

CALIFORNIA ENERGY COMMISSION1516 Ninth Street
Sacramento, California 95814Main website: www.energy.ca.gov

In the matter of:)	Docket No. 09-IEP-1L
)	
Preparation of the)	COMMITTEE DATA REQUEST
<i>2009 Integrated Energy Policy Report</i>)	Nuclear Power Plant-Related Data
_____)	

REQUEST FOR DATA RELATED TO CALIFORNIA'S NUCLEAR POWER PLANTS

As part of the California Energy Commission's *2009 Integrated Energy Policy Report (2009 IEPR)* proceeding, the IEPR Committee is requesting that Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and Sacramento Municipal Utility District (SMUD) provide data related to the Diablo Canyon Power Plant, Humboldt Bay Plant, the San Onofre Nuclear Generating Station (SONGS), Palo Verde, and Rancho Seco, as specified in Attachment A.

Public Resources Code (PRC) section 25301 directs the Energy Commission to assess and forecast all aspects of energy demand and supply at least every two years. These assessments and forecasts serve as the foundation for energy analyses and policy recommendations to the Governor, Legislature, and other agencies. The broad strategic purposes of these policies are to conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

To perform these assessments and forecasts, the Energy Commission may require submission of data from electric and natural gas utilities and other market participants. On April 16, 2008, the Energy Commission issued an Order Instituting Informational Proceeding to gather and assess information to assist in preparing the *2009 IEPR*, which is required by PRC section 25302. In that order, the Energy Commission delegated authority in this matter to the IEPR Committee and directed the Committee "to preside over this proceeding and take all actions necessary and appropriate to comply with all applicable legal requirements of the Public Resources Code, the Government Code, and implementing regulations."

In 2006, the California Legislature enacted Assembly Bill 1632 (Blakeslee, Chapter 722, Statutes of 2006; codified as Public Resources Code 25303), which directed the Energy Commission to assess the vulnerabilities of large baseload power plants greater than 1,700 megawatts to a major disruption due to a seismic event or plant aging, the potential impacts of such a disruption, the costs and impacts from waste accumulating at these plants, and major issues related to the future role of these plants in the state. California's two operating nuclear power plants, Diablo Canyon and the San Onofre Nuclear Generating Station, are the only two California plants that meet the 1,700-megawatt baseload criterion.

In 2008, the Energy Commission adopted *An Assessment of California's Nuclear Power Plants: AB 1632 Report*, as required by AB 1632, which made recommendations on nuclear-related efforts for the 2009 IEPR. The January 9, 2009 Scoping Order for the 2009 IEPR identified the following topics related to the state's nuclear power plants that would be covered in the 2009 IEPR:

1. Report on the utilities' progress in implementing the recommendations contained in the AB 1632 report.
2. Discuss progress made in working with the California Public Utilities Commission to develop a plan for reviewing the costs and benefits of nuclear plant license extensions, determine the scope of evaluation of extensions, and the criteria for assessment.
3. Evaluate uncertainties of the effects of outages at the nuclear plants and what modifications may be needed in long-term planning and procurement processes to ensure that replacement resources are acquired in a timely way.
4. Report on the status of federal nuclear waste disposal/management programs and federal efforts to establish a waste repository at Yucca Mountain.

The deadline for utilities to submit the requested information is Wednesday, July 22, 2009.

Public Participation

The Energy Commission's Public Adviser's Office provides the public assistance in participating in Energy Commission activities. If you would like information on how to participate in the 2009 IEPR Proceeding, please contact the Public Adviser's Office at (916) 654-4489 or toll free at (800) 822-6228, by FAX at (916) 654-4493, or by e-mail at [PublicAdviser@energy.state.ca.us]. If you have a disability and require assistance to participate, please contact Lou Quiroz at (916) 654-5146 at least five days in advance.

Please direct all news media inquiries to the Media and Public Communications Office at (916) 654-4989, or by e-mail at [mediaoffice@energy.state.ca.us]. If you have technical questions about this data request, please contact Barbara Byron of the Energy Commission's Executive Office at (916) 654-4976 or by e-mail at [bbyron@energy.state.ca.us]. For general questions regarding the IEPR proceeding please contact Lynette Esternon Green, IEPR project manager, by phone at (916) 653-2728 or by e-mail at [lesterno@energy.state.ca.us].

The service list for the 2009 IEPR is handled electronically. Notices and documents for this proceeding are posted to the Energy Commission website at [www.energy.ca.gov/2009_energypolicy/index.html]. When new information is posted an e-mail will be sent to those on the energy policy e-mail list server. We encourage those who are interested in receiving these notices to sign up for the list server through the website [www.energy.ca.gov/listservers/index.html].

JEFFREY D. BYRON
Commissioner and Presiding Member
Integrated Energy Policy Report Committee

JAMES D. BOYD
Vice Chair and Associate Member
Integrated Energy Policy Report Committee

Electronic Mail Lists: Energy Policy, Nuclear

Note: The California Energy Commission's formal name is the State Energy Resources Conservation and Development Commission.

ATTACHMENT A

Section 1: Background

The Energy Commission is requesting that utilities with operating nuclear power plants in California provide the data described in Section 2. These data will provide a foundation for the analyses and recommendations in the *2009 Integrated Energy Policy Report*. This information is also needed to continue the Energy Commission's nuclear policy assessment initiated in 2005 and continued through the 2005, 2007, and 2008 IEPRs, as well as to support legislative mandates and provide information needed to support the Energy Commission's input into federal waste management proceedings.

Public Resources Code (PRC) Section 25301 directs the Energy Commission to conduct regular assessments of all aspects of energy demand and supply. These assessments serve as the foundation for analyses and policy recommendations to the Governor, Legislature, and other agencies. The broad strategic purposes of these policies are to conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

To carry out these regular assessments of expected and needed electricity supplies, "the Commission shall conduct... (an) assessment of the availability, reliability, and efficiency of the electricity and natural gas infrastructure and systems including, but not limited to,...western regional and California electricity and transmission system capacity and use." (PRC Section 25303(a)[3])

If respondents have questions about the information being requested, Energy Commission staff will work with the utilities to clarify the information requests. General questions about these data requests should be directed to Barbara Byron at bbyron@energy.state.ca.us or by phoning (916) 654-4976.

Filing Instructions

The general instructions for responding to these data requests are provided below:

1. Each section and/or question identifies the specific nuclear power plant associated with the section's/question's data requests. We encourage Southern California Edison Company (SCE) to coordinate responses with its co-owners for San Onofre Nuclear Generating Station (SONGS)-related data requests.
2. If the respondent believes certain data or information is confidential or not intended to be released publicly, the respondent should provide a specific rationale for claiming confidentiality (please see below). Further, the respondent should provide a

reference to specific federal or state laws or regulations that provide the confidentiality treatment sought by the respondent.

3. Unless otherwise specified, the period for which data and documents are requested is **2004 through the most recent year that information is available (for example, 2009)**.
4. Unless otherwise specified, every effort should be made to provide the requested information in digital/electronic format such as CD/DVD-ROM, Portable Document Format (PDF) files, Excel spreadsheets, or similar formats. Links (URLs) to documents on Internet websites are acceptable. However, a URL link should be verified as working and must point to the specific document and not be general (for example, a general link to www.nrc.gov is not acceptable).

When to File

The Energy Commission requires that the utilities provide the Energy Commission the information, as described below, on or before **July 22, 2009**. At a later date, the 2009 IEPR Committee, which is comprised of Commissioner Jeffrey Byron as the Presiding Member and Vice Chair James Boyd as the Associate Member, may direct that additional data be filed to assess particular issues or policy proposals.

Who Must File

California utilities owning and/or operating the Diablo Canyon Nuclear Power Plant, Humboldt Bay Plant, San Onofre Nuclear Generating Station, Palo Verde Nuclear Generating Station, and Rancho Seco are required to file information as indicated below. Please note: Where the information is available through another forum, utilities are asked to identify a web link and a contact person (name, phone number, and e-mail address).

What Must be Filed

For all filings, parties are requested to submit the following:

- A brief cover letter, addressed to the Energy Commission's Docket Office;
- A compact disc containing all required data; or
- A paper copy of required data if not available in electronic format.

Where to File

Submit all requested data to:

California Energy Commission
Docket Office
Attention: **Docket 09-IEP-1L**
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Data that is submitted with an Application for Confidential Designation, however, must be sent to the Executive Director of the Energy Commission rather than to the Docket Office, as explained in the next section.

How to Apply for Confidential Designation of Submitted Data

The Executive Director of the Energy Commission has the overall responsibility for determining what information submitted with an application for confidentiality to the Energy Commission will be deemed confidential. Parties who seek such a designation must identify the specific information and describe why the information should be protected from release, the length of time such protection is sought, and whether the information can be released in aggregated form.

Certain categories of information provided to the Energy Commission, when submitted with a request for confidentiality, will be automatically designated as confidential and do not require an application. The types of data that are eligible and the process for obtaining this confidential designation are specified in California Code of Regulations, Title 20, section 2505(a)(5).

The process for requesting a confidential designation for the data is described below. A more detailed description of this process is provided in Title 20 of the California Code of Regulations, Section 2501 et seq. (See *Energy Commission Regulations*).¹ Parties must make a separate written application to the Executive Director that specifies which data within the body of all submitted material warrants a confidential designation. A document or electronic file bearing a “confidential” stamp will not suffice. A formal application is necessary.

¹ California Energy Commission regulations can be found at: <http://www.energy.ca.gov/siting/title20/index.html>

The following information items are needed by the Executive Director to make a confidentiality determination:

1. A printed cover letter bearing the following address:

Melissa Jones
Executive Director
California Energy Commission
1516 Ninth Street, MS 39
Sacramento, California 95814-5504

2. The data. For this data request, the data must be submitted on a compact disc that bears the name of the utility and the following sub-docket number:

Docket #09-IEP-1L. The confidential information must be clearly and properly labeled.

3. A signed and dated “penalty of perjury” certification must be included in the hard copy and electronic format, containing the following paragraphs, signature line, and signature by the person primarily responsible for preparing the application:

“I certify under penalty of perjury that the information contained in this application for confidential designation is true, correct, and complete to the best of my knowledge.” And,

“I certify that I am authorized to make the application and certification on behalf of (company, firm, partnership, trust, corporation, or other business entity, or an organization or association.)

4. In addition, the application for confidentiality submitted to the Executive Director may be deemed incomplete and returned to the applicant if the application does not contain the following:

- Identification of the information being submitted, including title, date, file size (for example, pages, sheets, MB), and sub-docket number;
- Description of the data for which confidentiality is being requested;
- Description of the length of time for which confidentiality is being sought, with an appropriate justification, for each confidential data category request;
- Identification of applicable provisions of the California Public Records Act (Government Code Section 6250 *et seq.*), and/or other laws, for each confidential data category request;
- A statement that describes how each category of confidential data may be aggregated with other data for public disclosure;
- Description of how the information is kept confidential by the applicant and whether it has ever been disclosed to a person other than an employee of the applicant, and if so, under what circumstances, and

- A statement attesting that: a) the specific records to be withheld from public disclosure are exempt under provisions of the Government Code, or b) the public interest in nondisclosure of these particular facts clearly outweighs the public interest in disclosure.

The items listed above should be hand-delivered or mailed to the Executive Director's office in a sealed package (or envelope) marked "Confidential."

If the filer is seeking confidential designation of information that is substantially similar to information that was previously determined to be confidential by the Commission, the application need only contain a certification, identical to that filed with the application for confidential designation of new information, stating that fact and that all the facts and circumstances relevant to that prior determination of confidentiality remain unchanged.

Application packages deemed incomplete will not be reviewed by the Executive Director. Instead, incomplete application packages will be placed in a "suspense" file, and the filer will be notified by mail and by e-mail about the deficiencies in the application. The filer has 14 calendar days to correct the deficiencies and to deliver to the Executive Director an amended *Application for Confidential Designation*, including the signed and dated "penalty of perjury" certification. If the Executive Director has not received the amended application within 14 calendar days from the date the letter was received, all information associated with the deficient application package will be deemed public information and docketed accordingly.

Once an application package is complete, the Executive Director of the Energy Commission has 30 days to render a decision regarding the confidentiality request. Confidentiality determination letters are signed by the Executive Director. If the letter states that the Executive Director has determined that the submitted data does not warrant confidential designation, then the applicant has 14 calendar days to appeal the Executive Director's decision to the full Commission. More specific questions about confidentiality may be directed to Kerry Willis at [kwillis@energy.state.ca.us] or (916) 654-3967.

Section 2: Nuclear Power Plant Data Request

A. Environmental Impacts (Diablo Canyon, SONGS 2 and 3)

1. Please provide copies of any feasibility or cost/benefit studies completed within the past three years for devices, technologies, or procedures that would mitigate cooling water impacts on the marine environment. For PG&E, this would apply to any studies that have been completed besides the *Diablo Canyon Cooling Tower Feasibility Study* (March 2009) by Enercon Services, Inc. and PG&E's "Comments on the Workshop on Options for Maintaining Electric System Reliability when Eliminating Once-Through-Cooling Power Plants" (May 26, 2009).

2. Please provide copies of any studies, evaluations, or assessments of radioactive material leaks or other hazardous materials discharges, particularly tritium, from the plant since 2006. These include: (1) permitted discharges of hazardous materials through the facility NPDES permit, (2) radioactive liquid/gaseous releases within the guidelines and limits of the Federal Operating License, (3) any “un-permitted” or accidental releases or spills, and (4) general studies on routine plant discharges.
3. Please submit copies of any notices of violation received from local, state or federal regulatory or trustee agencies related to environmental, public health or natural resource issues from the power plant since 2006.

B. Spent Fuel Generation (Diablo Canyon and SONGS 1, 2, and 3)

1. Please update and complete any data gaps in the following Table 12 from the *AB 1632 Assessment of California’s Operating Nuclear Plants: Final Report*, October 2008 (CEC-100-2008-005-F, page 213).

Table 12: Waste Generated at Diablo Canyon and SONGS (Unit 2 and Unit 3 only)

		Spent Fuel		Low-Level Waste			
		(No. of assemblies)	(Metric tons of Uranium)	Class A (ft ³)	Class B (ft ³)	Class C (ft ³)	GTCC (ft ³)
Diablo Canyon	Generated through 2007	2,642	1,136	8,130 ('02-'07)	804 ('02-'07)	563 ('02-'07)	Unknown
	2008 through Initial License	1,668	717	22,406	2,546	1,786	Unknown
	License Extension	2,112	908	17,480	2,680	1,880	Unknown
	Decommissioning	None	None	240,752	23,308	1,148	866
	Total	6,422	2,761	288,768	29,338	5,377	
SONGS	Generated through 2007	2,702	1,138	35,914 ('01-'07)	220 ('01-'07)	115 ('01-'07)	Unknown
	2008 through Initial License	2,270	988	SCE declined to provide this information.			Unknown
	License Extension	3,024	1,326				Unknown
	Decommissioning	None	None				~2,700
	Total	7,996	3,452				

2. For each of the years 2004-2008, how much spent nuclear fuel was generated by each unit (Diablo Canyon, SONGS 2 and 3, Palo Verde) and what is the average annual spent fuel generation rate for each unit over the lifetime of the plant?

C. Spent Nuclear Fuel Storage

1. Please provide updates to Table 14 from page 217 of the *AB 1632 Assessment of California's Operating Nuclear Plants: Final Report*, October 2008 (CEC-100-2008-005-F): Please also provide the information in metric tons of uranium.

Table 14: On-Site Spent Fuel Storage Capacity (number of assemblies)

	Diablo Canyon	SONGS Units 2 & 3
ISFSI Capacity	1,280	312
Planned Expansions	3,136	1,488
Total Planned ISFSI Capacity	4,416	1,800
Spent Fuel Pool Capacity	2,648	3,084
Total On-site Storage Capacity	7,064	4,884
Assemblies Generated during Current Licensing period	4,310	4,972

2. What is the current total amount of spent fuel (number of assemblies and metric tons of uranium) stored in storage pools at the plant?
3. What are the updated annual spent fuel pool operating and maintenance costs? Are any major capital investment projects anticipated for the spent fuel pools? If so, what are the anticipated costs?
4. What is the current status of the Interim Spent Fuel Storage Installation (ISFSI) and projected schedule for transfer of spent fuel to the ISFSI? (Diablo Canyon, SONGS 1, 2, and 3, Humboldt Bay)
5. What is the current amount of spent fuel being stored and planned for storage at the ISFSI? (SONGS 1, 2, and 3, Diablo Canyon, Palo Verde)
6. How long is the spent fuel cooled in the spent fuel pools before being transferred to the ISFSI? (Diablo Canyon, SONGS 2 and 3, Palo Verde)
7. What is the status of ongoing legal challenges regarding the Nuclear Regulatory Commission's (NRC) approval of Diablo Canyon's ISFSI license? (Diablo Canyon)
8. Should an offsite spent fuel storage or disposal facility becomes available, would the spent fuel stored onsite require repackaging before being transported offsite? How and where might spent fuel stored in dry casks at the reactor be repackaged, if needed, for transfer offsite to a storage or disposal facility? Please update information on the facilities that are available onsite to repackage, load and/or transport the spent fuel offsite by truck, rail and/or barge. (Diablo Canyon; SONGS 1, 2, and 3; Rancho Seco; Humboldt Bay; Palo Verde)
9. Please describe to what extent the ISFSI packaging is compatible with the Transportation Aging and Disposal (TAD) packaging system that DOE proposed

for transport to Yucca Mountain and what modifications to the existing site facilities might be required to ensure compatibility? (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay; Palo Verde)

10. Please provide updated information on the amount and status of any damaged spent fuel that is currently being stored at the plant. Please describe any special considerations or requirements for long-term storage of damaged spent fuel in the pools or ISFSI or for transport of damaged spent fuel offsite. (Diablo Canyon, SONGS, Humboldt Bay, Palo Verde)
11. Is any spent nuclear fuel generated by the plant unaccounted for by the plant owner? (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay; Palo Verde)
12. What are the estimated costs and potential risks of relying indefinitely upon onsite interim storage facilities? Please provide a copy of any cost/benefit study on the costs and risks of long-term or indefinite onsite storage (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay; Palo Verde)
13. What are SCE's plans for increasing on-site storage capacity to accommodate all of the spent fuel generated during SONGS current operating license? (SONGS)
14. What are the current estimates for how long spent fuel can be safely stored in the ISFSIs without repackaging or refurbishing any ISFSI components? For ISFSI components with design lives of less than 50 years, please specify the design life for each component and describe 1) what steps would be needed in order to continue to store spent fuel in the ISFSI beyond that design life, 2) the cost of these steps, and 3) the new design life of the component after these steps are taken (Diablo Canyon, SONGS, Humboldt Bay, Palo Verde)
15. What progress has been made in returning spent fuel pools to a more open racking configuration, while maintaining compliance with NRC cask and spent fuel storage requirements as recommended in the *AB 1632 Report* (p. 15)? (Diablo Canyon, SONGS)
16. What are the current estimated total costs to construct and fill the Diablo Canyon and SONGS ISFSIs with all the spent fuel expected to be generated through the current operating license? What would be the estimated total cost to construct and fill the ISFSIs with all the spent fuel that is expected to be generated through a 20-year license extension? (Diablo Canyon, SONGS)
17. What are the current estimated costs for the maintenance, operation, and security for the ISFSI? What are the estimated costs for storing spent fuel in the ISFSIs through the end of the plants' current operating licenses? What would be the additional operations, maintenance, and security costs resulting from delays in shipment to offsite storage lasting up to 25 years (for example, through the year 2034)? (Diablo Canyon, SONGS, Humboldt Bay, Palo Verde)

D. Spent Nuclear Fuel Transport and Disposal Issues (Diablo Canyon; SONGS 1, 2, and 3; Palo Verde)

1. Given the possibility that the Yucca Mountain program will be terminated (except for the license application proceeding), what are the current plans for indefinite onsite storage of spent fuel?
2. Please provide a description of the utilities' current understanding of the U.S. Department of Energy's (DOE) spent fuel acceptance schedule for a spent fuel repository or a federal centralized interim spent fuel storage facility.
3. Please provide a copy of the most recent information provided to the DOE for the Delivery Commitment Schedule as part of the Standard Contract for Disposal of Spent Nuclear Fuel. This information should include shipping modes (truck, rail, or barge), delivery year, range of discharge dates listed from earliest to latest, and metric tons of uranium.
4. Please provide annual projections of the number of shipments of spent fuel offsite by truck, rail and/or barge that will be generated during the plant's operating license. Please provide the same projections through a 20-year license extension.
5. Regarding possible shipment offsite to a centralized interim spent fuel storage facility, to what extent is the shipment schedule the responsibility of DOE rather than the plant operator? Please explain the division of responsibilities between DOE and the plant operator regarding shipping schedule.
6. What are the plans for spent nuclear fuel cooling before fuel is transported offsite once a storage or permanent disposal facility becomes available? For example, what is the minimum time that spent fuel must be cooled before being transported offsite? Will the "oldest fuel" be transported first? If not, why not?
7. What is the total amount (in dollars) that California ratepayers (or the utility) have contributed to date to the Nuclear Waste Fund for electricity generated by the nuclear power plant?
8. What are the annual contributions in dollars to the Nuclear Waste Fund by each California utility for electricity generated by the plant? If the amount varies by year, please provide a year-by-year breakdown of the amounts contributed.
9. Please update information provided in 2008 on the status of litigation associated with DOE's non-performance under the Standard Contracts. Please

also provide a copy of any briefs (DOE's and the utilities) and any substantive court rulings specific to the power plant that have been filed since 2008.

10. Please provide any damage estimate studies prepared by the utility as part of litigation regarding DOE performance of its obligations under the Standard Contract. (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay; Palo Verde).
11. If a final ruling in the non-performance litigation suit is still pending, what is the amount of estimated damages being sought? How will a damage award be shared by ratepayers and shareholders?

E. Low-Level Waste Storage, Transport and Disposal (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay)

1. Please provide updated information, since provided in 2008, on the amount of low-level radioactive waste, as categorized as Class A, B, C, or Greater-than-Class C waste, that has been generated each year at the nuclear power plant since the start of the plant's operations. Please also provide updated information on the amount of each type of low-level radioactive waste that will be generated through the current operating license, through a 20-year license extension, and through the end of plant decommissioning.
2. Please provide information, updating the information provided in 2008, on the transport and disposal costs through 2008 for each of these low-level waste types.
3. What are the current plans for where and how each class of waste will be stored or transported offsite for disposal? What percentage of each class of low-level waste was transported by transport mode (e.g., rail, truck, or barge) in 2008? What percentage is estimated to be transported by mode through the end of the current license?
4. What are the current and projected total costs of low-level waste disposal through the term of the current operating license, through a 20-year license extension, and through the end of decommissioning based on current and projected market prices for low-level waste disposal?

F. Seismic and Tsunami Issues (Diablo Canyon, SONGS, Humboldt Bay)

The Energy Commission adopted in November 2008 several recommendations regarding Diablo Canyon and SONGS (See: *An Assessment of California's Nuclear Power Plants: AB 1632 Report*, CEC-100-2008-009-MF) related to seismic and

tsunami issues. The following section includes requests for information on progress being made in carrying out these recommendations:

1. Please report on the seismic hazard and vulnerability assessments that are planned, in progress, or were recently completed (since last reported in 2008) and the significant findings and conclusions from these studies. What are the implications of this research in assessing whether plant design margins are sufficient to avoid major power disruptions due to a major earthquake or whether ISFSI design margins are adequate? (Diablo Canyon, SONGS, and Humboldt Bay)
2. What refinements, if any, have been achieved or are being conducted in ground motion models to account for ground motion near an earthquake rupture and what are the implications of these refinements to the design and reliable operation of Diablo Canyon considering both safety-related and non safety-related systems, structures and components (SSCs) of the plant? (Diablo Canyon)
3. Please describe the seismic vulnerability assessments that are planned or are in progress for Diablo Canyon that supplement the Long Term Seismic Program (LTSP). What are the major findings and conclusions from these studies? (Diablo Canyon)
4. Recent high resolution seismic reflection data collected by the US Geological Survey (spring 2008) revealed a previously unknown but apparently active fault zone between the San Diego Trough fault zone (SDTFZ) and the San Pedro Basin fault (SPBF). The interpretation of this data is that the new fault connects the SDTFZ and the SPBF, forming a combined fault zone about 250 km in length and that the new combined fault zone may pose more significant seismic hazard than previously recognized. Has SCE assessed whether this recent research has implications for the long-term seismic/tsunami vulnerability of both safety-related and non safety-related systems and components of SONGS? If so, what are the results of the assessment? (SONGS)
5. The *AB 1632 Report* recommended that SCE develop an active seismic hazards research program for SONGS similar to PG&E's LTSP to assess whether there are sufficient design margins at the plant to avoid major power disruptions. The Report further recommended that such a program should prioritize and include further investigations into the seismic setting at SONGS and assess whether recent or current seismic, geologic or ground motion research near SONGS has implications for the long-term seismic vulnerability of the plant. Please report on the results of these seismic research efforts. (SONGS)
6. Please report on PG&E's overall assessment of the Shoreline Fault including the results of additional geophysical surveys conducted in 2009. Do the ground motion models indicate larger than expected seismic hazards at Diablo Canyon?

If so, was the plant built with sufficient design margins to continue operating reliably after experiencing these larger ground motions? (Diablo Canyon)

7. The *AB 1632 Report* recommended that PG&E and SCE use three-dimensional (3-D) geophysical seismic reflection mapping and other advanced techniques to explore fault zones near the plants. Please report on any progress in carrying out this recommendation and describe what advanced mapping techniques are being planned or initiated to study fault zones near Diablo Canyon and SONGS. Given that a major seismic event could result in an extended plant shutdown, please comment on the costs and benefits of such advanced studies. (Diablo Canyon, SONGS)
8. Please describe PG&E's assessment of the implications of a San Simeon-type earthquake beneath Diablo Canyon. This assessment should include expected ground motions and vulnerability assessments for safety-related and non safety-related plant SSCs that might be sensitive to ground motions in the near field of an earthquake rupture. (Diablo Canyon)
9. The *AB 1632 Report* recommended further assessments that consider such a San Simeon-type earthquake from a deterministic basis (i.e., using a probability of 1) to evaluate the full implications of this earthquake, particularly for non-safety related plant SSCs and reliability. Please report on the status of these recommended assessments. (Diablo Canyon)
10. The *AB 1632 Report* noted that updated seismic hazard analyses incorporating the USGS National Seismic Hazard Mapping Project models and the UCERF-2 data base would provide additional information for regulators and the public regarding the seismic hazard at the plant sites. Please discuss the relevance of these models and the UCERF-2 database for the studies that might be required as part of the license renewal feasibility assessments for the plant. (Diablo Canyon, SONGS)
11. What efforts are planned, in progress or have been completed to install a permanent GPS array for helping to resolve seismic uncertainties in the vicinity of SONGS? (SONGS)
12. What efforts are planned, in progress or have been completed to review the tsunami hazard at the plant consistent with the Energy Commission's recommendation to assess tsunami vulnerability using new data from NOAA and second-generation tsunami run-up maps from the University of Southern California (USC)? Please provide the results of any tsunami hazard studies for the site that have been conducted in 2008 or 2009, and their implications for plant vulnerability and reliability. (Diablo Canyon, SONGS, Humboldt Bay)
13. What seismic design codes, standards and criteria were used in the design of these plants for the non safety-related SSCs? What key non-safety related

SSCs, if damaged by an earthquake, could result in a prolonged plant outage? (Diablo Canyon, SONGS).

14. Please describe the investigations that are planned, are in progress or have been completed for Diablo Canyon and SONGS to address the question of SSC compliance with current building codes and other current seismic design standards for non safety-related plant SSCs. Please include in this description any investigations planned or underway to evaluate the vulnerability of non safety-related plant SSCs in light of the changes to seismic design codes and standards since these plants were built. (Diablo Canyon, SONGS)
15. What are the estimated outage times to repair/replace these non-safety related SSCs and what are the repair/replacement plans to minimize plant outage time? (Diablo Canyon, SONGS)
16. Significant global warming issues for coastal nuclear power plants include sea level rise and increased storm activity in the form of hurricanes, cyclones, typhoons. Please describe any studies planned, underway or completed regarding global warming phenomena and their effects on the plant. (Diablo Canyon, SONGS, Humboldt Bay)
17. Please provide a copy of any testimony or comments on seismic issues and tsunamis that have been provided in 2008 and 2009. (Diablo Canyon, SONGS, Humboldt Bay)

G. Steam Generator and Reactor Vessel Head Replacements (Diablo Canyon, SONGS and Palo Verde)

1. What is the current status of and schedule for steam generator replacement at each unit (SONGS and Palo Verde)?
2. Please describe the completed steam generator replacement project at Diablo Canyon and any lessons learned. (Diablo Canyon)
3. Please provide copies of quarterly or annual status reports or compliance filings that have been submitted to the NRC, the California Coastal Commission, or other state regulatory commission since 2006. (Diablo Canyon, SONGS, Palo Verde)
4. What are the expected off-line dates for the power plant due to the steam generator replacement projects? (SONGS, Palo Verde)
5. Please describe any lessons learned from other steam generator replacement projects requiring cutting holes in containment to exchange the new steam generators with the old ones? (SONGS)

6. What is the current status of the reactor vessel head replacement project?
Please provide copies of quarterly or annual status reports or compliance filings that have been submitted to the NRC, the California Coastal Commission, or a state regulatory commission. (Diablo Canyon, SONGS 2 and 3, Palo Verde)
7. Are any other major (greater than \$20 million) retrofit projects planned? If so, please describe. (Diablo Canyon, SONGS 2 and 3, Palo Verde)

H. Decommissioning (Diablo Canyon; SONGS 1, 2, and 3; Rancho Seco; Humboldt Bay; and Palo Verde)

1. Please describe the status of plant decommissioning plans/projects and provide updates on the estimated total plant decommissioning costs.
2. Please provide updated estimates of the amounts of low-level waste to be generated and ultimately disposed of during plant operation and decommissioning and the cost of this disposal based on current and projected market prices for low-level waste transport and disposal.
3. Please provide a copy of the application and associated work papers submitted to a state regulatory commission in the most recent decommissioning-related proceeding.
4. Please provide a copy of submittals to the NRC over the period 2006-2009 related to decommissioning plans for the nuclear power plant.
5. Please provide a copy of substantive filings submitted to a state regulatory commission or the NRC over the period 2006-2009 concerning the status of decommissioning of the plant, including the status and adequacy of decommissioning trust funds.
6. What are the recent plans and status of efforts to store, transport offsite, and dispose of large plant components, including the old steam generators at Diablo Canyon, the SONGS 1 reactor vessel, the reactor vessel heads (after removal), and any other large radioactive plant components associated with the plant?

I. Plant Performance (Diablo Canyon, SONGS 2 and 3, Palo Verde)

1. Please provide hourly generation data for each unit for 2001-2008.
2. Please include GADS (Generating Availability Data Systems) Data for 2001-2008 on availability and outages.

3. For each of the periods in which one or more of the units were operating at reduced output during 2001-2008, please provide an estimate of the cost of replacement power (\$/MWh).
4. What are the schedule, duration, and purpose of any planned outages that exceed 15 days that are planned to occur through 2016?
5. Please provide any studies or reports that describe the characteristics of the resources that would be needed to replace the plant in the 2020s (when current operating licenses for the plants are scheduled to expire) in terms of baseload capacity and energy, ancillary services, transmission support, grid stability, and local reliability.
6. Please describe plans for replacing power from the plant if an outage lasts longer than 90 days.
7. If there is a prolonged outage (one year or more) at the plant, what are the contingency plans for replacement power?
8. Please provide copies of plant evaluations conducted by the Institute of Nuclear Power Operation (INPO) and any INPO Performance Index for the facility from 2007-2009. As for other areas, confidentiality protection will be provided for proprietary information as needed upon identification by the respondent.
9. How would portfolio needs and “best fit” criteria change in the absence of the nuclear facility for short-term (up to 90 days) and mid-term (91 days – five years) procurement?
10. What resources might be needed to provide grid stability to the system in the absence of the nuclear plants for an extended outage during the summer? Would replacement power purchased by the utility be likely to come from those resources?

J. Nuclear Fuel (Diablo Canyon, SONGS 2 and 3, Palo Verde)

1. How many months of nuclear fuel does the utility currently have under contract (including uranium, enrichment, and transportation services?) How many months into the future does the utility typically contract for nuclear (uranium) fuel? What is the current mix of short-term and long-term fuel supply contracts, where long-term is five years or more?
2. What are the major factors influencing the all-in-cost of uranium fuel to the utility?
3. Please provide a copy of the utility’s most recent forecast for expected uranium fuel prices covering at least the next five years and for 10 years, if available.

4. What is the utility's current outlook for uranium supply and the potential for a shortage?

K. Nuclear Insurance

1. Please provide current information on the insurance policies concerning nuclear liability claims for these facilities. (Diablo Canyon; SONGS 1, 2, and 3; Rancho Seco; Humboldt Bay; Palo Verde)
2. What is the current maximum liability for secondary financial protection for any licensed commercial reactor in the United States that experiences a nuclear liability loss? (Diablo Canyon; SONGS 1, 2, and 3; Rancho Seco; Humboldt Bay; Palo Verde)
3. Does the plant have nuclear property, decontamination, and debris removal insurance, and if so what is the maximum coverage? (Diablo Canyon; SONGS 1, 2, and 3; Humboldt Bay; Rancho Seco; Palo Verde)
4. Does the utility have any form of coverage for outage expenses and replacement power costs, and, if so, what is the deductible and what is the maximum coverage? (Diablo Canyon, SONGS 2 and 3, Rancho Seco, Palo Verde)
5. Does the utility have nuclear liability and property tax insurance for non-certified acts (as defined by the Terrorism Risk Insurance Act) for terrorism-related losses, including replacement power costs, and, if so, what is the deductible and what is the maximum coverage? (Diablo Canyon; SONGS 1, 2, and 3; Rancho Seco; Humboldt Bay; Palo Verde)

L. Relicensing or Plant Retirement (Diablo Canyon, SONGS 2 and 3)

1. Please describe the current status and overall schedule for plant license renewal activities related to a license renewal application to the NRC. What is the current estimate for the amount of time needed to complete a license renewal application and submit it to the NRC? What studies for your plant are underway and are needed to support such an application to the NRC? What is the schedule and planned studies that will be completed for the license renewal feasibility studies for the CPUC and in response to the AB 1632 assessment recommendations? (Diablo Canyon, SONGS 2 and 3)
2. Please describe the license renewal studies to be completed for the plant (for example, the general topics and areas of investigation) and provide a status report, including any results, of license renewal feasibility studies that are planned, are in progress or have been completed.

M. Other Issues (Diablo Canyon, SONGS 2 and 3, Palo Verde)

1. Please describe any major fires or safety related events occurring at the plant (2005-2009) that were reported to the NRC, for example, transformer fires. Please describe the cause of the event and corrective action taken. (Diablo Canyon, SONGS)
2. Please provide updated information on the total revenue requirements for the power plant for each year, since an operating license for the facility was issued? Please indicate for each of these years whether the annual revenue requirements were determined through a cost-of-service or performance-based mechanism. Where possible, please break down these revenue requirements into fixed and variable operating costs, capital additions, return on equity, and return of equity (depreciation). (Diablo Canyon, SONGS)
3. What are the current estimates for the projected total plant lifetime costs including costs for plant design and construction, operation, maintenance, fuel, repair and retrofit, emergency response planning, security, insurance, decommissioning, waste storage, transport, and disposal, with and without license renewal? (Diablo Canyon, SONGS)
4. Operators of nuclear power plants are expected to face a critical shortage of plant workers in the coming years as the current labor force retires. Nearly half of all employees in the nuclear industry are over 47 years old. What is the estimated percent of the employees at Diablo Canyon and SONGS that will be eligible for retirement over the next five? Please update information provided on what PG&E and SCE are doing to recruit and train plant workers, for example, engineers, technical workers, and managers, to replace these retiring workers. (Diablo Canyon, SONGS, Palo Verde)
5. Nuclear power plants also are expected to face shortages in key reactor materials and components for which the supply and production worldwide is limited. Please describe how these shortages might affect currently operating plants, if specialized reactor components need to be replaced through plant retirement. What is the lead time for delivery of key reactor components, for example, reactor vessel heads? (Diablo Canyon, SONGS, Palo Verde)
6. To protect plant workers, plant assets, and equipment in an emergency, please describe recent reassessments of the adequacy of access roads to the plants and surrounding roadways for allowing emergency personnel to reach the plant and to allow local communities and plant workers to evacuate. (Diablo Canyon, SONGS)
7. Please describe the current status of worker recruitment and training programs (plant operation and maintenance manuals, etc.) to help ensure that knowledge

and experience with the plant, particularly with respect to plant operation and maintenance and strong safety cultures are instilled in new workers. (Diablo Canyon, SONGS, Palo Verde)

8. Please provide an update of efforts you have made to maintain and enhance effective safety culture and equipment maintenance programs at your plants, including worker training, transfer of institutional knowledge to newer employees, maintaining adequate staffing levels and other program areas. (Diablo Canyon, SONGS, Palo Verde)
9. Please describe safety culture issues that have arisen at SONGS, the NRC's response to the lapses in safety culture at SONGS and the NRC's concerns about plant performance. Please provide copies of NRC plant assessments and reports. Please describe SCE's overall plan and progress being made to address these safety culture issues at SONGS. (SONGS).