CALIFORNIA ENERGY COMMISSION
1516 Ninth Street
Sacramento, California 95814

Main Web site: www.energy.ca.gov

In the matter of:	)	Docket No. 06-IEP-1N
	)	
Preparation of the	)	
2007 Integrated Energy Policy Report	)	NOTICE OF COMMITTEE
(*IEPR*)	)	WORKSHOP
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Notice of IEPR Committee Workshop on Nuclear Power Issues

The California Energy Commission's (Energy Commission) 2007 Integrated Energy Policy Report (IEPR) Committee (Committee) will conduct a two-day workshop to review the status of federal programs to manage and permanently dispose of or reprocess spent nuclear fuel; issues related to California's operating nuclear power plants; and the environmental, safety, and economic implications of a continued or increased role of nuclear power in California's energy future. Information discussed at the workshop will be considered in the development of the *2007 IEPR*. Chairman Jackalyne Pfannenstiel is the Presiding Member and Commissioner John L. Geesman is the Associate Member of the Committee. Other Commissioners may attend and participate in this workshop. The workshop will be held:

MONDAY, JUNE 25, 2007 and THURSDAY, JUNE 28, 2007
9 a.m.
CALIFORNIA ENERGY COMMISSION
1516 Ninth Street
First Floor, Hearing Room A
Sacramento, California
(Wheelchair Accessible)

Audio from this hearing will be broadcast over the Internet.
For details, please go to: www.energy.ca.gov/webcast/

To arrange for a call in and participate in the meeting,
please call (800) 857-6618 by 9:00 a.m.
Passcode: IEPR Call Leader: Lorraine White

Purpose

The Committee is seeking public comment on issues related to the status of federal programs to manage and permanently dispose of or reprocess spent nuclear fuel; issues related to the continued operation of California's nuclear plants; and the environmental, safety, and economic impacts of these plants. To maximize the value of this effort, a list of "Key Questions" is provided to focus, but not limit, the discussion, particularly as it pertains to options for future policies and program improvements. Policies and issues discussed in this workshop will be used to inform the development of the Energy Commission's *2007 IEPR* and associated energy policy recommendations.

The workshop agenda, as well as workshop documents, will be posted on the Energy Commission's Web site: [www.energy.ca.gov/2007_energypolicy/documents].

Background

The Energy Commission is required to prepare a biennial integrated energy policy report, or *IEPR*. The most recent *IEPR* was adopted November 2005, and updated in 2006. The *2007 IEPR* will be adopted in October 2007, and submitted to the Governor and the Legislature. The IEPR process identifies future statewide energy needs, assesses the major energy trends and issues facing the state, and uses these results to recommend energy policies that balance broad public interests to conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. As part of this process, the Energy Commission is examining the environmental, safety, and economic implications of California's reliance on nuclear power for a significant amount of its non-fossil fuel based electricity and is assessing the status of the federal program for permanently disposing of and reprocessing spent nuclear fuel.

California law prohibits the construction of any new nuclear power plants within the state until the Energy Commission finds that the federal government has approved and there exists a demonstrated technology for the permanent disposal or reprocessing of spent fuel from these facilities.[1] California's existing nuclear power plants provide a significant amount of California's non-fossil fuel based electricity, but they also produce significant amounts of spent nuclear fuel.

[1] In June 1976, California enacted legislation directing the California Energy Commission to perform an independent investigation of the nuclear fuel cycle. This investigation was to assess whether the technology to reprocess nuclear fuel rods or to permanently dispose of high-level nuclear waste had been demonstrated and approved and was operational. (See PRC 25524.1 [a] [1], 25524.1 [b], and 25524.2 [a] for a precise description of the specific findings and conclusions). After extensive public hearings, the Energy Commission determined that it could not make the requisite affirmative findings concerning either reprocessing of nuclear fuel or disposal of high-level waste. (See *Status of Nuclear Fuel Reprocessing, Spent Fuel Storage and High-Level Waste Disposal,* P102-78-001, January, 1978.) As a result, the development of new nuclear energy facilities in California was prohibited by law.

As part of the development of the *2005 IEPR*, the Committee began a comprehensive assessment of the status of currently operating nuclear power plants in California, the status of federal spent fuel storage/disposal programs and reprocessing, and the potential role of nuclear power in California's energy future. The Committee held a two-day workshop on nuclear power in August 2005, and heard 25 speakers participate in four sessions.[2] In addition, a consultant's report entitled *Nuclear Power in California: Status Report* was prepared by MRW & Associates, Inc. It was issued for comments in August 2005, and finalized in March 2006.[3] The major nuclear-related conclusions of the *2005 IEPR* are as follows:

- A demonstrated technology for the permanent disposal or reprocessing of spent nuclear fuel does not yet exist. Consequently, the Energy Commission could not approve a license application for the construction of a new nuclear power plant in California at this time.
- Reprocessing is more expensive than waste storage and disposal and continues to have implications for U.S. nonproliferation efforts.
- California needs a comprehensive assessment of the implications of indefinitely relying on at-reactor interim spent fuel storage and should evaluate the viability of centralized interim fuel storage proposals.
- California should evaluate whether the fees it charges for the transport of spent nuclear fuel through the state are sufficient to cover its costs, and the state should continue to participate in collaborative processes at the national and regional level to ensure that the state's interests are adequately represented.
- The California utilities should coordinate their plant outages to assure adequate resource availability during the replacement of the nuclear plants' steam generators.
- California should continue to monitor the status of the U.S. Department of Energy's (DOE) programs for the development of advanced nuclear technologies.

Since the 2005 IEPR workshop on nuclear power issues, market, regulatory, and legal changes have occurred that may impact the cost, safety, and reliability of nuclear power plants. For example, the Energy Policy Act of 2005 has established a number of subsidies for new nuclear power plants, and several U.S. utilities are now considering developing new plants. In California, projects to replace the steam generators at the San Onofre Nuclear Generating Station and the Diablo Canyon nuclear power plant have begun. In Arizona, the Palo Verde Nuclear Generating Station has been plagued by operational problems.[4] In addition, the federal government has attempted to take

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[2] Transcripts of the workshop and presentations can be found at the Energy Commission's Web site: [http://energy.ca.gov/2005_energypolicy/documents/2005_index.html#0815+1605].

[3] The final consultant's report is published on the Energy Commission's Web site: [http://energy.ca.gov/2006publications/CEC-150-2006-001/CEC-150-2006-001-F.PDF].

[4] See, for example, Report of GDS Associates on Behalf of the Utilities Division, Arizona Corporation Commission. Docket No. E-01345A-05-0826. August 17, 2006, p. 9. Available on the Internet, [http://images.edocket.azcc.gov/docketpdf/0000057900.pdf:]. Accessed February 12, 2007.

steps towards the development and licensing of a geological repository at Yucca Mountain and has initiated a program to develop proliferation-resistant reprocessing technologies.

Workshop Participation and Comments `

The Committee is seeking the participation of interested parties in discussing these issues as part of the 2007 IEPR proceeding. The Committee encourages interested parties to submit written comments in advance of the workshop, but no later than 5:00 p.m. on June 15, 2007. Please include the docket number, **No. 06-IEP-[1N]**, "Energy Report" and indicate **Energy Report: Nuclear Power, 2007 Workshops** in the subject line or initial paragraph of your comments. Those submitting written comments by electronic mail should provide the comments in either Microsoft Word format or Portable Document Format (PDF), but parties must also submit one paper copy to the Energy Commission's Dockets Unit. E-mail comments should be sent to docket@energy.state.ca.us. Please include your name or your organization's name in the name of the file. Those submitting written comments by hard copy only must provide an original plus 10 paper copies to the Energy Commission's Dockets Unit.

Please send or deliver materials to:
California Energy Commission Dockets Unit
Re: Docket No. 06-IEP-1N
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Workshop participants also may provide an original paper copy and 10 copies at the beginning of the workshop. All written materials relating to this workshop will be filed with the Dockets Unit and will become part of the public record in this proceeding.

Additional Information

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

Please direct questions regarding the 2007 IEPR proceeding to Lorraine White, IEPR Program Manager, at (916) 654-4075 or by e-mail at lwhite@energy.state.ca.us. Technical questions should be directed to Barbara Byron of the Energy Commission's Executive Office at (916) 654-4976 or by e-mail at bbyron@energy.state.ca.us. Please

direct all news media inquiries to Claudia Chandler, Assistant Executive Director, at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

The service list for the *2007 IEPR* is handled electronically. Notices and documents for these proceedings are posted to the Energy Commission Web site at: [http://www.energy.ca.gov/2007_energypolicy/].

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 Web site [http://www.energy.ca.gov/listservers/].

Key Issues and Questions for the Workshop

The following questions will provide the framework for discussions at the workshop. Participants may respond to these questions in oral or written comments. Policies and issues discussed in the workshop will inform the development of the Energy Commission's *2007 IEPR* and associated energy policy recommendations to the Governor and the Legislature.

I. Current Status of Spent Nuclear Fuel Storage and Disposal Programs and Implications for California

- What is the current status of DOE's application for an operating license for the Yucca Mountain repository; what are the major milestones for beginning repository operation, spent fuel transportation, and repository closure; and what has changed since the last CEC workshop in August 2005? What is the currently projected opening date, and how has this date changed since the last CEC workshop (2005)? What are the major scientific and engineering uncertainties, and have these uncertainties increased or decreased since the last CEC workshop? Is it time to rethink the entire approach?

- What is the status of proposals for state or regional centralized interim storage? What has changed since the last CEC workshop? How might a state or western regional interim storage facility impact California?

- How would legislation proposed by DOE impact the viability of the Yucca Mountain repository?

- What is the technical limit to the capacity of Yucca Mountain, and what is the projected need for additional repositories?

- There have been proposals to modify the design for Yucca Mountain to increase its operational flexibility. What are the major proposals and the status of these proposals? What is the likely impact of such a redesign on the project timeline?

- What will be the major impacts for California if the Yucca Mountain repository is built and becomes operational?

- What is the status of DOE's Yucca Mountain transportation proposal? How would use of the proposed rail routes in Nevada to the Yucca Mountain site impact California? What is the projected impact of the new canister design (TAD) on shipment schedules? What mitigation measures should California propose for these impacts?

- What are the implications of the National Academies' study of the safety of spent fuel transportation? What, if anything, should be done to increase the safety of spent fuel shipments?

- How will the Ninth Circuit decision in Mothers for Peace vs. the Nuclear Regulatory Commission (NRC) impact the design (and design basis) for spent fuel storage facilities?

- What are the best practices for state and local government on spent nuclear fuel transportation issues?

II. Current Status of a Federal Reprocessing Program and Implications for California

- What is the current program strategy and timeline for DOE's Global Nuclear Energy Partnership (GNEP)? Is the timeline realistic?

- What are the expected benefits of GNEP?

- How do the waste streams of once-through fuel cycling (spent fuel storage and permanent disposal) and reprocessing compare in terms of the volume and characteristics of wastes and the number of shipments that will be required? How might reprocessing affect the need for a permanent repository or repositories?

- Are the projected funding requirements for GNEP over the next 5 to 10 years realistic? What are the opportunity costs of the proposed level of GNEP funding as funding is diverted from energy efficiency and renewable energy research and development efforts?

- How would a U.S. reprocessing program affect the funding and need for Yucca Mountain and additional federal repositories?

- Various benefits from reprocessing have been claimed, including fuel recycling and waste reduction. How realistic are these claims? How do the potential benefits of reprocessing differ among the various reprocessing technologies?

- What have been the major operational problems at reprocessing facilities in the U.S. and globally?

- What has been the environmental legacy of reprocessing facilities around the world? What is the current status of remediation activities at these facilities?

- What is the relationship between uranium ore and fuel price and the economic benefit of reprocessing?

- What is a realistic timeframe to develop a domestic reprocessing industry? How long until engineering level, pilot program, and commercial scale GNEP facilities are in place? What are the major obstacles to overcome? Would a domestic reprocessing industry be centrally located or dispersed to regional facilities?

- Is development of a domestic U.S. reprocessing program driven by nonproliferation efforts?

- Do other countries' experiences with reprocessing offer lessons for the U.S.? What are the lessons learned?

- What would a domestic reprocessing program mean for California's nuclear power plant operators?

- What is the status of advanced reprocessing technologies? What are the primary technical and engineering uncertainties associated with each of the different technologies?

- What is the relationship between current or advanced reprocessing technologies and the development of advanced reactor technologies? What are the primary technical and engineering uncertainties associated with advanced reactors? What are the barriers to addressing these issues?

III. Operational Issues for California's Operating Nuclear Plants

- How are the operating costs of California's nuclear plants expected to change as the plants age?

- How are the safety and reliability of the state's nuclear power plants expected to change as the plants age?

- What is the status of the steam generator replacement projects at Diablo Canyon and SONGs? Have any problems emerged?

- What are the implications for the state's nuclear plant operators of the NRC recent ruling (January 2007) on regulations governing the design-basis

threat? What specific steps, if any, will the state's nuclear plant operators need to take to be in compliance with the ruling?

- Is the NRC's Reactor Oversight Process effective in identifying performance issues at operating plants? How is the NRC's oversight complemented by the Institute of Nuclear Power Operation (INPO)?

- What are the utilities' plans for replacement power if there are any significant long-term outages at their respective nuclear power plants?

- What is the status of the recent difficulties at Palo Verde Nuclear Generating Station? What institutional barriers, if any, contributed to the difficulties at Palo Verde?

- Are there any lessons that can be learned from the Palo Verde experience?

- What is the scope of issues and the typical hearing process in NRC relicensing proceedings? How have once-through cooling impacts been handled in these proceedings?

- What is the status of the proposed rulemakings that would require the impacts of terrorism to be considered in relicensing proceedings?

- What has been the role of state and local governments in NRC relicensing proceedings, and how have state and local issues raised in these relicensing proceedings been addressed and/or resolved?

- What issues should California consider as part of the relicensing process for California's nuclear power plants?

- What should be the roles of California's different state agencies (such as the Legislature, the Attorney General, the Energy Commission, the California Public Utilities Commission, the Coastal Commission, and the State Water Resources Control Board) in deciding whether California's nuclear power plants should be relicensed?

- What is the status of the State Water Resources Control Board's efforts to limit the use of once-through cooling at nuclear power plants?

- What are the implications for California of the Court of Appeals' recent ruling on the Environmental Protection Agency's (EPA) 316(b) regulations?

IV. Environmental, Safety, and Economic Implications of Nuclear Power

- Princeton University scientists have proposed “stabilization wedges” as a means of describing potential solutions to climate problems over the next 50 years, with nuclear power proposed as one of the technologies that should be a “wedge.” What role might nuclear power play in reducing greenhouse gas emissions from the energy supply sector? What are the emissions associated with the nuclear fuel cycle, and what are the uncertainties associated with these estimates? Is there an optimal role for nuclear power in the “stabilization wedge” concept?

- The United Kingdom (UK) Sustainable Development Commission recommended that nuclear power not be part of the UK’s greenhouse gas reduction strategy at this time. What are the main factors that influenced this decision? Under what conditions might this recommendation be reversed?

- The National Commission on Energy Policy (NCEP), in its December 2004 report and in its recent update, proposed an energy policy package that includes a nuclear policy element. At the same time, the NCEP found that a “substantial expansion” in nuclear energy would require surmounting four significant challenges:

  - Reducing the costs of reactor construction and operation.

  - Achieving a ten-fold or more reduction in the probability of a major release of radioactivity resulting from malfunction, human error, or terrorist attack.

  - Demonstration by the federal government that it can meet its obligations to manage the highly radioactive spent fuel from reactor operations.

  - Developing a highly effective international program to resolve the risks of proliferation.

  What progress has been made in addressing each of these challenges since the last CEC nuclear workshop?

- What are the current projections for construction and operating costs of new nuclear power plants? What are the major financial uncertainties influencing these projections? Do actual or estimated costs of recently built reactors in Asia or Europe provide credible estimates of likely costs of new reactors in the U.S.? How might a company recover cost overruns related to licensing delays or complications arising during plant design and construction?

- How might the limited plant standardization in the U.S. impact plant construction and operation costs?

- How should the risk of construction cost overruns be allocated among developers, investors, and ratepayers? How should costs due to operational problems be allocated between plant owners and ratepayers?

- Are the financial incentives offered under Energy Policy Act of 2005 (EPAct 2005) sufficient to prompt the construction of new domestic nuclear power plants? What is the status of making DOE's EPAct 2005 loan guarantees available for new nuclear power plants?

- Financial observers have emphasized the importance of Construction Work in Progress (CWIP) treatment for the financing of new nuclear plants. Will financing be available for new nuclear plants in California and in other states that do not allow CWIP? Likewise, will financing be available for plants that do not receive regulatory pre-approval of the prudence of the nuclear commitment?

- Would currently proposed reactor designs meet the NCEP criteria for reduced costs and enhanced safety?

- Can more advanced designs significantly increase the safety and security of nuclear power plants? How realistic are the cost estimates for such designs?

- What would be required to achieve an effective international program to address proliferation?