BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Order Instituting Investigation on the Commission's Own Motion to Determine Whether Pacific Gas and Electric Company and PG&E Corporation's Organizational Culture and Governance Prioritize Safety.	Investigation 15-08-019

OPENING COMMENTS OF THE OFFICE OF SAFETY ADVOCATE

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February 13, 2019

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I. INTRODUCTION

Pursuant to Assigned Commissioner Picker's Scoping Ruling (Scoping Memo) issued on December 21, 2018, the Office of the Safety Advocate (OSA) hereby files these Opening Comments for the Order Instituting Investigation (OII) (I.)15-08-019. On January 22, 2019, the assigned Administrative Law Judge (ALJ) granted an extension for the Opening Comments to be due on February 13, 2019.

The Scoping Memo initiates a new phase for this proceeding to determine whether Pacific Gas and Electric Company (PG&E) and PG&E Corporation's current corporate governance, structure, and operations is positioned to provide safe gas and electric service. The Commission will also review alternatives to the current management and operational structures of providing electric and gas service in Northern California.

The Commission seeks comments on the following issues:

- Corporate Governance
- Corporate Management
- Corporate Structure
- Publicly Owned Utility, Cooperative, Community Choice Aggregation or other Models
- Return on Equity
- Other Proposals

Below, OSA provides its comments for Corporate Governance, Corporate Management, Corporate Structure, and other Proposals.

II. DISCUSSION

A. Corporate Governance

This proceeding provides an opportunity for all parties to view a company's safety commitment from a holistic standpoint and examine the upper levels of an organization. At the highest level is the company's board of directors (BOD). They govern the organization by establishing broad policies and setting out strategic objectives. PG&E's BODs are comprised of both executive (PG&E employee) and non-executive (non-PG&E employee) directors. Non-executive directors are added to bring fresh perspective to augment its existing expertise in safety, operations, and other critical areas.[1] According to Dr. Kirstin Ferguson, who authored a thesis on "A study of Safety leadership and safety governance for board members and senior executives", there are four key roles of the board of directors:

- *Board Control* - Board members supervise management and protect shareholders;
- *Board Service* – Board members provide expertise and counseling;
- *Board Strategy* – Board member contributions range from "Approving, monitoring and reviewing strategy at one end, to a leadership role of active involvement in establishing the goals, values and setting direction at the other end;"[2]
- *Access to Resources* – Members assist in securing critical resources

According to Dr. Ferguson, three of the four roles listed above for BODs are directly related to workplace safety. It is within their control to ratify and monitor management as it relates to workplace safety. BODs provide specific skills or provide expertise in safety, and review safety initiatives and formulate safety strategy. BODs

[1] PG&E Summary of Corporate Structure at p. 1 of *I.15-08-019* (Filed January 16, 2019)

[2] (https://eprints.qut.edu.au/81349/1/Kirstin_Ferguson_Thesis.pdf) at p. 57.

experienced in safety management should be the driving force that instills safety in a corporation. This direction from the BODs should be the north star that guides a corporation's workplace safety. It is not clear from the "Summary of Corporate Structure of PG&E (U 39 M) and PG&E Corporation" documentation provided by PG&E if any of the board of directors actually have any safety management experience.

The "Summary of Corporate Structure of PG&E (U 39 M) and PG&E Corporation" report states that the BOD took additional action to instill a safety focus after the San Bruno explosion.[3] This resulted in PG&E splitting its operational management of the electric and gas business and retooling how it evaluates and mitigates risks.[4] On January 4, 2019, PG&E's BOD announced that it was making changes to reinforce the company's commitment to safety and improvement.[5] Among the changes cited was "Board refreshment", a process to bring in new directors. The action to bring in "board refreshment" was from the result of public pressure for 2017 & 2018 wildfires. These incidents and subsequent actions highlight a reactionary mentality by PG&E and its leadership. Safety culture as part of a larger safety management system is not relegated to only company employees but also applies to the corporate BODs as well. A proper safety management system consisting of a robust safety culture would cultivate continuous monitoring and review of safety risks and other for continuous improvements.

Conclusion and Recommendations

Although this proceeding is focused on PG&E and its safety culture and governance, OSA strongly advocates that these recommendations be applied to the other regulated Utilities.

- At least one non-executive member of the board of directors should have extensive safety management system experience (preferably in the utility industry) and be part of the board safety committee that focuses

[3] PG&E Summary of Corporate Structure at p. 1.

[4] *Id.* at p. 2.

[5] *id.*

primarily on safety that forms the company's safety governance framework.

- PG&E and PG&E Corp should be subjected business judgment rule (BJR) to require the Board of Directors to account for safety beyond the current fiduciary duties and regularly file with the commission a report of how the board met its duties under the BJR to account for safety. Dr. Ferguson's study suggests that the extent of internal focus on safety are reflected in external safety disclosures.[6] Simply put, a company with low levels of public safety disclosures more than likely had a low focus on safety internally. Conversely, a company with high levels of public safety disclosures had high internal focus on safety.

B. Corporate Management

Senior executives implement the decisions made by the board and are essential to the effective management of an organization. Over the past few years, PG&E has experienced several organizational changes. Organizational change is both the process in which an organization changes its structure, strategies, operational methods, technologies, or organizational culture to affect change within the organization and the effects of these changes on the organization.[7] In 2017, Geisha Williams was promoted to Chief Executive Officer (CEO) and structural reorganization of PG&E occurred which consisted of layoffs[8] and realignment of work groups. In 2018 and 2019, additional officer and senior executives resigned or left. During these periods of reorganization, PG&E shuffled leaders into various roles in which the individual may have little subject matter expertise over the work they oversee. In 2011, the "Report of the Independent Review Panel San Bruno Explosion" identified "inconsistent presence of subject matter expertise in the management ranks" and stated that repeated reorganizations have impaired the effectiveness of the PG&E.[9]

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[6] https://eprints.qut.edu.au/81349/1/Kirstin_Ferguson_Thesis.pdf) at p. 218.

[7] https://study.com/academy/lesson/what-is-organizational-change-theory-example-quiz.html

[8] https://www.sfgate.com/business/article/PG-E-to-lay-off-390-employees-as-it-tightens-its-10850562.php

[9] June 24, 2011, Report of the Independent Review Panel San Bruno, prepared for the California Public Utilities Commission.

Conclusions and Recommendations

When faced with certain challenges, such as financial strife, companies may feel reorganization as necessary. However such activities should be done with focus to process safety and not just to manage physical changes. Organizational changes can lead to serious incidents with potentially severe consequences if not successfully administered.[10] Thus, it is important when leaders are moved into new roles they have some subject matter expertise over the line of work they oversee. Effects of organizational changes on process safety can be more challenging to view because they are less commonly recognized than other types of change.[11]

Thus, when rearranging internal senior leaders for new roles, PG&E should set minimum subject matter expertise requirements for the work they oversee, especially for work impacting workplace safety.

C. Corporate Structure

Members from University of California, Berkeley's Center for Catastrophic Risk Management (CCRM) sent Commissioner Picker and OSA the attached memo outlining its recommendations related to Corporate Structure impacts on Safety. OSA supports the recommendations and believes the Commission should incorporate them.

D. Other Proposals

1. Similar to Canadian pipeline regulations[12] and the aviation, transit, and other industries, the Commission should establish safety management system standards for PG&E and California energy utilities, including safety culture assessment, and then secure additional resources to assess utility programs relative to those

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[10] https://www.aiche.org/academy/courses/ch525/managing-process-safety-risks-during-organizational-change

[11] *Id.*

[12] https://www.neb-one.gc.ca/bts/ctrg/gnnb/nshrppln/gdncntnshrpplnrgltn-eng.html#s6_1

standards.[13] [14] This program may be implemented initially and more expediently as an assessment, rather than enforcement program, to expedite implementation of safety management improvements by contrasting and improving safety management system organizational structure, programs, and best practices across utilities.

2. The Commission should develop a new Safety Program modeled after the Federal Aviation Administration (FAA's) Aviation Safety Action Program (ASAP).[15]

3. Similar to Canadian pipeline regulations,[16] the Commission should require utility CEOs to assess and certify that utility programs, including safety management system programs, are adequately resourced to meet the safety needs of the organization. If an assessment determines that it is not adequately resourced, it should provide a plan and schedule to adequately resource its safety programs and resolve any related program and management system deficiencies. Often key aspects of a management systems are not effectively resourced which causes it to be poorly implemented or ineffective (which in turn impacts the larger safety-related programs). If gaps in resourcing are identified, they should be resolved along with a corrective and preventive action plan for the deficiencies that were identified in the program or management system.

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[13] "The International Civil Aviation Organization (ICAO) has made it mandatory for all ICAO member states to implement a Safety Management System (SMS) to minimize risk and improve aviation safety. In response to this requirement, the FAA is implementing SMS in a variety of its organizational units."
https://www.faa.gov/about/initiatives/asap/policy/media/Maintenance_ASAP_DOT-FAA-AR-9-28.pdf
https://www.faa.gov/about/initiatives/sms/international/#ICAO

[14] CPUC March 2018 En Banc on Safety Management Systems

http://www.cpuc.ca.gov/2018safetyenbanc/CPUC En Banc Webcast:
http://www.adminmonitor.com/ca/cpuc/en_banc/20180208/

[15] "An ASAP program is about trust and collaboration between employees, management and the regulator, toward achieving a higher goal—safety for the flying public".
https://www.faa.gov/about/initiatives/asap/policy/media/Maintenance_ASAP_DOT-FAA-AR-9-28.pdf

[16] https://www.neb-one.gc.ca/bts/ctrg/gnnb/nshrppln/gdncntnshrpplnrgltn-eng.html#s6_1

4. Similar to the nuclear industry,[17] the Commission should consider embedding resident safety staff at each of the large utilities.

5. **Northstar Recommendations for the Commission**

The Commission should develop and implement select NorthStar Recommendations for the Commission beginning on Page I-16 of the Northstar report.[18] OSA supports most, although not all, of Northstar's specific recommendations for the Commission.

Specifically, in OSA Testimony,[19] (Also attached as Attachment B), OSA supported:

> **5.1 Northstar Commission Recommendation 1 - Utility sharing of a safety incident reporting system**
>
> OSA supports the Northstar report recommendation that the Commission "implement a system that encourages reporting of actual and potential safety incidents to be shared among the utilities in order to identify best practices and share lessons learned."
>
> This aligns with the Commission's 2017 Safety Action Plan, where Action Item 4 of the Safety Action Plan directed OSA to report on recommendations regarding application of a Safety Reporting System for California Utilities. Similar safety reporting systems have been used by regulators to improve safety in the airline, rail, and offshore oil and gas industries.
>
> **5.2 Northstar Commission Recommendation 2 – Develop a listing and consistent definitions of key safety-related metrics**
>
> To the extent that organizational, cultural, and public safety metrics are included in the adoption of a full complement of safety metrics, and are not skewed or vulnerable to gaming, underreporting, or bias, or misplaced incentives, OSA supported recommendation 2.

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[17] For a description of a resident staff and its functions see, NRC, "Backgrounder on NRC's Resident Inspection Program." https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/resident-inspectors-bg.html

[18] http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M185/K575/185575689.PDF

[19] http://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/Safety_Advocates/I1508019%20OSA%20OII%20Testimony%20.pdf

OSA is opposed to an inadequate set of metrics that do not capture organizational culture, or metrics that are vulnerable to driving underreporting or unintended behavior, or that fail to capture public safety.

5.4 Northstar Commission Recommendation 4 – Perform periodic audits of PG&E's safety programs and culture

OSA believes utility safety and safety culture would directly benefit from implementation of a comprehensive SMS across PG&E's enterprise, including but not limited to gas transmission, distribution, and storage; and electric transmission, generation, distribution, and hydro, and PGE enterprise functions. OSA believes the effectiveness of such a system would be highly dependent upon whether the Commission were to implement a program to audit or assess utility SMS component implementation and performance.

In its testimony, OSA further recommended:

5.5 OSA Recommendation 5 – Perform periodic audits of PG&E's safety programs and culture

Reporting of Safety Performance and Metrics

The Northstar Report recommended that the Commission have "meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs)." This cannot be done with current metrics and surveys demonstrated by the Report. These do not appear to address organizational and managerial elements that must be a part of Safety Management Systems (SMSs).

OSA recommends the Commission organize ongoing SMS metric workshops as part of this safety culture proceeding to facilitate implementing this safety recommendation with a focus on organizational, safety culture, and public safety performance metrics. The outcome of this effort may then be applied across all IOUs as recommended by the Northstar Report.

Cost-Benefit (CB) Analyses.

OSA testimony in this proceeding[20] did not support Northstar Commission Recommendation 3. OSA expressed concern about Northstar Commission Recommendation 3 to apply Performance Based Ratemaking to safety. OSA referenced past negative consequences from previous regulatory attempts to monetarily incentivize safety.[21] Any such proposed incentive program should be explicitly defined and well vetted to prevent unintentional negative impacts and reduced safety. The Commission should require that any such proposal identify well-established model programs used elsewhere with a proven selection and track record of superior safety metrics over a long term with well-supported history of supportive data.

Last, the Commission should retain Northstar, or a similar company, to evaluate PG&E's implementation of the Northstar recommendations.

III. CONCLUSION

OSA recommends that the Commission allow the safety culture development process to proceed for several years before looking at any formal CB analysis of PG&E initiatives to improve safety culture. The Commission should also leverage the expertise of Commission consultants and other utilities across the nation to comment on the broad questions proposed in this scoping memo. For example, the Commission should explicitly request comments from Overland Consulting, Liberty Consulting, Cycla, and Northstar.

The Commissions should publish safety performance, including organizational metrics similar to that of other regulatory bodies. The Commission should seek approval to secure and fund dedicated resources to publish those metrics, then continuously

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[20] I.15-08-019 OSA Testimony February 16, 2018:

http://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/Safety_Advocates/I1508019%20OSA%20OII%20Testimony%20.pdf

[21] Risk and Safety Aspects of Southern California Edison's 2018-2020 General Rate Case at p. 66.

Section 9.2 describes a number of prior Commission attempts to provide performance incentives in which the outcome was not what was intended. One quote states: "In a number of interviews, employees and supervisors stated that safety incentive programs acted as a disincentive for injury reporting."
http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Risk_Assessment/SCE%202018%20GRC%20Report%20Final%20with%20Appendix%20A.pdf

monitor, evaluate and improve the scope and effectiveness of these metrics. And, the Commission should require PG&E to identify and engage only with potential buyers of PG&E business units with an established safety record in the businesses which PG&E operates.

Moreover, the Commission should take action to improve utility safety by securing additional safety oversight resources as suggested during the latter part of recent radio program interview on the PG&E bankruptcy.[22]

OSA appreciates the opportunity to file these comments to guide the Commission for this new phase of the proceeding.

Respectfully submitted,

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[22] KALW Radio Interview 1 Hour Podcast: "City Visions: What can be done about PG&E?" Guests: Supervisor Hillary Ronen from San Francisco's District 9. Severin Borenstein, Professor of Business Administration and Public Policy at the Haas School of Business and Faculty Director of the Energy Institute at Haas. Catherine Sandoval, Associate Professor of Law at Santa Clara University and former Commissioner at the California Public Utilities Commission. https://www.kalw.org/post/city-visions-what-can-be-done-about-pge

Attachment A

CCRM Recommendations

Observations and Recommendations in Response to CPUC OII Proceeding15-08-019
Scoping Memo: Safety Culture and PG&E Restructuring

On 12/21/18 CPUC President Michael Picker issued a Scoping Memo to cover a new phase of an original Order Instituting an Investigation "to Determine Whether Pacific Gas and Electric Company and PG&E Corporation's Organizational Culture and Governance Prioritize Safety" (OII 15-08-019). This memo asserts that, given PG&E's record and the dangers inherent in PG&E's service territory, the Commission must evaluate whether there is a better way to serve Northern California with safe and reliable electric and gas service at just and reasonable rates. The scope of this investigation will be an unusually broad one. The Commission will examine PG&E's and PG&E Corporation's (PG&E Corp.) current corporate governance, structure, and operations to determine if the utility is positioned to provide safe electrical and gas service, and will review alternatives to the current management and operational structures of providing electric and gas service in Northern California." The memo also notes that "as stated in the original scoping memo issued on May 8, 2017, this proceeding is categorized as ratesetting "

Among the structural alternatives to be considered are:

• Should PG&E's gas and electric distribution and transmission divisions be separated into separate companies? If so, should the separate companies be controlled by a holding company? Should the holding company be a regulated utility?

• Should PG&E's corporate structure be reorganized with regional subsidiaries based on regional distinctions? For example, PG&E could be divided into multiple smaller utilities operating under a single parent company. If so, should such a reorganization apply to both gas and electric services? Do the physical characteristics of the gas and electric systems lend themselves to the same regional structure, or do the physical characteristics of the respective systems lend themselves to different regional structures?

• Should the Commission revoke holding company authorization, so PG&E is exclusively a regulated utility? Should all affiliates and subsidiaries be spun off or incorporated into the regulated utility?

• Should the Commission form a standing working group with the union leadership of PG&E to identify the safety concerns of PG&E staff?

• Should some or all of PG&E be reconstituted as a publicly owned utility or utilities?

• Should PG&E be a “wires-only company” that only provides electric distribution and transmission services with other entities providing generation services? If so, what entities should provide generation services?

It is not clear to us, as long practicing scholars, writers and researchers in the field of safety and reliability management in organizations, how the CPUC is currently in a position within the confines of a formal ratesetting proceeding to (1) investigate and assess these questions in all of their dimensions, (2) make informed decisions regarding them with confidence and (3) monitor those decisions sufficiently to know if they are working with respect to the promotion of safety management and safety culture in the gas and electric operations of PG&E. This seems particularly true within the context of a ratesetting proceeding, characterized by legal communication constraints, an adversarial relationship between many parties, and pressure for a specific decision within a restricted time-frame.

From our research and that of others in this field, it is clear that the relation of safety culture to organizational structure can be complex and uncertain. The field of safety culture is still immature. There is ambiguity as to what actually constitutes a "safety culture" across industries and its causal relationship is to accidents and incidents[1]. There can also be important differences in management structures and requirements associated with (1.) individualized accidents (slips, trips and falls) and (2) system accidents (which have multiple causes and can create injuries and fatalities outside as well as inside an organization)[2].

Further, safety culture is not "baked-in" to specific organizational structures. It evolves over time through a process of incentives, motivation and personal identification, reinforced by mutual trust among employees across units, departments, specialties and hierarchical levels, and then translated into actual real-time behavior all the time. Safety culture must be part of high level decisions, support and budget allocations but safety culture must also penetrate down to work assignments and work planning, individual job descriptions and role identity with respect to these jobs, and finally, down to task content and actual execution of tasks in real time. The fact is that we do not have systematic and generalized, let alone predictive knowledge about how actually to "grow" a safety culture in an organization. The National Academy of Engineering in a report on

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[1] A good review of the conceptual and empirical uncertainty of the safety culture concept is Sue Cox and Rhona Flyn, "Safety Culture: Philosopher's Stone or Man of Straw?" *Work and Stress* (July 1998). https://www.researchgate.net/publication/247510886. See also, Steven Kaspers, et. al. “Measuring Safety in Aviation: Empirical Results about the Relation between Safety Outcomes and Safety Management System Processes, Operational Activities and Demographic Data.” *Presario Confer*ence, 2017, (file:///C:/Users/owner/Documents/Downloads/raak-pro_pesaro%20(1).pdf) and also, Elan Head, “When Safety Management Systems Fail” *Vertical Magazine* (2015). https://www.verticalmag.com/features/whensafetymanagementsystemsfail/

[2] For clarification of these differences see Erik Hollnagel, *Safety-I and Safety-II*. New York Routledge, 2014.

safety culture in the Offshore Oil and Gas Industry described this process as "a long and uncertain safety culture journey"[3].

Consider hierarchy by way of example as an organizational structure. Many assume that hierarchy means that the actions taken in an organization predominantly reflect the intent and strategy of its top level officials. Therefore they assume that leaders can implement a safety culture in their organization if they are motivated to do so. That's one reason why hierarchy is assumed to be an accurate instrument of accountability for regulators and courts. But the same hierarchical structure that positions top officials to plan, make decisions and issue commands, and to be held accountable, is also a very unreliable conduit for information and for the real-time coordination of activities. Organizational plans, strategies, decisions and commands are prone to error or distortion in design and execution and individual units or departments can develop their own sub-cultures, sometimes at variance with an "official" organizational culture.

An effective safety culture entails top level supports but also, among other things, the ability and disposition of localized actors to supplement commands and designs -- adding safety margins, attending to safety issues not addressed by plans, commands and designs, calling attention to and correcting errors in those plans and designs, even in some cases by refusing to carry them out. The structural options listed in the Scoping Memo should all be evaluated in terms of these specific safety functions and behaviors and how they can be promoted, and not simply chosen to get rid of some features assumed to be inexorably associated with present deficiencies.

In short, the idea that a structural change is a guarantee of safety culture and safety management improvement is not supported by research. We suggest that the questions asked in the Scoping Memo are unlikely to be answerable in a way that can guide the Commission to a definitively supported "correct" decision. There are many dimensions and values at stake in any structural configuration. Any structure that promotes some values (such as clarity of command and accountability) will just as certainly organize some others (such as flexibility and local initiative) out. Considering and weighing the potential trade-offs and uncertainties of major structural changes takes time and careful consideration. Again, this would seem to be unlikely when the assessment of these structural options is to be done under the legal and time constraints and the adversarial framework of a ratesetting proceeding.

Consider two examples of the multiple dimensions of the options. One potential option to be considered under the scoping memo is "Should PG&E's gas and electric distribution and transmission divisions be separated into separate companies?" What would be the likely impacts of this upon safety? It might lead to a clearer focus by

[3] National Academy of Engineering, *Strengthening the Safety Culture of the Offshore Oil and Gas Industry* (Washington, DC: The National Academies Press, 2016), p. 9. https://doi.org/10.17226/23524.

managers and executives on the safety and risks of a specific infrastructure without having to compete for safety budgets with units operating other infrastructures. Smaller utility companies might develop more esprit among employees and a closer identification by each of them with company safety objectives and a common safety culture.

But is this assured with this strategy? Smaller companies with a smaller base of ratepayers might have fewer resources and capital available for risk reduction and other safety investments. Splitting up the companies does not proportionately cheapen the foundational costs of achieving and maintaining safe operations in an infrastructure. Rate payer increases required to support these investments borne by a smaller base of rate payers might be prohibitive. Companies with a smaller revenue base might find operating and personnel costs a strong motivation for their executives to cut overhead and production costs, and cost-saving demands imposed upon employees at all levels might undermine morale, increase workloads and reduce commitments to safety.

At the same time would these separate, smaller companies be more or less inclined to worry about and manage for interconnected infrastructure risks? Our research on a variety of infrastructures in Northern California found the complexity of possible interconnections and interdependencies among them to be formidable -- more complex than even managers and operators of each infrastructure realized. One important factor is that latent interdependencies among the infrastructures (water, electricity, gas, telecoms, shipping, levees) can appear in the shift from normal operation to periods of disruption, failure and then to recovery[4].

Right now PG&E is just beginning to appreciate the full extent of its own infrastructure inter-connections and vulnerabilities, mostly under the framework of sharing information or "interoperability" analysis. Even with its integrated corporate structure PG&E's separate utilities or "asset families" have separate management, budgets and operating personnel. Asset families compute and manage their own risks separately and compete with one another for priority in a general risk register which determines corporate risk mitigation investment decisions. How much less likely are a set of separate companies to cooperate collaboratively in identifying interconnected risks and investing for them? Meanwhile the CPUC itself is not organized and has not undertaken (with its separate safety branches) to research, identify and regulate interconnected risks?

Another option to be considered in the proceeding, restructuring PG&E into a non-profit publicly owned utility, also has many dimensions. The elimination of profit and shareholder return-on-investment pressure might indeed make safety a higher priority among board members, executives and managers throughout the utility.

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[4] For a description and analysis of these complex interconnections see E. Roe and P. Schulman, *Reliability and Risk: The Challenge of Managing Interconnected Infrastructures*. Stanford University Press, 2016.

But this too is not guaranteed. One recent study of over 3000 power plants (and hospitals) found that publicly owned plants (and public hospitals) had a 9% higher rate of non-compliance with health and safety regulations such as EPA Clean Air Act regulations than privately owned ones and were 20% more likely to have committed higher priority safety violations. Much of this difference was attributed to the increased difficulty of government regulators (federal or in cities or states) regulating other government entities. [5]

In actuality, studies differentiating public vs privately owned utilities find little variation in safety and reliability based on the ownership variable alone. Geography, technology, public levels of risk tolerance as well as managerial and regulatory quality seem more important.[6] What seems clear is that ownership does not by itself determine what attitudes and behaviors will actually prevail at the level of operations and task performance in real-time. Ownership and probably many other of the structural options being considered in the OII 15-08-019 proceeding are unlikely to settle the future of improvements in the safety management and safety culture that currently prevail in the gas and electric services operated by PG&E.

In other words, there will likely be no "slam-dunk" conclusions in the CPUC's proposed review of these options. Any options chosen by the Commission will therefore be uncertain propositions with respect to their safety management and safety culture impacts.

Conclusion and Recommendations

We certainly recognize the importance of a CPUC effort to undertake a broad scale survey and assessment of governance and structural changes and their potential impacts on improving PG&Es safety management and safety culture. We believe, however, that to be effective this review of options and their potential effectiveness also requires a reciprocal review of ways the CPUC could itself make changes in its regulatory oversight and decision-making processes that would not only improve its assessment process of PG&E governance and structural options, but also enlarge the likelihood that any chosen options would actually improve safety management, culture

[5] See D. Konisky and M. Teodoro, "When Governments Regulate Governments." American Journal of Political Science, 2016 (July), 559-574. https://onlinelibrary.wiley.com/doi/full/10.1111/ajps.12221

[6] See for instance World Bank, "Private versus public electricity distribution utilities: Are outcomes different for end-users?" (2018). (https://blogs.worldbank.org/developmenttalk/private-versus-public-electricity-distribution-utilities-are-outcomes-different-end-users), and John Goodman and Gary Loveman, "Does Privatization Serve the Public Interest?" *Harvard Business Review*, (November/December, 1991). https://hbr.org/1991/11/does-privatization-serve-the-public-interest

and, ultimately, safety outcomes. Given this conclusion we offer the following suggestions:

1. The CPUC should approach this review and assessment of options as a longer-term R&D undertaking, before it is defined as a decision-driven process. The CPUC does not in our view have a significant research and development capability in its regulatory tool kit. The Northstar report on PG&E's safety culture concluded (as noted in the Scoping Memo) that “[w]hile PG&E is committed to safety and efforts have been made to reduce incidents and increase the organizational focus on safety, these efforts have been somewhat reactionary – driven by immediate needs and an understandable sense of urgency, rather than a comprehensive enterprise-wide approach to addressing safety."

This, it seems to us, could also be a description of the CPUC's approach to its regulatory oversight with respect to safety. Much of its focus on safety is also reactive to specific events, and then is driven by a sense of immediate urgency for a finding and a "solution", a process encased within formal proceedings that are adversarial and rigidly structured with respect to information gathering and communication.

The more appropriate approach, it seems to us, for addressing the complexity and uncertainty surrounding the governance and structural questions at issue in this Scoping Memo is not the formal proceeding with testimony by competing parties, and Commissioners acting as detached judges, but instead the information exchange workshop or smaller seminar with presentations, reports, critiques, interactive exploration of diverse perspectives and the reasons for them. In this process CPUC personnel, including Commissioners should be active participants, as well as diverse personnel from relevant utilities and invited experts. These sessions should not be driven by the urgency of a quick decision but by the search for relevant information and insights.

We do not offer this research and development strategy as a replacement for the formal proceedings the Commission ultimately has to work within, but as a supplement to them and *in advance* of many other issues that will ultimately call for them. A number of federal safety regulators such as the FAA and the NRC have R&D units and also offer grants for research on relevant topics -- often directed toward future problems and regulatory challenges.

2. The CPUC in its review of options outlined in the Scoping Memo should take into account likely uncertainties in their ability to produce the safety and safety culture effects hoped for in PG&E's current electric and gas service. This means that in evaluating any option the Commission should realistically try to assess the monitoring and inspection capacities of the Commission itself to track the actual effects. Validating the effectiveness of Commission decision requires the enlargement of the scope of its

monitoring process, using various measures for safety culture assessment -- surveys, interviews and observations. It also means developing safety management metrics to assess what, if any, managerial changes, have taken place as a result of a chosen restructuring option. Other safety metrics should be employed as leading indicators track changes in safety processes before accidents occur. This metrics development is itself an R&D process and it should include CPUC and utility personnel as well as invited experts from other regulatory organizations who can offer information about their practices and experiences.

3. For this monitoring and assessment process to work effectively the Commission will also need to upgrade its inspection functions -- more inspectors, with advanced training in safety culture and safety management, spending more time at PG&E sites watching actual behavior at all levels from investment and budget meetings, to work planning sessions to actual task performance in operations and maintenance jobs. This will require a significant upgrade in the Commission's inspection function. As a basic inspection requirement the National Academy of Engineering asserted in its safety culture report noted earlier that "One challenge for all regulators is changing the mind-set of inspectors from inspecting for compliance to advocating for safety culture." [7]

Just as a comparative note, since 1978 the Nuclear Regulatory Commission has had a resident inspection force of 150 persons with 2 full-time resident inspectors on site at all the nuclear power plants and nuclear fuel production facilities it oversees.[8] They can attend any meeting and observe any operational or maintenance activity that occurs at these facilities. While the CPUC may not be able to increase its inspection force to this level it should recognize that part of the weighing of PG&E restructuring options is to recognize the need to upgrade its own inspection capacities if it hopes to realize and sustain the safety management and safety culture improvements that are driving this 15-08-019 proceeding.

4. Finally, a last recommendation arises with the recent announcement by PG&E officials of their intention to declare bankruptcy at the end of January 2019. There is now significant organizational turbulence within PG&E that is likely to increase -- with the departure of key executive and managerial personnel and the uncertainty of cost reductions and possible employee layoffs that might ensue under bankruptcy settlement proceedings and those decisions by the judge presiding over them. This turbulence will distract the attention of many personnel from important ongoing tasks as well as create serious declines in morale and employee engagement across the organization. These are likely to have immediate implications for safety in PG&E operations. It seems to us

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[7] National Academy of Engineering, *Strengthening the Safety Culture of the Offshore Oil and Gas Industry* (Washington, DC: The National Academies Press, 2016), p. 5. https://doi.org/10.17226/23524

[8] For a description of this force and its functions see, NRC, "Backgrounder on NRC's Resident Inspection Program." https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/resident-inspectors-bg.html

that upgraded CPUC inspections and other oversight activity is called for during this period to help prevent lapses in attention, compliance and care in safety critical functions throughout PG&E gas and electric asset families.

We would be happy to speak with you or any other CPUC personnel further about the issues and recommendations in this memo as well as additional research findings pertaining to them and the 15-08-019 proceeding.

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Attachment B

OSA Testimony
(February 16, 2018)

Docket	:	I.15-08-019
Exhibit Number	:	OSA-1
Commissioner	:	M. Picker
ALJ	:	Peter V. Allen
OSA Analyst	:	Alex Pineda

OFFICE OF THE SAFETY ADVOCATE
CALIFORNIA PUBLIC UTILITIES COMMISSION

OFFICE OF THE SAFETY ADVOCATE TESTIMONY ON THE ORDER INSTITUTING INVESTIGATION ON THE COMMISSION'S OWN MOTION TO DETERMINE WHETHER PACIFIC GAS AND ELECTRIC COMPANY AND PG&E CORPORATION'S ORGANIZATIONAL CULTURE AND GOVERNANCE PRIORITIZE SAFETY

I.15-08-019

San Francisco, California

February 16, 2018

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MEMORANDUM

This report was prepared by the Office of the Safety Advocate (OSA) of the California Public Utilities Commission (Commission) in the *Pacific Gas and Electric Company (PG&E) and PG&E Corporation (PG&E Corp.) Order Instituting Investigation (OII) 15-08-019, on the Commission's Own Motion To Determine Whether Pacific Gas and Electric Company and PG&E Corporation's Organizational Culture and Governance Prioritize Safety.* OSA hereby presents its analysis and recommendations on some issues raised in this OII.

Alex Pineda served as OSA's project coordinator and witness in this review, and is responsible for the overall coordination and writing of this report. His prepared qualifications are contained in Appendix A of this report.

CHAPTER 1

OVERVIEW AND POLICY

I. INTRODUCTION

On August 27, 2015, the Commission adopted this OII 15-08-019 to determine whether Pacific Gas and Electric Company's and PG&E Corp.'s (collectively "PG&E") organizational culture and governance prioritize safety and adequately directs resources, exercises accountability, and overall to achieve safety goals and standards consistently at a high level across the organization.[1]

During Phase 1 of this proceeding, the Commission's Safety Enforcement Division (SED) with the aid of a consultant, NorthStar Consulting Group (NorthStar), evaluated PG&E and PG&E Corp.'s organizational culture, governance, policies, practices, and accountability metrics in relation to PG&E's record of operations, including safety incidents. On April 21, 2017, a report summarizing findings and recommendations, *Assessment of Pacific Gas And Electric Corporation And Pacific Gas And Electric Company's Safety Culture Prepared For California Public Utilities Commission*, was made available by NorthStar (hereafter "Report").[2]

The Scoping Memo and Ruling of Assigned Commissioner (Scoping Memo), issued May 8, 2017, identified five key questions to be resolved.[3] On November 17, 2017, an Assigned Commissioner's Ruling Setting Scope of Testimony and Schedule, issued November 17, 2017, identified fourteen key question items in the Scope of Testimony.[4]

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[1] OII at 2.

[2] Scoping Memo and Ruling of Assigned Commissioner at 2.

[3] Scoping Memo and Ruling of Assigned Commissioner at 4-5.

[4] Assigned Commissioner's Ruling Setting Scope of Testimony and Schedule at 3-7.

II. SUMMARY OF RECOMMENDATIONS

Conditions that promote improvement in PG&E's management of safety, enhance its commitment to safety, and improve its safety culture are necessary to mitigate its historically inadequate safety performance. In turn, the Commission must remain vigilant and continue to monitor PG&E's safety culture implementation and execution to help ensure that safety related incident occurrences are optimally reduced.

OSA submits this testimony to contribute to the discussion over the improvement of PG&E's safety culture. It does so knowing however, that there are few quick-fixes and that changing a culture is not something that will work just by commanding or regulating it into place. PG&E is faced with a challenging, ever-evolving cultural dynamic that must be understood by the Commission and PG&E for this Investigation to achieve its purpose.

Safety has now become an integral part of many proceedings at the Commission. Issues raised in this OII are also garnering attention in other rulemakings and investigations, and there is a potential for redundancy or that some issues may not be given the attention they deserve in the best forum available. Therefore, as a threshold procedural matter, OSA submits that the Commission should decide which particular safety issues, for example, the development of a particular safety accountability metric, would be better served in a General Rate Case, (GRC) in the Safety Model Assessment Proceeding (SMAP,) the Risk Assessment Mitigation Phase proceeding, (RAMP) or whether they should be considered in this or some other proceeding. Should the Commission consider adopting an accountability mechanism or requirement as part of this proceeding, OSA believes the Commission would benefit from providing parties an opportunity to provide additional testimony on that element in this proceeding.

The challenge of widely adopting and embracing a safety culture environment, which PG&E faces in California, puts into question past efforts and organizational effectiveness in its safety implementation. Past efforts were inadequate, causing instances of severe harm to the public and company employees, and resulted in this present OII.

Maintaining safety requires adequate funding and resources that may be outweighed by a need to achieve financial performance goals. For example, cost-reduction initiatives can increase the level of safety risk. Pressures of this kind are recognized as a major threat to safety. Business decisions, especially those involving cutting costs, should be made taking into account the potential safety risks involved. The strength in leaderships' commitment to a widely embraced safety culture at PG&E and PG&E Corp. will play a crucial role in ensuring that safety will not suffer as a result of any current financial challenges.

It is sometimes assumed that an effective safety culture can be quickly established by strong leadership, through communication campaigns and safety designated expenditures. The Report appears to agree with this perspective, as items implemented by PG&E are described within the Report as either "improving safety culture" or "laying a good foundation for the improvement of safety culture." However, developing or changing an existing culture into a desired safety culture is a gradual process that must spread throughout an organization – at all levels.[5] One or more generations of employees and management may be required to accomplish this. However, if attention to safety as an organizational issue is rapid, it may be short lived – rapid attention and adoption might not lead to a successful and stable long-term safety culture.

While rapid progress may not be the best road to take, interim progress can be made and should be evaluated. Organizational commitments must be long-term and permeate throughout the company – from top-level managers and throughout their Lines of Business (LOB). This includes department heads, supervisors, individual operators, maintenance workers, and other employees. A successful safety culture must be comprised of more than formal rules, roles, authority, and accountability assignments. An internalized safety culture, through company training, socialization, and workplace reinforcement, becoming a part of the identity of individuals throughout the organization

[5] Institutional Organization for Safety and Health, "Promoting a Positive Culture" (https://www.iosh.co.uk/News/Promoting-a-positive-culture.aspx)

is key. While safety culture may be partially regulated into place, other vital components to its success are positive company pressures, support, encouragement, imagination, and adjustments to the ways tasks are completed.[6]

It would be premature to conclude that the recent enterprise-wide deployment of PG&E's corrective action program (CAP) across its lines of business (LOB) will have the desired effect on safety culture and its ability to operate safely. The deployment's impact on PG&E's safety culture is uncertain and must be monitored in the best interest of public safety and the occupational safety of its employees.

[6] James Reason, "Safety Paradoxes and Safety Culture" (https://pdfs.semanticscholar.org/2b44/75371e345293e26887133a5e5eebc563b3cb.pdf)

CHAPTER 2

OSA'S EVALUATION OF THE NORTHSTAR REPORT

I. INTRODUCTION

The matters of safety culture and governance at PG&E and PG&E Corp., investigated per the OII and with findings provided in the Report, are complex. For all parties involved, it is important to move forward with recommended paths to follow, goals to accomplish, and knowledge of issues that may remain to be resolved due to what may prove to be a perpetual iterative process during implementation in achieving the desired result, as the target exists in a dynamic environment.

Safety culture is recognized as affecting overall safety throughout PG&E. As demonstrated by this OII, the safety performance of public utilities is highly dependent on safety culture.[7] In addition, as organizational changes are commonplace, it is important to note that a factor affecting changes to safety culture is that of organizational change.[8] As changes to an organization can influence a company's own policies, governance, and attitudes of company employees, it can influence all aspects of safety. That being said, failure to provide proper action to past incidents and to ignore the importance of organizational changes may lead to unnecessary recurrences in the future.

Safety governance is "the relationship between board members and senior executives in the safety leadership of an organization and provides the structure through which the vision and commitment to safety is set, the means of attaining safety objectives are agreed, the framework for monitoring performance is established and compliance with the legislation is ensured."[9] As safety governance is a part of corporate governance,

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[7] I.15-08-019.

[8] "*Strengthening Safety Culture of the Offshore Oil and Gas Industry"* (2016), Transportation Research Board Special Report 321, by The National Academies of Sciences, Engineering, and Medicine at p. 22.

[9] *What is safety governance and why does it matter?* By Dr. Kirstin Ferguson for OrbitGroup. http://www.orbitasgroup.com/what-is-safety-governance-and-why-does-it-matter/

note that corporate governance provides the strategic vision and direction to manage the business, and safety must be inherent in that process.[10] Per PG&E's testimony, PG&E recently rolled out their corrective action program (CAP) enterprise-wide. Proper implementation across, or within each, LOB will determine if this enterprise-wide deployment of CAP is successful in increasing safety.

How any changes instituted by the Commission will affect PG&E's safety culture and governance is uncertain. However, it is important to move forward with careful planning to proceed in efforts to reduce or eliminate incidents of injuries, and to save lives – of the public and those employed by PG&E. Having reviewed the Report and PG&E's testimony, the following are OSA's recommendations and potential issues to consider, which will enable the Commission in moving forward with aiding in enhancing safety culture and governance at PG&E and PG&E Corp.

II. NORTHSTAR REPORT RECOMMENDATIONS AND OSA'S CONCERNS

OSA has the following observations and concerns regarding the Report's recommendations:

A. Use of Safety Management Systems to Enhance Safety Culture

Implementing an effective safety management system (SMS) can enhance an organization's safety culture. The effectiveness of an SMS will depend on the strength of that culture and leadership's commitment to safety. This is recognized by American Petroleum Institute Recommended Practice (API RP) 1173, standards for Pipeline Safety Management Systems, which include elements encouraging companies to fully integrate safety culture considerations into their management programs.

In OSA's review of PG&E's safety plan, it did notice a general reliance on having a pipeline SMS as the company's main effort to support its ongoing efforts to enhance its present safety culture. PG&E is making an effort to improve safety; however, having a

[10] *System Safety Engineering and Risk Assessment: A practical Approach,* by Nicholas J. Bahr at p. 130.

general reliance on a pipeline SMS is of concern, as doing so may not provide for safety aspects that would be applicable to each LOB.

B. Survey Employed in the NorthStar Report

The Report heavily relies on its assessment on PG&E's own safety culture survey instrument, the Premier Survey, which is conducted biennially.[11] The Report notes that many of the questions have changed from survey to survey, making tracking changes more difficult.[12] Additionally, the Premier survey is not close to state-of-the-art in culture survey research. Its questions seem to consist only of positive and quite general assertions of what should be the practice with which employees can only agree or disagree. A multi-value Likert scale would allow stronger or weaker expression of agreement or disagreement. More advanced surveys employ a mix of positive and negative questions and more specific questions about actual behavior.[13]

However, the Report demonstrates that the Premier questionnaire contains a useful narrative section for employee comments and these were factor analyzed for PG&E by a consultant (Monitor 360) in 2014.[14] This would be useful to do with every administration of the Premier Survey.

OSA recommends further investigation into metrics and survey methodologies that would be beneficial to evaluating, enhancing, and having a long lasting positive effect on safety culture and governance at PG&E and PG&E Corp.

In Attachment X, attached to this testimony, OSA provides "Comments on Performance Metrics" submitted in 2013 in R.11-02-019. "Appendix A" of those comments provides examples of safety culture survey questions used in other industries. Repeated use of a common subset of questions in safety culture assessments, can provide

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[11] NorthStar Report at IX-5.

[12] NorthStar Report at IX-29.

[13] The Culture of Safety: Results of an Organization-Wide Survey in 15 California Hospitals https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1743680/pdf/v012p00112.pdf

[14] NorthStar Report at IX-24.

additional insight into trends in the effectiveness of safety culture program initiatives, and may also be helpful to identify regional or organizational gaps in employee safety culture program performance.

C. OSA's Evaluation of the NorthStar Report Recommendations to the Commission

1. Recommendation 1– Utility sharing of a safety incident reporting system.

The Report recommends that the Commission "implement a system that encourages reporting of actual and potential safety incidents to be shared among the utilities in order to identify best practices and share lessons learned."[15] This aligns with the Commission's 2017 Safety Action Plan, where Action Item 4 of the Safety Action Plan directs OSA to report on recommendations regarding application of a pilot Safety Reporting System for California Utilities.[16] Similar safety reporting systems have been used by regulators to improve safety in the airline, rail, and offshore oil and gas industries.

OSA supports recommendation 1.

2. Recommendation 2– Develop a listing and consistent definitions of key safety-related metrics.

The Report recommends that the Commission, "working with all California IOUs, develop a listing and consistent definitions of key safety-related metrics to be tracked on a monthly basis and reported to the CPUC at an agreed upon frequency. Performance reporting should be handled in a non-punitive manner, but subject to audit by the CPUC."[17] Metrics played a role in justifying answers to many of the issue questions in the Scoping Memo. OSA is concerned, however, that the information obtained via metrics in the Report demonstrated a general lack of adequate leading

[15] NorthStar Report at I-16.

[16] 2017 Update - Safety Action Plan and Regulatory Strategy at 6.

[17] NorthStar Report at I-17.

indicator organizational metrics, including safety culture assessments. Safety failures can be a result of organizational failures. Additionally, OSA is concerned that utilities typically track employee lagging indicator safety metrics, such as fatalities and serious injuries, but generally fail to track and report on public safety metrics. For instance, eight members of the public died in the San Bruno pipeline explosion, but those fatalities would not have shown up in an Occupational Safety and Health Administration (OSHA) report. Thousands of residents and two schools were relocated as a result of the Aliso Canyon gas storage leak, but those again, would have not have shown up in an OSHA report. OSA is currently actively seeking to address these metrics concerns in the Commission's SMAP Proceeding (A.15-05-002) Metrics Working Group.

The outcome of OSA efforts in that proceeding are uncertain, however, and since this proceeding, I.15-08-019, is focused on organizational culture at PG&E, this proceeding may be the most appropriate proceeding to address organizational, safety culture, and public safety metrics at PG&E, particularly if they are not adopted in the SMAP proceeding.

To the extent that organizational, cultural, and public safety metrics are included in adoption of a full complement of safety metrics, and not skewed or vulnerable to gaming, underreporting, or bias, or misplaced incentives, OSA supports recommendation 2. OSA would, however, be opposed to an inadequate set of metrics that do not capture organizational culture, or metrics that are vulnerable to driving underreporting or unintended behavior, or that fail to capture public safety.

3. Recommendation 3 - Performance-Based Ratemaking Mechanism.

The Report recommends that the Commission employ "a Performance-Based Ratemaking (PBR) mechanism that includes a safety element to be considered in the rate design phase of the TY2017 PG&E General Rate Case (A.15-09-011)… [and the]

mechanism should include a traditional rate of return component and a variable safety-related component based on pre-defined criteria and the discretion of the CPUC."[18]

Although OSA supports accountability and generally supports the motive behind incentivizing safety, the Commission should keep in mind that it has experienced several instances in which well-intended performance-based ratemaking initiatives resulted in unintended or undesired behaviors and outcomes. Several examples are described in the Commission's Safety and Enforcement Division's (SED) reports on this subject matter.

One of SED's reports describes how metrics, including safety metrics, associated with "explicit or implicit financial incentives may drive unintended or undesirable behaviors that are detrimental to safety."[19] Please see Attachment Y, which is an excerpt from Section 9.2 of that report, entitled "Risks Associated with Metrics." Section 9.2 describes a number of prior Commission attempts to provide performance incentives in which the outcome was not what was intended. One quote from the attachment states: "In a number of interviews, employees and supervisors stated that safety incentive programs acted as a disincentive for injury reporting."

Furthermore, SED's June 2017 Monthly Performance Report recommended that "the Commission should hold the utilities accountable in some way for determining whether the compensation incentive programs are effective at improving safety. Currently, there does not appear to be any tracking or benchmarking process to determine effectiveness."[20]

A GRC is a limited format for regulating safety. It comes on a three-year cycle and is driven by cost projections, demand forecasts and rates of return arguments, which can outweigh safety considerations. A PBR mechanism may suffer from use of lagging metrics of incidents and accidents to define performance. The "safety-related

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[18] NorthStar Report at pp. I-10 and I-17.

[19] Risk and Safety Aspects of Southern California Edison's 2018-2020 General Rate Case, at 66. http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Risk_Assessment/SCE%202018%20GRC%20Report%20Final%20with%20Appendix%20A.pdf

[20] Safety and Enforcement Division Monthly Performance Report – June 2017, at 12.

component" should promote safety management metrics as leading indicators. Otherwise the PBR will likely be only retrospective and not be targeted enough to drive the development of a mature SMS at PG&E. SMS metrics, once developed, could be applied to PG&E investment proposals such as those for risk mitigation. These should be analyzed and potentially discounted in relation to their promised risk reduction based on the Commission's assessment of the current state of a utility's SMS and safety culture.

This is an opportunity for the Commission to specify clearly that as part of a PBR development process that PG&E, along with other utility analysts and subject matter experts (SMEs), should participate in a set of workshops with the Commission to design and develop a set of safety management metrics which can be used for assessment of the current state of SMS and safety culture of each utility prior to its participation in a general rate case (GRC) proceeding.

OSA therefore has concerns about recommendation 3. Any adoption of such a mechanism should be explicit about the metrics and formula to be employed so that it may be properly vetted in this proceeding. OSA believes the Commission should not adopt such a mechanism without being explicit in this proceeding about the metrics and formula that would be applied.

4. Recommendation 4 – Perform periodic audits of PG&E's safety programs and culture.

The Report recommends that the Commission "perform periodic audits of the safety programs and culture of PG&E, and potentially the other major California investor-owned utilities."[21] The Report found that "PG&E is currently developing a Safety Management System (SMS) to enhance its ability to monitor and assess safety performance and culture. As the SMS is in the early stages of development, NorthStar cannot assess it or its ability to measure culture change."[22]

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[21] NorthStar Report at I-17.

[22] NorthStar Report at VII-10

OSA believes utility safety and safety culture would directly benefit from implementation of a comprehensive SMS across PG&E's enterprise, including but not limited to gas transmission, distribution, and storage; and electric transmission, generation, distribution, and hydro, and PGE enterprise functions. Additionally, OSA believes the effectiveness of such a system would be highly dependent upon whether the Commission implemented a program to audit or assess utility SMS component implementation and performance.

5. Reporting of Safety Performance and Metrics

The Report also recommends that the Commission "have meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs))."[23] This cannot be done with current metrics and surveys demonstrated by the Report. These do not appear to address organizational and managerial elements that must be a part of SMSs.

OSA recommends the Commission organize ongoing SMS metric workshops to facilitate implementing this safety recommendation.

6. Cost-Benefit Analyses

The Report recommends that PG&E clearly define and articulate any new initiatives to improve safety culture, and perform cost-benefit analyses of these initiatives and identify performance measures."[24]

A cost-benefit (CB) analysis of safety culture initiatives may be an invitation to error, based on a false precision about an uncertain process. How will interim and long-term benefits be measured? What constitutes a safety culture development cost?

The hope in the Report's recommendation is that the CB initiative will ultimately improve safety culture and, ultimately, safety outcomes. OSA has concern that this CB effort could subsequently lead to biased performance measures and assessments.

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[23] NorthStar at I-10

[24] NorthStar at III-22

OSA recommends the Commission allow the safety culture development process to proceed for several years before looking at any formal CB analysis of the process.

7. Appointing a Corporate Safety Officer

The Report recommends that PG&E "[a]ppoint a Corporate Safety Officer who has both operations and professional safety experience."

The appointment of a safety officer as an instrument of managerial purpose is neither a necessary nor sufficient driver for the emergence of organizational culture. The existence of a specific safety officer may relieve leaders and managers of a sense of responsibility for safety, since another party is delegated that task and therefore the responsibility.

Neither Institute of Nuclear Power Operations (INPO), the Federal Aviation Administration (FAA) nor OSHA, nor API RP 1173 suggest the need for a safety officer in their guidelines for SMS and safety culture development.[25] Higher level commitment and accountability are discussed, but they do not specifically advocate a single safety officer. Safety commitment and responsibility should be integrated into the other activities and responsibilities of higher level executives and managers, rather than have to compete from a separate position for the attention of highest level executives.[26]

One safety culture model proposed by the North American Regulators Working Group on Safety Culture (NARWGSC) asserts that "there [should be] an accountable officer (AO) designated. This delegation is appropriate based upon the organizational

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[25] INPO,"Principles for a Strong Safety Culture"
https://www.nrc.gov/docs/ML0534/ML053410342.pdf

FAA, "Safety Management Systems for Aviation Service Providers"
https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-92B.pdf

OSHA, "Safety and Health Program Management Guidelines"
https://www.osha.gov/shpmguidelines/SHPM_guidelines.pdf

American Petroleum Institute, "Pipeline Safety Management System Requirements"
https://www.pipelinelaw.com/wp-content/uploads/sites/19/2014/09/API-RP-1173.pdf

[26] What are the Greatest Challenges for Aviation Safety Officers?
http://aviationsafetyblog.asms-pro.com/blog/greatest-challenges-for-aviation-safety-officers

structure (i.e. the correct person is delegated with the authority and control for human and financial resources). The AO demonstrates understanding of and commitment to the role and responsibilities. There [should be] evidence of the AO taking action to resolve issues."[27] But at the same time the NARWGSC report also stresses that "all leaders are knowledgeable about the regulations, their own procedures and current safety activities, issues and challenges, such as causes of recent incidents, results of previous audits and ongoing or new safety programs. All leaders routinely dedicate significant time to safety, which includes talking to frontline staff about safety concerns and potential solutions and leaders are routinely involved in incident investigations/reviews and in resolving safety issues."[28]

Safety culture creates a stable bias in values and practices widely distributed throughout an organization. It should be enduring beyond the role of any particular person. A safety culture and its development should be "person-proof" -- it should not depend on the skills of a specific culture "czar" nor be undermined by the deficiencies or disinterest of a single individual.[29] The urge to impose accountability on this process is understandable. However, this accountability should be shared throughout an organization.

OSA recommends the Commission allow PG&E discretion whether it wants, as it has had, a single safety officer. However, the Commission may want to ensure that if there is only one, in future PG&E safety assessments, surveys and interviews include questions pertaining to the functions and role of the safety officer.

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[27] North American Regulators Working Group on Safety Culture (NARWGSC), "Safety Culture Indicators Research Project: A Regulatory Perspective".

[28] Id.

[29] The Negotiated Order of Organizational Reliability https://www.researchgate.net/publication/249625140_The_Negotiated_Order_of_Organizational_Reliability

8. Safety Model Assessment Proceeding (SMAP)

In line with the Safety Model Assessment Proceeding (SMAP) Scoping Memo and the "Safety and Enforcement Division Evaluation Report on the Risk Evaluation Models and Risk-based Decision Frameworks in A.15-05-002, et al.," as well as the results of the Southern California Edison (SCE) SMAP Technical Working Group on SMAP Metrics in its Master List, OSA recommends that the Commission consider having the SED Technical Working Group to continue its meetings and deliberations.[30]

These meetings and deliberations should continue for the purpose of developing clearly described and defined metrics pertaining to the measurement of the existence and effectiveness of SMSs within the utilities. The metrics should address recognized elements of safety management systems as described in reference documents and guidelines offered by the FAA, INPO, and API RP 1173.

The SMAP proceeding is directed toward the identification of a standardized risk assessment methodology for use in Risk Assessment Mitigation Phase (RAMP) filings and GRCs, which would allow all of the major utilities to offer comparable analyses of risk mitigation strategies proposed in connection with rate cases. Additionally, per SED, it is too early to recommend a common risk evaluation methodology in the first S-MAP. Among the reasons that SED came to this conclusion was that model granularity should be improved. The utilities should consider having two parallel risk assessment models, with one having high granularity and another having low granularity to compare the results obtained from both methods.[31] SED also asserted that RAMP filings should describe the company's safety culture, executive engagement, and compensation policies.

In the SMAP Metrics Master List, developed by the SMAP Technical Working Group, there are no metrics that address SMSs provided by the utilities other than

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[30] Safety Model Assessment Proceeding (SMAP) – A.15-05-002 et al.
http://www.cpuc.ca.gov/General.aspx?id=9099

[31] Safety and Enforcement Division Evaluation Report on the Risk Evaluation Models and Risk-based Decision Frameworks in A.15-05-002 et al.
http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=10483

Records and Information Management training metrics. In their joint response to SMS metrics for possible development proposed by the OSA, the utilities dismissed them as vague, subjective and some as unrelated to safety. Their response indicated they did not realize these were proposed for development by the working group and, more importantly, it indicated a lack of understanding of safety management systems -- their design and strategy.[32]

For these reasons, OSA recommends that the Commission consider having the SED Technical Working Group continue its meetings and deliberations, and concludes that SMS metrics are needed to:

1. Make sure that risk assessments used in RAMP and GRC filings address important managerial and organizational factors that are leading indicators of risk and that can significantly improve the understanding and measurement of risk in these models,

2. Significantly increase the granularity of those models,

3. Provide information to significantly improve safety management in the utilities, and

4. Allow the Commission to be better informed about utility safety in both its GRC proceedings and its general oversight of safety in the utilities.

OSA believes the best path to the development of these metrics is to continue the work of the Technical Working Group under a clarified guidance of the SMAP Scoping Memo, with participation of both CPUC and utility staff.

[32] Safety and Enforcement Technical Working Group SMAP Metrics Master List http://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Safety/Risk_Assessment/SMAP/Staff%20Proposal%20SMAP%20Metrics.xlsx

APPENDIX A

Qualifications of Witnesses

QUALIFICATIONS AND PREPARED TESTIMONY
OF
Alex Pineda

Q1. Please state your name and business address.

A1. My name is Alex Pineda. My business address is 300 Capitol Mall, Sacramento.

Q2. By whom are you employed and in what capacity?

A2. I am employed by the California Public Utilities Commission as a Public Utilities Regulatory Analyst V in the Office of the Safety Advocate (OSA).

Q3. Please describe your educational and professional experience

A3. I hold a Bachelor of Science degree in Mechanical Engineering from the University of California, Davis, (UC Davis) and a Master of Science degree in Civil and Environmental Engineering from UC Davis. I joined OSA in 2018 and have over seven years of experience in the utility and related industries. More than three of those years were with the California Energy Commission (Energy Commission), and four years were with Clean Energy Assets, LLC. At the Energy Commission, I worked as an Energy Specialist and Mechanical Engineer on a broad spectrum of topics, including natural gas, renewable energy, and Building Energy Efficiency Standards (Energy Standards) issues, ranging from natural gas pipeline infrastructure analysis, ensuring applicants' compliance with the New Solar Homes Partnership (NSHP) Program in solar photovoltaic installations on qualifying homes, and analyzing regulatory language to manage contracts and confirm compliance requirements of the Energy Standards were met in high-rise residential multifamily building ventilation systems to provide intended outside air for the safety and wellbeing of occupants. Additional past experience includes engineering and management work for Clean Energy Assets, LLC, where I completed National Fire Protection Agency (NFPA) 70E training, which is a Standard for Electrical Safety in the Workplace, and was responsible for workplace safety of renewable energy generation facilities.

Q4. What is the scope of your responsibility in this proceeding?

A4. I am the sponsor of Chapters 1-2 of prepared testimony regarding the Pacific Gas and Electric Company and PG&E Corporation Order Instituting Investigation (investigation) 15-08-019, for the Commission's Own Motion To Determine Whether Pacific Gas and Electric Company and PG&E Corporation Organizational Culture and Governance Prioritize Safety.

Q5. Does this complete your testimony?

A5. Yes

Attachment B

OSA Testimony
(February 16, 2018)

Docket	:	I.15-08-019
Exhibit Number	:	OSA-1
Commissioner	:	M. Picker
ALJ	:	Peter V. Allen
OSA Analyst	:	Alex Pineda

OFFICE OF THE SAFETY ADVOCATE
CALIFORNIA PUBLIC UTILITIES COMMISSION

OFFICE OF THE SAFETY ADVOCATE TESTIMONY ON THE ORDER INSTITUTING INVESTIGATION ON THE COMMISSION'S OWN MOTION TO DETERMINE WHETHER PACIFIC GAS AND ELECTRIC COMPANY AND PG&E CORPORATION'S ORGANIZATIONAL CULTURE AND GOVERNANCE PRIORITIZE SAFETY

I.15-08-019

San Francisco, California

February 16, 2018

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MEMORANDUM

This report was prepared by the Office of the Safety Advocate (OSA) of the California Public Utilities Commission (Commission) in the *Pacific Gas and Electric Company (PG&E) and PG&E Corporation (PG&E Corp.) Order Instituting Investigation (OII) 15-08-019, on the Commission's Own Motion To Determine Whether Pacific Gas and Electric Company and PG&E Corporation's Organizational Culture and Governance Prioritize Safety.* OSA hereby presents its analysis and recommendations on some issues raised in this OII.

Alex Pineda served as OSA's project coordinator and witness in this review, and is responsible for the overall coordination and writing of this report. His prepared qualifications are contained in Appendix A of this report.

CHAPTER 1

OVERVIEW AND POLICY

I. INTRODUCTION

On August 27, 2015, the Commission adopted this OII 15-08-019 to determine whether Pacific Gas and Electric Company's and PG&E Corp.'s (collectively "PG&E") organizational culture and governance prioritize safety and adequately directs resources, exercises accountability, and overall to achieve safety goals and standards consistently at a high level across the organization.[1]

During Phase 1 of this proceeding, the Commission's Safety Enforcement Division (SED) with the aid of a consultant, NorthStar Consulting Group (NorthStar), evaluated PG&E and PG&E Corp.'s organizational culture, governance, policies, practices, and accountability metrics in relation to PG&E's record of operations, including safety incidents. On April 21, 2017, a report summarizing findings and recommendations, *Assessment of Pacific Gas And Electric Corporation And Pacific Gas And Electric Company's Safety Culture Prepared For California Public Utilities Commission*, was made available by NorthStar (hereafter "Report").[2]

The Scoping Memo and Ruling of Assigned Commissioner (Scoping Memo), issued May 8, 2017, identified five key questions to be resolved.[3] On November 17, 2017, an Assigned Commissioner's Ruling Setting Scope of Testimony and Schedule, issued November 17, 2017, identified fourteen key question items in the Scope of Testimony.[4]

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[1] OII at 2.

[2] Scoping Memo and Ruling of Assigned Commissioner at 2.

[3] Scoping Memo and Ruling of Assigned Commissioner at 4-5.

[4] Assigned Commissioner's Ruling Setting Scope of Testimony and Schedule at 3-7.

II. SUMMARY OF RECOMMENDATIONS

Conditions that promote improvement in PG&E's management of safety, enhance its commitment to safety, and improve its safety culture are necessary to mitigate its historically inadequate safety performance. In turn, the Commission must remain vigilant and continue to monitor PG&E's safety culture implementation and execution to help ensure that safety related incident occurrences are optimally reduced.

OSA submits this testimony to contribute to the discussion over the improvement of PG&E's safety culture. It does so knowing however, that there are few quick-fixes and that changing a culture is not something that will work just by commanding or regulating it into place. PG&E is faced with a challenging, ever-evolving cultural dynamic that must be understood by the Commission and PG&E for this Investigation to achieve its purpose.

Safety has now become an integral part of many proceedings at the Commission. Issues raised in this OII are also garnering attention in other rulemakings and investigations, and there is a potential for redundancy or that some issues may not be given the attention they deserve in the best forum available. Therefore, as a threshold procedural matter, OSA submits that the Commission should decide which particular safety issues, for example, the development of a particular safety accountability metric, would be better served in a General Rate Case, (GRC) in the Safety Model Assessment Proceeding (SMAP,) the Risk Assessment Mitigation Phase proceeding, (RAMP) or whether they should be considered in this or some other proceeding. Should the Commission consider adopting an accountability mechanism or requirement as part of this proceeding, OSA believes the Commission would benefit from providing parties an opportunity to provide additional testimony on that element in this proceeding.

The challenge of widely adopting and embracing a safety culture environment, which PG&E faces in California, puts into question past efforts and organizational effectiveness in its safety implementation. Past efforts were inadequate, causing instances of severe harm to the public and company employees, and resulted in this present OII.

Maintaining safety requires adequate funding and resources that may be outweighed by a need to achieve financial performance goals. For example, cost-reduction initiatives can increase the level of safety risk. Pressures of this kind are recognized as a major threat to safety. Business decisions, especially those involving cutting costs, should be made taking into account the potential safety risks involved. The strength in leaderships' commitment to a widely embraced safety culture at PG&E and PG&E Corp. will play a crucial role in ensuring that safety will not suffer as a result of any current financial challenges.

It is sometimes assumed that an effective safety culture can be quickly established by strong leadership, through communication campaigns and safety designated expenditures. The Report appears to agree with this perspective, as items implemented by PG&E are described within the Report as either "improving safety culture" or "laying a good foundation for the improvement of safety culture." However, developing or changing an existing culture into a desired safety culture is a gradual process that must spread throughout an organization – at all levels.[5] One or more generations of employees and management may be required to accomplish this. However, if attention to safety as an organizational issue is rapid, it may be short lived – rapid attention and adoption might not lead to a successful and stable long-term safety culture.

While rapid progress may not be the best road to take, interim progress can be made and should be evaluated. Organizational commitments must be long-term and permeate throughout the company – from top-level managers and throughout their Lines of Business (LOB). This includes department heads, supervisors, individual operators, maintenance workers, and other employees. A successful safety culture must be comprised of more than formal rules, roles, authority, and accountability assignments. An internalized safety culture, through company training, socialization, and workplace reinforcement, becoming a part of the identity of individuals throughout the organization

[5] Institutional Organization for Safety and Health, "Promoting a Positive Culture" (https://www.iosh.co.uk/News/Promoting-a-positive-culture.aspx)

is key. While safety culture may be partially regulated into place, other vital components to its success are positive company pressures, support, encouragement, imagination, and adjustments to the ways tasks are completed.[6]

It would be premature to conclude that the recent enterprise-wide deployment of PG&E's corrective action program (CAP) across its lines of business (LOB) will have the desired effect on safety culture and its ability to operate safely. The deployment's impact on PG&E's safety culture is uncertain and must be monitored in the best interest of public safety and the occupational safety of its employees.

[6] James Reason, "Safety Paradoxes and Safety Culture" (https://pdfs.semanticscholar.org/2b44/75371e345293e26887133a5e5eebc563b3cb.pdf)

CHAPTER 2

OSA'S EVALUATION OF THE NORTHSTAR REPORT

I. INTRODUCTION

The matters of safety culture and governance at PG&E and PG&E Corp., investigated per the OII and with findings provided in the Report, are complex. For all parties involved, it is important to move forward with recommended paths to follow, goals to accomplish, and knowledge of issues that may remain to be resolved due to what may prove to be a perpetual iterative process during implementation in achieving the desired result, as the target exists in a dynamic environment.

Safety culture is recognized as affecting overall safety throughout PG&E. As demonstrated by this OII, the safety performance of public utilities is highly dependent on safety culture.[7] In addition, as organizational changes are commonplace, it is important to note that a factor affecting changes to safety culture is that of organizational change.[8] As changes to an organization can influence a company's own policies, governance, and attitudes of company employees, it can influence all aspects of safety. That being said, failure to provide proper action to past incidents and to ignore the importance of organizational changes may lead to unnecessary recurrences in the future.

Safety governance is "the relationship between board members and senior executives in the safety leadership of an organization and provides the structure through which the vision and commitment to safety is set, the means of attaining safety objectives are agreed, the framework for monitoring performance is established and compliance with the legislation is ensured."[9] As safety governance is a part of corporate governance,

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[7] I.15-08-019.

[8] "*Strengthening Safety Culture of the Offshore Oil and Gas Industry"* (2016), Transportation Research Board Special Report 321, by The National Academies of Sciences, Engineering, and Medicine at p. 22.

[9] *What is safety governance and why does it matter?* By Dr. Kirstin Ferguson for OrbitGroup. http://www.orbitasgroup.com/what-is-safety-governance-and-why-does-it-matter/

note that corporate governance provides the strategic vision and direction to manage the business, and safety must be inherent in that process.[10] Per PG&E's testimony, PG&E recently rolled out their corrective action program (CAP) enterprise-wide. Proper implementation across, or within each, LOB will determine if this enterprise-wide deployment of CAP is successful in increasing safety.

How any changes instituted by the Commission will affect PG&E's safety culture and governance is uncertain. However, it is important to move forward with careful planning to proceed in efforts to reduce or eliminate incidents of injuries, and to save lives – of the public and those employed by PG&E. Having reviewed the Report and PG&E's testimony, the following are OSA's recommendations and potential issues to consider, which will enable the Commission in moving forward with aiding in enhancing safety culture and governance at PG&E and PG&E Corp.

II. NORTHSTAR REPORT RECOMMENDATIONS AND OSA'S CONCERNS

OSA has the following observations and concerns regarding the Report's recommendations:

A. Use of Safety Management Systems to Enhance Safety Culture

Implementing an effective safety management system (SMS) can enhance an organization's safety culture. The effectiveness of an SMS will depend on the strength of that culture and leadership's commitment to safety. This is recognized by American Petroleum Institute Recommended Practice (API RP) 1173, standards for Pipeline Safety Management Systems, which include elements encouraging companies to fully integrate safety culture considerations into their management programs.

In OSA's review of PG&E's safety plan, it did notice a general reliance on having a pipeline SMS as the company's main effort to support its ongoing efforts to enhance its present safety culture. PG&E is making an effort to improve safety; however, having a

[10] *System Safety Engineering and Risk Assessment: A practical Approach,* by Nicholas J. Bahr at p. 130.

general reliance on a pipeline SMS is of concern, as doing so may not provide for safety aspects that would be applicable to each LOB.

B. Survey Employed in the NorthStar Report

The Report heavily relies on its assessment on PG&E's own safety culture survey instrument, the Premier Survey, which is conducted biennially.[11] The Report notes that many of the questions have changed from survey to survey, making tracking changes more difficult.[12] Additionally, the Premier survey is not close to state-of-the-art in culture survey research. Its questions seem to consist only of positive and quite general assertions of what should be the practice with which employees can only agree or disagree. A multi-value Likert scale would allow stronger or weaker expression of agreement or disagreement. More advanced surveys employ a mix of positive and negative questions and more specific questions about actual behavior.[13]

However, the Report demonstrates that the Premier questionnaire contains a useful narrative section for employee comments and these were factor analyzed for PG&E by a consultant (Monitor 360) in 2014.[14] This would be useful to do with every administration of the Premier Survey.

OSA recommends further investigation into metrics and survey methodologies that would be beneficial to evaluating, enhancing, and having a long lasting positive effect on safety culture and governance at PG&E and PG&E Corp.

In Attachment X, attached to this testimony, OSA provides "Comments on Performance Metrics" submitted in 2013 in R.11-02-019. "Appendix A" of those comments provides examples of safety culture survey questions used in other industries. Repeated use of a common subset of questions in safety culture assessments, can provide

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[11] NorthStar Report at IX-5.

[12] NorthStar Report at IX-29.

[13] The Culture of Safety: Results of an Organization-Wide Survey in 15 California Hospitals https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1743680/pdf/v012p00112.pdf

[14] NorthStar Report at IX-24.

additional insight into trends in the effectiveness of safety culture program initiatives, and may also be helpful to identify regional or organizational gaps in employee safety culture program performance.

C. OSA's Evaluation of the NorthStar Report Recommendations to the Commission

1. Recommendation 1– Utility sharing of a safety incident reporting system.

The Report recommends that the Commission "implement a system that encourages reporting of actual and potential safety incidents to be shared among the utilities in order to identify best practices and share lessons learned."[15] This aligns with the Commission's 2017 Safety Action Plan, where Action Item 4 of the Safety Action Plan directs OSA to report on recommendations regarding application of a pilot Safety Reporting System for California Utilities.[16] Similar safety reporting systems have been used by regulators to improve safety in the airline, rail, and offshore oil and gas industries.

OSA supports recommendation 1.

2. Recommendation 2– Develop a listing and consistent definitions of key safety-related metrics.

The Report recommends that the Commission, "working with all California IOUs, develop a listing and consistent definitions of key safety-related metrics to be tracked on a monthly basis and reported to the CPUC at an agreed upon frequency. Performance reporting should be handled in a non-punitive manner, but subject to audit by the CPUC."[17] Metrics played a role in justifying answers to many of the issue questions in the Scoping Memo. OSA is concerned, however, that the information obtained via metrics in the Report demonstrated a general lack of adequate leading

[15] NorthStar Report at I-16.

[16] 2017 Update - Safety Action Plan and Regulatory Strategy at 6.

[17] NorthStar Report at I-17.

indicator organizational metrics, including safety culture assessments. Safety failures can be a result of organizational failures. Additionally, OSA is concerned that utilities typically track employee lagging indicator safety metrics, such as fatalities and serious injuries, but generally fail to track and report on public safety metrics. For instance, eight members of the public died in the San Bruno pipeline explosion, but those fatalities would not have shown up in an Occupational Safety and Health Administration (OSHA) report. Thousands of residents and two schools were relocated as a result of the Aliso Canyon gas storage leak, but those again, would have not have shown up in an OSHA report. OSA is currently actively seeking to address these metrics concerns in the Commission's SMAP Proceeding (A.15-05-002) Metrics Working Group.

The outcome of OSA efforts in that proceeding are uncertain, however, and since this proceeding, I.15-08-019, is focused on organizational culture at PG&E, this proceeding may be the most appropriate proceeding to address organizational, safety culture, and public safety metrics at PG&E, particularly if they are not adopted in the SMAP proceeding.

To the extent that organizational, cultural, and public safety metrics are included in adoption of a full complement of safety metrics, and not skewed or vulnerable to gaming, underreporting, or bias, or misplaced incentives, OSA supports recommendation 2. OSA would, however, be opposed to an inadequate set of metrics that do not capture organizational culture, or metrics that are vulnerable to driving underreporting or unintended behavior, or that fail to capture public safety.

3. Recommendation 3 - Performance-Based Ratemaking Mechanism.

The Report recommends that the Commission employ "a Performance-Based Ratemaking (PBR) mechanism that includes a safety element to be considered in the rate design phase of the TY2017 PG&E General Rate Case (A.15-09-011)… [and the]

mechanism should include a traditional rate of return component and a variable safety-related component based on pre-defined criteria and the discretion of the CPUC."[18]

Although OSA supports accountability and generally supports the motive behind incentivizing safety, the Commission should keep in mind that it has experienced several instances in which well-intended performance-based ratemaking initiatives resulted in unintended or undesired behaviors and outcomes. Several examples are described in the Commission's Safety and Enforcement Division's (SED) reports on this subject matter.

One of SED's reports describes how metrics, including safety metrics, associated with "explicit or implicit financial incentives may drive unintended or undesirable behaviors that are detrimental to safety."[19] Please see Attachment Y, which is an excerpt from Section 9.2 of that report, entitled "Risks Associated with Metrics." Section 9.2 describes a number of prior Commission attempts to provide performance incentives in which the outcome was not what was intended. One quote from the attachment states: "In a number of interviews, employees and supervisors stated that safety incentive programs acted as a disincentive for injury reporting."

Furthermore, SED's June 2017 Monthly Performance Report recommended that "the Commission should hold the utilities accountable in some way for determining whether the compensation incentive programs are effective at improving safety. Currently, there does not appear to be any tracking or benchmarking process to determine effectiveness."[20]

A GRC is a limited format for regulating safety. It comes on a three-year cycle and is driven by cost projections, demand forecasts and rates of return arguments, which can outweigh safety considerations. A PBR mechanism may suffer from use of lagging metrics of incidents and accidents to define performance. The "safety-related

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[18] NorthStar Report at pp. I-10 and I-17.

[19] Risk and Safety Aspects of Southern California Edison's 2018-2020 General Rate Case, at 66. http://cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Risk_Assessment/SCE%202018%20GRC%20Report%20Final%20with%20Appendix%20A.pdf

[20] Safety and Enforcement Division Monthly Performance Report – June 2017, at 12.

component" should promote safety management metrics as leading indicators. Otherwise the PBR will likely be only retrospective and not be targeted enough to drive the development of a mature SMS at PG&E. SMS metrics, once developed, could be applied to PG&E investment proposals such as those for risk mitigation. These should be analyzed and potentially discounted in relation to their promised risk reduction based on the Commission's assessment of the current state of a utility's SMS and safety culture.

This is an opportunity for the Commission to specify clearly that as part of a PBR development process that PG&E, along with other utility analysts and subject matter experts (SMEs), should participate in a set of workshops with the Commission to design and develop a set of safety management metrics which can be used for assessment of the current state of SMS and safety culture of each utility prior to its participation in a general rate case (GRC) proceeding.

OSA therefore has concerns about recommendation 3. Any adoption of such a mechanism should be explicit about the metrics and formula to be employed so that it may be properly vetted in this proceeding. OSA believes the Commission should not adopt such a mechanism without being explicit in this proceeding about the metrics and formula that would be applied.

4. Recommendation 4 – Perform periodic audits of PG&E's safety programs and culture.

The Report recommends that the Commission "perform periodic audits of the safety programs and culture of PG&E, and potentially the other major California investor-owned utilities."[21] The Report found that "PG&E is currently developing a Safety Management System (SMS) to enhance its ability to monitor and assess safety performance and culture. As the SMS is in the early stages of development, NorthStar cannot assess it or its ability to measure culture change."[22]

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[21] NorthStar Report at I-17.

[22] NorthStar Report at VII-10

OSA believes utility safety and safety culture would directly benefit from implementation of a comprehensive SMS across PG&E's enterprise, including but not limited to gas transmission, distribution, and storage; and electric transmission, generation, distribution, and hydro, and PGE enterprise functions. Additionally, OSA believes the effectiveness of such a system would be highly dependent upon whether the Commission implemented a program to audit or assess utility SMS component implementation and performance.

5. Reporting of Safety Performance and Metrics

The Report also recommends that the Commission "have meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs))."[23] This cannot be done with current metrics and surveys demonstrated by the Report. These do not appear to address organizational and managerial elements that must be a part of SMSs.

OSA recommends the Commission organize ongoing SMS metric workshops to facilitate implementing this safety recommendation.

6. Cost-Benefit Analyses

The Report recommends that PG&E clearly define and articulate any new initiatives to improve safety culture, and perform cost-benefit analyses of these initiatives and identify performance measures."[24]

A cost-benefit (CB) analysis of safety culture initiatives may be an invitation to error, based on a false precision about an uncertain process. How will interim and long-term benefits be measured? What constitutes a safety culture development cost?

The hope in the Report's recommendation is that the CB initiative will ultimately improve safety culture and, ultimately, safety outcomes. OSA has concern that this CB effort could subsequently lead to biased performance measures and assessments.

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[23] NorthStar at I-10

[24] NorthStar at III-22

OSA recommends the Commission allow the safety culture development process to proceed for several years before looking at any formal CB analysis of the process.

7. Appointing a Corporate Safety Officer

The Report recommends that PG&E "[a]ppoint a Corporate Safety Officer who has both operations and professional safety experience."

The appointment of a safety officer as an instrument of managerial purpose is neither a necessary nor sufficient driver for the emergence of organizational culture. The existence of a specific safety officer may relieve leaders and managers of a sense of responsibility for safety, since another party is delegated that task and therefore the responsibility.

Neither Institute of Nuclear Power Operations (INPO), the Federal Aviation Administration (FAA) nor OSHA, nor API RP 1173 suggest the need for a safety officer in their guidelines for SMS and safety culture development.[25] Higher level commitment and accountability are discussed, but they do not specifically advocate a single safety officer. Safety commitment and responsibility should be integrated into the other activities and responsibilities of higher level executives and managers, rather than have to compete from a separate position for the attention of highest level executives.[26]

One safety culture model proposed by the North American Regulators Working Group on Safety Culture (NARWGSC) asserts that "there [should be] an accountable officer (AO) designated. This delegation is appropriate based upon the organizational

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[25] INPO,"Principles for a Strong Safety Culture"
https://www.nrc.gov/docs/ML0534/ML053410342.pdf

FAA, "Safety Management Systems for Aviation Service Providers"
https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-92B.pdf

OSHA, "Safety and Health Program Management Guidelines"
https://www.osha.gov/shpmguidelines/SHPM_guidelines.pdf

American Petroleum Institute, "Pipeline Safety Management System Requirements"
https://www.pipelinelaw.com/wp-content/uploads/sites/19/2014/09/API-RP-1173.pdf

[26] What are the Greatest Challenges for Aviation Safety Officers?
http://aviationsafetyblog.asms-pro.com/blog/greatest-challenges-for-aviation-safety-officers

structure (i.e. the correct person is delegated with the authority and control for human and financial resources). The AO demonstrates understanding of and commitment to the role and responsibilities. There [should be] evidence of the AO taking action to resolve issues."[27] But at the same time the NARWGSC report also stresses that "all leaders are knowledgeable about the regulations, their own procedures and current safety activities, issues and challenges, such as causes of recent incidents, results of previous audits and ongoing or new safety programs. All leaders routinely dedicate significant time to safety, which includes talking to frontline staff about safety concerns and potential solutions and leaders are routinely involved in incident investigations/reviews and in resolving safety issues."[28]

Safety culture creates a stable bias in values and practices widely distributed throughout an organization. It should be enduring beyond the role of any particular person. A safety culture and its development should be "person-proof" -- it should not depend on the skills of a specific culture "czar" nor be undermined by the deficiencies or disinterest of a single individual.[29] The urge to impose accountability on this process is understandable. However, this accountability should be shared throughout an organization.

OSA recommends the Commission allow PG&E discretion whether it wants, as it has had, a single safety officer. However, the Commission may want to ensure that if there is only one, in future PG&E safety assessments, surveys and interviews include questions pertaining to the functions and role of the safety officer.

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[27] North American Regulators Working Group on Safety Culture (NARWGSC), "Safety Culture Indicators Research Project: A Regulatory Perspective".

[28] Id.

[29] The Negotiated Order of Organizational Reliability https://www.researchgate.net/publication/249625140_The_Negotiated_Order_of_Organizational_Reliability

8. Safety Model Assessment Proceeding (SMAP)

In line with the Safety Model Assessment Proceeding (SMAP) Scoping Memo and the "Safety and Enforcement Division Evaluation Report on the Risk Evaluation Models and Risk-based Decision Frameworks in A.15-05-002, et al.," as well as the results of the Southern California Edison (SCE) SMAP Technical Working Group on SMAP Metrics in its Master List, OSA recommends that the Commission consider having the SED Technical Working Group to continue its meetings and deliberations.[30]

These meetings and deliberations should continue for the purpose of developing clearly described and defined metrics pertaining to the measurement of the existence and effectiveness of SMSs within the utilities. The metrics should address recognized elements of safety management systems as described in reference documents and guidelines offered by the FAA, INPO, and API RP 1173.

The SMAP proceeding is directed toward the identification of a standardized risk assessment methodology for use in Risk Assessment Mitigation Phase (RAMP) filings and GRCs, which would allow all of the major utilities to offer comparable analyses of risk mitigation strategies proposed in connection with rate cases. Additionally, per SED, it is too early to recommend a common risk evaluation methodology in the first S-MAP. Among the reasons that SED came to this conclusion was that model granularity should be improved. The utilities should consider having two parallel risk assessment models, with one having high granularity and another having low granularity to compare the results obtained from both methods.[31] SED also asserted that RAMP filings should describe the company's safety culture, executive engagement, and compensation policies.

In the SMAP Metrics Master List, developed by the SMAP Technical Working Group, there are no metrics that address SMSs provided by the utilities other than

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[30] Safety Model Assessment Proceeding (SMAP) – A.15-05-002 et al.
http://www.cpuc.ca.gov/General.aspx?id=9099

[31] Safety and Enforcement Division Evaluation Report on the Risk Evaluation Models and Risk-based Decision Frameworks in A.15-05-002 et al.
http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=10483

Records and Information Management training metrics. In their joint response to SMS metrics for possible development proposed by the OSA, the utilities dismissed them as vague, subjective and some as unrelated to safety. Their response indicated they did not realize these were proposed for development by the working group and, more importantly, it indicated a lack of understanding of safety management systems -- their design and strategy.[32]

For these reasons, OSA recommends that the Commission consider having the SED Technical Working Group continue its meetings and deliberations, and concludes that SMS metrics are needed to:

1. Make sure that risk assessments used in RAMP and GRC filings address important managerial and organizational factors that are leading indicators of risk and that can significantly improve the understanding and measurement of risk in these models,

2. Significantly increase the granularity of those models,

3. Provide information to significantly improve safety management in the utilities, and

4. Allow the Commission to be better informed about utility safety in both its GRC proceedings and its general oversight of safety in the utilities.

OSA believes the best path to the development of these metrics is to continue the work of the Technical Working Group under a clarified guidance of the SMAP Scoping Memo, with participation of both CPUC and utility staff.

[32] Safety and Enforcement Technical Working Group SMAP Metrics Master List http://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Safety/Risk_Assessment/SMAP/Staff%20Proposal%20SMAP%20Metrics.xlsx

APPENDIX A

Qualifications of Witnesses

QUALIFICATIONS AND PREPARED TESTIMONY
OF
Alex Pineda

Q1. Please state your name and business address.

A1. My name is Alex Pineda. My business address is 300 Capitol Mall, Sacramento.

Q2. By whom are you employed and in what capacity?

A2. I am employed by the California Public Utilities Commission as a Public Utilities Regulatory Analyst V in the Office of the Safety Advocate (OSA).

Q3. Please describe your educational and professional experience

A3. I hold a Bachelor of Science degree in Mechanical Engineering from the University of California, Davis, (UC Davis) and a Master of Science degree in Civil and Environmental Engineering from UC Davis. I joined OSA in 2018 and have over seven years of experience in the utility and related industries. More than three of those years were with the California Energy Commission (Energy Commission), and four years were with Clean Energy Assets, LLC. At the Energy Commission, I worked as an Energy Specialist and Mechanical Engineer on a broad spectrum of topics, including natural gas, renewable energy, and Building Energy Efficiency Standards (Energy Standards) issues, ranging from natural gas pipeline infrastructure analysis, ensuring applicants' compliance with the New Solar Homes Partnership (NSHP) Program in solar photovoltaic installations on qualifying homes, and analyzing regulatory language to manage contracts and confirm compliance requirements of the Energy Standards were met in high-rise residential multifamily building ventilation systems to provide intended outside air for the safety and wellbeing of occupants. Additional past experience includes engineering and management work for Clean Energy Assets, LLC, where I completed National Fire Protection Agency (NFPA) 70E training, which is a Standard for Electrical Safety in the Workplace, and was responsible for workplace safety of renewable energy generation facilities.

Q4. What is the scope of your responsibility in this proceeding?

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Q5. Does this complete your testimony?

A5. Yes