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316 (b)
Once Through Cooling
Deadline: 9/15/06 5pm



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, July30 – 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 forgone: 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 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 Tennant for

Thomas Gross

cc: Members of the Board

Celeste Cantu, Executive Director

Dominic Gregorio, Staff