BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of Ratepayer Funding to Perform Additional Seismic Studies Recommended by the California Energy Commission (U 39 E)	)	Application No. 10-01-014

PREPARED TESTIMONY OF CALIFORNIA SENATOR SAM BLAKESLEE

The Alliance for Nuclear Responsibility hereby submits the attached testimony of Sam Blakeslee, California Senator, 15th District.

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TESTIMONY OF SAM BLAKESLEE

CALIFORNIA STATE SENATOR, 15TH DISTRICT

Q1. Please identify yourself and state your professional qualifications.

A1. My name is Sam Blakeslee, and I represent the 15th District in the California State Senate. I am a former research scientist and earned a Ph.D. from the University of California, Santa Barbara for research in seismic scattering, micro-earthquake studies, and fault-zone attenuation. I previously worked as a research scientist at Exxon's research lab in Texas, where I received a patent for inventing an innovative technique that used medical cat-scan mathematics to create detailed images of geologic formations. Later, I moved into management and became a Strategic Planner, where I was responsible for creating and managing Exxon budgets. I now live with my wife and two young daughters in San Luis Obispo, 10 miles from Diablo Canyon nuclear power plant.

Q2. What is the purpose of your testimony in this proceeding?

A2. I was the author of AB 1632, which directed the Energy Commission to review existing scientific studies to determine the potential vulnerability, to a major disruption due to aging or a major seismic event, of the state's nuclear power plants. The subsequent report by the Energy Commission made a number of recommendations for additional seismic studies to be completed at Diablo Canyon, as well as San Onofre, to better define the vulnerabilities, if any, of the plants to a prolonged outage. The thrust of the bill was to better understand the fiscal impact to ratepayers, as well as the inherent reliability challenges associated with replacing that much baseload generation for an extended period of time. As the AB 1632 report

issued by the Energy Commission noted, further seismic studies are necessary to fully understand the vulnerabilities of the plants and to resolve the uncertainty of the seismic settings at both Diablo Canyon and San Onofre. I am committed to seeing these questions addressed by the CPUC in reviewing PG&E's proposed seismic study plan.

Q.3. Are there developments that have occurred since the law was enacted in 2006 that have heightened your concern?

A.3. Yes, two major ones. First, Japan suffered from two devastating earthquakes in recent years – in 2007 and 2011 – which resulted in significant damage at two nuclear power plants. Both earthquakes generated much stronger ground motion than anticipated when the nuclear power plants were designed. In the case of the 2007 earthquake, six of the seven units at the Kashiwazaki-Kariwa nuclear power plant, the world's largest nuclear plant, remained offline three years after their initial shutdown. The utility had to find replacement power for 8,000 megawatts of baseload generation, which resulted in billions of dollars of additional fuel costs to ratepayers. Fast forward to the events last spring, when a Magnitude 9.0 earthquake struck offshore Japan on a fault system believed capable of only a Magnitude 7.9. Like the Magnitude 6.8 earthquake in 2007 that closed Kashiwazaki-Kariwa, the 2011 earthquake far exceeded the Japanese utility's seismic and engineering assumptions. The long-term impacts at the Fukushima nuclear power plant was devastating in terms of physical damage, replacement fuel costs, and lost economic activity. The executive director at Tepco, the utility who owns and operates both of the nuclear power plants, stated that Tepco's fuel costs will rise by 830 billion yen ($10.8 billion)

in the year ending March 2012 as the utility must use more thermal power generation to replace its 17 nuclear reactors, either shut or damaged by the disaster or offline for regular maintenance. The financial situation for Tepco is not good either. Despite receiving a $11.5 billion loan from the Japanese government in November 2011, Tepco is currently seeking an additional $26 billion in loans to stave of bankruptcy. All of these costs have been incurred because the seismic settings of the nuclear power plants were dramatically underestimated and the regulatory agency failed in its regulatory responsibilities – two very important lessons that California should learn from.

Q. 4. What is the second major development since 2006 that prompts your concern?

A. 4. A series of catastrophes that constitute a disturbing trend in the failure of regulatory agencies to fulfill their oversight obligations. There are the investigative news reports from Japan highlighting how the breakdown in regulatory oversight of the utility contributed to the catastrophic failures at the Fukushima nuclear units. After the *Deepwater Horizon* oil spill in the Gulf, it became clear that a passive regulatory environment allowed BP to take a number of safety shortcuts that contributed to the ecological and economic disaster. The result was the dissolution of the Minerals Management Services. Finally, and perhaps the most relevant to this proceeding, is the September 9, 2010 San Bruno pipeline explosion that killed eight people. In June of 2011 CPUC President Peevey, responded to an independent panel's recommendations for gas pipeline safety by acknowledging, "We seem to have drifted — ourselves, this commission and those we regulate — to a culture of complacency." The decisions made here at the Commission on Diablo Canyon – and

SONGS, too, for that matter – could potentially be among the most consequential decisions ever made by the Commission.

Q. 5. What has been your experience in dealing with PG&E?

A. 5. While I am encouraged by their more recent efforts to pursue the seismic studies, it has been a long time coming. I first called for additional seismic studies at Diablo Canyon upon being elected to the California legislature in 2005. PG&E penned an opinion in my local newspaper that called my request for further studies as "*unnecessary and bad policy for our California customers".*

In 2008, the Energy Commission held a public hearing to discuss a draft of the AB 1632 report, which stating that significant uncertainties exist near the Diablo Canyon and recommended that additional 3D seismic studies be completed. PG&E testified before the Energy Commission that they *"believe there is no uncertainty regarding the seismic setting and hazard at the Diablo Canyon Site".* Mere weeks later, the USGS announced the discovery of the active Shoreline fault running within some 600 meters offshore from Diablo Canyon Nuclear Power Plant -- and with an orientation that appears to intersect with the powerful Hosgri fault. Despite the fact that little was previously known about the Shoreline Fault at the time, PG&E was quick to declare, *"We don't see anything that exceeds the plant's design basis."* I am unclear how that conclusion could have been made absent the seismic data called for in 2005, recommended by the Energy Commission in 2008, and before any 3D seismic data had been required.

Last spring at a California Senate hearing on the ramifications of Fukushima, I asked if PG&E continued to maintain their previous assertion that there was no uncertainty in the seismic setting near the plant. PG&E responded by saying that although there is always some uncertainty they were, *"not concerned about the uncertainty."* I do not share their lack of concern.

Repeated requests and attempts have been made to work with PG&E on developing the study plan, by both myself and the Independent Peer Review Panel (IPRP) convened by the Commission to serve in an advisory capacity on the development of the very seismic studies in question. Concerns about the absence of this scoping and design information have been raised by members of the IPRP. However, to date, PG&E has not provided the necessary information to assess whether the studies are adequately designed.

Q. 6. You mention the Independent Peer Review Panel (IPRP). What do you believe is the role of the IPRP?

A. 6. In 2009, in wake of the discovery of the Shoreline Fault and in furtherance of the recommendations of the Energy Commission in the AB 1632 report, I authored AB 42, legislation that would have required PG&E to complete additional seismic studies recommended by the Energy Commission. One of the key provisions of AB 42 was direction to the Energy Commission, in consultation with the California Geological Survey and the Seismic Safety Commission, participate in the design of the seismic studies and to conduct an external peer review of the studies. While the Governor vetoed the bill, the intent of the legislation was fulfilled. In January 2010,

PG&E applied to the Commission for funding to perform additional seismic studies per the AB 1632 report. In August 2010, the Commission issued a decision (D.10-08-003) granting $16.73 million for the studies. However, as a condition of the approval, the Commission convened the IPRP and invited the Energy Commission, California Geologic Survey, the California Coastal Commission and the California Seismic Safety Commission to participate on the panel. The panel was convened to "conduct a peer review of the studies including independently reviewing and commenting on the study plan and completed study findings." The purpose of the IPRP is consistent with provisions of AB 42, which required the state's regulatory agencies to do more than simply accept PG&E's proposal, but to actively participate in the design of the studies to ensure that the concerns raised by the Energy Commission in the AB 1632 Report, and reaffirmed by the Commission, are addressed by the studies undertaken by PG&E. Per the Commission's own decision, the IPRP is tasked with providing comments on the design of the study.

Q. 7. Do you have any concerns about the IPRP and their role in the development of the seismic studies?

A. 7. My chief concern is that at the IPRP public meeting on February 6, 2012, members of the IPRP raised a number of questions about the most recent study plan, for which the State Lands Commission is currently preparing a draft EIR. What concerns me is that the IPRP questioned both the geographic scope of the study as well as the specific types of studies to be complete. In particular, the IPRP questioned whether the current footprint of the study is sufficient to provide meaningful data on the intersection of the Hosgri and Los Osos Faults, as well as the

southern terminus of the Shoreline Fault. In addition, the IPRP questioned whether the proposed use of geophones, instead of a high energy three-dimensional seismic reflection mapping survey, was the most appropriate for analyzing the Shoreline Fault. My concern is that despite these fundamental and significant questions regarding PG&E's study plan, it appears that PG&E plans to proceed with the current study plan and has made no representation that they intend to address the IPRP's questions or concerns. The IPRP stated that should they obtain the requested information, it may result in a determination by the IPRP that the study plan is insufficient. I would argue that the more prudent course of action is for the Commission to require PG&E to provide the requested information to the IPRP before further steps are taken.

Q. 8. Do the costs which PG&E is projecting cause you any concern?

A. 8. My concern regarding costs is that the study plan as it is currently designed may not be sufficient to address issues raised in the AB 1632 report. This concern is heightened by the questions raised by the IPRP, as well as by myself, that remain unanswered. PG&E's reticence to share the particulars about how they designed the study, who they spoke with, and what feedback they received from industry stakeholder, does not inspire confidence that the study plan is as robust as it should be. Given the lengthy history of PG&E either misunderstanding or mischaracterizing the seismic setting of Diablo Canyon dating back to the 1960's and continuing on even after the discovery of the Shoreline Fault, my main concern with cost is that the current study plan will ultimately prove inadequate.

The most frustrating aspect is the lack of information surrounding the current PG&E study plan. Their unwillingness to share information regarding about how the study plan was developed and what guided their decision-making process has created doubt regarding whether or not the current study plan is, in fact, the best design it can be and the most likely to render useful data. Both myself and the IPRP have questioned elements of the study plan and we await answers. My principal concern is that PG&E perform a seismic study that will answer the critical questions regarding the seismic setting at Diablo Canyon; until PG&E provides more information it is unclear whether or not the current proposal will generate an industrial quality study that sufficiently addresses the outstanding questions regarding the seismic setting at Diablo Canyon.

It is important that this study move forward as quickly as practicable, but with the caveat that survey be properly designed to answer the seismic questions to the extent possible. Because PG&E has provided so little information on how the study plan was designed, it is hard to have confidence in the current proposal.

Q. 9. Does that conclude your testimony?

A. 9. Yes, it does.