Appendix A

List of Recommendations

No.	Recommendation
Section 2 - Background	
	None
Section 3 – The Panel and Its Approach	
	None
Section 4 – San Bruno Incident	
	None
Section 5 – Review of PG&E's Performance as an Operator	
5.1.4.1	*PG&E needs to create a culture of system integrity that enables every employee to recognize and understand how his or her day-to-day actions affect system integrity.*
5.1.4.2	*PG&E needs to streamline the organization, reducing layers of management and rebuilding the core of technical expertise.*
5.2.4.1	*PG&E should acquire and develop a staff of professionals with the skills necessary to do state-of-the-art practical analysis of risk management decisions that concern public health and safety, employee health and safety, environmental consequences, socioeconomic consequences, and financial and reputation implications for the company.*
5.2.4.2	*The Board of Directors of PG&E should require that state-of-the-art risk analysis be conducted on every problem included on PG&E's list of top 10 catastrophic risks. The Board should be assessing the quality of involvement of the members of the top management team in every one of these risk analysis, as all risk management decisions that concern the top ten catastrophic risk should be of direct concern to all top PG&E executives, including the President and CEO, as well as the Board.*

5.3.4.1	*PG&E should conduct a comprehensive review of its data and information management systems to validate the completeness, accuracy, availability, and accessibility to data and information and take action through a formal management of change process to correct deficiencies where possible.*
5.3.4.2	*Upon obtaining the results of the review, PG&E should undertake a multi-year program that collects, corrects, digitizes and effectively manages all relevant design, construction and operating data for the gas transmission system.*
5.4.4.1	*The pipeline and distribution integrity management programs should be separated organizationally with dedicated resources to manage and execute both programs.*
5.4.4.2	*PG&E should conduct a staffing and skills assessment of the integrity management group to determine if the organization would be better able to maintain its focus and accomplish its complex mission that would with an alternate structure.*
5.4.4.3	*PG&E should establish a capital program, based on risk criteria, that includes retrofitting existing pipelines, as appropriate, to accommodate ILI tools. ILI surveys provide additional information about the condition of the pipe that enable better decisions regarding remediation, prevention, and mitigation such as monitoring, inspection, repair, replacement, and rehabilitation.*
5.4.4.4	*PG&E needs to establish a culture of pipeline integrity that enable field and staff to encourage self-reporting of deviations from company policies, processes, or practices. CPUC pipeline safety inspectors should view self-reported deviations as nonconformance rather than noncompliance.*
5.4.4.5	*PG&E should develop and adopt a maturity framework that reflects the importance and advancement of thinking of pipeline integrity and safety as a journey, which is coherently applied across the enterprise, where progress is transparent and measurable, and is consistent with the best thinking on pipeline integrity and process safety management.*

5.5.3.1	Review and restructure all division, regional and company emergency plans for consistency in presentation and feel, while incorporating best practices observed from Pipeline 2020.
5.5.3.2	Conduct a study of SCADA needs to achieve enhanced gas transmission system knowledge that would enable improved shutdown capabilities in the event of a future pipeline rupture. Study to include: (1) the visibility of the transmission operations to system operators, (2) the ability of automation to sense line breaks, (3) the ability to model failure events; and (4) the capability to transmit schematic and real-time information to pipeline field personnel.
5.5.3.3	When study of SCADA needs is completed (described in Recommendation 5.5.3.2), establish a multi-year program to make implement the results of the study.
5.6.4.1	PG&E should take a fresh look at the budgets for pipeline integrity efforts and make informed judgments about how to address the quality and timeliness of efforts to improve its system.
5.6.4.2	PG&E should establish a multi-year program that deals with all the capital requirements to assure system integrity, based on sound risk criteria (i.e., a methodology that addresses the likelihood of various possible failures given competing alternatives). This program would include: • Investments to collect, correct, digitize and effectively manage all relevant design, construction and operating data for the gas transmission system. • Investments to retrofit existing pipelines to accommodate in-line inspection technology, to test or replace uncharacterized or anomalous pipe has needed, and to reroute pipe in the HCAs where accessed.

5.7.4.1	PG&E should restructure the Pipeline 2020 document to enhance effectiveness and assist in monitoring for both PG&E and the CPUC, by incorporating the following: • Vision Statement, which will describe "the transmission pipeline system of the future." This should be a clear statement as to how PG&E sees the role of the transmission system of the future. This will facilitate decisions made in the strategic parts of 2020 that can be focused and relevant to more than just compliance. It should demonstrate the asset profile, and how it will support safety, and operational goals. PG&E should identify specific measures to define what an effective program will deliver. • Delivery Strategies, which will set out the goals of the strategy and steps to deliver the vision. The delivery strategies should be fully developed based on other recommendations for pipeline integrity management and related improvements. • Execution Plan, which will define the tasks to be accomplished, how they will be accomplished, an associated timeframe and projected costs. • Analysis of Alternatives, which will document various alternatives considered, complete with costs and consequences. A thorough analysis of alternatives will ultimately result in support of the program. • In lieu of or in addition to R&D funding for new technology, entertain reasonable opportunities to serve as a testing ground for improved ILI technology. The CPUC or its designated consultant should review the plan and collaborate with PG&E in the development of clear objectives, measures, and schedule.
Section 6 – Review of CPUC Oversight	
6.2.4.1	*Adopt as a formal goal, the commitment to move to more performance-based regulatory oversight of utility pipeline safety.*

6.2.4.2	*Greater involvement by staff in industry groups such as the Gas Piping Technical Committee (GPTC) will better enable the CPUC staff to keep abreast pipeline integrity management advancements from a technical, process, and regulatory perspective. In addition, the CPUC can, through such forums, gain insight for pipeline operators, utilities, service providers, and professional services firms, as well as other federal and state pipeline safety professionals.*
6.2.4.3	*The CPUC should further divide gas auditing groups to create integrity management specialists.*
6.2.4.4	*Undertake an independent management audit of the USRB organization, including a staffing and skills assessment, to determine the future training requirements and technical qualifications to provide effective risk-based regulatory oversight of pipeline safety and integrity management, focused on outcomes rather than process.*
6.2.4.5	*Provide USRB staff with additional integrity management training.*
6.2.4.6	*Retain independent industry experts in the near term to provide needed technical expertise as PG&E proceeds with its hydrostatic testing program, in order to provide a high level of technical oversight and to assure the opportunity for legacy piping characterization through sampling is not lost in the rush to execute the program.*
6.3.3.1	*The CPUC should develop a plan and scope for future annual California utility initiated independent integrity management program audits. The results of these audits should be used to provide a basis for future CPUC performance based audits on a three-year basis.*
6.3.3.2	*Request the California General Assembly to enact legislation that would replace the mandatory minimum five-year audit requirements for mobile home parks and small propane systems with a risk-based regime that would provide the USRB with needed flexibility in how it allocates inspection resources.*
6.3.3.3	*The CPUC should consider requiring the major regulated utilities operating in the State of California to submit the results of the independent integrity management audits as part of their respective rate case processes.*

6.3.3.4	*The USRB is currently understaffed and will be further understaffed as new programs such as Distribution Integrity Management are added. This understaffing problem must be relieved by a combination of an enhanced recruitment and training program to attract and retain qualified engineers plus a framework of supplemental support by outside consultants.*
6.3.3.5	*USRB should augment its current use of vertical audits that focus on specific regulatory requirements such as leak records or emergency response plans with:* • *Horizontal audits that assess a segment or work order of the operator's system through the entire life cycle of the current asset for regulatory compliance.* • *Focus field audits based on an internally ranking of the most risk segments of the gas transmission system assets in the state, regardless of the operator.*
6.3.3.6	*To raise the profile of the audits among all the stakeholders, add the following requirements to the safety and pipeline integrity audits of the utilities that includes the following features: (1) posting of audit findings and company responses on the CPUC's website; (2) use of a "plain English" standard to be applied for both staff and operators in the development of their findings and responses, respectively; and (3) a certification by senior management of the operator that parallels that certifications now required of corporate financial statements pursuant to Sarbanes-Oxley.*
6.4.3.1	*CPUC should consider seeking approval from the State Budget Director for an increase in gas utility user fees to implement performance-based regulatory oversight for all gas utilities.*
6.4.3.2	*Request the California legislature pass legislation that would replace the mandatory minimum five-year audit requirements with a risk-based regime that would provide the USRB with the needed flexibility in how it allocates inspection resources.*
6.5.3.1	*Adopt as a formal goal, the commitment to move to performance-based regulatory oversight of utility pipeline safety and elevate the importance of the USRB in the organization.*

6.5.3.2	*Develop a holistic approach to identifying pipeline segments for integrity management audits based on intrastate pipeline risk as opposed to simply auditing each operator's pipeline.*
6.6.3.1	*The CPUC should significantly upgrade its expertise in the analytical skills necessary for state-of-the-art quality risk management work. The CPUC should have an organizational structure for individuals doing this work such that they have an equal stature and access to management of the CPUC as those who deal with rate issues or legal or political issues. Although the CPUC's role is to provide oversight of the operator's compliance with federal and state codes, its role should not be to provide management of risk direction to the utilities.*
6.7.3.1	*The CPUC should seek to align its pipeline enforcement authority with that of the State Fire Marshal's by providing the CPSD staff with additional enforcement tools modeled on those of the OSFM and the best from other states.*
6.8.3.1	*Consider a more proactive role for the safety staff in utility rate filings. Improve the interaction between the gas safety organization and the Division of Ratepayer Advocates of the CPUC so there is an enhanced understanding of the costs associated with pipeline safety.*
6.8.3.2	*Consider, as appropriate, transferring the USRB gas safety staff to the OSFM, and with them the responsibility for inspection of gas operator safety and integrity management programs as required by federal and state gas pipeline safety regulations.*
Section 7 – Public Policies in the State of California	
7.4.1	*Improve the interaction between the gas safety organization and the Division of Ratepayer Advocates of the CPUC so that there is an enhanced understanding of the costs associated with pipeline safety.*
7.4.2	*Upon thorough analysis of benchmark data, adopt performance standards for pipeline safety and reliability for PG&E, including the possibility of rate incentives and penalties based on achievement of specified levels of performance.*