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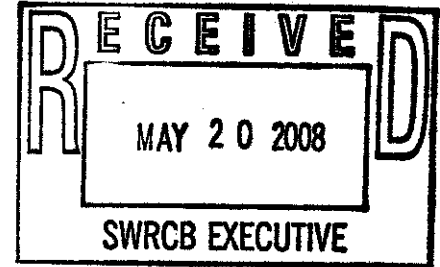
Public Comment
Once Through Cooling
Deadline: 5/20/08 by 12 p.m.

Michael M. Hertel, PhD
Director, Corporate Environmental Policy
michael.hertel@sce.com

May 20, 2008

VIA E-MAIL & U.S. MAIL

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814



RE: Comment Letter – Once-Through Cooling Policy

Dear Ms. Townsend,

Southern California Edison (SCE) respectfully submits its comments on the “Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters For Power Plant Cooling” (Scoping Document) issued by the State Water Resources Control Board (Board).

I. Environmental Programs at San Onofre Nuclear Generating Station

A. SCE's Restoration Programs at San Onofre

The issue of marine impacts at the San Onofre Nuclear Generating Station (SONGS) was dealt with fully by the California Coastal Commission (CCC) when it issued SCE a coastal development permit (CDP) for SONGS 2 and 3 (Permit No. 183-73, dated 2/28/74). The CCC permit required significant study of upgrades of the extensive fish protection system designed into the plant and full compensation for identified marine impacts that could not be resolved by in-plant systems. After 15 years of study and extensive public hearing, the Commission found that there were residual marine impacts. The CCC specifically rejected requiring the installation of cooling towers as a remedy and instead chose to impose extensive mitigation conditions to eliminate all remaining marine impacts from the facility. The mitigation permit conditions include the restoration of the San Dieguito River mouth and coastal lagoon, the construction of a kelp reef, and support for a California sea bass hatchery. The conditions include detailed success criteria and monitoring requirements (including independent comparison to reference natural wetlands) to assure that the restored wetland performs as expected for the full operating life of the plant. The conditions require the establishment of a trust fund to allow for the maintenance of the restored wetland in perpetuity.

The conditions in the CDP require over 160 acres of new or restored wetlands along with 280 additional acres which will be used as open space to become a protected park at the San Dieguito River Park near Del Mar in northern San Diego County. The San Dieguito site was chosen by the CCC after extensive investigation of several other potential restoration sites. This is the largest wetlands restoration project in San Diego County since 1995. The project will provide highly productive coastal wetland habitat essential



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for foraging and reproduction of hundreds of species of native fish (including halibut), birds, and mammals, with additional emphasis placed on endangered species found within the area. This habitat is created by restoring critical tidal flow and allowing growth of plants distinctive to the California coast. The estimated cost of the project is \$86 million in 2008 dollars.

The restored wetland is protected from sedimentation due to infrequent flooding of the San Dieguito River that runs through the project by berms (designed by scientists and oceanographic engineers from the Scripps Institute of Oceanography). The berms serve as hydraulic controls keeping the flood flow in the river channel while allowing water to move back and forth through the restored wetland and transporting sediment to the ocean for beach sand replenishment.

In addition, the San Dieguito Wetlands project will allow the area to be restored to its historical natural condition while allowing the public to view and enjoy the newly created preserve. The new park will include a 2¼-mile scenic trail system punctuated by viewing platforms and an interpretive visitors' center. The trails will be connected to San Diego's Coast to Crest trail project, which winds from the mountains to the ocean throughout San Diego County.

SCE is also building a 150-acre kelp reef as a condition the CDP in order to mitigate the modeled decrease in kelp that CCC concluded results from SONGS operations. The reef is located off San Clemente Beach and will be built within an 862-acre parcel leased from the State Lands Commission that extends north three miles to the San Clemente pier. The project cost is estimated at \$16 million, with an additional \$5 to \$10 million for CCC construction monitoring and post-construction assessments. The reef will not only satisfy the CCC-required mitigation of the environmental impacts to the kelp resulting from SONGS' operation, it will also substantially enhance coastal natural resources by creating valuable habitat for fish and other marine organisms.

SCE also funded, in cooperation with the Hubbs-SeaWorld Research Institute, a new hatchery in Carlsbad, California in 1995. SCE's contribution was \$5 million. The hatchery has the potential of producing more than 350,000 young white sea bass each year. The young white sea bass are released into bays and near-shore areas of the Pacific Ocean in Southern California to replenish depleted stocks.

SCE believes that these mitigation measures, which were ordered by the CCC in compliance with the California Coastal Act requirements to protect and enhance the coastal environment, and that are funded by ratepayer dollars, fully mitigate potential environmental impacts to the marine environment from SONGS that may not be resolved by the extensive in-plant protection systems at Units 2 and 3. Additional marine protection measures are not warranted.

II. Proposed Interim Measures

The Scoping Document proposes several interim measures that would be required even as a site may be going through a site-specific review to determine if cooling towers are feasible or required. Such a requirement is not warranted at SONGS because there are no residual environmental impacts at the site due to SCE's extensive mitigation program. Further, these measures are poorly defined and should be developed in more detail before the Board issues a final policy.

Certain measures, such as large-organism exclusion, will require substantial research and permitting. The proposed measure apparently is intended to minimize the impact to marine mammals and reptiles. SCE suggests that the National Marine Fisheries Service (NMFS) is the most appropriate agency to manage these issues. Potential impacts to sea turtles already are addressed under an Endangered Species Act permit issued by NMFS for SONGS. SCE is processing a similar permit for marine mammals. Because SCE has commented extensively on this issue in past letters,¹ we will limit the discussion here except for the entrapment numbers listed. Between 1978 and 2007, the annual average entrapment of mammals at SONGS was 25 individuals.² In recent years, the numbers have increased due to increases in the population. SONGS has a comprehensive marine mammal rescue program. Over 40% of the entrapped animals are returned unharmed to the ocean. Sixty percent of the harbor seals and nearly all the green sea turtles are returned alive. NMFS has not determined the level of take to be significant. Placing exclusion devices offshore would require permits from at least six agencies (CCC, State Lands Commission, Department of Fish and Game, NMFS, U.S. Army Corps of Engineers, San Diego Regional Water Quality Control Board) and concurrence by the U.S. Coast Guard. The permitting process would likely be quite lengthy. In addition, SONGS entrains an average of 209 kg of algae a day per unit. In extreme events, this value was recorded as high as 1441 kg. This indicates a high level of clogging would result on the narrow, 4-inch mesh and would require cleaning and maintenance by divers. The draft policy does not provide any data or studies to show that this type of structure is feasible. Requiring a measure that has not been thoroughly researched could trigger substantial delays and force temporary non-compliance.

The Board staff also suggests reducing water flow to ten percent during periods when the plant is not generating. SONGS has four pumps per unit, none of which are variable flow. Therefore, the flow could not be reduced to the recommended level. Even if the reduction were possible during maintenance and refueling outages, it would jeopardize critical plant tests and operations that take weeks to conduct. The proposed restriction of the policy will not allow SONGS to operate within its design constraints. The flow minimization concept suggested in the Scoping Memo plainly is not feasible at SONGS.

Circulating water pumps must also be operated in support of plant start-up several days before the plant is on line. The circulating water pumps are required to be run to reduce corrosion rates of the circulating water piping. SONGS has four 2,500 horsepower

¹ SCE has attached to this letter its two previous comment letters from September 2006.

² These figures are derived from stranding reports that SCE submits to NMFS.

circulation pumps rated at 207,500 gallon per minute per unit. These pumps are very expensive to operate and are therefore only operated when absolutely necessary. SCE believes the following revision is warranted: "Two days after plant shutdown, main circulating water pumps shall only be run if required to maintain the plant circulating water piping and the power plant within plant design parameters."

III. Studies Show that the Current Technology at SONGS Effectively Reduces Impingement and Entrainment

Scientists have conducted many studies over the past 30 years at a variety of coastal facilities. The most notable is the Marine Review Committee (MRC)'s 15-year, \$50 million effort, which the CCC commissioned as part of the Coastal Development Permit process for SONGS. The study focused on the biological effects of the cooling system on the marine environment. After studying all aspects of entrainment, impingement, and discharges associated with plant operations, the authors concluded that the abundance of plankton near SONGS was "largely unaffected."³ Even though the plant takes in 1,400 tons of zooplankton, "there is no evidence for a local reduction in plankton, and ... these losses do not constitute a substantial adverse effect."⁴ The MRC also found that the intake of fish larvae did not show a clear pattern of decreases in their abundance. The study ultimately concluded that existing plant intake modifications were acceptable, cooling towers were not feasible, and mitigation measures fully compensated for any impacts.

Further, as described below, SCE recently completed and submitted a comprehensive demonstration study (CDS) analyzing the impact of impingement and entrainment.⁵ The Impingement Mortality and Entrainment Study included in the CDS identified three species as the most abundantly impinged species, making up approximately 90 percent of the total number of fish. The study compares the current impacts of once-through cooling to those found during previous studies and previous Section 316(b) demonstrations, and also evaluated existing technologies for the reduction of entrainment.

Three species of fish are impinged at SONGS: northern anchovy, Pacific sardine, and queenfish. When compared to commercial and recreational fishery losses, impingement totals represented 1% or less for most species.⁶ Based on a full year of sampling, it was determined that fish larvae in the present study were similar to those found during the MRC period. Sampling of the source water determined that fish larvae in the present study were similar to those found during the MRC period. No significant decline in larval density offshore has been detected.

³ Marine Review Committee, *Final Report of the Marine Review Committee to the California Coastal Commission* at 11 (1989).

⁴ *Id.*

⁵ MBC Applied Environmental Sciences, *Impingement Mortality and Entrainment Characterization Study* (December 11, 2007). SCE submitted the study to the San Diego Regional Water Quality Control Board.

⁶ *Id.* at 7-14.

The CDS also estimated the calculation baseline and determined that SONGS effectively reduced the amount of impingement and entrainment with current protective systems. The estimated efficiency in reducing impingement of fish of the SONGS velocity caps is 88.17%. Coupled with the Fish Return System, the estimated reduction in the amount of adult fish impinged at the plant is 94.22% based on abundance and 97.65% based on biomass. Although a reduction in entrainment was not estimated, study data suggest that the mid-water offshore intakes significantly reduced it as well.

Recently, an alternative cooling system analysis was completed for the Ocean Protection Council by Tetra Tech.⁷ The study, funded at \$350,000, was completed over 18 months. The Scoping Document refers to the Study repeatedly to support the assertion that cooling towers are feasible at most facilities. But the study's authors conclude their findings "do not constitute a final determination of what is feasible at any individual facility under the California Environmental Quality Act (CEQA), which is defined as 'capable of being accomplished...taking into account social, environmental, economic and technological factors.'"⁸ This study's scope and conclusions were so limited, that a more substantive and far-reaching analysis of feasibility must be conducted as required under CEQA before the Board adopts a policy.

IV. The Proposed Two Alternative Tracks Cannot be Utilized At SONGS

The Scoping Document contains two tracks for compliance: (1) the installation of cooling towers as the Best Technology Available (BTA); and (2) the use of alternative technologies that would reach the same reductions in impingement and entrainment as cooling towers. As explained below, neither option is feasible at SONGS.

A. Track I

A combination of site constraints, adverse environmental impacts, and permitting issues precludes the installation of cooling towers at SONGS. Due to protections imposed on lands south of the plant by the CCC, the presence of the state park north and south of the plant, the presence of endangered species south of the plant, and Nuclear Regulatory Commission requirements that preclude relocation of facilities located within the plant site, a significant number of the needed cooling tower complements would have to be sited on the inland side of Interstate 5, which borders the plant on the east. SCE does not know whether the Navy would agree to lease additional land to SCE. If such land could be obtained and the environmental characteristics did not bar construction, SCE would need to secure approval from the California Department of Transportation to install the necessary piping to convey water to and from the plant to the cooling towers underneath the freeway. The installation of cooling towers would also reduce the plant's efficiency compared to once-through ocean water cooling. Additional decline in plant efficiency results from the need to circulate sea water from the ocean to the cooling towers and back. SCE would need to install a pumping system to bring the water up to the elevated mesa. SCE estimates the elevation differential from the plant site to the inland cooling

⁷ Tetra Tech, *California's Coastal Power Plants: Alternative Cooling System Analysis* (Feb. 2008).

⁸ *Id.* at I-2.

towers would be 100 feet. Approximately 73 million gallons per day of salt water would need to be pumped uphill to the mesa site of the cooling towers. SCE's current estimate is that plant efficiency would be reduced by 2%, necessitating the generation of make-up power (largely fossil-based), with the resulting environmental impacts from siting and operating such facilities. Due to electrical system requirements the makeup generation would have to come from within the southern California load center where environmental issues, especially air quality requirements, make the siting of such additional generation highly problematic.

Were cooling towers required, they would have to be sited in an elevated condition above current grade because the drift (or evaporation) of salt water used for cooling would otherwise settle onto Interstate 5 causing safety problems. Elevating the towers would exacerbate aesthetic issues (the California Coastal Act requires the CCC to protect visual fields in the coastal zone).

The installation of cooling towers would have an adverse environmental impact on the SONGS area. SCE is required by the CCC to protect endangered species by leaving certain areas undeveloped. The installation of cooling towers would impact these areas. Thus, SCE would need to secure CCC approval along with permits associated with compensating for the take of endangered and threatened species and their habitat. It should also be pointed out that when the CCC adopted permit conditions for SONGS 2 and 3, it concluded that cooling towers were not appropriate. Additional adverse environmental impacts that would be caused include increased emissions of:

(1) greenhouse gases associated with reduced plant efficiency; (2) particulate matter (SCE would need air quality permits for an estimated 310 tons per year of PM-10); and (3) salt drift. Given the location of the plant, it is doubtful the necessary air permits could be obtained.

Finally, SCE must seek approval from the California Public Utilities Commission before spending ratepayer funds on the Board's suggested program. Due to all of these constraints, cooling towers are not feasible at SONGS.

B. Track II

The Board's second proposed alternative is the use of other technologies that would achieve the same reductions in impingement and entrainment as a cooling tower. As demonstrated by the studies described above, however, no such alternative technologies exist. These studies investigated available technologies such as fine-mesh screens and in-plant and offshore narrow-slot wedge-wire screens. The largest drawback was the screens' tendency to be clogged with algae and fouling organisms. The inability to keep them clean would compromise the flow required to operate the plant safely. Further, the study showed even if these technologies could be applied successfully, the reduction in entrainment was only 76 percent, which would not comply with Track II.⁹ It must also be noted that this study examined 500-micron screens, not the 200-micron recommended by

⁹ Electric Power Research Institute, Comprehensive Demonstration Study for Southern California Edison's San Onofre Nuclear Generating Station (Final Report) at 28 (January 2008).

the Board. Presumably, the reduction associated with the 200-micron screens would decrease substantially, thus rendering this option even less feasible.¹⁰

The results of the MRC and CDS studies at SONGS suggest the facility is already using the best technology available. Those technologies, including the ongoing mitigation measures, already minimize impingement and entrainment.

V. The environmental review process under CEQA must inform the public and decision-makers about all adverse environmental consequences of the proposed policy.

It is well-settled law that "a paramount consideration [of the California Environmental Quality Act ("CEQA")] is the right of the public to be informed in such a way that it can intelligently weigh the environmental consequences of any contemplated action and have an appropriate voice in the formulation of any decision." *Envtl. Planning and Informational Council v. County of El Dorado*, 131 Cal. App. 3d 350, 354 (1982). "The requirement of a detailed [EIR] helps insure the integrity of the process of decisions by precluding stubborn problems or serious concerns from being swept under the rug." *Sutter Sensible Planning, Inc. v. Bd. of Supervisors*, 122 Cal. App. 3d 813, 820 (1982).

Under CEQA, "[t]he purpose of an [EIR] is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant impacts of such a project might be minimized; and to indicate alternatives to such a project." Pub. Res. Code § 21061 (emphasis added). The draft environmental review in the Scoping Document falls short of the statutory requirements. It appears that the Board has oversimplified the likely scope and detail of the CEQA document that would be required, and correspondingly underrepresented the scope and breadth of the environmental impacts that would result. The Board must complete a significantly more detailed and comprehensive environmental analysis to comply with CEQA.

As detailed in this comment letter and our previously submitted comments (a copy of which is attached for your convenience and incorporated as if fully set forth herein), the policies proposed in the Scoping Document have the potential to result in substantial and systematic direct and indirect environmental impacts, including cumulative environmental impacts, that will have to be analyzed rigorously to comply with CEQA. The Board must examine a reasonable range of alternatives and adopt all feasible mitigation measures that would reduce significant environmental impacts. Pub. Res. Code §§ 21002, 21081(a); Cal. Code Regs. tit. 14, §§ 15001(a)(3), 15021(a)(2), 15091(a)(1).

¹⁰ *Id.*

A. The Board must perform the "functional equivalent" of a rigorous and detailed EIR.

Because the planning process by which the Board proposes to review the Proposed Policy is a "certified regulatory program," the Board must produce a document that is "functionally equivalent" to an Environmental Impact Report ("EIR"). The Board cannot limit its substantive CEQA review because it proposes to act under a certified regulatory program. *Envil. Prot. Info. Ctr. v. Johnson*, 170 Cal. App. 3d 604, 618 (1985) ("Nothing in section 21080.5 supplies a basis for concluding that the Legislature intended the section to stand as a blanket exemption from CEQA's thorough statutory scheme and its salutary substantive goals.").

Furthermore, the Board cannot avoid a complete and detailed analysis of reasonably foreseeable environmental impacts by labeling the EIR as "programmatic." *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, 40 Cal. 4th 412, 429 (2007) ("[T]iering is not a device for deferring the identification of significant environmental impacts that the adoption of a specific plan can be expected to cause"); *Al Larson Boat Shop, Inc. v. Bd. of Harbor Comm'rs*, 18 Cal. App. 4th 729, 741-42 (1993) ("The level of specificity of an EIR is determined by the nature of the project and the 'rule of reason' ..., rather than any semantic label"). In this case, the policies proposed in the Scoping Document would result in a number of reasonably foreseeable significant environmental impacts that must be thoroughly addressed and reduced to the extent feasible. Pub. Resources Code §§ 21002, 21081(a). The draft environmental review in the Scoping Document falls short of this statutory requirement.¹¹

B. The Board must incorporate SONGS' existing environmental mitigation programs into the environmental baseline.

The Board cannot make a meaningful assessment of the potential environmental effects (i.e., any benefits and adverse impacts) of the policies proposed in the Scoping Document without first characterizing the baseline environment. *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors*, 87 Cal. App. 4th 99, 120 (2001).

In this case, the baseline environmental setting includes the extensive mitigation and restoration efforts undertaken by SONGS through the CCC's regulatory process. As discussed in detail above, the CCC already has required SCE to minimize the potential environmental impacts from operations at SONGS, including the construction of a large mitigation wetland area. Because of this prior mitigation, there are no incremental environmental impacts to minimize from the operations at SONGS. Thus, the application

¹¹ The Board ostensibly has acknowledged its obligation to fully comply with CEQA. On page 50 the Scoping Document, the Board states: "CEQA imposes specific obligations on the [Board] when they adopt rules or regulations establishing performance standards or treatment requirements. Public Resources Code §21159 requires that the [State Water Board] concurrently perform an environmental analysis of the reasonably foreseeable methods of compliance. The environmental analysis must address the reasonably foreseeable environmental impacts of the methods of compliance and reasonably foreseeable alternatives and mitigation measures." (Emphasis added.)

of BTA is irrelevant at SONGS since the purpose of BTA is coupled expressly to the minimization of environmental impact.

C. *The Scoping Document oversimplifies the "project."*

Without a detailed, accurate project description, the CEQA process cannot yield accurate, clear results, this frustrating review by the public. *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 192 (1977). The "project" that must be described includes everything needed for implementation of the overall action. Cal. Code Regs. tit. 14, § 15003(h). To comply with CEQA, the Board must "[d]escribe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation." CEQA Guidelines, Appendix G (emphasis added).

As discussed above, SCE does not own any of the land on which SONGS sits; the U.S. Department of the Navy does. It may be very difficult to lease additional lands. In addition, SONGS is surrounded by a popular state park. Several sensitive species are located in the proposed area, including the San Diego fairy shrimp, two native and rare plants (the little mouse tail and Pendleton's eryngo), burrowing owls, and the California gnatcatcher. Furthermore, the MRC's 1989 study for the CCC rejected the cooling tower option at SONGS as infeasible because of "technical, environmental, and safety disadvantages."¹² The CCC accepted this recommendation.

Due to the presence of environmentally sensitive habitat and wetlands near SONGS, in addition to the important aesthetic and recreational resources associated with the state park, the CCC recently refused to approve a toll road in the area by an 8-to-2 vote. Given the important biological, recreational, water quality, and aesthetic resources that would be significantly impacted by the installation of a cooling tower, the likelihood of securing the necessary regulatory approvals is doubtful.

The Board's proposal puts SCE in a terrible bind: no technology other than cooling towers would satisfy the proposed rule, but the CCC will not likely approve cooling towers absent an express order from the Board, and such an order would violate Water Code Section 13360. Moreover, SCE has a legal obligation to serve all existing and projected electric load within its service area.

Even if SONGS is somehow able to replace once-through-cooling technology with cooling towers, it would result in direct impacts to biological, water, recreational, and aesthetic resources, and indirect impacts would flow from delays related to the loss of SONGS' consistent and reliable power supply to the grid. The "programmatic" level of review does not shield the Board from analyzing these impacts because they are reasonably foreseeable consequences of its proposed policy.

¹² MRC report, *supra* note 3, at 291.

D. *The environmental and cumulative impacts from the proposed rule are grossly understated.*

A significant environmental impact can result under CEQA even if it is not directly tied to project approval. *City of Santa Ana v. City of Garden Grove*, 100 Cal. App. 3d 521, 531-33 (1970) (amendment to a general plan may produce significant environmental impacts indirectly by ultimately triggering adverse changes to the environment); *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 712-18 (1990) (EIR overturned in part because lead agency failed to consider secondary or indirect impacts of project).

The Board's proposal would trigger a series of significant environmental impacts that must be analyzed in the Board's functionally equivalent EIR. The potential destabilizing effects of losing the nuclear plants from the grid, even for the construction period (which could be years), present a clear and present threat to the reliability of California's electricity supply. California's two base loaded nuclear facilities (SONGS and PG&E's Diablo Canyon facility) provide core and essential reliability to the grid. Reducing or eliminating that reliability could result in socioeconomic and environmental effects throughout the state and to the economy that would lead to significant impacts under CEQA. Direct, indirect, and cumulative impacts include, but are not limited, to:

- **Greenhouse Gas Emissions** – The closure of SONGS would result in a net increase in greenhouse gas emissions because the relatively clean energy produced by SONGS likely would have to be replaced by a less efficient natural gas plant with higher emissions.
- **System Reliability** – The closure of SONGS would decrease grid stability, triggering rolling blackouts during heat waves in the Southern California summer months and driving up electricity rates.
- **Construction of Additional Power Plants** – The construction of a number of new power plants to replace SONGS could lead to myriad environmental impacts.
- **Construction of New Transmission Lines to Other Providers** – The closure of SONGS and other once-through-cooled plants will require significant electrical inputs from other providers. In addition to the environmental impacts associated with constructing new transmission lines (which are very difficult to permit in today's regulatory environment), placing California's electric future in the hands of other providers requiring transmission grid improvements is a risky and uncertain venture, the socioeconomic and environmental impacts of which are only hinted at in the draft document.
- **Biological, Water, Recreational, and Aesthetic Impacts** – Even if cooling towers could be constructed at SONGS, this would constitute a massive construction project that must be thoroughly evaluated under CEQA regarding

impacts to important biological, recreational, water quality, and aesthetic resources.

E. Alternatives

The Board is required to develop and analyze any feasible alternative that would result in fewer environmental impacts than the Proposed Policy. Cal. Code Regs. tit. 14, § 15126.6; tit. 23, § 3777(a)(2); Pub. Res. Code § 21159.

The environmental review associated with the Scoping Document does not include an alternatives analysis. The document's discussion of alternatives is qualitative in nature and does not identify either specific impacts or the means to reduce those impacts. The California Supreme Court has found that a very similar approach violates CEQA. In *Laurel Heights Improvement Assn. v. Regents of Univ. of California*, the Court stated that an adequate alternatives discussion "must contain facts and analysis, not just the agency's bare conclusions or opinions." 47 Cal. 3d 376, 403-4 (1988). The facts and analysis the Board includes in the CEQA analysis must consist of a "quantitative, comparative analysis" of the relative environmental impacts of its proposed policy and each alternative. *Kings County Farm Bureau*, 221 Cal. App. at 735.

A number of alternatives are available and have been raised in this and past comment letters that would reduce environmental impacts associated with the Board's proposal. We believe these technologies already have been used by SCE to minimize to insignificance potential adverse impacts from SONGS. Under these circumstances, additional technology is not necessary; and the Board can avoid adverse environmental impacts that would result from either the shutting down of SONGS, or the construction of a massive cooling tower complex on sensitive coastal resources. To the extent that any further impact minimization were warranted, which we do not believe is the case, the Board should recognize restoration and mitigation as among the best technologies to address entrainment and impingement.

California's nuclear power plants (which provide 13% of the State's electricity) should not be lumped together in a one-size-fits-all policy with other power plants, some of which operate only intermittently. A reasonable alternative would be to allow an exception to nuclear power plants under the Board's proposal to allow for individual, case-by-case evaluation.

In addition, the existing safety exception under Section 2(D) could be expanded to include situations where the reduction of impingement and entrainment will conflict with the ability to operate the plant in accordance with its design bases, other regulatory requirements, and operating licenses from the Nuclear Regulatory Commission.

VI. Conclusion

Thank you for the opportunity to comment on the Scoping Document. If the Board members or staff has any questions regarding this filing, I can be reached at (626) 302-9456.

Very truly yours,



Michael M. Hertel, PhD
Director, Corporate Environmental Policy

Attachments (2)

cc: John R. Fielder
Alan J. Fohrer
Richard M. Rosenblum
Ross T. Ridenoure
Pedro J. Pizarro
Polly L. Gault
Stephen E. Pickett, Esq.



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September 15, 2006

Song Her, Clerk to the Board
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Dear Song Her:

Southern California Edison Company (SCE) has reviewed the June 13, 2006 Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations (Scoping Document) issued by the State Water Resources Control Board (State Water Board). SCE appreciates the State Water Board's interest in Clean Water Act (CWA) Section 316(b) and the United States Environmental Protection Agency (USEPA) regulations that were adopted to implement CWA §316(b). While we believe that the USEPA regulations have some problems, their general approach is appropriate and SCE strongly encourages the State Water Board to have its Scoping Document track the EPA regulations closely.

Furthermore, we are pleased to see that the State Water Board recognizes that the implementation of any 316(b) Policy must be supported by an environmental analysis pursuant to the California Environmental Quality Act (CEQA). SCE is submitting these comments regarding the scope and content of the Environmental Analysis that the State Water Board must prepare to implement its 316(b) Policy pursuant to Public Resources Code Section 21159. That section provides that preparation of an Environmental Impact Report (EIR) satisfies the requirement to perform an environmental analysis. SCE believes that the EIR preparation is most appropriate for informing the public about the potential environmental impacts of the proposed 316(b) Policy.

Additionally, at a July 31, 2006 workshop, SCE was told by State Water Board staff that this Scoping Document should also be considered an opportunity to provide comments on the scope contents of the proposed 316(b) Policy. Therefore, SCE is also providing comments on the proposed policy itself. Not only must the State Water Board evaluate the impacts of its proposed 316(b) policy, including the social and economic impacts, but the State Water Board must also evaluate alternatives to that policy. The SCE comments should be seen as an alternative, from which the same potential environmental impacts must be analyzed as that of the proposed 316(b) Policy.

I. Scope and Content of Environmental Impact Report.

A. The State Water Board Must Prepare an Environmental Impact Report

Given the potential significant impacts on the environment from the proposed 316(b) Policy, the State Water Board must assume that an Environmental Impact Report (EIR),

or a functionally equivalent document, needs to be prepared to support the policy.¹ As the Scoping Document makes clear, the withdrawal of cooling water for use at coastal power plants "removes billions of aquatic organisms including fish, fish larvae and eggs, crustaceans, shellfish, sea turtles, marine mammals, and many other forms of aquatic life from waters of the U.S. . . . Clean Water Act §316(b) requires USEPA to ensure that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impacts." Clearly, there are significant changes to the physical environment that are subject to CEQA.

The proposed 316(b) Policy provides that not only must existing power plant owners comply with the USEPA CWA §316(b) regulations, but there would be additional, substantial requirements to reduce the impingement and entrainment of aquatic life. In fact, the Scoping Document notes that the California Ocean Protection Council urges that the State Water Board implement protective controls that would achieve a 90 - 95 percent reduction in once-through cooling impacts. In addition to the significant beneficial effects that the proposed 316(b) Policy would have on the environment, based upon the reduction in impingement and mortality, the policy would also result in **significant consequential and adverse** environmental impacts that must be analyzed. Some of those potential adverse impacts are discussed below.

Thus, the proposed 316(b) Policy would result in both (i) a significant change from the USEPA regulations, and (ii) a significant effect on the environment. Those changes must be fully evaluated in an EIR. (Public Resources Code Section 21080(d) and 21100)

B. The EIR Must Evaluate All the Direct Impacts from the proposed 316(b) Policy

CEQA defines the term "Project", which includes the proposed 316(b) Policy, as any "activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment." The proposed 316(b) Policy would have both direct and indirect changes, which may at times be categorized as cumulative impacts.

1. Potential Favorable Direct Impacts Must Be Evaluated.

The Scoping Document focuses on how and why the State Water Board seeks to modify the USEPA regulations implementing CWA §316(b). The Scoping Document spends very little space discussing the need for environmental analysis that must go into a CEQA document. For instance, the Scoping Document section on Biological and Cumulative Impacts contains a few conclusory statements, such as:

- Protection of the entire [aquatic] community is essential for promoting a healthy ecosystem.

¹ While the State Water Board may have the authority to create a document that is functionally equivalent to an EIR, SCE's comments are directed toward the requirements for preparing a complete EIR because these same requirements must be present in the State Water Board's functionally equivalent document.

- However, multiple reductions in the population of a sensitive species may produce population declines greater than the simple sum of each facilities impact.
- The combined effect of mortality at both plants may exceed a threshold needed for sustained, long-term populations of the species.

The Scoping Document makes these statements, but does not follow up with any explanation about how the State Water Board will evaluate these potential impacts from coastal power plants. The proposed 316(b) Policy is an important program that will have significant environmental, social, and economic consequences. The State Water Board must fully evaluate those potential benefits and detriments in an EIR. Yet, the Scoping Document does not indicate how the State Water Board proposes to undertake that evaluation. This leaves little room for productive comments because no proposed studies are presented.

2. Potential Negative Direct and Indirect Impacts Must Also Be Evaluated.

The Scoping Document fails to explain how the State Water Board will evaluate the potential negative environmental and economic impacts associated with the proposed 316(b) Policy. For example, the Scoping Document states that "existing power plants can feasibly implement controls to achieve a 95% reduction in impingement". The proposed 316(b) Policy provides "To reduce entrainment, existing power plant owners or operators must either reduce intake flow to that commensurate with a closed-cycle recirculating system or reduce entrainment of all life stages or fish and shellfish by 90 percent by any combination of operational or structural controls."

Yet, the Scoping Document offers no proposal for how power plant owners and operators will achieve these goals. As a few different mechanisms are available, their environmental impacts must be explored in the EIR. For example, a power plant could install a closed cycle cooling tower system to achieve the impingement and entrainment goals. The construction and operation of this system will have significant environmental impacts, such as:

- Entrainment and impingement impacts
- Concentrated effluent, which must be discharged off-site
- Air quality impacts associated air emissions from cooling towers
- Visual impacts of cooling towers
- Reduction in power generation at coastal stations
- Increased operation and maintenance costs at coastal power plants

- Closure of coastal generating stations due to economic hardship
- Increased generation at other generating stations.
- Increased environmental impacts due to increased pollution at other generating stations
- The need for additional generating stations and impacts at those new locations
- Reduced reliability on the electric grid due to removal of electric generating stations from areas near the load center and use of other generating stations outside the load center.
- Construction of new transmission and substation facilities to bring power into the load center.
- Increased potential for energy shortages and brown outs due to reduced generation at coastal power stations.

This list of environmental impacts from the 316(b) Policy, such as those listed above must be evaluated in the EIR.

II. The State Water Board Must Consider Alternatives to the Proposed 316(b) Policy.

A. The Existing USEPA Regulations Are an Alternative to Consider

SCE questions the need for the State Water Board to create a 316(b) Policy that is different from the USEPA CWA §316(b) regulations. The Scoping Document does not adequately compare the proposed 316(b) Policy with the federal regulations. Importantly, from a CEQA perspective, the Scoping Document must analyze and evaluate the environmental impacts associated with the two different regulatory schemes. CEQA requires that the State Water Board evaluate a reasonable range of alternatives when evaluating the approval of a project. (Title 14, California Code of Regulations Section 15126.6, Public Resources Code Section 21100(b)(4)) Here, the USEPA regulations are essentially the "no project alternative" because if the State Water Board does not create the proposed 316(b) Policy, the Regional Water Quality Control Boards will continue to require that coastal power plants comply with the USEPA regulations. Therefore, at a minimum, the State Water Board must evaluate the environmental impacts of both the USEPA regulations and the proposed 316(b) Policy.

B. Other Alternatives are Also Available

Aside from the need to evaluate both sets of environmental impacts, the best State policy would be to implement the Federal 316(b) policy as it exists. Instead of creating a brand new policy, the State Water Board should help define ambiguous areas and provide guidance to the Regional Boards regarding implementation. Interestingly, the State Water Board has introduced its proposed 316(b) Policy at a time when all existing coastal power plant are already in the process of achieving compliance with the USEPA regulations. The USEPA regulations do not allow much time for compliance. As soon as

the regulations were implemented, power plant operators began the compliance process. For example, SCE is already 10 months into the process. It makes little sense for the State Water Board to implement a new policy that would confuse and potentially cause conflicts with how power plant operators have already begun to comply with the USEPA regulations.

The State Water Board's guidance could include the review and approval of the Comprehensive Demonstration Study (CDS) and would outline compliance monitoring. The actual development of the CDS and the required elements are well covered in the federal rule, and development is generally already well underway by power plant owners. The timeline for compliance is also well defined by the federal rule. What is not covered is how the Regional Boards should implement the findings of the CDS and how it fits within the states NPDES permitting process. If the State Water Board addresses this portion of the 316(b) process, it would not interfere with the ongoing process to comply with the federal timelines and would not cause duplications in studies that could result in the unnecessary spending of millions of dollars.

The State has indicated that "staff believes that existing power plants can feasibly implement controls" but offers no data to support this assertion. Much of the technical data that is needed to develop a state policy which is more stringent than the federal policy will be the site specific technology studies that will be completed as part of the CDS. The federal rule conducted a detailed analysis of existing control technologies to determine their feasibility. Unfortunately, many of these technologies were tested under conditions unlike those found at the west coast generating facilities. These areas are subject to high fouling that could render the available technologies ineffective. The areas offshore of many of these plants are highly traveled by recreational and commercial vessels and do not allow for the implementation of some of these technologies. Furthermore, the sensitivity of the environment offshore may preclude modification of many of the intakes.

With the completion of the CDS documents, the state will have updated, regional analyses of these technologies. These will include reduction estimates, feasibility studies, and economic analyses that are essential to determine compliance ranges for impingement and entrainment and are scheduled to be completed in January 2008. Developing a policy that addresses the process after the CDS documents are completed will have the advantage in that the facilities would be able to comply with the federal rule and provide the necessary data needed to make decisions on compliance issues. Without the benefit of this data, many plants could be required to retrofit to technologies that are both technologically and economically infeasible.

C. The New York State 316(b) Regulations Alternative Is Inappropriate

The recent Scoping Document indicated that the State of New York's policy on 316(b) was used as a model for the California policy. Basing California's 316(b) policy on New York's policy is unreasonable due to the differences in the water bodies affected. The New York State 316(b) Policy is tailored for a hydrologic and ecological landscape

completely different from the California coast. The potential for impacts from once-through cooling systems in New York are incomparable to the California situation. The power plants in New York draw cooling water from a highly impacted freshwater river system, primarily the Hudson River. These power plants are highly concentrated geographically, and often their impacts overlap since the water body is so narrow and unidirectional in flow. Cumulative impacts on a river can be significant for these reasons.

Conversely in the case of southern California, many power plants are widely separated and have comparatively miniscule cumulative impacts to the southern California Bight of the Pacific Ocean. For instance, the southern California Bight is a very large and dynamic system linked to ocean regions north, west and south. Within this bight (between Point Conception and San Diego, including Santa Monica Bay as well as the Channel Islands), there are two major ocean currents that influence the effects of power plant cooling systems. A southward moving current flows offshore and a northward moving current is present along the coast. This creates substantial circulation through numerous eddies. The impacts from power plants to this larger water body are not nearly as significant as those on a confined river. The New York model is therefore inapplicable. The Scoping Document does not discuss these differences or attempt to compare the different environmental impacts of the two regions.

D. No Long-Term Significant Impact Justifies More Stringent Regulations

With regards to the overall impact of once through cooling, without any scientific studies, the Scoping Document implies that existing power plants have substantial impacts to aquatic life in the ocean. However, this allegation has been made for years without any real long-term impacts being shown. The power industry has been conducting impact studies for over thirty-years, without any findings of significant long-term impacts. While measurable impacts occur from these facilities, most studies indicate that there is little or no significant impact to the coastal environment.

For example, the fifteen-year, 50 million dollar study conducted by the California Coastal Commission's Marine Review Committee (MRC) at SCE's San Onofre Nuclear Generating Station (SONGS) studied all impacts of the plant's cooling water system. The MRC looked at before and after data, they compared the impacts to local control sites, and looked at seasonal effects (including El Nino). While some impacts were found, the significant impact alleged was not substantiated. In some cases it was determined that there were no impacts and some beneficial impacts were discovered.

Many similar 316(b) studies conducted at coastal facilities in the late 1970's and early 1980's came to the same conclusion. Furthermore, there have been no studies that have indicated a depletion of fish populations near any of the power plants and there has been no extirpation of species attributed to the once through cooling systems.

In fact, many fisheries are on the rise. One example is the drastic increases in the numbers of Pacific sardines along the coast of California. This is an industry that peaked

in the 1920's and 1930's but crashed in the 1960's due to mismanagement of the fisheries. Once fishing guidelines were implemented, this species has begun to recover².

A five part series in the Los Angeles Times titled Altered Oceans (July 30 – Aug 4, 2006) described the state of the oceans as impacted and toxic. The series discussed impacts from chemicals and plastics. The series cited a 90% decline in big fish over the last 50 years due to overfishing³. However, once through cooling was never mentioned as a causative agent. This series suggested that other impacts from non-point sources and other discharges have been shown to be more detrimental than once through cooling. And these impacts are being noted at the large scale level.

The State Water Board should review the MRC study and the resulting reports. This intensive study included the input and research of highly respected scientists in the field. The study was modeled after many of the concerns addressed in the 316(b) rule, but was far more comprehensive in its scope. It provides substantial data on local populations of fish and shellfish in adult and larval and egg forms. It studied the impingement and the entrainment impacts at SCE's SONGS power plant. It looked at mitigating factors including technology controls. The overall conclusion of the study was that SONGS would not have significant impacts on the ocean environment if the recommended fish impingement technologies, operational modifications, and restoration were implemented.

E. Calculation Baseline

1. Reference Sites: Reference sites have been proposed to be allowed for the calculation of the baseline environment against which entrainment and impingement impacts will be evaluated. If this option is used, caution should be used in selecting the specific reference sites as they may not be representative of the source water that may be affected by any particular power plant. The differences in power plant locations may result in substantial variability in the abundance and the impacts on species within the study area. Local abundances of fish are highly variable especially considering the large areas that many adults may cover. The complex ocean currents can also affect the variability of the results. Selection of reference sites would require additional sampling just to determine if that site is appropriate for one or more power plants. There is the potential for reference sites to overestimate or underestimate impacts on species if the species composition is not similar. The extreme example of this would be that species that are being entrained at the plant are not present at the reference site; this would result in estimates of impacts on a species greater than the estimated population of the species.

2. Baseline Flow - The USEPA regulations do not incorporate intake flow volumes or operational parameters into the calculation of the environmental baseline. The proposed 316 (b) Policy requires that the baseline be calculated by

² Status of the Pacific Coast Coastal Pelagic Species Fishery and Recommended Accepted Biological Catches. Stock Assessment and Fishery Evaluation. Pacific Fishery Management Council, 2005.

³ Altered Oceans. A Five Part Series. Los Angeles Times, July 30 – August 4, 2006.

actual flow rates that have been reported to the RWQCB over the last NPDES cycle. SCE does not believe that this would have an impact on the baseline calculations at the SCE's San Onofre Nuclear Generating Station (SONGS) because it is a baseload plant that operates near maximum flow. This means that the actual flow rates at SONGS are very close to the permitted maximum flow. However, there are occasions during a NPDES permit cycle in which the plant has either one or both of the units down for refueling and maintenance. Since these outages occur on alternate years or when needed, it should be addressed how this may affect the calculation of baseline flow under the State 316(b) policy.

F. Inflexible Performance Standards Do Not Sufficiently Consider the Available Technologies for Reducing Mortality and The EIR Must Address the Environmental Impacts Associated With Attempts to Achieve the Performance Standards

The USEPA 316(b) regulations established ranges for the proposed reduction in impingement and entrainment mortality. The reason ranges were selected as opposed to specific limits is "because of the uncertainty inherent in predicting the efficacy of any one of these technologies, or a combination of these technologies [to reduce impingement and entrainment], across the spectrum of facilities."⁴ Thus, USEPA acknowledged the variability of the performance standards based on site specific and plant specific issues. Installation and performance of these control technologies can be affected by a number of factors including both plant design and operation and environmental conditions.

In the case of the California coastline, the principle factor affecting the performance of the technologies, such as fine mesh screens and narrow-slot wedgewire, is the high potential for biofouling. Many of the technologies that USEPA analyzed were studied in freshwater habitats. The amount of biofouling that occurs along the California coast is quite substantial compared to what is found in freshwater habitats. An example of this is how quickly the SONGS intake structures are fouled with attachment of gooseneck barnacles and mussels. The rate is so rapid that frequent heat treats (every 4-6 weeks) have to be performed during the spring and summer months to remove these fouling organisms. Issues like this make some of these technologies less efficient and in some cases infeasible. Less efficient impingement or entrainment technologies will not reduce mortality at a reasonable cost, and could significantly reduce power generation.

Plant design will also have a direct impact on the efficiency and feasibility of these technologies. Off-shore intakes will be difficult to retrofit and may be impossible to keep clear of debris. Some facilities may have physical barriers to retrofitting or may lack the required space.

The USEPA recognized these issues and noted that power plants may have difficulties reaching the upper end of the mortality reduction range but believed that most facilities could eventually meet the lower end of the ranges established in the federal 316 (b) regulations if they were to implement and optimize available design and construction

⁴ Federal Register, Vol. 69, No. 131, page 41600.

technologies. The State Water Board proposed 316(b) Policy seems to contradict this conclusion and assumes that all existing power plants are capable of meeting the upper portion of the range. However, the proposed policy does not support these assumptions with any new data or studies. Nor does the proposed policy identify the environmental, social, and economic factors associated with these two alternatives (range of performance standards versus high end only performance standards).

USEPA also established the lower end of the existing range because it was recognized that "more fragile species may not have a high survival rate after coming into contact with fish protection technologies." This statement recognizes that with the mortality of the species of fish entrained is highly variable. Thus, the efficacy of a technology may be site specific; one site may be able to meet the higher end of the range and another may not using the same technology. Any performance standards must reflect these practicalities and differences with a range of reduction limits.

Finally, the USEPA noted that the upper portion of the range may, at some time, be achieved by new technologies not analyzed by its 316(b) study. However, many of the new technologies that were referenced in the Scoping Document have not been shown to be feasible. Technologies such as aquatic filter barrier systems are not practical in the ocean and others may actually impact non-target organisms. An example is sound barriers; this technology could impact other species in the area of the plant, most notably marine mammals that are sensitive to noise. In the case of SONGS, light barriers were analyzed and determined to not have a substantial positive effect by the California Coastal Commission (CCC)⁵.

In short, much of the needed data to determine if the upper end of the range could be achieved has not been developed. Prior to creating the proposed 316(b) Policy, the State Water Board must (i) evaluate the potential for technologies to achieve success at power plants along the California coast, and (ii) determine the environmental and economic impacts associated with such technologies in the EIR that will support any eventual 316(b) Policy.

1. Site Specific Determination of Best Technology Available (BTA)

The proposed 316(b) Policy does not allow for site specific determination of BTA. Citing Water Code Section 13142.5, the Scoping Document states that site specific evaluations are inconsistent with state policy, which requires the use of the best available site, design, and technology **feasible** for new and expanded power plants. First, this law does not apply to existing power plants, and for good reason. It would be highly impractical to relocate or redesign an existing power plant to meet the Best Technology Available for new power plants years after the existing power plant was first built. The cited code does not require that type of an effort. In fact, site specific feasibility is highly variable when it comes to retrofitting an existing plant. In contrast, construction of a new plant allows for

⁵ California Coastal Commission. Executive Director's Determination That Fish Behavior Barriers Tested at SONGS are Ineffective. September 22, 2000.

much more flexibility and hence a general policy regarding cooling water systems at new plants could be adopted in those circumstances. Moreover, with the wide variety of plant designs and operations, the ability to use a single technology at all plants would not be feasible. It is essential that site specific analyses be allowed.

Second, the California Water Code and the USEPA regulations have essentially the same result. The USEPA regulations require the Best Technology Available, whether or not the technology is feasible. However, the USEPA regulations then allow for site specific determinations of the technology where compliance costs are also evaluated. This is equivalent to the State Water Board's feasibility standard. The term "feasible" includes economic and cost benefit determinations. "Feasible" is not something that is just possible, but it means "capable of being accomplished in a successful manner within a reasonable period of time, taking into consideration economic, environmental, social, and technological factors". (Public Resources Code Section 21061.) This is the same definition that is used in the proposed 316(b) Policy. Therefore, the Scoping Document is clearly in error when it states that the use of site specific determinations of technology is inconsistent with state law because they would consider economic and other factors.

In fact the proposed 316(b) Policy is contrary to existing law as the proposed policy attempts to apply a new standard to existing facilities. Thus, the Scoping Document must be revised to use the appropriate interpretation of Water Code Section 13142.5. Furthermore, the EIR needs to consider the environmental impacts associated with the installation of new technologies at power plants. Additionally, if the proposed 316(b) Policy imposes different requirements on expanded or new power plants, the EIR must analyze their respective environmental impacts.

2. Nuclear Facility Safety Concerns

SCE appreciates the Scoping Document's recognition that nuclear power plants have safety issues that may preclude meeting the impingement and entrainment reduction performance standards that would otherwise be applicable to other coastal power plants. The proposed 316(b) Policy would relieve nuclear power plants from meeting the upper end of the performance standards if the plant operator or owner demonstrates that the technology would conflict with Nuclear Regulatory Commission (NRC) safety requirements. While this provision in the proposed policy is important, more flexibility is needed. The NRC may not have specifically instituted safety requirements that one can cite as a requirement such as a regulation. Nonetheless, many of these reduction technologies could impact the operations of the power plant that could in turn lead to safety problems. For example, there may be issues with technologies impacting station flows that may cause the power plant to stop producing electricity based on NRC safety levels regarding pressure differentials. However, if the plant trips, it is not likely that the NRC would see this as a safety issue because the tripping device functioned as

intended. Thus, the proposed 316(b) Policy must allow for both feasible technologies and tie the safety demonstration solely to other operational and safety considerations.

The Scoping Document notes that flow reduction may be reduced during periods when electrical energy is not being produced. However, that statement is not always accurate. Operating at reduced flow rates or following energy load demands may not be consistent with the power plant design and could lead, at a minimum, to more frequent equipment failure that potentially challenges safety requirements and more frequent and costly maintenance requirements. Many plants are not equipped to operate at reduced flow and the cost of reducing load for a baseload power plant can be significant. The proposed 316(b) Policy must consider these costs and consequences.

To assure that SCE would be allowed to continue to operate SONGS in accordance with its design and NRC license, SCE requests that the following paragraph be inserted in place of proposed provision 2 c. as follows

If an existing nuclear power plant demonstrates that implementation of operation and/or technological measures for the reduction of impingement and entrainment will conflict with the ability to operate the plant safely and in accordance with its design bases, other regulatory requirements, and operating license from the Nuclear Regulatory Commission, the performance standards for impingement and entrainment may be met using any combination of operational or structural controls and restoration measures.

G. Restoration Measures

The Scoping Document proposes to allow restoration as mitigation only as a last resort, and only for entrainment losses. First, the restoration alternative should also be applicable to power plants that cannot sufficiently reduce impingement mortality.

Second, not all coastal power plants will be able to meet the lower range of the reductions for both impingement and entrainment. It is unlikely that all of the facilities would meet the 60% reduction in entrainment with existing technologies. Biofouling and flow issues could prevent the application of many technologies. Third for impingement, many coastal power plants may already have very low impingement numbers. Requiring those plants to spend substantial amounts of money to protect a relatively small number of fish is not a good policy. In these cases, the money spent on protecting a few fish, could better be applied to implement habitat restoration projects, if any mitigation were needed at all. The EIR for the proposed 316(b) Policy must consider the environmental impacts and cost benefit of installing new operational or technological controls versus restoration or other forms of mitigation, and the extent to which mitigation is even needed in the event of minimal environmental impacts.

The proposed 316(b) Policy also ranks mitigation preferences. They are 1) on-site, in-kind, 2) on-site, out-of-kind, 3) off site, in-kind, and finally, 4) off-site, out-of-kind. The ranking of preferences leaves out a discussion of the quality of the habitat that is impacted and the quality of the habitat that will be provided through mitigation. For instance, in the case of SONGS, the water body that is impacted is primarily open water, sandy bottom. This type of habitat has a much lower value than the coastal wetland habitat that is being created/restored as mitigation as required by the CCC following the MRC study. Thus, the EIR for the proposed policy must consider the environmental impacts associated with these types of mitigation preferences and the policy should allow for flexibility to provide high quality habitat in the most cost effective manner feasible. Additionally, the proposed 316(b) Policy should also contain a provision that accepts mitigation measures, like those imposed on SONGS and especially those that have already been implemented at a coastal power plant.

H. the Habitat Production Foregone Method is Not Always an Appropriate Method for Determining Restoration Objectives

The proposed 316(b) Policy requires that Habitat Production Foregone (HPF) methodology be used to determine the amount of restoration required, if restoration is allowed. However, as presented, the HPF methodology is incomplete to use for such a determination. Production Foregone depends on a great many factors. The model is complex and takes into account natural mortality of selected species. The survival rates of species in their early stages of life are difficult to estimate, and this data usually only exists for commercially important or well studied species. Rago indicated in his 1984 study that "production foregone will not be applicable to minor species."⁶ Yet these are the majority of the fish that are impacted by most coastal power plants. Dr. Foster implies the HPF method is a simple calculation based on flow and area of water.

Furthermore, the proposed HPF method relies on a percentage of the species impacted in the water body. The boundaries of the areas impacted and how they are determined are not mentioned. An estuary with easily derived acreages was given as an example. However most of the generating stations have very complex hydrology offshore. For instance, SONGS is on an open coastline. To use the HPF, one must determine what volume of water could be affected and where the boundaries would be located? All of these factors are essential to determine the potential acreage affected by the plant. Finally, it is not clear what the acreage that is determined through this model will actually mean? This habitat is not removed or rendered unusable for aquatic life. In fact, the MRC showed that some aquatic species in the SONGS areas significantly increased after plant operations began. Thus, acre for acre mitigation is certainly not appropriate. If the HPF method is to be used at all, it should be used in its entirety, and it should be well defined as to what the results mean. Most importantly, a quality of habitat factor should be included.

⁶ Rago, P.J., 1984. Production foregone: an alternative method for assessing the consequences of fish entrainment and impingement losses at power plants and other water intakes. *Ecological Modeling*, 24: 79-111.

The proposed 316 (b) Policy also states that a facility must "demonstrate the efficacy" of the restoration, but offers no sort of guidelines. Vague comments such as these must be addressed before the final policy is adopted. Certainly the restoration will be monitored to determine if it meets certain success criteria, but it would not be reasonable to require monitoring outside of the mitigation area. If the restoration meets the success criteria established in the Mitigation Plan, then the efficacy should be based on that determination. Finally, the EIR must evaluate alternative mitigation measures to using the HPF, both in its complete and incomplete form.⁷

I. New and Existing Power Plants

The proposed 316(b) Policy has chosen to expand the USEPA Section 316(b) regulatory definition of "new facilities" to include any facility that has "undergone or will undergo a major modification" that will increase electrical production capacity or increase intake flow. This proposal needs to be tempered such that increases in production capacity or intake flow must be significant for the power plant to be considered a new facility. For example, SCE is undergoing a replacement of the SONGS steam generators, and the EIR for the project notes that the new steam generators will match the specifications of the original generators. No change in rated capacity or operational aspects of the plant is expected or planned. However, it is possible that the "standard" new steam generators would only be made in a slightly larger capacity. If that capacity would have been slightly higher than existing, SONGS would still essentially be an existing facility. Or based upon improved technologies and efficiency, SONGS could potentially experience an increase in capacity. While this is not expected, the potential exists to inadvertently become a "new facility" as defined by the proposed policy. Thus, the proposed policy should acknowledge that capacities may fluctuate due to plant repairs and new, more efficient equipment. Only if the increase in electrical capacity or flow is over 25% should the increase be deemed as significant and treated as a new plant.

J. Economics

The Scoping Document states that the USEPA was not able to monetize benefits for about 98% of the species to be protected by the regulations at existing power plants. However, the 2% of the species that were evaluated make up the majority of the fish that are entrained or impinged at SONGS. Take for instance northern anchovies, Pacific sardines, and queenfish. These species make up nearly 95% of SONGS total impingement⁸. All of these species were included in the economic studies performed by the USEPA. The remaining species are typically not entrained or impinged in significant numbers so their impact is not substantial. Some of the species impinged represent only a few individuals.

Species that were chosen for economic analysis in the federal rule are commercial and recreational fish. These species were chosen because of the more obvious value to fisheries and these species have been more studied than other species. Thus, there is

⁷ Title 14, CCR §15126.4

⁸ Southern California Edison, 2005. Annual Marine Environmental Analysis and Interpretation.

substantial data on their life history as well as on their overall population numbers. The scoping document should use this information.

The Scoping Document argues that the "use benefits dramatically underestimate the overall ecological benefit of the Phase II rule." The USEPA economic analysis does take into account another beneficial use of the ocean - the industrial benefit. The State Water Board is not only mandated to protect the environment, but it is also mandated to protect all listed beneficial uses of the state's waters. This includes industrial applications such as power generation. When developing this state policy, the State Water Board should not ignore established beneficial uses. Additionally, in preparing its EIR, the State Water Board should evaluate these overall impacts.

K. Biological and Cumulative Impacts

The State Water Board has stated that "Protection of the entire community is essential for promoting a healthy ecosystem." The proposed 316(b) Policy has not stated what level of ecosystem protection is required. The proposed policy appears to take a 100% protection stance. Yet, the Scoping Document provides no evidence that there have been substantial impacts to fish populations in the California Bight that justify such protection. It would seem that if California's coastal power plants have been operating for more than three decades and if they have been severely impacting the coastal ecosystem, it would be expected that notable decreases in fish populations would be detected. Most notably this would cause a decrease in commercial and recreational fishing. Economic analyses of these industries do not show this trend. In fact, many recreational fisherman are seen offshore of these plants indicating that these fish are still available in the area. Some species, like the Pacific sardines, are showing substantial increases in numbers.

The EIR should present data of significant reductions in overall fish stocks to support the proposed 316(b) Policy.

The Scoping Document also properly mentions that it will perform an analysis of cumulative impacts. However, the EIR should recognize that while the California coastal waters are all part of the Pacific Ocean that alone does not mean that coastal power plants will cause a cumulative impact. For example, cumulative impacts may arise for some pelagic species, but it is not necessarily true for many of the coastal species. The EIR should evaluate the different areas along the coast and determine what inter-relationship there may be, if any, among the different areas.

Furthermore, even if coastal power plants are within the general vicinity of each other, their potential impacts could be to different species. The potential for impact would include several factors such as intake location and depth, flows, and operational considerations. These differences can easily be seen in the numbers and diversity of fish that are entrained at each plant. The EIR should not operate under the assumption that cumulative impacts occur because the plants are in close proximity.

The State Water Board references a study conducted by MBC and Tenera (2005) that estimated an overall cumulative entrainment mortality of 1.4% in the Southern California Bight. It would seem that a 1.4% reduction in fish in the bight is insignificant, especially considering that many of these species are more heavily impacted by other industries, such as the fishing industry. Another quote from this study referenced power plant fish mortality in relation to recreational fishing. The report indicated that only 8-30% of the total recreational fish mortality in any year is due to power plants. The upper portion of the range was based on frequently caught, but less recreationally desirable, queenfish. It does not mention species that are most prized by recreational fisherman such as kelp bass and barred sandbass have a much higher percentage of fish captured by fishermen.

The State Water Board cumulative impact analysis should also consider the impacts due to other facilities along the California coast. The EIR should discuss what standards will apply to these other facilities, if any. Finally, the cumulative studies must take into account facility intake designs and the species they entrain, not simply their location.

L. Threatened, Endangered, and Protected Species

Threatened, endangered, and protected species are already protected by designated agencies. If these species are present, then each facility is already required to comply with those agencies' requirements. The proposed 316(b) Policy should just acknowledge that the facility must comply with the federal and state laws that protect these species. Coastal facilities have been working with many of these agencies with jurisdiction to address potential take or harm of these species, so an additional state requirement in the proposed 316(b) policy would only duplicate and complicate these current processes.

M. PICs, CDS, and Monitoring

The Regional Boards have the responsibility for reviewing the PIC and the CDS. The PICs are already submitted for almost all of the coastal power facilities. Any new 316(b) policy will not be developed in a timely enough manner to address these PICs. As mentioned above, a helpful role for the proposed Policy is to develop guidelines for reviewing the CDS and the associated monitoring plans.

N. Expert Review Panel

The expert review panel that is proposed to be created in early Fall 2006, will be implemented too late to make comments on data collection proposals, but could serve a useful purpose during the CDS period. The panel should work in conjunction with coastal power plants. The proposed 316(b) Policy should provide the rationale and process for panel member selection.

M. Flow Reduction

The proposed 316(b) Policy provision 2 d. requires that the coastal generating stations would have to reduce intake flow to ten percent of the baseline flow rate if the power

plants will not produce electricity for more than 2 days. Circulating water pumps for cooling water systems are expensive to operate. Cost considerations alone result in these pumps only being operated when necessary for the safe and efficient operation of the plant. However, the provision 2.d restriction is too broad. For example, as the operation of many power plants is dictated by the California Independent System Operator, a power plant operator may not know if the plant will not operate for more than 2 days unless the plant is taken out of service for maintenance reasons.

This restriction would also preclude the plant from drawing condenser vacuum during start up. For example, San Onofre normally has to draw vacuum two weeks prior to going on-line following a normal outage as part of a controlled start up of the plant. If there is an emergent outage or trip, the plant normally needs to maintain vacuum for the few days or week that it takes to return to power. Breaking vacuum would unnecessarily add significant complications and further delay the return of the plant to service. For the cooling water system itself, allowing the salt water to stagnate with no aeration around all stainless steel components increases corrosion rates and adversely affects the long-term reliability and performance of the safety-related salt water cooling pumps due to potential severe corrosion damage. Due to these and other power plant operating requirements, SCE requests that the wording of provision 2 d. be changed as follows:

If the owner/operator knows that the power plant will be out of service for two or more consecutive days, the owner or operator must minimize entrainment by reducing intake flow to the maximum extent feasible given the operating restrictions of the plant, such as the use of flow for cooling, corrosion prevention, or other operational and safety purposes. This measure will be allowed to count as an operation control to assist in meeting the required impingement and entrainment reductions. This requirement shall be implemented in the National Pollutant Discharge Elimination System (NPDES) permit for the power plant through an appropriate maximum intake flow limitation that applies during these periods.

Finally, much of our NPDES compliance requires that we have a certain amount of flow. We have inputs from the Full Flow Condensate Polisher Demineralizer Hold Up Tanks's and High Flow Make Up Demineralizer Waste Neutralization Tank's and also now from the sewage treatment plant discharge.

III. Appropriate Location for the State Policy

The proposed 316(b) Policy should be a stand alone policy rather than trying to incorporate it into an existing plan. While the Ocean Plan is the closest document, in terms of function, i.e. protecting ocean water quality, that document affects a broad range of uses. The proposed 316(b) Policy is more akin to the State Water Board's policy regarding the use of ground water at inland power plants, which is a separate policy. This would allow for more flexibility. The Scoping Document notes the potential to incorporate the policy into the existing Thermal Plan because of the connection of the

cooling water intakes and thermal discharges. Although there may be some nexus, it does not seem enough to warrant placing this policy into an existing policy. This policy as proposed will have enough of an impact that it can stand alone.

Thank you for the opportunity to comment on the proposed State 316(b) Policy. If you have any questions, please call me at (626) 302-9545.

Sincerely

Patrick Terrant for

Thomas Gross

cc: Members of the Board
Celeste Cantu, Executive Director
Dominic Gregorio, Staff

**Bcc: Mike Hertel
David Kay
Nino Mascolo
MaryJane Johnson
Robert Heckler
Patrick Tennant**



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September 25, 2006

Song Her, Clerk to the Board
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Dear Song Her:

Subject: Response to Comments Regarding State Water Resources Control
Board Clean Water Act Section 316(b) Scoping Document

Southern California Edison (SCE) would like to respond to comments presented in a letter authored by various nongovernmental organizations (including the California Coastkeeper Alliance, Heal The Bay, Surfrider, United Anglers of California, Inc., etc.) regarding the alleged impacts and possible plant modifications to the San Onofre Nuclear Generating Station (SONGS) to comply with the proposed State 316(b) policy. Although SCE generally opposes many of the comments, some data has been misrepresented and warrants specific responses.

Impacts of Once-Through Cooling (OTC)

The first group of comments addresses the potential impacts OTC has on the marine environment. The letter quotes data presented at the September 6, 2005 public hearing in Laguna Beach, CA by Dr. Michael Foster from the Moss Landing Marine Laboratory. At this meeting, Dr. Foster claimed in a presentation that approximately 50 million marine and estuarine fish are entrained per day in California by power plant cooling water intake systems (CWIS). Although acknowledged as an estimate, this number has no basis in fact. If calculations of the amount of fish larvae entrained are made using Dr. Foster's data (400-600 fish larvae per 1000 m³) and the estimated intake flow of 17 billion gallons a day, the actual estimate is between 25.7 million and 38.6 million individuals, not the stated 50 million. Additionally, this number is based on certain assumptions that exaggerate the total.

The first assumption is that the powerplant CWIS is always operating at maximum flow, but most do not. Any reduced flows due to maintenance or reduced power demand would reduce this impact. Another fallacious assumption is that all fish larvae within the entrained plankton would have survived to adulthood. The truth is that the percentage of fish larvae that survive to adulthood is naturally very small. Fish reproductive strategy is to produce as many eggs as possible to offset high natural mortality. In other words, only a small percentage of the eggs and larvae naturally reach adulthood in any case. This number is difficult to quantify due to numerous environmental, physiological, and species specific differences, so the broad generalizations made by Dr. Foster cannot be supported scientifically with any significant certainty. In fact, all of the coastal power plants are

currently conducting entrainment studies to document the amount of ichthyoplankton that is entrained, so detailed information will be available in their respective Comprehensive Demonstration Study reports, which are likely to be completed near the beginning of 2008.

SONGS Impacts on Kelp and Kelp Fish

A commonly misstated "fact" is that SONGS has destroyed 200 acres of kelp forest, which makes up 10% of the kelp on the entire coast. It was further stated that this kelp would never return. The first error is that the amount of lost kelp was calculated using two separate years of data. The first value is the impact amount that the Marine Review Committee (MRC)¹ estimated to be the potential impact that would be caused by SONGS if all conditions were optimal; in other words, it was the maximum loss possible. Their estimate was that 80 hectares (0.800 km² or 197 acres) of kelp was impacted². To come up with a 10% statistic, the Letter rounds up slightly the estimated value from the MRC study (1983) to 200 acres (0.315 sq miles or 0.809 km²). Then, this number was compared to the total amount of kelp canopy cover presented by the California Department of Fish and Game for the total canopy coverage along the California Coast in 1999 (3.7 sq miles)³. Even if canopy data was an appropriate comparison for the MRC data (which it is not, see below), the use of data 16 years after the proposed impact and at a time when the kelp coverage was very low statewide is inappropriate. The selection of the time period from which data is used will have drastic variations in the "impact" estimates. For example, if data of kelp abundance from the same CDFG source was used from a time period prior to SONGS operation, when the total canopy cover was 53.9 sq miles, the SONGS "impact" would only be 0.5%. At another point of time, one after the start-up of SONGS (1989), and closer to the actual MRC study, the total acreage for coastal California was 17.5 sq miles. This would result in only a 1.8% decrease.

Obviously comparing different years of canopy cover allows for substantial variations and greatly over-exaggerates impacts. The reason is that kelp canopy is highly variable and affected by a great many factors. The natural life cycle of kelp causes fluctuations in canopy cover due to natural die-offs. This will create decreases in overall canopy cover, but as new kelp recruits and grows to adult size, the canopy returns. Thus, kelp growth is measured over a number of years and compared to similar sites to obtain a fair evaluation of kelp impacts.

The Kelp Survey Consortium measures canopy coverage in Orange and San Diego Counties, much like the data that CDFG reported. The consortium has been conducting aerial surveys since 1983⁴. According to the Kelp Survey Consortium, canopy cover for the SOK kelp bed was only measured to be 0.102 km² during the same time period, not

¹ The MRC was created by the California Coastal Commission (CCC) and oversaw a \$50 million, 15 year study of the potential impacts of SONGS.

² Marine Review Committee, 1989. Final Report of the Marine Review Committee to the California Coastal Commission.

³ California Department of Fish and Game, 2001. California's Living Marine Resources: A Status Report.

⁴ Kelp Survey Consortium 2005, Status of the Kelp Beds 2004, San Diego and Orange Counties, Prepared by MBC Applied Environmental Services.

the 0.809 km² estimated by the MRC. The total for Region 9 for that year was only 0.639 km². This again shows that the actual impacts to kelp were overestimated. But, it also showed that the amount of kelp actually increased offshore, and was at a record high in 1990 (0.763 km²). So in fact, the kelp did return after SONGS Units 2 and 3 began operation in 1983 and 1984.

Further complicating this comparison is that the MRC study did not use simple canopy cover to determine the amount of impact. The MRC conducted detailed surveys of the bottom of the ocean in the area. This included transects in which individual plants were counted and the use of side scanning sonar. The area estimated was what "could" be present during an ideal year. If this methodology was utilized in determining the areas listed above, the values would be substantially higher, further decreasing the percentage numbers.

Testimony by Wheeler North, a world-renown kelp expert, indicated that the impact was not nearly as severe and the CCC eventually concluded that the impacts could be mitigated with 61 Ha (0.61 km² or 150 acres) of artificial reef.

The Letter also states that there was an 80% reduction in the kelp fish population. However, the MRC study had determined that there was 70% decrease in abundance of kelp bottom fish and a 17% decline in abundance of kelp fish living in the water column. The percentage is from a comparison of the abundance numbers of fish on the SOK and the San Mateo Point reference station. Thus, it should be noted that these decreases are localized within the SOK and not the entire coastline. It should be noted that San Mateo Point tends to be more productive and better habitat due to its location on a point. This allows for natural currents to flow through the area, bringing nutrients and food, and producing an overall more robust kelp community.

Large Fish Kills

The Letter references an August 2005 fish kill at SONGS due to entrainment. The fish kill represented over 5 tons of northern anchovies. Large kills such as the one listed are abnormal and highly infrequent. In the operational history of SONGS Units 1, 2, and 3 (1968 to present), only 6 of these events have occurred. The causes of these large impingements are typically weather related in which water temperatures are atypical or local runoff and storms have created high levels of turbidity bringing fish closer to the intake structures. These large kills generally represent a single species indicating that a large school of the fishes was present offshore. A comparison to the commercial fisheries take of anchovies would put the magnitude of this impact into perspective (See Comparisons of OTC to Other Marine Impacts below).

Impacts to Marine Mammals

Impacts to marine mammals and sea turtles are well documented and reported to the National Marine Fisheries Service (NMFS) on a monthly basis in Marine Mammal Stranding Reports. It should be noted that SONGS has developed a program to minimize

the impacts to marine mammals and sea turtles. This includes procedures for capturing and removing the animals from the system. Over \$35,000 of research was conducted to design cages to capture harbor seals and California sea lions. The cages are deployed in SONGS fish return system whenever a marine mammal is sighted. Once captured, the mammals are released back to the ocean. Sea turtles are tagged and released. Harbor seals and sea turtles have a high survivability percentage, with sea turtles survival being nearly 100%.

Comparisons of OTC to Other Marine Impacts

The Letter also states that owners of facilities that utilize OTC are suggesting that they "should not be regulated to the required extent of the law because other threats to marine life, such as fishing, have greater impacts than OTC." The intent of the comparison was to illustrate the level of significance of the impacts, not to infer that the plants should not to be regulated. In the case of SONGS, the vast majority of the fish impinged at SONGS (more than 95%) is made up of 3 species: northern anchovies, Pacific Sardines, and queenfish. Northern anchovies and Pacific Sardines are pelagic species that are commonly fished by the commercial fishing industry. For example, live bait fishing is comprised of primarily northern anchovies and sardines, but also includes white croaker and queenfish. These pelagic fish travel much of the coast and range from Baja California as far north as Washington and Canada (depending on the species) and are subjected to many regional pressures, with fishing being a very large one. This type of fishing closely mimics the entrainment of adult fish at SONGS. So comparisons made to the State Water Board during the public comment period in December 2005 in Oakland, CA were to show the relative significance of the two similar impacts. In the cases of northern anchovies and Pacific sardines, the relative impacts were 4% and 0.2%, respectively⁵. The point is that the fishing guidelines and population assessments have been conducted on these species, and the fishing industry is regulated in such a manor that they do not impact the overall sustainability of the fish populations. Thus, if the impact from SONGS on these species is only a small percentage of the fishing impact, then SONGS also does not significantly impact these species.

Feasibility of Closed Cycle Cooling

Another comment made by the Letter was that a review of aerial photography indicates that there is adequate space at SONGS for cooling towers. Unfortunately, this photography did not include overlays of property ownership. SCE does not own any of the land that SONGS is situated on. SCE leases the property from the U.S. Department of the Navy. Simply finding property surrounding the SONGS site and alleging that it may be used for cooling towers is a gross simplification of the issue. Furthermore, one of the areas suggested by the Letter is on land that is used by the California State Parks. More importantly, a simple search of the California Natural Diversity and Database (CNDDDB) shows the potential for several sensitive species in the area proposed. These include San Diego fairy shrimp (*Brachinecta sandiegonensis*), two native and rare plants, little mouse tail (*Myosarus minimus ssp. Apus*) and Pendleton's eryngo (*Erygium*

⁵ Southern California Edison's comments to the SWRCB, December 2005, Oakland, CA

pendletonensis), and burrowing owls (*Athene cunicularia*) (See attached Figure). Further site analysis shows that the plant community is classified as coastal sage scrub habitat that is critical for the California gnatcatcher (*Polioptila californica californica*). Thus, a thorough, professional analysis of potential land use impacts identifies several highly probable regulatory constraints to cooling tower siting.

Furthermore, land is only one of the factors influencing the potential to use closed cycle cooling. During the MRC research, an extensive study was conducted to determine the feasibility of installing cooling towers at SONGS. The majority of the committee rejected the cooling tower option because "technical, environmental, and safety disadvantages and high costs outweigh its advantages at SONGS."⁶ The CCC accepted this recommendation. The issues included the potential impacts to sensitive habitat on the bluffs, visual impacts to a well-known and heavily used State Park (San Onofre), salt drift and the environmental consequences, noise impacts, and potential changes in climate that would create fog hazards on Interstate 5. There was substantial concern regarding the disposal of the blowdown water in these cooling towers. This water would be highly concentrated with salts and other minerals and would have to be discharged to the ocean.

The engineering assessment that was made during the MRC review period concluded that the construction of cooling towers would cost \$300 million (1990) dollars. Annual operation costs would be \$30 million dollars. Net power output would be reduced by 83 MW due to additional power required to operate the towers, which would be provided from fossil fuel sources that would increase emissions of air pollutants.⁷ This value did not include the costs of environmental compliance and mitigation. This value, even in 1990 dollars, is larger than the stated \$100 million per 1,000 MW of capacity stated in the comment letter. The reason being is that the Letter's value was based on an "easy" retrofit, without any credible analysis. SONGS has several site specific factors that greatly influence the cost to build and operate cooling towers. One is the fact that the towers would have to be placed on the bluffs, at a substantially higher elevation than the plant, making the engineering of these structures difficult. The Electric Power Research Institute estimates that a difficult retrofit is actually \$250 million per 1000 MW of capacity⁸.

It should be emphasized that detailed analyses of all compliance alternatives will be included in the Comprehensive Demonstration Study report that is a part of the required 316(b) process, which includes the evaluation of closed cycle cooling. The studies will incorporate facility specifics and environmental concerns. Simply showing an aerial photo is an overly simplistic approach that provides no basis for an informed discussion.

⁶ Marine Review Committee, 1989. Final Report of the Marine Review Committee to the California Coastal Commission

⁷ PLG, Assessment of Marine Review Committee Recommendations for SONGS Units 2 and 3, February 1990.

⁸ As presented by the California Council for Environmental and Economical Balance (CCEEB) at the December 7, 2005 public meeting.

Offshore Intakes

Another comment made was that credit should not be given for offshore intakes because "there was no evidence that this structural design was originally intended to reduce entrainment." However, the SONGS intake structures were specifically designed to reduce entrainment and impingement through employment of an offshore velocity cap, location at midwater depth and distant from the shoreline, and the employment of a fish return system.

Economic Calculation

On page 13, the Letter indicates that the cost of installing cooling towers at SONGS and PG&E's Diablo Canyon nuclear power plant is insignificant based upon the value of the revenue stream earned by operation of the power plants at a 90% capacity factor at current wholesale electricity rates. However, SONGS, like PG&E's Diablo Canyon project, do not sell energy on the wholesale market. That energy is provided to our customers at rates set by the California Public Utilities Commission. Thus, it is inappropriate to claim that the cost of installing cooling towers is a fraction of the revenue stream. Rather, the cost is an additional burden imposed on the ratepayers of California which must be justified.

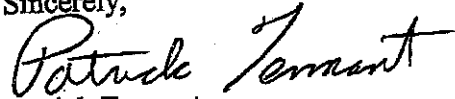
The Letter states that the economic cost of lost generation during cooling tower installation is not that great because the power plants are taken out of service periodically anyway. However, SONGS Units 2 and 3 do not have planned outages at the same time, and are designed to operate continuously for 18 months between refuelings.

Mitigation

Finally, the subject of mitigation was discussed. SCE has already commented on mitigation in our earlier letter, but there is one additional point that should be made. The overall benefit that mitigation can create is substantial. Restoration of coastal wetlands not only benefits fish species, but is an overall benefit to the entire ecosystem. An example of this is the SONGS mitigation project that has been approved by the CCC, the San Dieguito Wetlands restoration and creation. This 150-acre wetland restoration project is designed to provide spawning habitat for a variety of fish species, but will have positive effects on several endangered species, including the California least tern (*Sterna antillarum browni*), the light-footed clapper rail (*Rallus longirostris levipes*), and the Belding's savannah sparrow (*Passerculus sandwichensis beldingi*). It will also provide a lasting endowment for the maintenance and preservation of the area, including a public involvement and education program. Another mitigation program that was funded by SCE was the Hubbs-Seaworld white seabass hatchery. This program has been highly successful and has been well received. These two programs are valuable and provide substantial benefits to the community and the environment on a whole, and are consistent with some of the signature organization's missions. The potential long lasting benefits of restoration should not be ignored and should be encouraged.

Thank you for allowing the opportunity to comment on the above issues. If you have any further questions regarding these comments, please feel free to contact me at (626) 302-3066.

Sincerely,



Patrick Tennant
Aquatic Biologist

Cc: State Water Board Members
Dominic Gregorio