produce more significant methane emissions.

As for Class B utilities, Staff recommends the Commission allow Staff more flexibility to review requests for exemptions. Staff would like to emphasize that the Commission should clearly require utilities to justify why specific BPs should not apply to them including how these BPs will not achieve significant emissions reductions in light of data provided in their Annual Emissions Inventory Reports.

Finally, for Class C utilities, Staff recommends the Commission allow Staff additional flexibility to review requests for exemptions from BPs that allow for exemptions with the expectation that these utilities still focus on cost-effective leak prevention BPs for their companies.

Implementation of Compliance Plans

SB 1371 states, “The rules and procedures, including best practices and repair standards, shall be incorporated into the safety plans required by Section 961 and the applicable general orders adopted by the commission.”⁵ At this time, the only applicable general order adopted by the commission is G.O. 112, Revision F.

Rather than attempting to revise G.O. 112- F to incorporate what may prove to be an evolving set of Best Practices, Staff instead recommends that the SB 1371 Compliance Plans be filed as a new component of the Gas Safety Plans. Section 961 (b) (4) referencing Section 1701.1, provides sufficient authority for the Commission to “review and accept, modify, or reject an updated plan...” The Commission may want to consider at a further date opening a separate Order Instituting Rulemaking (OIR) to incorporate the natural gas leakage abatement and methane emission reduction rules and procedures into G.O. 112. If so, Staff advises that the Commission consider opening a separate OIR no earlier than the year 2020 to allow for adequate lessons learned for Staff to advise the Commission on appropriate refinement of best practices to incorporate them into G.O. 112 minimum requirements.

In D. 15-06-044, the decision adopting the revised G.O. 122-F, Gas Safety Plans were included among a list of annual filings to be made in conjunction with other required reports and documents, starting March 15, 2017.

In order to give the utilities sufficient time to work with Staff on the format and content of the new SB 1371 Compliance Plans and develop their portfolios of best Practices, Staff recommends that the first set of Compliance Plans be filed as part of the 2018 Gas Safety Plans, and should be updated every two years.

⁵ SB 1371 Natural Gas: Leakage Abatement, Section 2: Article 3, 975(f)

Evaluation of Best Practices and R&D/Pilots

Because Section 961(b), the Gas Safety Plan statute, gives the Commission broad authority to review and accept, modify or reject the Gas Safety Plans, including SB 1371 Compliance Plans, it is reasonable to establish criteria for evaluating the success or failure of the plans in terms of effectiveness of BPs and outcomes of R&D/Pilots.

The ultimate evaluation, of course, should come in the form of demonstrable reductions to emissions reported in the annual leak surveys. The reporting templates already include specific questions about new practices that were employed in the previous year and an assessment of their impacts. This should be supplemented with an assessment of individual BPs that form each company's Compliance Plans.

Because the Staff Revised Best Practices include several references to R&D or pilots to test new technologies and programs, the initial Compliance Plans should include a detailed description of such proposals, and the 2020 plan update should include an evaluation of results, including costs, of any R&D programs or pilots that the utilities proposed in their initial plans. At the conclusion of the R&D or pilot programs, Staff recommends the Commission require utilities to make a recommendation for implementation/deployment, or for a revised BP or an additional research plan based on the results.

Staff recommends that in its forthcoming Phase 1 decision the Commission direct Parties to participate in a workshop or working group process similar to that used to develop the BPs to further refine the expected content and structure of the Compliance Plans, the template for the R&D Pilot Plans, and a reasonable means by which the utilities can report on the outcomes of their test programs, recommend whether to continue, expand or curtail the effort, and for Staff to evaluate the outcomes.

Best Practices for Methane Leakage Abatement and Emissions Reductions

No.	Best Practices	Logic
	Policies and Procedures (P&P)	
BP 1	<p><u>Compliance Plan</u> Written Compliance Plan identifying the policies, programs, procedures, instructions, documents, etc. used to comply with the Final Decision in this Proceeding (R.15-01-008). Exact wording TBD by the company and approved by the CPUC, in consultation with CARB. Compliance Plans shall be signed by company officers certifying their company’s compliance. Compliance Plans shall include copies of all policies and procedures related to their Compliance Plans. Compliance Plans shall be filed biennially (i.e. every other year) to evaluate best practices based on progress and effectiveness of Companies’ natural gas leakage abatement and methane emissions reductions.</p>	<p>Each company is of a different size and has a different business model. Compliance Plans will require Companies to include those Best Practices (BPs) mandated by the Commission, noting applicable exemptions and alternatives, and any additional measures proposed by each Company to abate natural gas leakage and reduce methane emissions. However, companies must submit a Compliance Plan for approval by the CPUC, in consultation with CARB, to ensure that they are complying with the decisions of this proceeding and SB 1371. The Compliance Plan filing also incorporates many requirements for other BPs including policies and procedures, recordkeeping, training, experienced/trained personnel. In addition, other specific requirements in many leak detection, leak repair and leak prevention BPs are incorporated into the Compliance Plan filing.</p>
BP 2	<p><u>Methane Potent GHG Policy</u> Written company policy stating that methane is a potent Green House Gas (GHG) that must be prevented from escaping to the atmosphere. Include reference to SB 1371 and SB 1383. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of Compliance Plan filing.</p>	<p>Written company policies, referencing both SB 1371 (2014, Leno) and SB 1383 (2016, Lara), are needed to guide company activities and ensure effective implementation to abate natural gas leakage and reduce methane emissions.</p>

No.	Best Practices	Logic
BP 3	<p><u>Pressure Reduction Policy or Procedure</u></p> <p>Written company policy or procedure stating that pressure reduction to the lowest operationally feasible level in order to minimize methane emissions is required before non-emergency venting of high-pressure distribution (above 60 psi) and transmission lines consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of Compliance Plan filing. A company may request an exemption with appropriate justification.</p>	<p>Written company policies or procedures are needed to require minimization of methane emissions from company activities (e.g. blowdowns, other operational emissions, etc.), and ensure effective implementation consistent with Operations & Maintenance (O&M) safety, system integrity and reliability requirements. This pressure reduction BP applies to non-emergency venting of high pressure distribution (above 60 psi) and transmission lines. This BP allows for utilities to request an exemption with appropriate justification.</p>
BP 4	<p><u>Scheduling Projects Policy or Procedure</u></p> <p>Written company policy or procedure stating that any high pressure distribution (above 60 psi) and transmission line project that requires evacuating methane will build time into the project schedule to reduce methane emissions to the atmosphere consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Projected schedules of high pressure distribution and transmission (above 60 psi) line work, requiring methane evacuation, shall also be submitted to facilitate audits, with line venting schedule updates TBD. Exact wording TBD by the company and approved by the</p>	<p>Written company policies or procedures to schedule projects for specified distribution and transmission lines to minimize methane emissions are needed to guide company activities and ensure effective implementation consistent with O&M safety, system integrity and reliability requirements. This scheduling projects BP applies to non-emergency venting of high pressure distribution (above 60 psi) and transmission lines requiring methane evacuation. This BP allows for utilities to request an exemption with appropriate justification.</p>

No.	Best Practices	Logic
	<p>CPUC, in consultation with CARB, as part of the Compliance Plan filing. A company may request an exemption with appropriate justification.</p>	
<p>BP 5</p>	<p><u>Methane Evacuation Implementation Procedures</u> Written company procedures implementing the BPs approved for use to evacuate methane and how to use them consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. A company may request an exemption with appropriate justification.</p>	<p>Written company procedures are needed to guide company activities for methane evacuation implementation and ensure effective implementation consistent with O&M safety, system integrity and reliability requirements. This methane evacuation implementation BP applies to non-emergency venting of high pressure distribution (above 60 psi) and transmission lines requiring methane evacuation. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 6</p>	<p><u>Methane Evacuation Work Orders Policy</u> Written company policy that requires that for any high pressure distribution (above 60 psi) and transmission projects requiring evacuating methane, Work Planners shall clearly delineate, in procedural documents, such as work orders used in the field, the steps required to safely and efficiently reduce the pressure in the lines, prior to lines being vented, considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. A company may request an exemption with appropriate justification.</p>	<p>Written company policies are needed for methane evacuation work orders to guide company activities and ensure effective implementation consistent with O&M safety, system integrity and reliability requirements. This methane evacuation work orders BP applies to non-emergency venting of high pressure distribution (above 60 psi) and transmission lines requiring methane evacuation. This BP allows for utilities to request an exemption with appropriate justification.</p>

No.	Best Practices	Logic
BP 7	<p><u>Bundling Work Policy</u> Written company policy requiring bundling of work, whenever practicable, to prevent multiple venting of the same piping consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Company policy shall define situations where work bundling is not practicable. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. A company may request an exemption with appropriate justification.</p>	<p>Written company policy is needed for bundling work to guide company construction and O&M activities for coordination of multiple venting of lines to reduce excess methane emissions consistent with O&M safety, system integrity and reliability requirements. This bundling work BP requires companies to define situations where work bundling is not practicable. This BP allows for utilities to request an exemption with appropriate justification.</p>
BP 8	<p><u>Company Emergency Procedures</u> Written company emergency procedures which describe the actions company staff will take to prevent, minimize and/or stop the uncontrolled release of methane from the gas system or storage facility consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. This requirement should not be duplicative to final DOGGR or ARB Oil & Gas Regulations or CPUC GO 112-F, or its successors. A company may request an exemption with appropriate justification.</p>	<p>Most natural gas companies have gas systems containing large volumes of methane. An uncontrolled release can negate the methane reductions of other utilities and increase GHG emissions. Written emergency company procedures are needed to guide company staff to prevent, minimize, and/or stop the uncontrolled release of methane and ensure effective implementation consistent with O&M safety, system integrity and reliability requirements. Requests for exemption may be considered for small gas companies. This company emergency procedures BP should not be duplicative to final DOGGR or ARB Oil & Gas Regulations or CPUC GO 112-F, or its successors.</p>

	Recordkeeping	
BP 9	<p><u>Recordkeeping</u> Written Company Policy directing the gas business unit to maintain records of all SB 1371 Annual Emissions Inventory Report methane emissions and leaks, including the calculations, data and assumptions used to derive the volume of methane released. Records are to be maintained in accordance with G.O. 112 F and succeeding revisions, and 49 CFR 192. Currently, the record retention time in G.O. 112 F is at least 75 years for the transmission system. 49 CFR 192.1011 requires a record retention time of at least 10 years for the distribution system. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing.</p>	<p>Accurate reporting of methane emissions and leaks, including estimation methodologies and assumptions, is critical for regulatory audits to ensure compliance. Written company policy is needed to ensure these records are maintained for all SB 1371 relevant actual measured emissions and leaks and estimated emissions and leaks including calculations, data and assumptions to derive the volume of methane released.</p>
	Training	
BP 10	<p><u>Training to ensure personnel know emergency procedures to prevent/minimize/stop uncontrolled releases of methane</u> Training to ensure that personnel know how to use company emergency procedures which describe the actions staff shall take to prevent, minimize and/or stop the uncontrolled release of methane from the gas system or storage facility. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company's General Rate Case</p>	<p>Most natural gas companies have gas systems containing large volumes of methane. An uncontrolled release can negate the methane reductions of other utilities and increase GHG emissions. This training BP is needed to ensure personnel know how to use emergency procedures to prevent, minimize and/or stop the uncontrolled releases of methane. This training BP allows for companies to submit draft training programs along with a process to update the program once finalized to allow companies opportunities to integrate changes to their existing training and program development through their existing GRC and/or CBC processes. This BP allows for utilities to</p>

	<p>(GRC) and/or Collective Bargaining Unit (CBC) processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan. A company may request an exemption with appropriate justification.</p>	<p>request an exemption with appropriate justification.</p>
<p>BP 11</p>	<p><u>Training programs for workers to know methane emissions reductions policies</u></p> <p>Ensure that training programs educate workers as to why it is necessary to reduce, eliminate and/or prevent methane emissions and leaks. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company’s GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan. A company may request an exemption with appropriate justification.</p>	<p>Training programs are necessary to help employees understand why it is important to abate natural gas leaks and reduce methane emissions. If they understand the reasoning behind the goals, they are more likely to comply with the company’s policies and procedures. This training BP is needed to ensure workers knows methane emissions reductions policies. This training BP allows for companies to submit draft training programs along with a process to update the program once finalized to allow companies opportunities to integrate changes to their existing training and program development through their existing GRC and/or CBC processes. This BP allows for utilities to request an exemption with appropriate justification.</p>

<p>BP 12</p>	<p><u>Training / Knowledge Transfer Programs</u> Training /Knowledge Transfer Programs to ensure knowledge continuity for new methane emissions reductions best practices as workers, including contractors, leave and new workers are hired. Training and knowledge transfer programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company’s GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once finalized into its Compliance Plan. A company may request an exemption with appropriate justification.</p>	<p>New workers need to be trained in how to abate natural gas leakages and minimize methane emissions. Knowledge transfer programs are also needed to alleviate knowledge gaps and improve safety for new methane emissions reductions best practices. This training BP allows for companies to submit draft training programs along with a process to update the program once finalized to allow companies opportunities to integrate changes to their existing training and program development through their existing GRC and/or CBC processes. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 13</p>	<p><u>Training Programs to instruct workers, including contractors, on how to perform BPs, efficiently and safely</u> Create and implement training programs to instruct workers, including contractors, on how to perform the BPs chosen, efficiently and safely. Training programs to be designed by the Company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. If integration of training and program development is required with the company’s GRC and/or CBC processes, then the company shall file a draft training program and plan with a process to update the program once</p>	<p>Training programs are necessary to instruct workers, including contractors, on how to perform BPs, efficiently and safely. This training BP is needed to ensure companies instructs workers, including contractors, on how to perform BPs, efficiently and safely. This training BP allows for companies to submit draft training programs along with a process to update the program once finalized to allow companies opportunities to integrate changes to their existing training and program development through their existing GRC and/or CBC processes. This BP allows for utilities to request an exemption with appropriate justification.</p>

	finalized into its Compliance Plan. A company may request an exemption with appropriate justification.	
	<u>Experienced, Trained Personnel</u>	
BP 14	<p><u>Experienced, Trained Personnel</u></p> <p>Create new formal job classifications for apprentices, journeyman, specialists, etc., where needed to address new methane emissions reduction and leak abatement best practices, and filed as part of the Compliance Plan filing, to be approved by the CPUC, in consultation with CARB. A company may request an exemption with appropriate justification.</p>	<p>According to the Unions, there is a significant need for experienced, qualified people working in the field, and also for participation in the evaluation of existing practices and development of better (best) practices. Experienced gas system workers have first-hand knowledge of how system equipment operates, what the O&M problems are and how to fix them resulting in less methane leaks. If this is accurate, then methane leaks and emissions are not entirely infrastructure issues. Experienced workers are critical to help train, improve procedures, maintain and operate equipment and to address new methane emissions reduction and leak abatement best practices. This BP allows for utilities to request an exemption with appropriate justification.</p>

	<u>Leak Detection</u>	
BP 15	<p><u>Gas Distribution Leak Surveys</u> Conduct leak surveys of the gas distribution system outside business districts, every 3 years instead of every 5 years. In lieu of more frequent leak surveys, utilities could propose and justify in their Compliance Plan filings a more technologically feasible and cost-effective substitute best practice(s) for prioritizing gas distribution pipeline leak detection efforts. The substitute BPs should demonstrate comparable or better performance. A company may request an exemption with appropriate justification. Companies without distribution systems are exempt from this practice.</p>	<p>This BP would transition from a 5-year leak survey cycle to a 3-year leak survey cycle for the following parts of the gas system: 49 CFR 192.723 – Distribution systems: Leakage-surveys. Subsection (b)(2) currently states: “A leakage survey with leak detector equipment must be conducted outside business districts as frequently as necessary, but at least once every 5 calendar years at intervals not exceeding 63 months. However, for cathodically unprotected distribution lines subject to §192.465(e) on which electrical surveys for corrosion are impractical, a leakage survey must be conducted at least once every 3 calendar years at intervals not exceeding 39 months.” Research cited in the proceeding by both Colorado Air Quality Control Commission and the U.S. EPA indicates that more frequent inspections result in greater reductions of methane emissions since leaks are found sooner and have less time to emit methane. More frequent leak surveys are permitted by the above relevant CFR. This leak detection BP also allows for utilities to propose and justify a more technologically feasible and cost-effective substitute best practice(s) for prioritizing gas distribution pipeline leak detection efforts in lieu of more frequent leak surveys. The substitute BP(s) should demonstrate comparable or better performance. This gas distribution leak survey BP only applies to companies with gas distribution systems but this BP also allows for utilities to request an exemption, with appropriate justification.</p>

<p>BP 16</p>	<p><u>Special Leak Surveys</u></p> <p>Companies shall outline as part of their compliance filings, supplemental surveys they conduct as part of their integrity management or other programs. Leak survey frequency for any supplemental leak surveys shall be performance based and outlined within each company’s Compliance Plan. The use of special surveys should be predicated on predictive analysis and historical trends, if possible. Utilities will file in their Compliance Plan how they propose to utilize predictive analysis including whether further R&D and/or a pilot is most appropriate. Predictive analysis may be defined differently for differing companies based on company size and trends. Pipe materials that are more susceptible to leaks should be replaced or modified to make safe (e.g., cast iron or certain type of plastic pipe, unprotected steel). If this practice is required through existing or other regulations, then file in Compliance Plan how this practice is being addressed and provide reference to where the status of the implementation is reported. A company may request an exemption with appropriate justification. Companies without susceptible pipe (see above) or distribution systems are exempt from this practice.</p>	<p>This leak detection BP requires companies to outline supplemental surveys that are part of their integrity management or other programs in their Compliance Plan filings and to require that leak survey frequency for any supplemental leak surveys to be performance based. Also, this BP states that the use of special surveys should be predicated on predictive analysis and historical trends, if possible. This BP allows further Research & Development (R&D) and/or a pilot specifically for utilization of predictive analysis. This BP also allows for predictive analysis to be defined differently for differing companies based on company size and trends. This BP allows for exemption for companies without susceptible pipe (e.g. cast iron or certain type of plastic pipe or unprotected steel) or distribution systems but also allows for utilities to request an exemption, with appropriate justification.</p>
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<p>BP 17</p>	<p><u>Enhanced Methane Detection</u> Utilities shall propose in their Compliance Plans use of enhanced methane detection practices (e.g. gas speciation, mobile methane detection and/or aerial leak detection) or propose pilot programs, as appropriate, with implementation timelines, and evaluation criteria. A company may request an exemption with appropriate justification.</p>	<p>This leak detection BP requires utilities to propose the use of enhanced methane detection practices (e.g. gas speciation, mobile methane detection, and/or aerial leak detection) or propose pilot programs, as appropriate, with implementation timelines, and evaluation criteria. This BP allows utilities to propose specific technologies that are most suitable for their gas systems and geographical areas. This BP allows for an exemption with appropriate justification.</p>
<p>BP 18</p>	<p><u>Stationary Methane Detectors</u> Utilities shall propose in their Compliance Plans use of Stationary Methane Detectors for early detection of leaks, including whether further R&D and/or a pilot is most appropriate. Locations include: Compressor Stations, Terminals, Gas Storage Facilities, City Gates, and Metering & Regulating (M&R) Stations. Methane detectors should be capable of transferring leak data to a central database, if appropriate for location. This requirement should not be duplicative to final ARB Oil & Gas Regulations. A company may request an exemption with appropriate justification.</p>	<p>This leak detection BP requires utilities to propose the use of Stationary Methane Detectors for early detection of leaks. This BP allows for proposals to be for further R&D and/or a pilot if this is most appropriate. This BP applies to locations including compressor stations, terminals, gas storage facilities, City Gates and Metering & Regulating (M&R) Stations. This BP recommends that methane detectors are capable of transferring leak data to a central database, if appropriate for location. This BP should not be duplicative to final ARB Oil & Gas Regulations. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 19</p>	<p><u>Above Ground Leak Surveys</u> Utilities shall propose in their Compliance Plans frequent leak detection and data collection at above ground transmission and high pressure distribution facilities including</p>	<p>This leak detection BP requires utilities to propose frequent leak detection and data collection at above ground transmission and high pressure distribution facilities including Compressor Stations, Gas Storage Facilities, City Gates, and Metering</p>

	<p>Compressor Stations, Gas Storage Facilities, City Gates, and Metering & Regulating (M&R) Stations, as appropriate. Utilities shall work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve emissions quantification to assist demonstration of actual emissions reductions. Utilities may use EPA Method 21, optical gas imaging, or other methods for above ground facilities/leaks. This requirement should not be duplicative to final ARB Oil & Gas Regulations or CPUC GO 112-F, or its successors. Utilities may request an exemption with appropriate justification.</p>	<p>& Regulating (M&R) Stations, as appropriate. This BP also requires utilities to work together, with CPUC and ARB staff, to come to agreement on a similar methodology to improve emissions quantification to assist demonstration of actual emissions reductions. Emissions quantification is critical as lessons learned from reviewing Annual Emissions Inventory Report data is that much of the inventory is based on estimations and that improved quantification technologies are very much needed. This BP should not be duplicative to final ARB Oil & Gas Regulations. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 20</p>	<p><u>Leak Quantification & Geographic Evaluation/Tracking</u> Utilities shall propose in their Compliance Plans methodologies for improved quantification and geographic evaluation and tracking of leaks from the gas systems. Utilities shall file in their Compliance Plan how they propose to address quantification including whether further R&D and/or a pilot is most appropriate. Utilities shall work together to devise improved quantification and geographic evaluation and tracking of leaks. Leak detection equipment ideally will be capable of transferring leak data to a central database in order to provide data for leak maps. Geographic leak maps shall be publicly available with leaks displayed by zip code, City boundary and/or other metric (number</p>	<p>This leak detection BP requires utilities to propose methodologies for improved quantification and geographic evaluation and tracking of leaks. See BP 19 Logic as to why this is important. This BP also allows for utilities to propose R&D and/or pilots to address leak quantification and requires utilities to work together on devising improved quantification and geographic evaluation and tracking of leaks. This BP recommends that methane detectors are capable of transferring leak data to a central database in order to provide data for leak maps. This BP allows for utilities to request an exemption with appropriate justification.</p>

	and type of leaks per zip code). A company may request an exemption with appropriate justification.	
	Leak Repairs	
BP 21	<p><u>“Find It Fix It Policy”: Leak Repair Timeline and Backlogs</u></p> <p>Utilities shall file in their Compliance Plan how they propose to prioritize their leak repairs, including backlogs, and how to determine a certain size threshold and other factors for justifying reasonable exceptions. The threshold determination can include whether further R&D and/or a pilot is most appropriate. The utilities should work together, with CPUC and ARB staff, to come to agreement on a similar threshold methodology, for consistency. A company may request an exemption with appropriate justification.</p> <p>Leak Repair Timeline: Until a leak volume threshold has been determined, utilities shall repair all new leaks within a maximum of three years as of discovery, allowing for reasonable exceptions. Once a threshold has been determined, all new leaks above the threshold shall be repaired at a timeline to be determined, within a maximum of three years as of discovery, allowing for reasonable exceptions.</p> <p>Backlogs: Utilities shall propose a date to eliminate their backlog of all leaks.</p> <p>Note 1: In no case shall the time to</p>	<p>As the only leak repair BP, this “find-it/fix-it” BP applies to all leaks. This BP includes a timeline section which initially, requires all leaks to be repaired within a maximum of three years as of discovery, allowing for reasonable exceptions, until a leak volume threshold has been determined. This BP also requires utilities to propose a date to eliminate their backlog of all leaks. In addition, this BP requires utilities to propose how they plan to prioritize their leak repairs, including backlogs, and how to determine a certain size threshold and other factors for justifying reasonable exceptions. The BP allows the utilities to propose further R&D and/or a pilot specifically for determining the leak volume threshold partly because the technology for detecting and measuring leaks is still being developed. This BP recommends the utilities work together, with CPUC and ARB staff, to come to agreement on a similar threshold methodology, for consistency. This BP requires utilities to not exceed leak repair times specified in General Order (GO) 112-F and its successors, or as ordered by the CPUC Gas Safety & Reliability Branch. This BP recommends simple repairs that can be performed by tightening of fittings or lubrication should be performed as soon as reasonably possible. This BP allows for utilities to request an exemption with</p>

	<p>repair a leak exceed the repair times specified in G.O. 112 F and succeeding revisions, or as ordered by the CPUC Gas Safety and Reliability Branch.</p> <p>Note 2: Additionally, simple repairs that can be performed by tightening of fittings or lubrication should be performed as soon as reasonably possible.</p>	<p>appropriate justification.</p>
	<p>Leak Prevention</p>	
<p>BP 22</p>	<p><u>Pipe Fitting Specifications</u></p> <p>Review and revise pipe fitting specifications, as necessary, to ensure tighter tolerance/better quality pipe threads. Utilities will be required to review any available data on its threaded fittings, and if necessary, propose a fitting replacement program for threaded connections with significant leaks or comprehensive procedures for leak repairs and meter set assembly installations and repairs as part of their Compliance Plans. A fitting replacement program should consider components such as pressure control fittings, service tees, and valves metrics, among other things. If an R&D or pilot program is deemed necessary, then utilities can submit a proposal as part of their Compliance Plan, subject to review and approval by the CPUC, in consultation with CARB. A company may request an exemption with appropriate justification.</p>	<p>This leak prevention BP addresses the very large number of threaded fittings and their known propensity to develop leaks. This BP allows for review and revision of pipe fitting specifications and any available data on utilities’ threaded fittings, as necessary. This BP requires utilities to review their own pipe fittings specifications along with available data and if necessary, propose a fitting replacement program as part of their Compliance Plan. This BP allows for an R&D or pilot program to be proposed, if necessary, as part of the Compliance Plan. For example, Aeronautical National Pipe Taper (ANPT) threads (ANSI SAE AS71051) may be less leak-prone than National Pipe Taper (NPT) pipe threads (ANSI/ASME B1.20.1) since the former has 2 threads and the latter has 3 threads. However, other types of threads or connections may prove better. Typically, leaks from threaded connections are not from initial installation but may develop over time. This BP allows for utilities to request an exemption with appropriate justification.</p>

<p>BP 23</p>	<p><u>Prevent/Minimize/Stop Fugitive & Vented Methane Emissions (Catastrophic Releases, High-Bleed Pneumatics, Blowdowns, etc.)</u></p> <p>Methods, systems and components used to prevent, minimize and/or stop fugitive and vented methane emissions, including catastrophic releases, from a gas system or storage facility. This measure should include replacement of high-bleed pneumatic devices with technology that does not vent gas (i.e. no-bleed) or vents significantly less natural gas (i.e. low-bleed) devices. This measure should also include reduction of emissions from blowdowns, as much as operationally feasible. Utilities should propose R&D or pilot programs to determine cost-effectiveness and technical feasibility of blowdown mitigations for distribution pipelines (at or below 60 psi) as part of their Compliance Plans. This requirement should not be duplicative to final DOGGR or ARB Oil & Gas Regulations or CPUC GO 112-F, or its successors. A company may request an exemption with appropriate justification.</p>	<p>Most natural gas companies have gas systems containing large volumes of methane. Large amounts of fugitive and vented emissions, including catastrophic releases, can negate the methane reductions of other utilities and significantly increase GHG emissions. This leak prevention BP focuses on prevention, minimization and/or stopping fugitive and vented methane emissions including those from catastrophic releases, high-bleed pneumatics and blowdowns. This BP recommends replacement of high-bleed pneumatic devices and reduction of blowdown emissions, as much as operationally feasible. Also, since some policy and procedures BPs apply to only high pressure distribution lines (above 60 psi) and transmission lines, this BP recommends utilities propose R&D or pilot programs to evaluate blowdown mitigations for distribution pipelines (at or below 60 psi). This BP should not be duplicative to final DOGGR or ARB Oil & Gas Regulations or CPUC GO 112-F, or its successors. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 24</p>	<p><u>Dig-Ins / Public Education Program</u></p> <p>Dig-Ins – Expand existing public education program to alert the public and third-party excavation contractors to the Call Before You Dig – 811 program. In addition, utilities must provide procedures for excavation contractors to follow when excavating to prevent damaging or rupturing a gas</p>	<p>Dig-Ins are a major cause of gas line ruptures. The utilities are already required to implement Dig-In public awareness programs. This leak prevention BP requires utilities to expand their existing public education programs and to provide procedures for excavation contractors to follow when excavating. This BP should not be duplicative to CPUC GO 112-F, or</p>

	<p>line. A company may request an exemption with appropriate justification. This requirement should not be duplicative to CPUC GO 112-F, or its successors.</p>	<p>its successors. This BP allows for utilities to request an exemption with appropriate justification.</p>
<p>BP 25</p>	<p><u>Dig-Ins / Company Monitors for All Excavations near Transmission Lines</u> Dig-Ins – Utilities must provide company monitors to witness all excavations near gas transmission lines to ensure that contractors are following utility procedures to properly excavate and backfill around transmission lines. This requirement should not be duplicative to CPUC GO 112-F, or its successors.</p>	<p>Dig-Ins are a major cause of gas line ruptures. This leak prevention BP is necessary to ensure contractors follow utility excavation and backfill procedures around transmission lines in order to try to prevent damage to a transmission line. (It is possible to nick or damage a transmission line which can be a root cause for a rupture years later.) This BP only applies to gas utilities with gas transmission lines in California. This BP should not be duplicative to CPUC GO 112-F, or its successors.</p>
<p>BP 26</p>	<p><u>Dig-Ins / Repeat Offenders</u> Utilities shall document procedures to address Repeat Offenders such as providing post-damage safe excavation training and on-site spot visits. Utilities shall keep track and report multiple incidents, within a 5-year period, of dig-ins from the same party in their Annual Emissions Inventory Reports. These incidents and leaks shall be recorded as required in the recordkeeping best practice. In addition, the utility should report egregious offenders to appropriate enforcement agencies including the California Contractor’s State License Board. The Board has the authority to investigate and punish dishonest or negligent contractors. Punishment can include suspension of their contractor’s license.</p>	<p>This leak prevention BP requires utilities to document procedures to address Repeat Offenders and to track and report multiple incidents in their Annual Emissions Inventory Reports. This BP recommends utilities report egregious offenders to appropriate enforcement agencies. This BP requires these incidents and leaks to be recorded under the Recordkeeping BP.</p>

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