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California Energy Commission
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Re: Docket 15-IEPR-12: Comments of Pacific Gas and Electric Company on Nuclear Issues

I. Introduction

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on topics discussed at the April 27, 2015 California Energy Commission (CEC or Commission) workshop on nuclear issues.

DCPP is a safe, clean, reliable, and vital energy resource for California and a significant economic engine for the central California coast. The two units at DCPP produce a total of 18,000 gigawatt-hours (GWh) of clean and reliable electricity annually, enough energy to meet the needs of more than three million Northern and Central Californians. DCPP provides nearly 10 percent of California's generated energy portfolio, more than 20 percent of the power that PG&E delivers to customers, and is 100 percent greenhouse gas (GHG) emissions free.

In fact, for years, DCPP has continuously and safely produced clean and reliable energy without GHG emissions, avoiding six to seven million metric tons per year of GHGs that would otherwise be emitted to the atmosphere by conventional generation resources. These two units are currently licensed by the U.S. Nuclear Regulatory Commission to operate through 2024 (Unit 1) and 2025 (Unit 2).

Looking forward, DCPP will continue to play a key role in supporting our local communities and in helping California accomplish its ambitious goals to reduce GHG emissions and combat climate change.

II. PG&E's Safety Commitment is Unwavering

At PG&E, nothing is more important than public, employee, and contractor safety. PG&E is dedicated to making safety our highest priority on every job, encouraging team members to

speak up when concerns arise, and instilling a sense of personal responsibility for personal and public safety in each PG&E employee. We are focused on and dedicated to doing everything necessary to run the business safely.

Building a vibrant safety-first culture is a job that will never be finished. Ensuring the safety of our systems and procedures requires constant hard work. PG&E has made significant progress over the last four years in shoring up the safety-first culture across the company. Much of that progress can be measured in miles of pipeline tested and replaced, the third-party certifications and acknowledgements we have received on the gas and electric system, dollars invested in new safety improvements, or the cumulative years of experience represented by the new team members who have helped strengthen PG&E's gas, electric, and emergency response organizations. But perhaps the most important progress has been made in PG&E's culture. Whether it is stopping a job because of safety concerns, reporting "near misses" so that others can learn and steps can be taken to avoid a future accident, or self-reporting violations to the California Public Utilities Commission (CPUC) – no matter the consequences, PG&E is always actively addressing and improving its safety culture. Again, this change has been recognized by third-party organizations and safety officials, including the National Transportation Safety Board for significant progress made in our gas organization.

A. PG&E is Transforming Itself into The Safest, Most Reliable Utility in the Nation

At the April 27, 2015 workshop, Chair Weisenmiller asked PG&E to submit, for the CEC's record, the transcript of comments made by CPUC President Michael Picker after the CPUC's decision conference imposing penalties on PG&E for the San Bruno natural gas pipeline explosion. The transcript of those comments can be found in Attachment 1.

After the April 9, 2015 CPUC decision conference, PG&E reiterated its commitment to transforming itself into the safest, most reliable utility in the country. That commitment, however, was made long before the CPUC vote on San Bruno and PG&E has made tremendous progress since 2010. At the same time, the company recognizes that there is more to do and it is committed to doing it right.

As one sign of PG&E's momentum, last year PG&E became one of the first natural gas utilities to earn two respected international safety certifications—ISO 55001 and PAS 55-1—which require PG&E to meet rigorous standards for managing its gas pipelines and other physical assets. Indeed, Lloyd's Register, which reviewed PG&E's compliance with these standards, certified PG&E as a best-in-class gas system operator.

PG&E continues to look across the gas industry, as well as real-time businesses like the airline industry, for best practices and continues to shift its gas operations from a "monitor and respond" paradigm to a "predictive and proactive" paradigm. These efforts are not just improving PG&E's safety culture and operations, but improving the industry. PG&E has taken action at all levels, including management, technology, and process changes, which have enhanced the safety and reliability of our gas system. A few of these initiatives include:

- Leadership changes, which began at the top, with new leadership in a number of roles at the senior-most levels of the company. Our gas operations business has been restructured and PG&E has hired the best natural gas experts in the country to run it.
- 3,500 leaders at all levels of PG&E have taken safety training, and the lessons of San Bruno are reviewed with every new employee.
- Advanced pipeline safety testing has been conducted, and pipe replaced where necessary. More than 200 new automated or remotely controlled emergency shut-off valves have been installed.
- More than 800 miles of remaining cast-iron pipe in our system has been decommissioned and replaced with stronger, more efficient and seismically sound pipe.
- A new gas operations control center was constructed, employing the most advanced technology, from which PG&E can monitor the entire system and respond more quickly and effectively to emergencies.
- New gas leak detection technology (Picarro) that is 1,000 times more sensitive than before is used to help find and fix leaks before they become a problem.
- PG&E is now among the fastest in the entire industry in responding to customer gas odor calls.
- Nine of 12 recommendations from the National Transportation Safety Board have been closed out, and work on the remaining three is on track.

In addition to the safety activities for the natural gas business, PG&E is now establishing an Enterprise Corrective Action Program, or ECAP. This program, which has been utilized successfully as a tool to identify, categorize, address, and track issues to resolution at Diablo Canyon for many years, will allow any employee to identify an issue or concern and will provide a process to document and address gaps and deficiencies in PG&E's systems and work to correct them. In addition, this enterprise-wide program will ensure consistent approaches for finding and fixing problems and will allow for greater collaboration across the entire Company. This program will be a centerpiece of a robust, enterprise-wide safety culture.

B. The Safety Culture at Diablo Canyon is a Sustainable, Holistic, Objective, Transparent, Safety-Focused Process Designed to Ensure Employees Can Raise Concerns and Strive to Prevent Safety Issues

The first responsibility of a nuclear facility operator is the safety of the public and its employees. Over the course of 30 years, Diablo Canyon has maintained an excellent operating record. PG&E reports on 17 performance indicators to the NRC on a quarterly basis. Based on this quarterly reporting, Diablo Canyon currently has the highest measure, a rating of "green," for each of the NRC's Reactor Oversight Process Performance Indicators. Diablo Canyon's vibrant safety culture contributes significantly to this excellent operating record.

The nuclear industry in the United States has long recognized that a healthy nuclear safety culture is integral to safe, reliable plant operations. While the licensee maintains responsibility

for maintaining a healthy safety culture, the regulator provides an important oversight function. As noted in the NRC's Final Safety Culture Policy Statement:

> Nuclear Safety Culture is defined as the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment. Individuals and organizations performing regulated activities bear the primary responsibility for safety and security. The performance of individuals and organizations can be monitored and trended and, therefore, may be used to determine compliance with requirements and commitments and may serve as an indicator of possible problem areas in an organization's safety culture. The NRC will not monitor or trend values. These will be the organization's responsibility as part of its safety culture program.[1]

In addition to the NRC Safety Culture Policy Statement, the Institute for Nuclear Power Operations (INPO), of which every U.S. licensee is a member, has adopted Principles of a Strong Nuclear Safety Culture. Thus, the cornerstone of nuclear safety at Diablo Canyon and the United States nuclear fleet is an industry-wide commitment to foster a safety culture at each facility. To implement this commitment, the Nuclear Energy Institute issued NEI 09-07, a guidance document addressing how to create, maintain, and monitor a healthy nuclear safety culture. The most recent version of NEI 09-07 is provided in Attachment 3 for review by the CEC and the public to gain insight on nuclear safety culture that is applicable across the energy industry.

Nuclear safety culture involves three interrelated concepts: nuclear safety culture, organizational culture, and safety conscious work environment.

Nuclear Safety Culture: The core values and behaviors resulting from a collective commitment from leaders and individuals to emphasize safety over competing goals to ensure the protection of people and the environment. The terms nuclear safety culture and safety culture are synonymous.

Organizational Culture: The shared basic assumptions that are developed in an organization as it learns and copes with problems. The basic assumptions that have worked well enough to be considered valid are taught to new members of the organization as the correct way to perceive, think, act, and feel. Culture is the sum total of a group's learning. Culture is for the group what character and personality are for the individual.

Safety Conscious Work Environment (SCWE): An environment in which employees are encouraged to raise safety concerns, both to their management and to the NRC, without fear of retaliation and where those concerns are promptly reviewed, given the proper priority based on their potential safety significance, and appropriately resolved with timely feedback to employees. SCWE is a critical element of a healthy nuclear safety culture.

[1] See Attachment 2 for the entirety of the NRC's Final Safety Culture Policy Statement.

The SCWE, as described by the NRC, includes a management attitude that promotes employee involvement and confidence in raising and resolving concerns; a clearly communicated management policy that safety has the utmost importance, overriding, if necessary, the demands of production and project schedules; a strong, independent quality assurance organization and program; a training program that encourages a positive attitude toward safety; a safety ethic at all levels that is characterized by an inherently questioning attitude, attention to detail, prevention of complacency, a commitment to excellence, and personal accountability in all safety matters.

The objectives of a SCWE is to establish effective methods for communicating between employees and management involved in nuclear activities; establish programs that ensure matters brought to the attention of management are promptly and adequately addressed; maintain a SCWE where individuals are encouraged to raise nuclear safety issues without fear of reprisal; and develop management behaviors that foster employee confidence to raise nuclear safety concerns.

The traits for a healthy nuclear safety culture are described by INPO as including:

Personal Accountability (PA): All individuals take personal responsibility for safety. Responsibility and authority for nuclear safety are well defined and clearly understood. Reporting relationships, positional authority, and team responsibilities emphasize the overriding importance of nuclear safety.

Questioning Attitude (QA): Individuals avoid complacency and continuously challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action. All employees are watchful for assumptions, values, conditions, or activities that can have an undesirable effect on plant safety.

Effective Safety Communication (CO): Communications maintain a focus on safety. Safety communication is broad and includes plant-level communication, job-related communication, worker-level communication, equipment labeling, operating experience, and documentation. Leaders use formal and informal communication to convey the importance of safety. The flow of information up the organization is seen as important as the flow of information down the organization.

Leadership Safety Values and Actions (LA): Leaders demonstrate a commitment to safety in their decisions and behaviors. Executive and senior managers are the leading advocates of nuclear safety and demonstrate their commitment both in word and action. The nuclear safety message is communicated frequently and consistently, occasionally as a stand-alone theme. Leaders throughout the nuclear organization set an example for safety. Corporate policies emphasize the overriding importance of nuclear safety.

Decision Making (DM): Decisions that support or affect nuclear safety are systematic, rigorous, and thorough. Operators are vested with the authority and understand the expectation, when

faced with unexpected or uncertain conditions, to place the plant in a safe condition. Senior leaders support and reinforce conservative decisions.

Respectful Work Environment (WE): Trust and respect permeate the organization. A high level of trust is established in the organization, fostered, in part, through timely and accurate communication. Differing professional opinions are encouraged, discussed, and resolved in a timely manner. Employees are informed of steps taken in response to their concerns.

Continuous Learning (CL): Opportunities to learn about ways to ensure safety are sought out and implemented. Operating experience is highly valued, and the capacity to learn from experience is well developed. Training, self-assessments, and benchmarking are used to stimulate learning and improve performance. Nuclear safety is kept under constant scrutiny through a variety of monitoring techniques, some of which provide an independent "fresh look."

Problem Identification and Resolution (PI): Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance. Identification and resolution of a broad spectrum of problems, including organizational issues, are used to strengthen safety and improve performance.

Environment for Raising Concerns (RC): A safety-conscious work environment (SCWE) is maintained where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment, or discrimination. The station creates, maintains, and evaluates policies and processes that allow personnel to freely raise concerns.

Work Processes (WP): The process of planning and controlling work activities is implemented so that safety is maintained. Work management is a deliberate process in which work is identified, selected, planned, scheduled, executed, closed, and critiqued. The entire organization is involved in and fully supports the process.

These concepts are woven through all of the processes and activities at DCPP. In the first instance, and most directly, DCPP has a Nuclear Safety Culture procedure which clearly defines the objectives, responsibilities, and requirements of all nuclear professionals on site to ensure the safety culture flourishes. PG&E provides a copy of its Nuclear Safety Culture procedure in Attachment 4.

1. A Variety of Tools Promote a Robust Safety Culture at DCPP

To further enhance the goals of NEI 09-07 and assure that defined, repeatable, teachable programs are in place, PG&E uses a variety of tools to encourage dialogue and open communications. These tools include leadership training, analytical tools to aid in decision making, and practical hands-on training. Through a variety of accredited and non-accredited programs, these trainings enhance our ability to operate safely and inculcate safe behavior in everything we do, resulting in a robust, sustainable safety culture.

Part of maintaining a strong nuclear safety culture is monitoring. To perform this function, DCPP has a Safety Culture Monitoring Panel (SCMP). The objectives of the panel are:

1. Achieve a strong nuclear safety culture
2. Establish a repeatable, holistic approach to assessing safety culture on a continuing basis
3. Use multiple data sources to assess safety culture
4. Apply assessment results to enhance NSC via the CAP and PI programs
5. Establish common methodology for conducting surveys and assessments
6. Identify developing NRC cross-cutting aspect areas

In addition to the activities of the SCMP, a safety culture assessment is performed biennially by an independent organization to ensure that any potential safety culture issues are raised and addressed.

a. Safety Leadership Training Culture

Numerous programs have been deployed at Diablo Canyon Power Plant, ranging from procedures to safeguard employees who raise concerns to investment in leadership skills that are often overlooked in the workplace. Leaders are trained in organizational effectiveness, from the Chief Nuclear Officer to the front line supervisor, on specific techniques for communication that create a culture where it is safe – and encouraged -- to raise and discuss issues of concern, that knowing they will be respected and that acted upon. There are two formal programs which complement each other that are employed at Diablo Canyon: Crucial Conversations and Facilitative Leadership. Crucial Conversations teaches participants how to communicate more effectively, including during potentially stressful situations. This includes training on recognizing physical responses to stress and techniques on how to overcome perceptions to reach a common goal of understanding. Facilitative Leadership builds off of these techniques and also gives training on many different ways to lead a team, achieve consensus and tap the power of participation across an organization to achieve the best results possible in the work place. Over 400 management employees have taken the Facilitative Leadership class and many management leaders, from the Chief Nuclear Officer to entry-level managers, have also been trained as instructors to ensure the sustainable nature of the program.

b. Analytical Tools Aid in Decision Making

In addition to understanding organization effectiveness, numerous tools aid PG&E and its team members in making the best technical decisions when addressing plant operations. These tools are based on Probabilistic Risk Assessment (PRA), which utilizes tens-of-thousands of logic trees and evaluations to focus efforts on the right action on the right component at the right time. The use of PRA is a significant evolution in operations in many industries, ranging from nuclear power to aviation. In short, PRA gives keen focus and builds upon decades of operational and scientific knowledge when making evaluations of plant equipment.

c. Hands-on Training is Unparallelled

These tools also include more traditional forms of training, which are simply unparalleled by any other industry. For instance, control room operators at Diablo Canyon spend 20 percent of their careers in training. Every fifth week, those operators spend a full week in the simulator, class room, and in the field to continually assess their skills, challenge their problem solving and diagnostic skills, and keep them engaged in life-long learning. Moreover, the simulator, a full-scale replica of the Unit 1 control room, is used for training that ranges from the routine to emergency procedures to a concept known as just-in-time training. Just-in-time training allows for refresher training at an appropriate interval before actually performing a task. As an example of where just-in-time training is used, taking a unit offline for a refueling outage is not a regular occurrence at a nuclear facility due to the length of time between refueling outages. Therefore, the team tasked with taking the unit offline will train using the simulator just prior to performing the actual outage.

The organizational focus on maintaining a strong safety culture can be readily observed and felt at DCPP. PG&E invites the CEC Commissioners and staff to tour the plant any time should they wish to observe the safety culture in action. In 2014, PG&E conducted 125 tours at Diablo Canyon that took 2,497 people to the site. The tour attendees' backgrounds ranged from high school science classes to policy makers, demonstrating PG&E's commitment to transparency.

C. DCPP Programs Support a Strong Safety Culture

PG&E's Nuclear Oversight Program (NOP) establishes a comprehensive multi-level oversight, audit, assessment, and verification program. For management oversight, the Program provides for direct observation of activities in progress by directors and supervisors, highlights issues needing additional management attention, and requires the review of the results of audits and assessments to determine where improvements may be needed. The Program also specifies numerous standing committees (e.g., the Nuclear Safety Oversight Committee), along with additional audit, assessment, and verification parameters. Attachment 5 contains a copy of the principal guidance for the NOP at DCPP. Numerous elements of the NOP are detailed below.

1. Corrective Action Program – Find it, Fix it, and Prevent Reoccurrence

The Corrective Action Program (CAP) is an important part of the overall safety culture program, because it utilizes the experience and expertise of nuclear operations personnel to identify plant concerns. The primary process DCPP uses to identify, analyze, and resolve plant problems. Elements of the program include: issue identification, issue significance review, various levels of cause analysis up to root cause analysis, corrective action development and implementation, and performance trending and monitoring.

CAP is implemented through a computer program, which all employees and contractors have access to – if an employee does not have a dedicated computer, they can enter notifications into

the system using computers in common areas at the plant. Employees may also submit notifications anonymously. DCPP expects employees to use a low threshold in identifying problems. In other words, the significance process, not the issue identification process, governs the urgency with which the issue should be addressed. Any issue any employee believes may have any impact on plant operations and/or safety should be identified via a notification to the CAP. The principal governance document for the CAP program at DCPP is provided in Attachment 6.

As noted above, PG&E is expanding the CAP across the enterprise, creating an Enterprise Corrective Action Program (ECAP).

2. Quality Assurance Program

A Quality Assurance program is an essential part of ensuring the proper attention to the quality of the efforts and the materials that go into the design, operation, maintenance, and modification of DCPP. It reflects the nuclear generation's total commitment to quality in the safety-related aspects of the facility.

The objective of the Quality Assurance Program is to contribute to a work environment wherein all employees are responsible to conduct their activities per the highest quality standards. This is accomplished by:

- Establishment of management systems that keep management apprised of the quality of the facility performance.
- Preparation of, and training in, procedures and systems that help assure the safe, reliable maintenance, operation, and modification of the facility.
- Preparation of design disclosure documents that correctly transfer design information in a clear manner that allows meeting all design commitments.
- Procurement of materials and services from competent qualified suppliers who are provided all pertinent data to properly perform their tasks.
- Overview by the quality organization to provide added assurance that systems and procedures are properly implemented and are effectively meeting their intended functions.
- Tracking of problems to assure that adequate and timely corrective actions are taken.
- Cooperative interaction between organizations.

The principal governance document for the Quality Assurance Program at DCPP is provided in Attachment 7.

3. Employee Concerns Program

Another element of the Safety Culture is the Employee Concerns Program or ECP. The ECP allows employees to voice concerns both to their management and/or the NRC without fear of retaliation and employees are encouraged to raise those concerns. Through regular safety culture

surveys, another avenue is provided to employees to raise issues and concerns. Generally, the safety culture surveys consist of 73 statements that survey participants review and indicate whether they agree, disagree, or have a neutral opinion. The statements touch upon numerous areas within each of the NRC's 13 Safety Culture components.

4. Nuclear Safety Oversight Committee

The Nuclear Safety Oversight Committee (NSOC) conducts independent reviews of the actions and practices relating to nuclear power plants which may have a bearing on nuclear safety and environmental matters. The NSOC reports to and advises the chief nuclear officer (CNO) on the adequacy and effectiveness of the DCPP independent review program. In addition to reporting directly to the CNO, the NSOC Chair meets with the PG&E Board of Directors at least once per year and more, if requested, to report out on items and issues covered during its reviews. NSOC performs its audits and reviews approximately 4 times per year.

D. An Active Safety Culture Shares Experiences and Helps Advance Best Practices - HBPP Decommissioning Lessons Learned

As evidence of the nuclear industry's willingness to share experiences and help advance best practices in the industry, PG&E recently presented a paper entitled "Humboldt Bay Power Plant Decommissioning Transition to Civil Works" at the 2015 Waste Management conference. This paper focuses on "lessons learned" from decommissioning this facility. HBPP is routinely benchmarked by other countries based on our successes in nuclear decommissioning and safety record, with more than 900 days without a recordable or lost time injury while performing challenging demolition work scope and other related activities. HBPP is on track to complete demolition well under the accumulated radiation dose experiences of prior nuclear plant decommissioning while maintaining worker safety and site schedule.

In June 2014, HBPP's Unit 3 nuclear facility achieved a significant milestone, removing radiologically significant plant systems from the buildings after more than three decades in SAFSTOR. HBPP's historical design and construction, with close proximity to the bay and associated tidal interactions, posed unique challenges to an effective decommissioning effort.

Currently HBPP is cutting up the empty reactor pressure vessel using robotics to ensure the safety of workers on-site, while at the same time enabling future work to remove the drywell containment and caisson structures. In preparation for this phase of decommissioning, PG&E conducted run-up and mock-up testing of tooling to segment the HBPP reactor vessel.

In addition, PG&E has partnered with the contractor in establishing a good client/contractor relationship that was invaluable as HBPP site personnel addressed schedule or site challenges that emerged during demolition. Finally, development of a solid baseline project schedule that incorporated regulatory constraints, client expectations, and contract constraints was importance to safe, compliant project execution.

The complete paper is provided in Attachment 8, pursuant to Chair Weisenmiller's request at the April 27 workshop.

III. Diablo Canyon Performance and Operations are Subjected to Regular, Independent Scrutiny by the NRC and the DCISC

A. NRC Presence On Site

DCPP is subject to rigorous NRC inspections. Two NRC inspectors, who live in the community and work at the plant site, scrutinize, on a daily basis, activities at the plant and check on adherence to federal safety requirements. That oversight can take many forms on any given day, including an inspector visiting the control room and reviewing operator logbook entries or watching operators conduct plant tasks; performing visual assessments of a certain area or areas of the plant; observing tests of, or repairs to, important systems or components; interacting with plant employees to see if they have any safety concerns; or checking corrective action documents to ensure that problems have been identified and appropriate fixes implemented. The NRC also deploys teams to conduct periodic inspections at the plant site.

Any safety-significant issues that are identified are promptly brought to the attention of plant operators to be corrected, if necessary, and communicated to NRC management. If any problems are significant enough, the NRC will consider whether enforcement action is warranted.

In addition to the two resident NRC inspectors, the NRC conducts over 15,000 hours per year in inspections of programs at DCPP.

B. The Diablo Canyon Independent Safety Committee Provides a Unique Opportunity for Public Review of Diablo Canyon Operations

As part of a 1988 settlement agreement approved by the CPUC, a Diablo Canyon Independent Safety Committee (DCISC) was established to review Diablo Canyon operations for the purpose of assessing safety and to suggest recommendations for ensuring safe operations. The committee is composed of three members: an appointee of the Governor, an appointee of the Attorney General, and an appointee of the Chairman of the California Energy Commission. Committee members serve for a three-year term. Neither the Committee nor its members have any responsibility or authority for plant operations, and they have no authority to direct PG&E personnel, yet their insights have been deeply appreciated and have helped the station to operate with transparency and a strong focus on safety. Diablo Canyon is the only nuclear power plant in the nation with an independent safety committee. For more information, please see the DCISC website at www.dcisc.org.

The settlement agreement that established the DCISC provided that: 1) The DCISC shall have the right to receive certain operating reports and records of Diablo Canyon; 2) The DCISC shall have the right to conduct an annual examination of the Diablo Canyon site and such other supplementary visits to the plant site as it may deem appropriate; 3) The DCISC is to prepare an

annual report, and such interim reports as may be appropriate, which shall include any recommendations of the Committee. The three-member DCISC provides an annual report summarizing its activities and reviewing Diablo Canyon operations. The annual report also documents the members' conclusions and recommendations regarding Diablo Canyon operational safety. PG&E provides a written response to each recommendation, which is published with the annual report. The DCISC then reviews PG&E's response and, if the DCISC is dissatisfied with PG&E's final response to any recommendation, the DCISC may raise the matter with the CPUC, with any or all of the Committee Members' appointing entities, or with the Nuclear Regulatory Commission. To date, PG&E has ultimately responded appropriately to each of the DCISC recommendations.

The DCISC also typically conducts three public meetings each year in the San Luis Obispo area. Dates, times and locations for these meetings are posted on the committee's website, advertised in local newspapers, and notices are sent to other news media and those persons who have requested advanced notice of the public meetings. All meetings include an opportunity for the public to address comments and provide information to the Committee members. PG&E representatives are present to make informational presentations to the Committee on topics requested by the members. Certain public meetings may include a limited number of members of the public on a first-come, first-served basis, governmental representatives, and members of the media. The meeting agenda and supporting documents, as well as a transcript of discussion at the public meetings, are on file and available to members of the public. DCISC meetings are broadcast on local cable television and archived on the SLO-Span.org website.

The DCISC also conducts numerous fact-finding visits by individual committee members and consultants to the plant site and to other locations as necessary to assess issues, review plant programs and activities, interview and meet with PG&E management and employees, follow-up on current items on the DCISC's open items list and to identify agenda items for future public meetings. These fact-finding visits generally occupy one or two intensive days of research and investigation concerning PG&E's current activities and programs. Committee representatives also frequently observe meetings of PG&E's internal safety review organizations and committees. A detailed written report, summarizing their activities, is prepared for each fact finding visit by the participants. Comments concerning these reports are sought from each of the other members and consultants and, when approved by the Committee as part of a public meeting, the fact-finding reports are provided to PG&E. Fact-finding reports are included as a part of the Committee's Annual Report and represent a valuable and useful tool for the Members, consultants, and PG&E. The Committee's fact-finding visits constitute a vital and important aspect of the Committee's safety review function.

Finally, the DCISC provides publicly available information via its website concerning Diablo Canyon, maintaining transcripts and minutes of each public meeting and reports of each fact finding meeting, as well as the annual reports on the safety of Diablo Canyon.

E. PG&E Senior Seismic Hazard Analysis Committee (SSHAC) Meetings Were Open to the Public

PG&E made a commitment that SSHAC workshops where only PG&E data are discussed would be open to the public. PG&E-specific SSHAC workshops were publicized in advance in local media and on PG&E's website to encourage public participation. There were multiple layers of public and independent review in the SSHAC process to update the seismic hazard analysis. This includes an independent peer review of all considered data, methods, and models, including those data from the advanced seismic studies, public and technical expert participation at the SSHAC workshops, and a full review of all data and results by the NRC. In fact, PG&E has a dedicated website on SSHAC activities that can be found at http://www.pge.com/mybusiness/edusafety/systemworks/dcpp/SSHAC/.

While the SSHAC process is not ongoing, independent oversight has been provided through this process on PG&E's seismic studies. Furthermore, the Independent Peer Review Panel, through its review of the California Central Coast Seismic Imaging Report, has provided valuable inputs to shape PG&E's SSHAC submittal to the NRC.

F. The Institute of Nuclear Power Operations (INPO) Participation Promotes the Highest Levels of Safety and Reliability

The Institute of Nuclear Power Operations is a not-for-profit organization headquartered in Atlanta, Georgia. INPO's mission is to promote the highest levels of safety and reliability – to promote excellence – in the operation of commercial nuclear plants by 1) establishing performance objectives, criteria, and guidelines for the nuclear power industry; 2) conducting regular detailed evaluations of nuclear power plants; and 3) providing assistance to help nuclear power plants continually improve their performance.

INPO accomplishes its mission through conducting plant evaluations, providing training and accreditation, developing events analysis and information exchange, and providing other assistance. The accreditation process is similar to that used for hospitals and universities

In conducting plant evaluations, INPO evaluation teams travel to nuclear electric generating facilities to observe operations, analyze processes, shadow personnel, and ask questions of the plant operator about safety and operations. With an intense focus on safety and reliability, INPO evaluation teams assess the knowledge and performance of plant personnel, the condition of systems and equipment; the quality of programs and procedures, and the effectiveness of plant management. INPO also conducts corporate evaluations that are focused on safety and reliability. These evaluations are proprietary in nature and PG&E cannot make these documents publicly available because of confidentiality restrictions in INPO's agreements with nuclear plant operators.

INPO also provides training and support for nuclear professionals and evaluates individual plant and utility training programs to identify strengths and weaknesses and recommends

improvements. INPO also shares information and publications across the industry, sharing lessons learned and best practices.

IV. Once-through Cooling Policy Provides for Alternative Compliance Requirements

At the April 27 workshop, Mr. Jonathan Bishop provided an update on the State Water Resources Control Board (SWRCB) once-through cooling (OTC) evaluation for DCPP. As indicated by Mr. Bishop, the SWRCB's policy (Section 3.D(8)) allows the Board to establish alternate requirements for compliance with the OTC policy, if compliance costs are wholly out of proportion to costs previously identified or compliance is wholly unreasonable based on specified factors. OTC policy, which was developed over a five-year period, considered many approaches for OTC compliance by nuclear facilities, finding that nuclear facilities provide unique contributions to reaching the state's greenhouse gas emission reduction goals and a separate approach was warranted. As such, establishing OTC alternative compliance requirements for DCPP is provided for by the policy and is not an "exemption" from policy, as claimed by the Alliance for Nuclear Responsibility in its April 27 presentation.

At the time the OTC policy was established, DCPP accounted for roughly 22% of the state's average once-through cooling flow but only 8% of entrainment and 1% of impingement. DCPP's proportional share of the state's OTC impacts at the time of policy development was substantially less than its share of cooling water flow, due to both the plant's location and design. During the workshop, Chair Weisenmiller asked for information on the cost to implement alternative technologies for cooling DCPP. Based on the Bechtel Report submitted to the SWRCB, the cost of freshwater cooling towers ranged from $8.6 to $11.7 billion and would require an excavation larger than the Panama Canal that would permanently impact approximately 400 acres north of the plant. Dry Cooling options were higher still, reaching $14.1 billion. Saltwater tower options, while less expensive than freshwater installations, were estimated to cost between $6.2 and $8.0 billion and would raise significant operational and safety concerns regarding salt deposition, plant security, and a reduction in the net generation exported to the grid.

Additional information on the Bechtel Report and the SWRCB's OTC policy can be found at: http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/rcnfpp/ .

V. California Independent System Operator Finds Summer 2015 Supply Adequate

On May 7, 2015, the California Independent System Operator (CAISO) issued its 2015 summer assessment, indicating that electricity supplies will be sufficient to meet the 2015 summer peak even under the extreme scenario of hot temperatures that only occur every decade or so.

Per the CAISO, although the multi-year drought is reducing hydroelectric availability to the lowest level in 10 years, it will not materially impact grid reliability. Energy imports to the CAISO are also expected to be normal.

As requested by Chair Weisenmiller, PG&E provides the complete CAISO 2015 Summer Assessment in Attachment 9.

VI. Numerous 2013 IEPR Recommendations Have Been Completed

At the April 27 workshop, Chair Weisenmiller requested an update on the status of numerous recommendations made in the 2013 IEPR. PG&E provides an update on the recommendations below. Given the short time since the workshop, PG&E is unable to provide a complete update on the status of all of the recommendations in this letter; however, it will provide additional information on recommendations not included below in a supplemental letter later this month.

Recommendation #1: Complete and make available AB 1632 Report-recommended studies. PG&E should continue to provide updates on its progress in completing the *AB 1632 Report*-recommended studies to the Energy Commission and make its findings and conclusions available to the Energy Commission, the CPUC, and the NRC during their reviews of the Diablo Canyon license renewal application.

Response: PG&E completed the advanced seismic studies, and issued the Central Coastal California Seismic Imaging Project (CCCSIP) final report on September 10, 2014. Copies of the report were sent to the CEC, the CPUC, and the NRC. The CCCSIP report is also located at: http://www.pge.com/en/safety/systemworks/dcpp/seismicsafety/report.page

PG&E met with the Independent Peer Review Panel at three publically held meetings to discuss the final CCCSIP report. The three meetings were held on October 23, 2014, November 17, 2014, and January 8, 2015. Each meeting was followed by IPRP Reports 7, 8, and 9, on the offshore low energy and the onshore seismic surveys, and the site specific response study respectively. PG&E responded to all three IPRP reports in a single letter issued on April 21, 2015. PG&E provides copies of IPRP Reports 7, 8, and 9, along with PG&E's response, in Attachments 10, 11, 12, and 13 to this letter.

Recommendation #3. Assess liability coverage adequacy. Based on mounting clean-up costs for the 2011 Fukushima accident, prior to reactivating the Diablo Canyon license renewal application with the Nuclear Regulatory Commission, PG&E should provide to the Energy Commission and CPUC a comprehensive study on whether the Price-Anderson liability coverage for a severe event at Diablo Canyon would be adequate to cover liabilities resulting from a large offsite release of radioactive materials in San Luis Obispo County, and if not, identify and quantify other funding sources that would be necessary to cover any shortfall. The CPUC should consider requiring PG&E to complete such a study as a condition of License Renewal funding approval.

Response: As PG&E noted in its October 15, 2013 comments on the Draft 2013 IEPR,[2] the adequacy of the federal Price-Anderson Act liability insurance regime establishes a *comprehensive* federal scheme to assure that funds will be available to compensate injured members of the public if a nuclear incident were to occur despite all precautions. Each licensee of a large nuclear power plant licensed by the NRC must maintain an amount of primary financial protection against public liability claims equal to the maximum amount of liability insurance available at reasonable cost and on reasonable terms from private sources.[3] Each large reactor licensee also must participate in a secondary insurance plan that provides additional contributions (*i.e.*, retrospective premiums) from all large reactor licensees in the United States if claims exceed the amount available in primary insurance.

If sufficient funds may not be available from primary and secondary insurance to pay claims for an actual event, the Price-Anderson Act further provides that the President must submit a report and proposals for compensation to Congress.[4] Congress is authorized to allocate additional federal funds and charge licensees and others additional amounts to provide for full and prompt compensation for claims. Price-Anderson, therefore, already addresses potential funding sources in the event that the primary and secondary insurance amounts are exceeded.

Recommendation #4: Evaluate seismic hazard analysis against the licensed design. To help ensure plant reliability and minimize costs to ratepayers, the Nuclear Regulatory Commission should, in an open, timely and transparent process, ensure that all seismic hazard analyses for Diablo Canyon are evaluated against the licensed design basis elements for the Design Earthquake and the Double Design Earthquake, in addition to the Hosgri earthquake element.

Response: The Nuclear Regulatory Commission has taken action on this recommendation. In response to the NRC's directives, PG&E has completed a seismic hazard re-evaluation using an updated Seismic Source Characterization (SSC) model and updated Ground Motion Characterization (GMC) model as basic inputs to a site-specific probabilistic seismic hazard analysis (PSHA). The SSC describes the future earthquake potential (e.g., magnitudes, locations, and rates) for the region surrounding the DCPP site, and the GMC describes the distribution of the ground motion as a function of magnitude, style of faulting, source-to-site geometry and site condition. For the seismic hazard update, both of these models followed the guidelines of the Senior Seismic Hazard Analysis Committee (SSHAC) Level 3 process (Budnitz et al., 1997; NRC, 2012).

A Screening, Prioritization, and Implementation Details (SPID) report documenting the results of the SSC and GMC models, and a site-specific response study, was sent to the NRC on March 11, 2015. The SPID includes an interim evaluation where the new Ground Motion Response Spectrum (GMRS) is compared to the 1977 Hosgri Spectrum, and to the results of the Long

[2] http://www.energy.ca.gov/2013_energypolicy/documents/2013-10-01_workshop/comments/PG_and_E_Comments_2013-10-15_TN-72080.pdf
[3] 42 U.S.C. § 2210.b(1).
[4] 42 U.S.C. § 2210.i.

Term Seismic Program seismic margins assessment. These comparisons demonstrate that there is a reasonable assurance that the DCPP structures, systems and components required for safe shutdown will continue to perform their intended functions if subjected to the ground motions defined by the new GMRS. As required by the NRC, PG&E will perform an updated seismic probabilistic risk assessment (SPRA) of the safety-critical structures, systems, and components. The SSC and GMC SSHAC reports and the SPID document are located at www.pge.com/dcpp-ltsp.

VII. Additional Information to be Provided

At the April 27 workshop, Chair Weisenmiller made numerous requests for additional information. Due to the limited time since the workshop, PG&E will provide additional information responsive to the Chair's requests by May 29. This information will include: 1) information on Diablo Canyon's ramping ability; 2) an update on the 2013 IEPR recommendations not included in Section VI above; 3) information on dry cask storage operation; and 4) additional updated information based on the 2013 IEPR data request. PG&E is also reviewing the transcript of the workshop, received May 6, to ensure completeness of its response.

Sincerely,

/s/

Valerie Winn