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07-AB-1632

DATE DEC 21 2007

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December 21, 2007

California Energy Commission
1516 9th Street, MS4
Sacramento, CA 95814-5512

Comments of the Alliance for Nuclear Responsibility on
AB 1632 NUCLEAR
POWER PLANT ASSESSMENT
DRAFT STUDY PLAN

Docket No. 07-AB-1632

The Alliance for Nuclear Responsibility appreciates the responsible mandate by our state legislature to protect ratepayers by analyzing the full costs, benefits and risks of California's dependence on aging nuclear reactors. Our comments will follow the format of the Draft Study Plan – changes and additions are underlined in blue.

Task 2: Seismic Vulnerability Assessment

Topic 1

Alliance comments are underlined in blue.

1. Review available evidence, including evidence arising from seismic events near nuclear reactors in other countries and states, including those generated by the July 2007, Kashiwazaki earthquake in Japan..
2. Review the scientific evidence related to the faults in the vicinity of each plant and consider information regarding the seismic setting of the surrounding area that might impact access to the plant, the transmission of power to and from the plant and the storage of highly radioactive waste

Topic 2

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Identify and assess existing and soon to be released studies, reports, and relevant data, discussing the seismic design of each major plant

- component and identify^{ing} the major plant components that are vulnerable to damage during a major seismic event. ^{Also} consider safety systems, nuclear steam supply systems, and balance of plant systems and structures. ^{In particular, focus on the portions of these studies, reports and relevant data that} identify the level of ground motion that could be sustained by key plant systems and structures and discuss the probability of these levels being exceeded.
2. Identify and ^{discuss existing information and soon to be released information and relevant data addressing} the seismic vulnerability of the key plant systems and structures to a major disruption. ^{Careful consideration should be made for key plant systems and structures that may experience stress from more than one seismic event} and
 3. Consider the vulnerability of ^{high-level radioactive waste storage casks}, transmission systems and access roadways, including evacuation routes, near the plant.

Topic 3

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. ^{Using existing information and soon to be released studies, reports and relevant data} create a table of critical components for each plant, their seismic capacities (fragilities), and their vulnerabilities to flood-induced damage. For each component in the table, determine the time to repair or replace the item for each ground motion level at the plant and for various-sized tsunamis. Describe the cumulative damage anticipated for a given seismic or tsunami event at the plant.
2. Compile similar information for infrastructure components such as ^{high-level radioactive waste storage casks}, transmission facilities and access roadways.

Topic 4

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Review the most current information available, ^{including new studies by the USGS to be submitted in the first half of 2008}, on the Hosgri Fault, as well as other faults in the area, with respect to their implications for causing an extended shutdown at Diablo Canyon.
2. Summarize the current state of knowledge regarding these faults, compare this information with the current seismic risk reports available for Diablo Canyon, and determine whether assessments of the plant's vulnerabilities and seismic frequencies require updating or modification.

3. Summarize the implications of thrust faulting as contrasted with slip/strike faulting on the vulnerabilities identified from available assessments. Particular attention will be paid to the influence of uncertainty in the determination of the displacement and the mean recurrence interval of significant seismic events.

The Alliance for Nuclear Responsibility strongly disagrees with PG&E's redlining of points 2 & 3 above. The issue of updating seismic information and analyzing the implications of thrust faulting as contrasted slip/strike faulting have been the subject of controversy for several decades. These issues were not resolved, but rather were ignored, in the most recent Nuclear Regulatory Commission's hearings on construction of a high-level radioactive waste storage facility adjacent to Diablo's reactors. The wording in Topic 4, should remain as it with the exception of including new information currently being studied by the USGS.

Topic 5.

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Discuss the NRC requirements triggering an update to seismic studies.
PG&E WOULD DELETE THE FOLLOWING:specific types of new information that could trigger a requirement to update the seismic risk of the plants. Examples include the occurrence of new earthquakes or the discovery of new faults or fault characteristics.
2. Assess the relative likelihood of the discovery of such new information.(deleted by PG&E)

Again the Alliance for Nuclear Responsibility strongly opposes PG&E's redlining of Topic 5. The Nuclear Regulatory Commission has a well-publicized history of ignoring evidence relating to seismic issues near nuclear plants. For example:

In 1973/74, after the Hosgri Fault was rediscovered in late 1973, both Scenic Shoreline and the Mothers filed motions to halt the construction of the plants. Both intervenors called for an investigation on the potential effects on the proposed seismic design of the plant from an earthquake on the Hosgri Fault . We also argued against the continued pouring of money into a plant that might not prove to be adequately designed. The response from the ASLB was that money would never enter into a decision. On May 2, 1974, the Atomic Safety and Licensing Board of the NRC denied a request to halt construction until there was more data on the earthquake fault.¹

In 1976, due once again to citizen intervention, the usual operating licensing procedure had to be altered because of the discovery of the Hosgri. A completely separate hearing was required to be held on the

¹ Telegram Tribune, May 2, 1974, Bruce Kyse

single issue of seismicity.

In 1977 PG&E, with the cooperation of the NRC, tried to invent an "interim" license. This was a push to license the plant while PG&E tried to justify their old seismic design figures to meet the new design criteria caused by the discovery of the Hosgri. Once again, internal memos obtained by the Mothers for Peace showed a great deal of pressure had been brought to bear on members of the USGS to revise their estimates regarding their concerns regarding Diablo's seismic design.

In 1978-79 a 3 month hearing on the seismic issue took place in San Luis Obispo. The NRC chairwoman ruled that two expert seismic consultants who had raised fears about Diablo's ability to withstand earthquakes would not be subpoenaed to testify at the plant's licensing hearings, but their publications would be admitted as evidence.² Although the NRC denied the subpoena, the opinion was overturned on appeal.

Finally in 2003, the NRC denied seismic contentions brought to the ASLB relating to storage of highly radioactive waste in dry casks onsite. The contention was not denied on merits, but the Board told intervenors that they would have to reopen original licensing proceedings to bring forth new information.

Representative List of Studies to be Reviewed for Seismic Vulnerability Assessment

1. Diablo Canyon and SONGS seismic studies, such as the following:
 - a. Individual Plant Examination of External Events (IPEEE) reports for SONGS and Diablo Canyon
 - b. *The Application of Probabilistic Techniques to Seismic Risk Analysis of the Diablo Canyon Plant*, PG&E
 - c. *Diablo Canyon Seismic Response Utilizing Logic Models to Determine Plant Response to External Events*, PG&E
 - d. *Final Report of the Diablo Canyon Long-Term Seismic Program*, PG&E
 - e. *A Probabilistic Seismic Safety Assessment of the Diablo Canyon Nuclear Power Plant*, N.M. Newmark
 - f. *Seismic Evaluation for Postulated 7.5M Hosgri Earthquake, Units 1 and 2, Diablo Canyon Site*, Docket Nos. 50-275 and 50-323, NUREG Vols. 1 through 7, PG&E
 - g. [Contention of San Luis Obispo Mothers for Peace...\(Legg and Namson\)](#)
2. Safety and risk assessment studies, such as the following:

² Telegram Tribune, 1978, Carl Neiburger

- a. NRC Safety Evaluation Reports
- b. NRC “State of the Art Reactor Consequence Analysis for Diablo Canyon”
- 3. Other resources, such as the following:
 - a. Studies and data produced by PG&E and SCE in response to the 2007 IEPR data requests
 - b. Reports and information from government agencies, including the California Coastal Commission, California Seismic Safety Commission, California Geologic Survey, the U.S. Geological Survey, and the County of San Luis Obispo

Task 3: Plant Aging Vulnerability Assessment

Topic 1

- 1. Identify and review available information regarding historical plant performance [throughout the United States](#) with respect to reliability, maintenance, aging, and power outages lasting longer than 6 months.
- 2. Consider events involving the repair or replacement of major equipment that resulted in outages or extensions of outages [and the cost to ratepayers and taxpayers due to these outages.](#)
- 3. Assess plant maintenance programs using data from the U.S. Nuclear Regulatory Commission (NRC) [and other oversight agencies and government offices, included but not limited to the Government Accounting Office, National Academy of Sciences and DOE.](#)
- 4. Review plant-specific staffing and maintenance plans pertaining to staffing [and expertise](#) levels and contingency plans for plant access and recovery of major equipment. Use plant-specific information if available or generic industry information.

Topic 2

- 1. Examine the implications for Diablo Canyon and SONGS, [including ratepayers impacts](#), from the failure or serious degradation of major plant components based on the experience and lessons learned from other nuclear power plants that have had failure or serious degradation of major plant components.
- 2. Review the long-term impact of radiation on system components and structures with particular focus on the potential for accelerated aging [and weakening of containment structures in the event of an act of nature, sabotage or terrorism..](#)
- 3. Review the potential of regulatory impacts due to the occurrence of a major event at another plant, [both the U.S. and abroad.](#)

Topic 3

- 1. Review [historical and current](#) information, assessments, and programs at Diablo Canyon, SONGS, and Palo Verde related to the safety culture at these plants.
- 2. Examine the NRC’s Multiple System Responses Program (MSRP)

results to infer any [historical and/or current](#) safety culture issues at Diablo Canyon or at SONGS.

Topic 4

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. [Review documentation](#) and assess Diablo Canyon's and SONGS' [historical and current](#) compliance with NRC plant maintenance requirements.

Topic 5

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Review plant staffing plans [focusing on the](#) attention [the plants'](#) paid to how the plants will maintain an adequate number of trained personnel in the operations, safety, and maintenance groups.
2. Examine the [existing industry, utility-specific and independent government or organizational studies, if available, addressing the](#) range of skills, training, and expertise required by plant employees, including technicians, operators, engineers, and safety personnel. Summarize and assess the quality of the training programs [and projected availability of replacement workers in light of the possibility of extending the operations of SONGS and Diablo Canon beyond current licensing periods.](#)
3. [Examine how will staffing plans be impacted by an industry-wide challenge to replace experienced personnel.](#)

Topic 6.

1. Review generic and plant-specific information regarding any trends in increased detection of radioisotopes in either the primary system or the environment at [California, U.S. reactors, and international reactor and waste facilities..](#)
2. [Summary of loss of property values or other negative impacts due to Tritium leaks at aging reactors in California and across the nation.](#)

Representative List of Studies to be Reviewed for Plant Aging Vulnerability Assessment

1. Studies and reports on nuclear plant aging, such as the following:
 - a. Development and Demonstration of Methods for Nuclear Power Plant Aging Risk Analysis, *Plant-Specific Data Collection and Interpretation*, PLG-0717, Volume1, Rev. 1, prepared for EG&G Idaho, Inc., Idaho National Engineering Laboratory
 - b. Aging PSA Guide, *Final Report of the Mitsubishi Heavy Industries, Ltd.*,

Aging Probabilistic Safety Assessment Report, prepared for Mitsubishi Heavy Industries, Ltd., PLG-1098

c. Lochbaum, David. *Walking a Nuclear Tightrope: Unlearned Lessons of Year-plus Reactor Outages*, Union of Concerned Scientists, September 2006.

d. Nuclear Plant Aging Research Program Plan, NUREG-1144, NRC

2. Reports and studies from federal agencies, including NRC Licensee Event Reports, the Nuclear Operations Analysis Center (NOAC) report, the Multiple System Responses Program report, and studies from the Office of Nuclear Regulatory Research and the U.S. Government Accountability Office

3. Reports on aging of equipment and components such as the following:

a. *Aging Assessment of Component Cooling Water Systems in Pressurized Water Reactors (Phase 2)*, NUREG/CR-5693

b. *Evaluations of Core Melt Frequency Effects Due to Component Aging and Maintenance Risk Assessment*, NUREG/CR-5510

c. *Aging Effects on Time-Dependent Nuclear Plant Component Unavailability: An Investigation of Variations from Static Calculations*, R.D. Radulovich

d. *BWR Control Rod Drive System Aging*, presentation at 19th Water Reactor Safety Information Meeting, R.H. Greene

Task 4: Impact of a Major Disruption

Scope of Assessment for Impact of Major Disruption Analysis

Topic 2

Add: Review data on major disruptions specifically in Japan over the past decade

Topic 3

Working with policymakers, grid operators, and utilities, consumer groups [other organizations and the public](#), [identify](#) the current transmission issues associated with a potential loss of power at SONGS or Diablo Canyon. Describe the role of SONGS and Diablo Canyon in maintaining system reliability.

Topic 4

1. Perform a reliability study in order to determine how much new transmission or generation capacity would be required in order to maintain reliability of the transmission system and adequate power supply in the event of extended outages at Diablo Canyon and/or SONGS. Use a production cost model to determine incremental power costs during such an outage.
2. Consider the impact of the loss of California's nuclear power plants on each utility's planning reserve margin and local and system capacity

requirements. Provide general parameters of the type and cost of incremental investments that might be needed in the event of extended nuclear power plant outages or retirements.

3. Perform an economic analysis of the costs of replacement power.

— Complete these analyses for the years 2008 and 2012 REPLACE with 2021 and 2025.

California is planning to reach its goal 2020. PG&E is spending ratepayer money (\$17 million according to testimony before Senator Kehoe), for a feasibility study of operating its aging reactors for another twenty years beyond 2025. SCE will be requesting similar funding for a study...Therefore A4NR requests that cost replacement power analyses be completed for the years 2022 and 2025 as well.

4. Consider what efficiency programs/incentives could be required if there is a decrease in the reliability of Diablo Canyon and/or SONGS, or in the event of extended outages.

Topic 5

1. Determine the public safety and economic impacts of an extended outage at Diablo Canyon or SONGS. Include the cost of replacement Power and efficiency programs/incentives, and the incremental costs of repairs and replacements in this assessment.

Topic 7

Assess the seasonal environmental and economic impacts of relying on replacement power sources and efficiency programs/incentives and the time and budget required to develop these power sources.

Topic 8

Compare the cost of the continued operation of the nuclear power plants to the cost of replacement power alternatives and efficiency programs/incentives. Include in these cost estimates the costs of any transmission system upgrades or extensions that would be required in order to make use of the generation portfolio.

Production Cost Modeling Approach:

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

The economic impacts of an extended outage at Diablo Canyon, at SONGS, and at both these plants will be assessed using the MarketSym production cost model.⁴ The contractor will assume that the outage occurs in the year 2012 and lasts for one year. The contractor will use the Energy Commission's Scenario 1(b), which was prepared for the 2007 IEPR, as the base case and will also

consider the possible retirement of aging gas-fired plants in Southern California, as identified in the Energy Commission's Scenario Analysis. In addition, the contractor will be cognizant of issues raised by the Ocean Protection Council in their assessment of the possible retirement of plants that use once-through cooling. The Alliance strongly opposes the removal of this last sentence by PG&E or the request of SCE on Dec 11, 2007. We have spoken to the Ocean Protection Council and studied the 2nd Circuit Court decision relating to once-through-cooling and this issue is currently a cost to marine life and has the possibility to impact tourism, fishing and local economies surrounding nuclear reactors. The Commission should also examine the cost of the potential upgrade of plant cooling systems from once-through cooling to the legally mandated Best Technology Available (closed cycle cooling or dry cooling).

⁴ MarketSym was used in the hourly dispatch analysis for the Energy Commission's Scenario Analysis.

Representative List of Studies to be Reviewed for Impact of Major Disruption Analysis

1. Studies on the social and economic risks of a possible disruption, such as the following:
 - a. Analysis of the Risk to the Public from Possible Damage to the Diablo Canyon Nuclear Power Station from Seismic Events, Units 1 and 2, Diablo Canyon Site, PG&E.
2. Studies on the cost of major outages at nuclear power plants and the impacts of aging on operating costs, such as the following:
 - a. *Review of Palo Verde 2005 Outages*, Report of GDS Associates, Inc. on Behalf of Utilities Division, Arizona Corporation Committee, August 2006
 - b. *An Analysis of Nuclear Power Plant Operating Costs: A 1995 Update*, Energy Information Administration, April 1995
3. Reports on PG&E and SCE reserve margins, such as the following:
 - a. PG&E and SCE Long-Term Procurement Plans
 - b. *2006 Resource Adequacy Report*, CPUC, March 16, 2007.
 - c. Energy Commission energy demand forecasts
4. Studies on the cost and environmental impacts of generation and transmission in California, such as the following
 - a. *Comparative Costs of California Central Station Electricity Generation Technologies*, Energy Commission, 2007
 - b. *Scenario-Based Assessment of Resource Plans Predicated on Large Penetration of Preferred Resources*, Energy Commission, 2007
 - c. *Strategic Transmission Investment Plan*, Energy Commission, 2005 and 2007
 - d. *Environmental Performance Report*, Energy Commission, 2003-2007
 - e. *California Ocean Protection Council Alternative Cooling System Analysis*
<http://www.resources.ca.gov/copc/OTC.htm>

Task 5: Nuclear Waste Accumulation Assessment

Scope of Nuclear Waste Accumulation Assessment

Topic 1

Quantify and describe the amounts of radioactive waste, [in weight and radionuclide dosages](#) generated at Diablo Canyon and SONGS over the plants' operating license periods. Consider the amounts of spent fuel and the amounts of each grade of low-level waste (i.e., Classes A, B, and C, and Greater than Class C) generated at each site.

Topic 2

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. [Build upon Review](#) assessments already completed [and soon to be completed](#) in the 2005 and 2007 IEPR proceedings that evaluated the plans for storage, transportation, and disposal of nuclear waste from Diablo Canyon and SONGS.
2. Review DOE's requirements for transportation casks and the need for repackaging. Assess the costs associated with DOE's proposed requirement to transfer spent fuel into Transportation, Aging and Disposal (TAD) canisters at reactors before transport to a repository.
3. Develop [Review](#) cost estimates for the Diablo Canyon and SONGS waste storage, [transport](#) and disposal plans.
4. [ADD-Determine the costs associated with DOE scenarios on radioactive waste removal from Diablo Canyon and SONGS; including costs for barging, weight limits on roads, rail access, impacts on freight transport within state, training and equipping of first responders.](#)

Topic 3.

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Review cost estimates to build, maintain, and protect the dry cask storage facilities at Diablo Canyon and SONGS [in perpetuity](#).
2. Assess the capacity of the ISFSIs to store all the spent fuel that will be generated through the initial reactor operating licenses and through an additional 20 years of license extension.
3. Compare historic costs to damage amounts that the utilities have [petitioned for](#), been awarded and [actually been paid](#) resulting from their breach of contract lawsuits against DOE.

4. Estimate the payments that Review information provided in connection with the 2005 and 2007 IEPR proceedings and PG&E and SCE's testimony and the decisions in the last General Rate Case before the CPUC regarding payments California ratepayers have made to the federal Nuclear Waste Fund in order to pay for the transport, storage, and disposal of Diablo Canyon and SONGS spent fuel.

Topic 4

1. Review and summarize available documents on the seismic capacity of Diablo Canyon's and SONGS' spent fuel pools and dry cask storage containers. Discuss the magnitude and ground motion of a seismic event necessary to cause functional damage to the spent fuel pool and storage containers, as well as the damage/failure modes. Consider the potential role of recovery actions to prevent or mitigate damage.
2. Review and summarize available documents on terrorist threats to spent fuel pools and storage containers. Identify the possible nature, type, and magnitude of terrorist attacks necessary to cause functional damage, as well as the damage/failure modes and the potential role of recovery actions to prevent or mitigate damage.
3. ADD -Assess how the containment systems necessary to withstand attack may be weakened over time by erosion, seismic events, defective parts or inadequate maintenance.

Topic 6

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Identify the Alliance for Nuclear Responsibility would leave "Identify" in and then add PG&E's request for Review and assess documents addressing the potential risks involved with the eventual transport off site of the spent fuel, which will involve movement of hazardous material over existing rights-of-way near populated areas, introducing the potential for an accidental or terrorist-caused release of radionuclides. The increased cost for trained and equipped personnel along transport routes for each shipment, in addition to the impacts to road and rail infrastructure and delay of freight shipments for twenty additional years of radioactive waste transport should be identified, reviewed and included in the analysis.

Topic 7

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Review and evaluate local and state emergency management plans for dealing with nuclear plant emergencies. Focus on elements of these

plans as they relate to spent fuel storage [and transport of highly radioactive waste](#) and how these plans might change if the spent fuel was removed from the site [or limited to current license terms](#).

2. Summarize [existing all information at reactor locations in the United States](#) and the potential emergency preparedness cost implications if spent fuel remains at the plant site for an indefinite period of time.

Topic 8

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Evaluate the long-term impacts of semi-permanent waste [\(define semi-permanent\)](#) sites on surrounding land uses, [transportation, emergency planning](#) and coastal access by comparing existing and planned uses and projecting how those future uses might be impacted if the nuclear waste remains onsite.

2. Analyze [studies, reports and data addressing](#) the impacts on property values, tourist revenues, and local economies. Determine land use impacts by examining the most recent and appropriate literature and studies and applying the conclusions to the sites being considered [\(considered for what?\)](#).

Topic 9

Provide an update on the status of the U.S. reprocessing initiatives (e.g. GNEP), federal waste management, and high level waste disposal activities.

Representative List of Studies to be Reviewed for Nuclear Waste Accumulation Assessment

1. Reports on the current spent fuel storage installations, such as the following:

a. *Diablo Canyon Independent Spent Fuel Storage Installation Safety Evaluation Report*, Center for Nuclear Waste Regulatory Analyses

b. Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) Submittal of Geologic Data Reports (11), in Response to U.S. Nuclear Regulatory Commission Docket No. 72-26, prepared for Pacific Gas & Electric Company, William Lettis & Associates, Inc.

2. Data produced by PG&E and SCE in response to 2007 IEPR data requests on radioactive waste generated at the nuclear plants and plans for and cost of waste storage and transport

3. Studies on the cost and risks associated with waste storage and transport options, such as the following:

a. Bunn, et. al. *Interim Storage of Spent Nuclear Fuel: A Safe, Flexible, and Cost-Effective Near-Term Approach to Spent Fuel Management*, Harvard University-University of Tokyo Joint Report, June 2001

- b. Bunn, et. al. *The Economics of Reprocessing vs. Direct Disposal of Spent Nuclear Fuel*, Harvard University, December 2003
- c. Shropshire, et. al. *Advanced Fuel Cycle Cost Basis*, Idaho National Lab, April 2007
- d. PG&E and SCE rate filings
- e. National Academies' review of safety and security of spent fuel storage (2005) and transport (2006)
- 4. Studies and local planning data related to the local economic impacts of spent fuel storage, such as the following:
 - a. *The impacts of nuclear facilities on property values and other factors in the surrounding communities* by Roger H. Bezdek, Robert M. Wendling, International Journal of Nuclear Governance, Economy and Ecology (IJNGEE), Vol. 1, No. 1, 2006
 - b. General Plans and websites for the Cities of Atascadero, Morro Bay, Pismo Beach and the City and County of San Luis Obispo.
 - c. SLO County Grand Jury Recommendation 2007
- 5. Studies, testimonies, and presentations related to Yucca Mountain and spent fuel transport by DOE, the State of Nevada, and the State of California
- 6. Information on and reviews of DOE's reprocessing initiative, such as the following:
 - a. DOE reports and presentations
 - b. *Review of DOE's Nuclear Energy Research and Development Program*, National Academies, 2007

Task 6: Assessment of Other Nuclear Power Policy and Planning Issues

In this task, the contractor will consider a number of additional policy and planning issues that should be examined as part of the Nuclear Power Plant Assessment. These will include examining the life cycle costs and environmental impacts of nuclear power plants compared with energy alternatives, assessing the impact of certain rising prices on the cost of nuclear power, assessing local economic impacts of nuclear power and alternative power sources, and evaluating the costs and benefits of obtaining license extensions for California's nuclear plants.

Scope of Nuclear Power Policy and Planning Issues Assessment

Topic 1

PG&E redlines are included. Where the Alliance has no opposition to the utility's changes to the draft there are no comments, where we disagree or have additional comments they are underlined in blue.

1. Compare the life cycle costs and environmental impacts of nuclear power to the life cycle costs and environmental impacts of alternative

baseload [and distributed](#) power sources that could be added in California, [Evaluate including](#) the impacts of once-through cooling and greenhouse gas emissions [related to nuclear power generation](#). [The Alliance for Nuclear Responsibility requests that the original language of the last sentence not be amended to PG&E's language on this topic.](#)

Topic 2.

Examine the potential sources for additional [baseload and distributed](#) power in the state and construct a reasonable portfolio of resources from those potential sources.

Topic 3

Monitor proceedings at the NRC, [Congress and state agencies](#) related to security measures at [new and aging](#) nuclear power plants and spent fuel storage facilities. If additional security requirements are imposed, assess the economic impacts of these requirements on Diablo Canyon and SONGS.

Representative List of Studies to be Reviewed for Nuclear Power Policy and Planning Issues Assessment

1. Reports on power generation life cycle costs, such as the following:
 - a. *Comparative Costs of California Central Station Electricity Generation Technologies*, Energy Commission 2007
 - b. *Scenario-Based Assessment of Resource Plans Predicated on Large Penetration of Preferred Resources*, Energy Commission 2007
 - c. *Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs*, National Academies, 2006
 - d. Data produced by PG&E and SCE in response to 2007 IEPR data requests on costs of Diablo Canyon and SONGS
 - e. Shropshire, et. al. *Advanced Fuel Cycle Cost Basis*, Idaho National Lab, April 2007
2. Reports on the nuclear labor market, such as the following:
 - a. NRC and U.S. Department of Labor reports, data, and presentations on the supply-demand balance in the nuclear plant labor market
 - b. Leonard Bond, Kevin Kostelnik, and Richard Holman, *Addressing the Workforce Pipeline Challenge*, ANS Winter Meeting and Nuclear Technology Expo, INL/CON-06-11700 November 2006
3. NRC reports and decisions related to reactor and spent fuel storage security, including from the following proceedings:
 - a. Docket 72-26: Diablo Canyon dry cask storage licensing
 - b. State of Massachusetts and State of California petitions for rulemaking PRM 51-10 and PRM 51-12: Environmental impact assessments of spent fuel storage (including impacts of sabotage)

The following are comments/questions made at the CEC's Dec 12th workshop on the Draft Study Plan:

- Q. Will analysis include recent information resulting from July 2007 earthquake in Japan?
- A. Yes
- Q. Will the analysis include how more than one seismic event might challenge the ability of the reactors and/or waste facility to withstand additional quakes, sabotage or terrorism?
- A. Yes
- Q. Will the analysis include the possible need and costs to again replace large and expensive components such as steam generators, turbine rotors, reactor vessel heads, etc...?
- A. Yes
- Q. Is the plan to review more than completed studies, such as reports, USGS research, data, legislation that will be completed in the next year or would provide valuable information in a comprehensive analysis?
- A. Yes
- Q. Will combined renewable, sustainable, efficiency sources be considered as possible replacement power options?
- A. Yes
- Q. Will coastal erosion – historical and predicted be considered in final report?
- A. Depends on resources
- Q. Will the plan include review of costs of license renewals where active interventions are in place? Ex. Pilgrim, Ma and Indian Pt., NY.
- A. Yes
- Q. Will the plan included the cost of need for additional storage sites if license renewals are allowed to be applied for by the state and/or granted by the NRC for an additional 20 years?
- A. Yes
- Q. Will the plan consider the possible costs of or possibility of aging reactors such as SONGS and Diablo Canyon if new NRC security criteria recommendations for new reactors are applied to existing reactors?
- A. Not sure

In addition, the Alliance for Nuclear Responsibility supports the recommendations made by Scott Fielder relating to the costs of decommissioning. We ask that all “back-end” costs be included in analysis plan.

The final comments of the Alliance for Nuclear Responsibility have to do with an inclusive process. Workshops should be held in reactor communities at least once before plan is in final draft. In today's energy market, planning requires that energy generation planners be visionary. Therefore, the CEC should invite input from the renewable/sustainable/efficiency based organizations.

Is there a process for disclosure of all meetings with consultants, staff and commission with legislators, other agencies, industry and utility representatives and other organizations? For this analysis to be perceived as unbiased it would be valuable to be able to access the subject matter of those meetings. A list serve for those interested in the AB 1632 analysis would be very helpful to all interested in the analysis.

It is vital that there is public confidence that the state has independently reviewed, analyzed and made recommendations with safe, reliable, economic and secure energy supplies.

Respectfully submitted,

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