G. NRC License Renewal

The owners of SONGS 2 & 3 currently have permission from the Nuclear Regulatory Commission to operate until the expiration of the current operating licenses in 2022. The existing environmental effects of operating the nuclear power plant through the duration of the NRC licenses have been previously reviewed by the NRC and predecessor and cooperating agencies. Comments received during the Scoping Period following publication of the Notice of Preparation (October 2004) asserted that replacement of the steam generators would facilitate the continued operation of the SONGS facility beyond the current licensing period. The EIR preparers agree that it would be impossible to renew the NRC licenses without successful replacement of the steam generators.

Permission to operate SONGS 2 & 3 after 2022 would need to be granted to SCE by the NRC through approval of an application for renewal of its existing operating licenses. The licensing process would include a detailed review of engineering and safety issues, as well as the environmental effects of extending the permitted operating life of the SONGS facility. Information presented in the No Project Alternative assessments Section D (for each issues area, D.2 though D.14) of this EIR indicates that some beneficial impacts would occur with discontinued operation of SONGS because routine operation of the nuclear power plant affects the existing environment, especially in the areas of marine biological resources and public safety. Before renewing the licenses for SONGS 2 & 3, these issues would need to be fully reviewed by the NRC. As described in Section D.1, this EIR does not evaluate the potential impacts associated with license renewal. Please refer to Section A and D.1 for a description of CPUC's approach to evaluating the impacts of the Proposed Project in this EIR.

This section of the EIR describes SCE's current position on license renewal and also summarizes the NRC's license renewal process. Section G was prepared to provide the public with information on the NRC license renewal process, should SCE file an application with the NRC in the future. This section also describes the types of environmental impacts that may be associated with license renewal, if such renewal were ultimately approved by the NRC.

G.1 SCE's Position on NRC License Renewal

In a response to a data request from the CPUC, SCE has stated that it currently has no plans to apply to the NRC for renewal of the operating licenses at SONGS (SCE, 2004). However, SCE has investigated the information, analysis, and regulatory procedures that would need to be fulfilled prior to filing an application for license renewal. If SCE did eventually choose to seek license renewal for SONGS, such a renewal would allow the facility to operate and generate power for an additional 20 years beyond the original 40-year operating licensing terms for each unit, both of which expire in 2022. Should SCE seek a license renewal, it would need to follow the detailed licensing process described in Section G.2 below.

G.2 NRC Licensing Process

The NRC is responsible for oversight and licensing of all commercial power, research, and test reactors, as well as the use of nuclear materials in the United States. The NRC administers the site-specific license for SONGS 2 & 3, according to the requirements of 10 CFR 50, Domestic Licensing of Production and Utilization Facilities. These regulations are put forth by the NRC pursuant to the Atomic Energy Act of 1954, as amended (68 Stat. 919), and Title II of the Energy Reorganization Act of 1974 (88 Stat. 1242). The NRC allows SONGS 2 & 3 to operate within the limitations of the operating licenses and NRC requirements for the life of each unit's license, a term not to exceed 40 years (10 CFR 50.51).

The NRC has no role in energy resource planning except for its responsibilities of safety review required by the Atomic Energy Act and environmental analysis under the National Environmental Policy Act (NEPA). State energy regulators and facility owners have the ultimate decision on whether to continue facility operations based on resource planning and economic factors under the State's jurisdiction or the owner's preference. State regulations and energy policy influence the State's energy system needs by defining the operational and investment objectives of the plant owners. Economic factors are one of the major variables in the license renewal decision for power plant owners. In California, the State may have decision-making power in the NRC license renewal process if the license renewal process requires rate-making modifications under CPUC's jurisdiction. If this is the case, a facility in California applying for an NRC license renewal may also be subject to a CEQA analysis in addition to the environmental impact statement (EIS) required by the NRC under NEPA. The State agencies would have jurisdiction only over the ratemaking proceeding, not the license renewal process.

With regard to the NRC license renewal process, the application process would occur along two concurrent tracks for review of environmental (10 CFR 51) and safety issues (10 CFR 54). The Applicant must prepare an evaluation of the potential impacts on the environment if the plant operates for an additional 20 years. In addition, the Applicant must provide the NRC with an evaluation that addresses the technical aspects of plant aging and a description of how to manage the aging effects.

Under 10 CFR 51, the NRC developed a Generic Environmental Impact Statement (GEIS) for Renewal of Nuclear Plants, which is a programmatic approach to assess potential environmental impacts that may be associated with license renewal at any facility (NRC, 1996). The NRC has established a general approach to analyze each environmental issue for significance and severity of impacts, and assigned it a significance level of small, moderate, or large. In addition to assigning the significance level in the GEIS analysis, potential environmental issues are assigned to Category 1 or Category 2 as explained below:

- **Category 1:** (1) the environmental impacts associated with the issue have been determined to apply either to all plants or, for some issues, to plants having a specific type of cooling system or other specified plant or site characteristics; (2) a single significance level has been assigned to the impacts (except for collective offsite radiological impacts from the fuel cycle and from high-level waste and spent fuel); and (3) mitigation of adverse impacts associated with the issue that has been considered in the analysis, and it has been determined that additional plant-specific mitigation measures are likely not to be sufficiently beneficial to warrant implementation.
- **Category 2:** For these issues, the analysis reported in the GEIS has shown that one or more of the criteria of Category 1 cannot be met, and therefore, additional plant-specific review is required.

As listed in Table G-1, the final GEIS assessed 92 potential environmental issues. Sixty-eight of these issues are found to be Category 1 and are identified in 10 CFR Part 51 as not requiring additional plant-specific analysis. However, the Applicant would be required to evaluate the 24 Category 2 issues in a Supplemental EIS. During the evaluation, the Applicant would be required to evaluate compliance with applicable, federal, State, and local environmental standards. Should a potential impact be identified, specific mitigation measures would be developed, where feasible, to reduce the impacts to a less than significant level. An analysis of environmental impacts of alternatives to license renewal would also be included in the Supplemental EIS. Section 10 CFR 51.53(c)(2) specifically excludes from consideration in the environmental report the issues of need for power, the economic costs and the benefits of the Proposed Action, the economic costs and benefits of alternatives to the Proposed Action, or other issues not related to environmental effects.

In addition to the NEPA component of the license renewal process, all facilities must go through a detailed safety review of all systems, structures, and components associated with the power plant. It must be demonstrated that the effects of aging will be managed in such a way that the intended functions of the structures and components will be maintained for the period of extended operation. Another requirement for license renewal is the identification and updating of time-limited aging analyses. During the design phase for a plant, certain assumptions about the length of time the plant will be operated are made and incorporated into design calculations for several of the plant's systems structures and components. Under a renewed license, these calculations must be shown to be valid for the period of extended operation.

G.3 Status of License Renewal Applications

As described in Table G-2, a total of 22 nuclear power plants have been issued a new 20-year license, or are currently going through the licensing process at the NRC. Neither of the two operating power plants in California (SONGS or DCPP) are currently in the licensing process at the NRC or have been issued a new license. According to the NRC, the license renewal process usually takes between 22 and 30 months to complete. The application process must start five years prior to the end of the license period. Therefore, if SCE decides to apply for a renewal of the current licenses, it would need to initiate the application process no later than 2017 for SONGS 2 & 3.

Table G-1. Issues Analyzed in GEIS*

Issue	Category 1	Category 2
Surface Water Quality, Hydrology, and Use[1]		
Impacts of refurbishment on surface water quality	x	
Impacts of refurbishment on surface water use	x	
Altered current patterns at intake and discharge structures	x	
Altered salinity gradients	x	
Altered thermal stratification of lakes	x	
Temperature effects on sediment transport capacity	x	
Scouring caused by discharged cooling water	x	
Discharge of chlorine or other biocides	x	
Discharge of sanitary wastes and minor chemical spills	x	
Discharge of metals in waste water	x	
Water use conflicts (plants with once-through cooling systems)	x	
Water use conflicts (plants with cooling towers and cooling ponds using make-up water from a small river with low flow)		x
Aquatic Ecology[2]		
Refurbishment	x	
Accumulation of contaminants in sediments or biota	x	
Eutrophication	x	
Entrainment of phytoplankton and zooplankton	x	
Cold shock	x	
Thermal plume barrier to migrating fish	x	
Distribution of aquatic organisms	x	
Premature emergence of aquatic insects	x	
Gas supersaturation (gas bubble disease)	x	
Low dissolved oxygen in the discharge	x	
Losses from predation, parasitism, and disease among organisms exposed to sublethal stresses	x	
Stimulation of nuisance organisms (e.g., shipworms)	x	

Table G-1. Issues Analyzed in GEIS*

Issue	Category 1	Category 2
Aquatic Ecology		
Entrainment of fish and shellfish in early life stages		x
Impingement of fish and shellfish		x
Heat shock		x
Entrainment of fish and shellfish in early life stages	x	
Impingement of fish and shellfish	x	
Heat shock	x	
Groundwater Use and Quality		
Impacts of refurbishment on groundwater use and quality	x	
Groundwater use conflicts (potable and service water; plants that use <100 gpm)	x	
Groundwater use conflicts (potable and service water, and dewatering; plants that use >100 gpm)		x
Groundwater use conflicts (plants using cooling towers withdrawing make-up water from a small river)		x
Groundwater use conflicts (Ranney wells)		x
Groundwater quality degradation (Ranney wells)	x	
Groundwater quality degradation (saltwater intrusion)	x	
Groundwater quality degradation (cooling ponds in salt marshes)	x	
Groundwater quality degradation (cooling ponds at inland sites)		x
Terrestrial Resources		
Refurbishment impacts		x
Cooling tower impacts on crops and ornamental vegetation	x	
Cooling tower impacts on native plants	x	
Bird collisions with cooling towers	x	
Cooling pond impacts on terrestrial resources	x	
Power line right-of-way management (cutting and herbicide application)	x	
Bird collision with power lines	x	
Impacts of electromagnetic fields on flora and fauna (plants, agricultural crops, honeybees, wildlife, livestock)	x	
Floodplains and wetland on power line right-of-way	x	
Threatened or Endangered Species[1]		
Threatened or endangered species		x
Air Quality		
Air quality during refurbishment (non-attainment and maintenance areas)		x
Air quality effects of transmission lines	x	
Land Use		
On-site land use	x	
Power line right-of-ways	x	
Human Health		
Radiation exposures to the public during refurbishment	x	
Occupational radiation exposures during refurbishment	x	
Microbiological organisms (occupational health)	x	
Microbiological organisms (public health) (plants using lakes or canals, or cooling towers or cooling ponds that discharge to a small river)		x
Noise	x	
Electromagnetic fields, acute effects (electric shock)		x
Electromagnetic fields, chronic effects	NA	NA

Table G-1. Issues Analyzed in GEIS*

Issue	Category 1	Category 2
Radiation exposures to public (license renewal term)	x	
Occupational radiation exposures (license renewal term)	x	
Socioeconomics		
Housing impacts		x
Public services: public safety, social services, and tourism and recreation	x	
Public services: public utilities		x
Public services, education (refurbishment)		x
Public services, education (license renewal term)	x	
Off-site land use (refurbishment)		x
Off-site land use (license renewal term)		x
Public services, transportation		x
Historic and archaeological resources		x
Aesthetic impacts (refurbishment)	x	
Aesthetic impacts (license renewal term)	x	
Aesthetic impacts of transmission lines (license renewal term)	x	
Postulated Accidents		
Design basis accidents	x	
Severe accidents		x
Uranium Fuel Cycle and Waste Management		
Nonradiological waste	x	
Low-level waste storage and disposal	x	
Mixed waste storage and disposal	x	
On-site spent fuel	x	
Transportation		x
Decommissioning		
Radiation doses	x	
Waste management	x	
Air quality	x	
Water quality	x	
Ecological resources	x	
Socioeconomic impacts	x	
Environmental Justice		
Environmental justice	NA	NA

* This table provides a summary of all the potential issues that may come up during re-licensing. Not all Category 2 issues would apply to SONGS.
[1] For all plants
[2] For plants with once-through cooling pond heat dissipation systems
Source: NRC, 1996.

Table G-2. Status of NRC License Renewal Applications

Applicant	Plant Name & Units	Date Application Rec'd by NRC	Date NRC Issued GEIS Supplement	Date NRC Issued SER	Date NRC Issued License
COMPLETED APPLICATIONS					
Baltimore Gas & Electric Co.	Calvert Cliffs, 1 & 2	April 1998	Nov 1999	Nov 1999	Mar 2000
Duke Energy	Oconee Nuclear Station, 1, 2 & 3	July 1998	Feb 2000	Feb 2000	May 2000
Entergy Operations	Arkansas Nuclear One, 1	Feb 2000	April 2001	April 2001	June 2001
Southern Nuclear Operating Co., Inc.	Edwin I. Hatch Nuclear Plant, 1 & 2	Mar 2000	May 2001	Oct 2001	Jan 2002
Florida Power & Light Co.	Turkey Point Nuclear Plant, 3 & 4	Sep 2000	Jan 2002	Feb 2002	June 2002
Virginia Electric & Power	North Anna, 1 & 2 Surry, 1 & 2	May 2001	Dec 2002	Nov 2002	Mar 2003
Duke Energy	McGuire, 1 & 2 Catawba, 1 & 2	June 2001	Dec 2002	Jan 2003	Dec 2003
Exelon	Peach Bottom, 2 & 3	July 2001	Jan 2003	Feb 2003	May 2003
Florida Power & Light Co.	St. Lucie, 1 & 2	Nov 2001	May 2003	July 2003	Oct 2003
Omaha Public Power District	Fort Calhoun Station, 1	Jan 2002	Aug 2003	Sep 2003	Nov 2003
Carolina Power & Light	H.B. Robinson Nuclear Plant, 2	June 2002	Dec 2003	Jan 2004	April 2004
Rochester Gas & Electric Corp.	R.E. Ginna Nuclear Power Plant, 1	Aug 2002	Jan 2004	Mar 2004	May 2004
South Carolina Electric & Gas Co.	V.C. Summer Nuclear Station, 1	Aug 2002	Feb 2004	Jan 2004	April 2004
Exelon	Dresden, 2 & 3 Quad Cities, 1 & 2	Jan 2003	June 2004	July 2004	Oct 2004
APPLICATIONS UNDER REVIEW					
Southern Nuclear Operating Co.	Farley, 1 & 2	Sep 2003			
Entergy Operations	Arkansas Nuclear One, 2	Oct 2003			
Indiana & Michigan Power Co.	D.C. Cook, 1 &	Nov 2003			
Tennessee Valley Authority	Browns Ferry, 1, 2 3	Jan 2004			
Dominion Nuclear Connecticut, Inc.	Millstone, 2 & 3	Jan 2004			
Nuclear Management Co.	Point Beach, 1 & 2	Feb 2004			
Constellation Energy	Nine Mile Point, 1 & 2	May 2004			
Progress Energy	Brunswick, 1 & 2	Oct 2004			

G.4 References

SCE (Southern California Edison). 2004. Letter from William M. Messner, SCE Attorney, to Nicolas Procos, CPUC Project Manager. November 1.

NRC (Nuclear Regulatory Commission). 1996. Generic Environmental Impact Statement for License renewal of Nuclear Plants (NUREG-1437). May.