

# DOCKET

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**ALLIANCE FOR NUCLEAR RESPONSIBILITY**

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TO: CEC  
RE: Docket 09-IEP-1A

**Additional comments of the Alliance for Nuclear Responsibility  
CEC 2009 IEPR.**

December 14, 2009

Nuclear Power Plants  
Pages 9-10

The Nuclear Regulatory Commission license renewal application process determines whether a plant meets its renewal criteria, but not whether the plant should continue to operate. The Nuclear Regulatory Commission specifically states that it “has no role in the energy planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate.” It is left to state regulatory agencies to determine whether it is in the best interest of ratepayers and cost effective to continue operation of their state’s nuclear plants.

Although the California Public Utilities Commission does not approve or disapprove license applications filed with the Nuclear Regulatory Commission, both Pacific Gas and Electric and Southern California Edison must obtain the California Public Utilities Commission’s approval to pursue license renewal before receiving California ratepayer funding to cover the costs of the Nuclear Regulatory Commission license renewal process.

**COMMENT:** As described in the 2007 CPUC GRC decision 07-03-044 (March 15, 2007), A4NR and co-intervenors noted that, “ANR/SC and TURN are particularly concerned that PG&E may use the license renewal study to unilaterally seek license renewal without prior Commission review of the study or Commission authority for PG&E to submit a re-licensing application.”

**QUESTION:** In view of the fact that, exactly as predicted by A4NR et al., PG&E has done precisely what the Alliance anticipated, does this mean that the CPUC abrogated its duty when it authorized ratepayer funding for a “feasibility” study which now, absent the final state (CEC/AB 1632)) analysis, must have served as the prime research and

background document for PG&E's license renewal? Did the ratepayers, by default, pay for PG&E's "license renewal application" as the feasibility study seems to have gone directly from results to implementation without any oversight and analysis by its authorizing body, the CPUC?

The California Public Utilities Commission's General Rate Case Decision 07-03-044 required Pacific Gas and Electric to incorporate the Energy Commission's AB 1632 assessment findings and recommendations in its license renewal feasibility study and to submit the study to the California Public Utilities Commission no later than June 30, 2011, along with an application on whether to pursue license renewal for Diablo Canyon. Letters on June 25, 2009, from the president of the California Public Utilities Commission to Pacific Gas and Electric and Southern California Edison reiterated the requirement for each utility to complete the AB 1632 Report's recommended studies, including the seismic/tsunami hazard and vulnerability studies, and report on the findings and the implications of the studies for the long-term seismic vulnerability and reliability of the plants. These studies are necessary to allow the California Public Utilities Commission to properly undertake its obligations to ensure plant and grid reliability in the event that either Diablo Canyon or San Onofre has a prolonged or permanent outage and for the California Public Utilities Commission to reach a decision on whether the utilities should pursue license renewal. However, the utilities' reports to date indicate they are not on schedule to complete these activities in time for California Public Utilities Commission consideration. In addition, both utilities have indicated objections to providing some of the studies and/or requirements indicated by the AB 1632 Report and the California Public Utilities Commission General Rate Case Decision.

The IEPR Committee believes that the comprehensiveness, completeness, and timeliness with which both utilities provide the studies identified in the AB 1632 Report will be a critical part of the California Public Utilities Commission and Nuclear Regulatory Commission reviews of the utilities' license renewal applications.

**COMMENT:** While there may be valid arguments to keep various aspects of the Nuclear Regulatory Commission's oversight secure, there is absolutely no reason why PG&E and/or SCE should be allowed to ignore CPUC requirements or CEC recommendations or California law. Further, completion and review of *all* AB 1632 Report and CPUC recommendations is in the best interest of ratepayers and state energy planning. To place ratepayers at financial risks of beginning a license renewal process fifteen years before the current licenses expire and before AB 1632 studies and CPUC requirements are complete would be irresponsible. The NRC has themselves indicated in their GEIS that the longest timeline for the license renewal process is at most six years, which would well allow for the additional two years (2012-2013) that the utilities say is needed to fully complete the seismic recommendations. In today's economic environment allowing any ratepayer investment in the license renewal process would be yet another unneeded charge.

**QUESTION:** How could this ratepayer risk be deemed "just and reasonable" (as is the CPUC mandate)? Given the unique seismic history at Diablo Canyon, and the history

of cost overruns associated with PG&E's project, how can the CEC or CPUC allow PG&E to withhold any new seismic studies from consideration and analysis?

Recommendation PAGE 10:

The IEPR Committee has identified the following recommendation as the highest priority action California needs to take to help ensure nuclear plant reliability and to minimize costly outages:

- Pacific Gas and Electric Company and Southern California Edison should complete all of the studies recommended in the Assembly Bill 1632 Report, should make their findings available for consideration by the Energy Commission, and should make their findings available to the California Public Utilities Commission and the U.S. Nuclear Regulatory Commission during their reviews of the utilities license renewal applications.

**RECOMMENDATION:** A4NR would add the following to the CEC recommendation: "...and before any ratepayer funding is granted the utility to pursue an NRC application for license renewal."

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In April 2006, the SWRCB issued a resolution to reduce OTC impacts from existing power plants to comply with the CWA. The SWRCB issued a preliminary proposal to phase out OTC and provided it for review to the Energy Commission, California ISO, and the CPUC. The SWRCB received pertinent feedback from the energy agencies about the ability to maintain reliability while complying with OTC policy. ...

The energy agencies submitted a final strategy in May 2009 that calls for replacing existing OTC facilities with some combination of repowered technologies onsite, new generation located in other areas, and/or upgrades to the transmission system. The SWRCB accepted the proposal and included references to it in its draft OTC policy on June 30, 2009. The OTC concerns relating to grid reliability, with emphasis on Southern California, are discussed in more detail in Chapter 3.

**COMMENT:** PG&E has been out of compliance with its NPDES permit for over 12 years. The federal court has ruled that OTC must be phased out.

**RECOMMENDATION:** Until this issue is resolved and ratepayers understand the costs involved in alternative cooling systems and all mitigation (past, present and future), no public funds should be expended to pursue an NRC license renewal for Diablo Canyon or San Onofre.

In addition to marine impacts from OTC, the primary concerns regarding the state's nuclear plants relate to the potential for extended outages at the plants from seismic events or plant aging and the absence of a repository for disposal of the high-level radioactive waste produced at the plants. In addition, the plants pose a small risk of potentially severe impacts from acts of terrorism or accidents.

**COMMENT:** While the "risk" may be small (in terms of probability) the "severity" of such an incident could reach catastrophic levels.

The Energy Commission's report, *An Assessment of California's Nuclear Plants: AB 1632 Report*, adopted as part of the 2008 IEPR Update, recommended that PG&E and SCE update studies on the seismic hazard at their nuclear plants, investigate plant seismic safety compliance with current codes and standards, describe plant repair plans and timeframes in the event of an earthquake, provide evidence of strong safety cultures (especially at SONGS), and report findings from these studies as part of their license renewal feasibility studies for the CPUC and in future IEPRs.

**COMMENT:** This is the issue that separates Diablo from virtually all other reactors sites. The NRC has thus far refused to hear seismic issues in any license renewal proceedings. The NRC's draft GEIS dedicated a mere 152 words in a 604 page document to seismic issues. The nuclear industry would have it deleted altogether, as their lobbyist John Snooks of the Nuclear Energy Institute told the NRC at the GEIS public hearing in Newton, Massachusetts: "We feel that seismology should be removed from consideration in the GEIS. Seismology we feel is a condition of the site. It is unaffected by continued operation of the plant."

**RECOMMENDATION:** For ratepayers, citizens and/or the state to address the possible impacts of new seismic reports, the Nuclear Regulatory Commission requires yet another costly and time consuming proceeding to reopen the *original* license proceeding. If that is to be the case then, California should reopen the original CPCN dating from 1967. Should the state choose to follow the NRC's lead in requiring the original license proceedings to be reheard, then it is paramount that the complete absence of seismic knowledge of earthquake faults closer than 20 to 50 miles from the reactor site (as was declared in the original CPCN) must be reconsidered in light of two active faults within two and one half miles off the shore of Diablo. Then and only then can California responsibly determine if it is the state's best interest to continue to rely on aging reactors and co-located high-level radioactive waste storage facilities on its seismically sensitive coast.

California's nuclear plants have been operating for roughly 20 years and are licensed to continue operating through 2022 (SONGS) and 2024 and 2025 (Diablo Canyon Units 1 and 2, respectively). They provide benefits to California in the form of resource diversity, low operating costs, relatively low GHG emissions, and enhanced grid reliability. However, they also pose risks associated with nuclear waste storage, transport, and disposal, as well as potentially severe effects from accidents, acts of nature like earthquakes or tsunamis, or terrorism.

California has a moratorium on building new nuclear power plants until a means for the permanent disposal or reprocessing of spent nuclear fuel has been demonstrated and approved in the United States. In 1978, the Energy Commission found that neither of these conditions had been met. In 2005, the Energy Commission reaffirmed these findings and also found that reprocessing remains substantially more expensive than waste storage and disposal and has substantially adverse implications for nuclear nonproliferation efforts.

**COMMENT:** Given the aforementioned unanswered seismic concerns, and the questions raised about the costs and liabilities faced by the Japanese utilities and ratepayers in the wake of the Kashiwazaki quake and loss of that generation source, A4NR questions the categorization of nuclear power as enhancing resource diversity.

**RECOMMENDATION:** A4NR requests that the CEC hold hearings in 2010 to determine how long and under what conditions the state should allow an additional twenty years of nuclear generation and production of highly radioactive waste on seismically active and eroding coasts.

Nuclear Power Plants  
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As part of the 2008 IEPR Update, the Energy Commission developed An Assessment of California's Nuclear Power Plants: AB 1632 Report, which addressed seismic and plant aging vulnerabilities of California's in-state nuclear plants, including reliability concerns. In addition, the report identified a number of other issues important for the state's nuclear policy and electricity planning. These include:

- Continuing Nuclear Regulatory Commission (NRC) concerns over safety culture, plant performance, and management issues at SONGS.

**COMMENT:** Since the draft IEPR was issued the NRC:

\*has been approached by two workers alleging retaliation for raising safety concern ([http://www.nctimes.com/news/local/oceanside/article\\_c0d12f10-ee28-5fbc-b94c-3ffbfc6a8a68.html](http://www.nctimes.com/news/local/oceanside/article_c0d12f10-ee28-5fbc-b94c-3ffbfc6a8a68.html)),

\*has received License Event Report (Docket No. 50-361Licensee Event Report No. 2009-003 San Onofre Nuclear Generating Station, Unit 2 (LER) 2009-003 for a potential loss of Pressurizer Auxiliary Spray capacity pursuant to 10 CFR 50.73(a)(2)(v)(B) and 50.73(a)(2)(vii). Inservice Testing identified flow leakage through a check valve caused the auxiliary spray depressurization rate to be less than assumed for the licensing basis described in the Updated Final Safety Analysis Report (UFSAR).

**COMMENT:** Neither issue has been resolved.

- The evolving federal policy on long-term waste disposal.

**COMMENT:** A4NR wonders what is the “evolving federal policy on long-term waste disposal” that the CEC refers to in the IEPR? More importantly A4NR believes that California has relied on unsubstantiated and unrealistic scenarios for permanent waste solutions far too long, and it is time for the state to set a date certain (end of current

license) by which the federal government must fulfill its promise to remove highly radioactive material from the state's seismically active coast.

- Costs and benefits of nuclear power compared to other resources.

**RECOMMENDATION:** A4NR recommends that the state include cradle to grave costs in any comparison of the costs and benefits of nuclear power compared to other resources. Previous drafts of the AB 1632 report presented ample narrative descriptions of "risks" and "benefits" but few tables for financial comparisons.

- Potential conversion from once-through cooling to closed-cycle wet cooling.

**COMMENT:** A4NR has testified before the legislature and the SWQCB that in the interest of ratepayers, funding should not be expended for cooling alternatives. Rather the state should decide that nuclear licenses should not be extended beyond current terms, thereby alleviating the need for cooling towers and/or expensive litigation.

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An overarching issue with the state's nuclear facilities is plant license renewal. The NRC operating licenses for California's nuclear plants are set to expire in 2022 (SONGS Units 2 and 3) and 2024 and 2025 (Diablo Canyon Units 1 and 2, respectively). It is unknown whether the NRC will approve applications by PG&E and SCE for 20-year license renewals, but the NRC has yet to deny a single application and has issued license renewals for 54 of the nation's 104 nuclear power reactors. SCE plans to file a SONGS license renewal application in late 2012. PG&E announced on November 24, 2009 its intention to file the Diablo Canyon application.

**COMMENT:** Actually PG&E filed the application on November 24<sup>th</sup> and the application has been posted to the NRC website:

<http://www.nrc.gov/reactors/operating/licensing/renewal/applications/diablo-canyon/dcpp-lra.pdf>

State regulatory agencies and the owners of the plant would ultimately decide whether the plant will continue to operate based on factors such as need for power or other matters within the State's jurisdiction or the purview of the owners...the NRC has no role in the energy planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate."

The NRC license renewal proceeding focuses on plant aging issues, such as metal fatigue or the degradation of plant components, as well as environmental impacts related to an additional 20 years of plant operation. The NRC has consistently excluded from its proceedings issues raised by states and public interest groups that are not directly related to plant aging or to deficiencies in the environmental impact assessment. For example, during the license renewal proceeding for the Indian Point Power Plant in New York, the NRC dismissed from the proceeding most of the State of New York's contentions, including those regarding seismic vulnerability, plant vulnerability to terrorist attack, and the inadequacy of emergency evacuation plans for the plant. 17 million people live within 50 miles of the Indian Point nuclear facility.

**COMMENT:** To emphasize the NRC's complete misunderstanding of the seismic implications of license renewal at the nation's most recognized earthquake-prone reactor site—Diablo Canyon—It accepts without scrutiny only two pages regarding new seismic information in PG&E's 1274 page re-licensing application. On those 2 pages, (5-4, 5-5) the applicant regards the "potential fault" using the terms "*preliminary* results from an *ongoing study*," "performed and *initial evaluation*," "undertook a *preliminary* independent review" and after considering "the results of the deterministic analysis as a whole and the *current level of uncertainty*" the "NRC staff concludes that the postulated Shoreline Fault will not likely cause ground motions that exceed those for which DCCP has already been analyzed." (note: emphasis added).

**RECOMMENDATION:** It should be inconceivable to those charged with safeguarding the costs and reliability of California's electric supply to accept that notion that such incomplete seismic information, with no concrete conclusions, be accepted as definitive in any way. For an example of the consequences, one only need review (as AB 1632 mandates) the implications of the Kariwa-Kashiwazaki earthquake, which while considered a "success" by the nuclear industry because a meltdown or catastrophic release was avoided, could prove to be devastating to the reliability and costs of nuclear generation. No license renewal ratepayer funding should be granted utilities until the economic analysis of seismic disruptions—based on definitive and independently peer reviewed seismic data—is complete per AB 1632.

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Although the CPUC does not approve or disapprove license applications filed with the NRC, both utilities must obtain CPUC approval to pursue license renewal before receiving California ratepayer funding to cover the costs of the NRC license renewal process. The CPUC proceedings will determine whether it is in the best interest of ratepayers for the nuclear plants to continue operating for an additional 20 years. The proceedings will address issues that are important for electricity planning **but are not included in the NRC's license renewal application review.** (emphasis added)

**COMMENT:** It is clear from the NRC's Generic Environmental Impact Statement for License Renewal that seismic issues are not integral part of the relicensing process as the NRC has placed seismic issues under the broader heading of "Geology and Soils: Small Impact, Category 1". Yet, seismic concerns are the most important consideration for those who live in the shadow of Diablo Canyon is the vulnerability of both the aging reactors, the spent fuel pools and both currently licensed and anticipated onsite storage of high-level waste.

**RECOMMENDATION:** As citizens and ratepayers of this state rely on state oversight agencies and the legislature to take action in all matters for which they have authority, they must ensure that those issues—including the potential costs of a seismic incident—are addressed and resolved before the Diablo Canyon reactor can operate even one-year beyond current license terms.

The purpose of the CPUC license renewal review is to consider matters within the state's jurisdiction, including the economic, reliability, and environmental implications of

relicensing. For example, the CPUC will consider the cost-effectiveness of license renewal compared with and replacement power options.

**RECOMMENDATION:** A4NR requests that the CPUC consider full cradle-to-grave costs of nuclear generation, including not just capital and operations, but waste disposal as well, for resolving problems at the “back-end” of the nuclear process could equal or surpass the costs of generation, leaving future ratepayers and taxpayers responsible for safely securing waste from energy resource from which they received little, if any, benefits.

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To initiate the CPUC license renewal review, PG&E and SCE are required to submit license renewal feasibility assessments to the CPUC. For example, the CPUC required PG&E to submit an application by June 30, 2011, on whether renewing Diablo Canyon’s operating licenses is cost-effective and in the best interest of PG&E’s ratepayers. In letters to SCE and PG&E in June 2009, the CPUC emphasized that the utilities must address in their feasibility assessments all the issues raised in the AB 1632 Report. The CPUC specifically directed the utilities to undertake the following activities:...

The comprehensiveness, completeness, and timeliness of these activities will be critical to the CPUC’s ability to assess whether or not the utilities should apply to the NRC for license renewals. However, the utilities’ reports to date indicate they are not on schedule to complete these activities in time for CPUC consideration. In addition, PG&E has objected to providing the seismic studies to the CPUC as part of a license renewal review.

**RECOMMENDATION:** A4NR requests that the CEC, the CPUC and the legislature assert with clarity to both PG&E and SCE that not one penny of ratepayer funding will be expended for its NRC relicensing process until the state’s requested comprehensive studies are completed, reviewed and if necessary, recommendations implemented. The failure of the utilities’ to be able to meet the timelines for CPUC consideration are their own failures and must not be allowed to in any way preclude information that had been deemed to be of importance for ratepayers and state energy planning officials.

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In October 2008, PG&E commented to the Energy Commission on the draft AB 1632 Report that it does not interpret the requirement to submit a license renewal feasibility study to the CPUC as including seismic safety, which it considers to be “outside the scope of license renewal,” or those issues “that are not within the CPUC’s jurisdiction.” PG&E also articulated its belief that the plan for the Energy Commission and the CPUC to review the costs and benefits of license renewal and to assess whether or not the utilities should pursue license renewal “improperly infringes upon the sole jurisdiction of the NRC to determine whether or not nuclear license should be extended.” PG&E reiterated this point in a letter to the CPUC, specifying that it would provide the information requested in the AB 1632 Report, subject CPUC’s jurisdiction.

**COMMENT:** In its letter to PG&E, the CPUC indicated that the requested information is all subject to CPUC jurisdiction since it informs procurement planning. In its comments to the CEC and letter to the CPUC, PG&E fails to properly interpret the “Sun Desert”



Decision of 1983, selectively quoting sections on state pre-emption relating to the original Atomic Energy Act, but failing to mention the conclusion of the justices that:

“...whereas the States exercise their traditional authority over economic questions such as the need for additional generating capacity, the type of generating facilities to be licensed, land use, and ratemaking. This Court accepts California's avowed economic rather than safety purpose as the rationale for enacting 25524.2, and accordingly the statute lies outside the federally occupied field of nuclear safety regulation. Pp. 205-216.”

In spite of the NRC's proposed GEIS guidance for license renewals which suggests that seismic issues do not impact license renewals, A4NR, and a myriad of NGO's and state agencies disagree. After the 2007 Kashiwazaki-Kariwa earthquake it is vital that California's oversight agencies and legislature recognize the costs of seismic event, even absent a large-scale radioactive release. As reported in the San Luis Obispo TRIBUNE on October 13, 2009, AB 1632 author “...Blakeslee pointed to that incident, saying that the lack of seismic retrofit work on the Japanese plant resulted in \$12 billion in new costs to ratepayers.” The latest news from Japan regarding this event, posted the week after PG&E filed for license renewal at the NRC, is:

#### **Kashiwazaki-Kariwa unit 6 - When will it resume commercial operation?**

(December 1, 2009) **THE DENKI SHIMBUN Electric Daily News**

<http://www.shimbun.denki.or.jp/english/article/2009120102.shtml>

TOKYO, JAPAN --When unit 6 of Tokyo Electric Power's Kashiwazaki-Kariwa nuclear power station will resume commercial operation has attracted the attention of concerned parties.

All seven units of Kashiwazaki-Kariwa stopped operation after being damaged during the earthquake the year before last. Since then, after inspection and repair work, units 7 and 6 were restarted in May and August, respectively, this year and test operation prior to starting commercial operation has continued. Units 1 through 5 are current undergoing inspection and repairs. Unit 7 was temporarily shut down from September through November due to problems, and Unit 6 is expected to be the first unit to resume commercial operation.

In order to restart commercial operation, approval of three local governments (Niigata Prefecture, Kashiwazaki City and Kariwa Village) is necessary. With regards to unit 6, the committee of specialists appointed by Niigata Prefecture reached the conclusion on November 18 that "there were no issues for resuming commercial operation." Kashiwazaki City and Kariwa Village also judged that this conclusion was appropriate. Only the final judgment of Niigata Prefecture remained and it was thought that the resumption of commercial operation was a matter of time.

However, on the following day, November 19, there was a fire at the power plant facility and the attitude of the prefecture has hardened. The prefecture has decided to defer its final judgment until Tokyo Electric Power provides an explanation of the causes of the problem and preventive measures.

The prefecture with regards to its final judgment stated, "If the causes of the problem are rooted in power plant operating procedures, Tokyo Electric Power

may be required to take further measures." Thus, there is uncertainty again regarding resumption of commercial operation.

**COMMENT:** Thus, nearly two and a half years after the quake, none of the 8000 MW of nuclear power lost in Japan has resumed commercial operation, and costs continue to escalate. Quite clearly, there is a firm nexus between *seismic and economic* concerns, particularly for state energy planners and for ratepayer advocates. As the news story posted above indicates, there is also a role for a governmental unit as small as a local prefecture in Japan to voice their opposition to the startup of the plant, and to be able to prevent that startup despite a "go-ahead" from the Japanese nuclear regulatory authority. For those supporters of nuclear power who promote the idea on the notion of a "successful" program in Japan, perhaps they would be willing to invite the same measure of local jurisdictional control over nuclear operations as well.

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PG&E continues to object to a CPUC review of Diablo Canyon seismic studies as part of a license renewal review, and its current schedule would in fact not allow time for this review.

**COMMENT:** As pointed out above, clearly there are serious economic implications as witnessed by the Japanese situation.

**QUESTION:** Frankly, who's in charge of this process: the regulated utility or the state regulators? What is the legal basis for PG&E's objection as they want ratepayer funds for all aspects of studies and application?

PG&E is required to submit its license renewal feasibility assessment to the CPUC by June 30, 2011, but does not expect to complete updates to the seismic hazard model and the seismic vulnerability assessment until 2012 and 2013, respectively.

Furthermore, PG&E said that it will require ratepayer funding to undertake the 3D seismic mapping surveys recommended in AB 1632 and that it may use the CPUC license renewal review proceeding as an opportunity to request this funding. If this occurs, the results of these studies will likely not be available for CPUC consideration during this proceeding.

**RECOMMENDATION:** A4NR has no objection to funding 3D mapping or other seismic studies; however, no funding to pursue a license renewal application should be granted until all studies are complete and reviewed. Any upfront funding places ratepayers at risk and is based on no factual evidence that license renewal will result in reliable or cost-effective energy supplies.

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A similar issue arises with SCE. The utility plans to submit an application to the CPUC in late 2010 for funding to pursue an NRC license renewal application and to address issues from the AB 1632 Report and the CPUC. However, SCE anticipates using this application to also request funding for completing AB 1632 recommended studies. Furthermore, SCE anticipates filing its CPUC application in the third quarter of 2010, but does not anticipate completing many of its studies until the end of 2010.

**COMMENTS:** A4NR's comments regarding SCE are identical to our comments on PG&E's position on funding for license renewal before studies are complete and reviewed.

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Nuclear Waste Issues

After decades of federal efforts to establish a permanent geologic repository for spent nuclear fuel and high-level waste at Yucca Mountain, Nevada, development of the Yucca Mountain Repository Program will be suspended in 2010. The program has long been challenged by scientific and technical uncertainty about its suitability for isolating the wastes from the environment and has faced staunch political and legal opposition.

The federal energy and water appropriations bill for fiscal year 2010, signed into law in October 2009, eliminated all funding for development of Yucca Mountain, including further land acquisition, transportation development, and site engineering. This budget cut initiated by the President's budget proposal, demonstrates the Obama administration's belief that the Yucca Mountain repository is not a workable solution to the problem of nuclear waste disposal. This represents a major shift in U.S. nuclear waste policy.

**RECOMMENDATION:** A4NR believes that the lack of a workable solution over 42 years after the state in good faith granted a CPCN, and over 31 years after the state enacted California's Nuclear Safeguard Laws (PRC 25524) which "grandfathered" in Diablo Canyon and SONGS Unit 2 & 3, should trigger a reinvestigation into whether the "grandfather" clause would or should include a continuance allowing an additional 20 years of operation and the high level waste created, for which there remains no federal solution.

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Halting development of Yucca Mountain means that the federal government has no clear policy in place for the long-term disposal of nuclear waste. Possible options include long-term dry cask storage at reactor sites or at a few centralized storage facilities, and/or the development of commercial reprocessing.

The federal appropriations bill sets aside \$5 million to establish a Blue-Ribbon Commission of experts to investigate such alternative solutions and make recommendations to the Administration. It is not clear how the Commission will be chosen.

**RECOMMENDATION:** In essence, the nation's policy for the permanent disposal of highly radioactive waste remains "unclear" over 40 years after the state granted a CPCN relying on the federal governments promises. As such, A4NR requests reconsideration of the "grandfather" clauses of PRC 25524.

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The uncertainty surrounding U.S. nuclear waste disposal policy means that nuclear reactor operators, including PG&E and SCE, can no longer count on transferring spent

fuel to a federal nuclear waste repository in the near or medium-term future. As a result, the utilities must continue to store spent nuclear fuel at the reactor sites. For California, this means that the 6,700 assemblies of spent fuel (2,600 metric tons of uranium) currently being stored at operating and decommissioned nuclear plants in-state will remain at these sites for the foreseeable future.

**COMMENT:** It appears that California needs to understand the NRC's criteria for siting mid and long-term radioactive waste facilities. It would be helpful if various agencies could begin assigning actual numerical values to terms such as "medium-term." A4NR is willing to go out on a limb and state that the NRC has no such policy, which places the state and PG&E/SCE ratepayers at unknown risk. To allow an additional 20 years of radioactive waste production and storage on the state's fragile coast California must demand seismic siting criteria for high-level radioactive waste disposal and further demand Diablo Canyon and SONGS meet those criteria before any ratepayer funding for a license renewal is allowed.

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PG&E and SCE have built intermediate-term waste storage facilities at their plants, known as independent spent fuel storage installations (ISFSIs). The ISFSIs at Diablo Canyon and SONGS are currently licensed for 20 years, but they may be eligible for multiple license extensions. The NRC allows spent fuel to be stored at reactor sites in above-ground storage for 100 years and is considering extending that limit by 20 years. PG&E and SCE report enough storage space at their respective nuclear plant sites for all spent fuel generated through the plants' current licenses.

**QUESTION:** How many "multiple license extensions" may be granted, and what are the terms of those licenses in numerical values?

**COMMENT:** PG&E would need to build a new storage site for the highly radioactive material produced during a license renewal term. As explained to San Luis Obispo County during the license hearings for the initial ISFSI installation, PG&E would need to build any new storage area outside the existing, approved and NRC permitted plant footprint. This will require a re-opening of seismic issues that may prove unfavorable for long-term storage, thus forcing the utility to continue to store spent fuel from a relicense period in the densely racked pools. SCE's statement that there is room onsite to store waste through a license renewal is at best creative, especially if SCE is considering keeping the vulnerable spent fuel pools full through end of license renewal term. This is unconscionable in light of the National Academy of Sciences report on vulnerability of spent fuel pool storage and new seismic and erosion information.

The utilities have not reported plans to pursue the Energy Commission recommendation to modify their spent fuel pools' racking to a less dense orientation. However, the density of the spent fuel pools should decrease as the utilities move assemblies into dry cask storage. Thus far, PG&E has transferred 96 spent fuel assemblies to the Diablo Canyon ISFSI, and SCE has transferred 827 spent fuel assemblies to the SONGS ISFSI.

**QUESTION:** Can the CEC require that California nuclear utilities re-rack their spent fuel pools to a less dense orientation – to reduce reliability and economic risks? Such a

decrease in pool density may not be possible at SONGS and the CEC should require SCE to explain how they will store all waste onsite through the end of an anticipated license renewal without overcrowding of spent fuel pools?

With the federal nuclear waste program in limbo, at-reactor storage continues to be the de-facto federal spent fuel storage policy. If Yucca Mountain is permanently abandoned, a federal permanent geologic repository or centralized dry cask storage facility likely will not be available for decades. Consequently, even if the plants' operating licenses are not renewed, it is likely that spent fuel will remain at the reactor sites for an extended period. As discussed in the AB 1632 Report, on-site ISFSIs would not necessarily restrict the decommissioning of the rest of the site and its conversion to other uses.

**RECOMMENDATION:** A4NR would like to take this opportunity to reintroduce its vision of a renewable energy center (wind, sun, wave—off and onshore—and tidal) along with an energy efficiency think-tank and labor workforce retraining center. We believe this would replace several hundred, even perhaps a thousand MW, onsite and have the potential to devise technology to save a thousand more. This would bring in new green MW, new efficiency programs and technology, new jobs, new infrastructure, new property taxes, and reduce the radioactive footprint on our seismically active coast.

In addition to spent fuel, the nuclear plants generate low-level radioactive waste that must be disposed of at special facilities. In the past, the utilities shipped their low-level waste to several disposal facilities, but there is currently just one facility that will accept low-level waste from California reactors, and it accepts only the least radioactive grade of waste. As a result, PG&E and SCE are also storing more highly radioactive classes of low-level waste at the reactor sites. Each plant generates around 150 cubic feet per year of this waste from regular operations.

**RECOMMENDATION:** The absence of low-level waste disposal facilities and the resultant increase in costs of storage should be included in any cost-comparison studies of alternatives, and these studies should be completed and reviewed before any ratepayer funding is expended for the NRC's license renewal process.

#### Once-Through Cooling Page 114

As discussed in the section on natural gas power plants, the SWRCB released a draft policy in June 2009, on the use of coastal waters for power plant cooling. The SWRCB and the California EPA have found that SONGS' cooling system is responsible for about one-third of all OTC- related impingement mortality and entrainment losses along the California coast....There is little doubt that nuclear power facilities are the most "exempted, un-transparent, un-democratic" generation sources in the world. While it may be difficult to construct a alternative cooling system at SONGS due to lack of acreage; Diablo Canyon should have no such bounding resources.

**RECOMMENDATION:** A4NR reiterates its plan that, in the interest of ratepayers, funding should not be expended for cooling alternatives. Rather, the state should decide that nuclear licenses should not be extended beyond current terms, thereby

alleviating the need for cooling towers and/or expensive litigation after current licenses expire.

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If the SWRCB's policy is approved, the agency will direct PG&E and SCE to commission independent studies to assess the costs of alternative options for SONGS and Diablo Canyon to meet the requirements of the SWRCB's policy. These studies would be completed within three years of the effective date of the policy. The IEPR Committee believes that these studies should also be included in the cost-benefit assessment of the plants' license renewal feasibility studies.

**RECOMMENDATION:** These studies must be completed before the license renewal process can commence. Without the benefits of these studies, ratepayers are placed at risk of expending funds for an NRC license renewal that may never come to fruition.

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#### Climate Change Impacts

One final environmental issue is the potential impact of climate change on the nuclear facilities. The Energy Commission staff report, Potential Impacts of Climate Change on California's Energy Infrastructure and Identification of Adaptation Measures, discussed potential impacts of climate change on power plant infrastructure. Power plants located along the coast could be impacted by coastal erosion, sea level rise, and storm conditions. For example, Diablo Canyon pumps cooling water through an intake pipe that takes the full brunt of northern swells from Pacific storms. To avoid shutting down or tripping the units, the facility has had to curtail power twice per storm season (on average) because of debris buildup on the intake screens. The shutdowns can last anywhere from 18 hours to several days.

**RECOMMENDATION:** In addition to the problems cited above regarding Diablo Canyon, the erosion problem near San Onofre also demand attention. In earlier comments, A4NR cited the following current reference: The work, by scientists Cheryl Hapke of the USGS, Dave Reid and Bruce Richmond was published in the Journal of Coastal Research. The article is titled "Rates and trends of coastal change in California and the regional behavior of the beach and cliff system." Further studies on erosion, sea-level raise and storm impacts on cooling systems and reliable operation must be completed and reviewed before expending ratepayer funding for the NRC license renewal process.

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#### Nuclear Plants and Reliability

An issue of critical importance to the state for reliability planning is the possibility of a nuclear plant shutdown or even an extended outage, such as the multi-year outage at the Kashiwazaki-Kariwa plant in Japan following a major earthquake. The AB 1632 Report found that, given the current transmission system, a prolonged shutdown of SONGS could result in serious grid reliability shortfalls, whereas a prolonged shutdown of Diablo Canyon would generally not pose reliability concerns. However, the AB 1632

Report also found that further reliability assessments are needed to fully understand the reliability implications of extended outages at the nuclear plants.

Further studies are needed to understand what new generators, transmission lines, and/or demand response initiatives would be needed to prepare for the eventual shutdowns of the nuclear plants or to plan for possible extended outages while maintaining grid stability and local reliability. The need for and cost of these alternate resources should be considered in the cost-benefit assessment of the plants' license renewal feasibility studies and should also be considered in the context of CPUC and California ISO reliability planning. Given the long time frame required for permitting and building new generation and transmission resources, these studies should be completed soon.

**RECOMMENDATION:** These cost benefit assessments of alternate resources and reliability assessments should be completed before any ratepayer funding is expended for the NRC's license renewal process.

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Seismic Issues

Diablo Canyon and SONGS are located along California's seismically active coastline. The plants were designed to withstand large earthquakes without release of radiation or major damage; however, scientific understanding of the coastal fault zones has improved over the decades since the plants were designed, with a new fault discovered offshore of Diablo Canyon just last year.

**COMMENT:** It is important to note that Diablo Canyon was not "designed" but rather "redesigned" to meet current seismic disclosures and subsequent requirements. For example, in November, 1967 when the state granted the CPCN, page 645 states:

"A consulting seismologist testified as to the maximum size earthquakes that can be expected to occur on active faults located some 20 to 50 miles from the site and a consulting structural design engineer testified and presented a study showing that the plant can be designed and constructed to operate safely during and after such earthquakes".

In 1969, two Shell Oil geologists discovered the Hosgri Fault, but the information is proprietary and nobody is notified of the discovery. In 1975 the USGS issues its final report finding the Hosgri fault 2.5 miles offshore of Diablo and capable of a 7.5M quake. For a historical perspective on PG&E's responses to seismic issues, here are some newspaper headlines from the last 40 years:

Telegram Tribune, November 28, 1973, "PG&E expert says faults shouldn't peril Diablo"  
Telegram Tribune, May 21, 1976, "Hosgri fault—it's [sic] discovery a big surprise"  
San Jose Mercury News, October 28, 1981, [PG&E spokesman Richard] "Davin countered, 'it wasn't apparent to PG&E that it as a fault of major significance until further investigation was done."

Los Angeles Times, March 16, 1982, "Yet, in a private 1967 Atomic Energy Commission memo describing a meeting to discuss PG&E's application for a construction permit, the

agency noted that “PG&E ‘does not intend to do further trenching at the risk of uncovering geologic structures which could lead to additional speculation and possible delay in the project....”

With the announcement last year of the discovery of the Shoreline Fault, 1800 feet offshore, PG&E and the NRC quickly arrived at a decision regarding this new fault that, as indicated in the language of PG&E’s license renewal, uses only vague and uncertain terms with no conclusive, contemporary, or independently peer reviewed data. To wit: On those 2 pages, (5-4, 5-5) the applicant regards the “potential fault” using the terms “*preliminary* results from an *ongoing study*,” “performed and *initial evaluation*,” “undertook a *preliminary* independent review” and after considering “the results of the deterministic analysis as a whole and the *current level of uncertainty*” the “NRC staff concludes that the postulated Shoreline Fault will not likely cause ground motions that exceed those for which DCPD has already been analyzed.” (note: emphasis added).

**RECOMMENDATION:** Given that PG&E’s history of “under-assumptions” regarding earthquake faulting have plagued their projects from Bodega Bay to Humboldt to Diablo Canyon—all of them resulting in cost increases for ratepayers (billions in the case of Diablo Canyon) it is imperative that to guard against such future cost overruns, all the seismic studies required in AB 1632 be carried out in a timely manner and that the results be adopted and implemented before any permission is granted the utility to charge ratepayers in pursuit of NRC license renewal.

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Plant components that do not serve a safety function were designed for less stringent seismic standards than the core of the nuclear plants. A large earthquake could cause enough damage to these components to necessitate extended plant shutdowns—five of the seven reactors at the Kashiwazaki-Kariwa plant in Japan remain shut-down more than two years after being damaged by an earthquake.

**COMMENT:** As indicated by A4NR previously, no Kashiwazaki nuclear plants are generating commercial power since July 2007.

An extended plant shutdown would have economic, environmental, and reliability implications for ratepayers. The CPUC will therefore consider the risk of an extended outage as part of its license renewal cost-benefit assessment. To support this assessment, the AB 1632 Report recommended that utilities update the nuclear plants’ seismic assessments, including assessments of the earthquake and tsunami hazards at the plants, the vulnerability of non-safety related parts of the plants, and the time needed to repair the plants following an earthquake. It is crucial that the utilities complete these studies and submit them as part of the CPUC’s license renewal review.

**RECOMMENDATION:** A4NR would add “before any ratepayer funding for the NRC license renewal application process.”

In July 2009, the utilities reported to the Energy Commission that they intend to complete these assessments. However, both utilities reported plans to use a probabilistic approach to their seismic hazard assessments rather than the deterministic approach



recommended by the AB 1632 Report, and SCE did not commit to using some of the advanced mapping and survey techniques that were recommended. Furthermore, SCE's tight schedule for completing the studies raises questions about how comprehensive its seismic assessment will be. As described above, the utilities do not intend to complete all the studies in time for submittal to the CPUC with their license renewal feasibility studies.

**COMMENT:** Utilities granted ratepayer funding must abide by California consumer law – rates must be just and reasonable. For SCE and PG&E to designate which studies they will or won't do and when they will or won't do them to fails to protect the ratepayers who provide utility profits.

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In addition, PG&E is planning to request ratepayer funding to undertake the three-dimensional geophysical seismic reflection mapping surveys recommended in the AB 1632 Report. PG&E will not include the United States Geological Survey National Hazard Mapping Project models in its studies because the models do not include detailed information pertinent to the Diablo Canyon area. Instead, PG&E believes that information developed in its own studies will inform the USGS databases.

**QUESTION:** A4NR wonders why PG&E is deciding which studies to include for review by state oversight agencies and lawmakers. This pattern has not necessarily worked in the ratepayers best interest in the past and should not be followed today as the state decides whether or not to rely on aging reactors on a seismically active coast. As stated in A4NR's brief recap of PG&E's seismic history, it was USGS seismologists that confirmed the presence of the Hosgri Fault in 1975.

**RECOMMENDATION:** A4NR requests that *all* seismic studies pertaining to faulting near the state's operating reactors are included in any decision-making by oversight agencies and/or legislators. In addition, A4NR requests that all studies recommended by the CEC and the state legislature be complete, reviewed, and any recommendations implement before expenditure of ratepayer funding for PG&E to pursue its NRC license renewal application.

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PG&E has already completed initial assessments of two specific seismic hazards in the area of Diablo Canyon, concluding that seismic activity that could be generated by the newly discovered Shoreline Fault is within the design margins of Diablo Canyon. The NRC's preliminary assessment concurs with this conclusion. PG&E is conducting additional geophysical studies and will provide a final report in December 2010. PG&E has similarly concluded that new estimates of the near fault ground motions from large strike-slip earthquakes, including directivity and maximum component effects, reveal a lower hazard than previously thought and therefore do not represent an increased hazard to Diablo Canyon.

**COMMENT:** As stated earlier by A4NR, the NRC assessment of the Shoreline Fault is preliminary at best, and filled with vague words "preliminary," "initial," "uncertainty."

A4NR does not believe, given PG&E's record of non-disclosure and erroneous suppositions regarding earthquake faults, that state regulators can accept and make decisions based on an unsubstantiated "initial...preliminary" report.

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Research indicates that SONGS could experience larger and more frequent earthquakes than was anticipated in the original plant design and that additional research is needed to characterize the seismic hazard at the site. The AB 1632 Report recommended that SCE develop an active seismic research program for SONGS, similar to PG&E's Long Term Seismic Program, to assess whether the plant has sufficient design margins to avoid major power disruptions.

As of July 2009, SCE had not begun its updates to the SONGS seismic hazard and vulnerability assessments. Yet, the utility states that it expects to complete these by the end of 2010.... It remains to be clarified whether SCE plans to collect any new data on the seismic hazards in the SONGS region or whether it is planning simply to review currently available data.

**COMMENT:** A4NR fails to see how the potential economic threat of a seismic event that could strike at SONGS is any less substantial than that at Diablo, minus the known and existing faults at Diablo. However, as California nuclear history has shown us, a fault may not be present in 1967, but a reality by 1974. Therefore, the fact that the seismic studies for SONGS are decades old and badly in need of updating should make SCE's reporting on this matter one of urgency. As such, any ratepayer funding for license renewal at SONGS should face the same restrictions as those at Diablo Canyon: No ratepayer funding until all the AB 1632 studies are completed, analyzed and recommendations implemented.

Nuclear Plants and the Economy

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Nuclear power plants face a number of economic barriers, including high capital costs and long construction lead times. While nuclear plants are relatively cheap to run, construction costs are high. These costs are also highly uncertain since few nuclear plants have been constructed in the U.S. since the 1980s.

**COMMENT:** A4NR requests clarification on how the CEC arrived at the conclusion that nuclear power plants are "relatively cheap to run...." What criteria were used to arrive at this fiscal conclusion? Do "low operating costs" simply imply a low cost of uranium fuel, or does that take into account the expensive high-cost "O&M" operations and maintenance procedures as evidenced (in the past 5 years) by the replacement of steam generators, reactor vessel heads and turbine rotors at a cost of billions of dollars in ratepayer funded repairs? In another example of potential risks to economical operation and reliability, A4NR requests the CEC to demand clarification from the utilities on the wide discrepancies to their responses to questions on the future costs and availability of uranium fuel supplies. In their data responses to question J4, SCE states that, "it does not anticipate any potential shortage of uranium." This answer is in direct opposition to PG&E, whose answer to the same question was: "By 2015 there

could be a serious shortage of uranium supply to cover the base worldwide requirements

**RECOMENDATION:** With such divergent answers from California's two major IOUs, the CEC should require backup documentation for these predictions AND should require independent studies of future uranium supplies and projected costs

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Reactor Vessel Integrity

The NRC recently revised its regulations to provide licensees with a new alternative for assessing the probability of a crack forming through the wall of a reactor pressure vessel. If such a crack occurred, it could damage the reactor core and, in rare cases, release radioactive materials into the environment. The probability of crack formation relates directly to the extent of reactor pressure vessel embrittlement, which determines the ability of metals that make up the reactor pressure vessel to withstand stress without cracking. The old regulations required licensees to demonstrate that reactor pressure vessel embrittlement would not exceed a screening limit corresponding to a one-in-200,000-year probability of through-wall crack formation. While NRC's recently adopted regulations expand this requirement to a one-in-a-million- year probability, they also allow for the use of a less-conservative method for assessing the probability. With the old methodology, Diablo Canyon Unit 1 and nine other reactors would have exceeded the screening limit during a 20-year license extension and would not be eligible for license renewal unless they could reduce the embrittlement rate or demonstrate that operating the reactor would not pose an undue public risk. In contrast, the new method results in a much lower calculated embrittlement for most reactors, and is no longer expected to limit any U.S. reactor from obtaining a 20-year license renewal. (NUREG-1806, p. xxii and Appendix D)

**COMMENT:** The above quotes segment is taken out of chronological page order, but placed here after the section dealing with the economics of nuclear power. Rather than seen through the lens of a safety issue, the subject of embrittlement becomes one of economics. Recall the situation involving the steam generators at both SONGS and Diablo Canyon: These large components also suffered embrittlement due to manufacturing defects and engineering assumptions that did not hold true regarding radioactive bombardment and metal decay. At first, the NRC changes the rules so that the rate at which tubes would be "plugged" or taken out of service was modified to extend their life. The public was told that there was no safety problem and that reactors could operate with the plugged tubes. It wasn't but two years later that both utilities had moved into a full-fledged CPUC rate case to recoup nearly \$ 1 billion per facility to replace these defective parts. The analogy here is that the pressure vessel is yet another component that may fail before the end of its expected life—even with NRC changes to the standards that may be considered safe. While it is truly the purview of the NRC to determine if it can operate safely, when and if a determination is made that it *can't*—and the history of the steam generators bears this out (first they are "OK," then they *aren't*) then the question is: How much would it cost to replace? Since this problem of pressure vessel cracking is being brought to light at this early stage, it is only fair to ratepayers for the CPUC and CEC to request that the potential cost of replacing this pressure vessel be formulated into any future cost/risk/benefit analysis.

Nuclear Plant Safety Culture

Improvements to the safety culture and plant performance at SONGS will be reflected in improved ratings by the NRC and INPO and by shorter outages and higher capacity factors. If sufficient improvements are not demonstrated in the coming years, the implications of sustained safety culture lapses and the possible impact on reliability of the plants will need to be considered as part of the state's license renewal assessment for the plant.

**COMMENT:** On November 24, 2009, the NRC announced a special inspection at the Diablo Canyon power plant to address:

"On October 23, during a maintenance procedure, workers discovered that a set of switches that are intended to allow control room operators to remotely open cooling water valves were misaligned. The valves are part of a system that would collect water from the floor of the containment building for recirculation to cool the reactor during some severe accidents. If the valves could not be opened remotely, operators would be required to manually open them or use a different system to provide cooling water for the reactor."

Therefore, the Alliance believes that the CEC should not limit its concerns only to safety culture at SONGS, but include Diablo Canyon as well for ongoing evaluation. The Alliance for Nuclear Responsibility has broached these safety-culture issues with the Nuclear Regulatory Commission's Office of Inspector General as a symptom of an erosion of safety margins that might be attributable to the epidemic of retiring nuclear workers and inadequate training of the replacement workforce. A4NR has requested an audit of all safety-culture and component problems at the nation's reactor sites to determine if both are exacerbated by the aging workforce population. A4NR would like to see the state join our request

**RECOMMENDATION:** The CEC should review the NRC's draft policy on safety culture and, if appropriate, file comments: Comments on the changes will be accepted until Feb. 4, 2010, following publication of the draft safety culture policy statement in the *Federal Register*, (<http://edocket.access.gpo.gov/2009/pdf/E9-26816.pdf>). Comments may be mailed to: Alexander Sapountzis, Office of Enforcement, Mail Stop O4 A15A, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or e-mailed to: [alexander.sapountzis@nrc.gov](mailto:alexander.sapountzis@nrc.gov).

## Conclusion

The Alliance for Nuclear Responsibility finds that the California Energy Commission has provided a responsible review of the myriad of issues that require investigation if California is to depend on aging reactors for an additional twenty years beyond current license terms. A4NR has recommended clarifying and/or strengthening certain recommendations and it is our hope that in light of PG&E's premature filing with the NRC for a 20 year license renewal on November 24<sup>th</sup>, *before* studies are completed and some are even begun, that the CEC will seriously consider our recommendations.

In 1974, through the vision and determination of Los Angeles assemblyman Charles Warren, the Warren-Alquist act created this body we now know as the California Energy Commission. The passage of the Warren-Alquist Act also marked the beginning of a decision by this state to exercise national leadership on energy policy, and similarly, to exercise state control over determining California's energy planning and implementation.

Since 2005 the public has participated in the CEC's IEPR and AB 1632 process. Since 2005, Barbara Byron has included the public in the Commission's oversight process and carefully reviewed the large volume of reports and articles to ensure a complete record. The Commission's process was welcoming and the public's input respected. Most importantly, the process was transparent – a rarity when discussing the costs, benefits and risks of operating aging reactors in fragile coastal zones.

The Alliance hopes that this process will continue and that the Commission will follow through on all its recommendations and work with the CPUC and the state legislature to ensure that no ratepayer funding is expended before all studies are complete and reviewed.

Sincerely,

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