



12/07/05 WS
316 (b)
Email: Bd, CC, TH,
ML, BJ, SP

December 2, 2005

Jerry Secundy, Board Vice Chair

**SUBJECT: COMMENTS ON STATE REGULATION UNDER SECTION 316(b)
OF THE FEDERAL CLEAN WATER ACT**

Southern California Edison (SCE) provides electric service to over 12 million people throughout a 50,000 square mile service territory in central and southern California. SCE is also majority owner and operator of the San Onofre Nuclear Generating Station (SONGS) located in northern San Diego County. SONGS withdraws cooling water from the Pacific Ocean and is subject to the regulations that are the focus of the December 7th workshop.

SCE wishes to rebut certain claims made at the previous State Water Resources Control Board (SWRCB) meeting on September 26th in Laguna Beach regarding the impacts of Coastal Cooling Water Intake Systems and the administration of §316(b) of the federal Clean Water Act. We also wish to elaborate on our oral comments concerning implementation issues.

The Federal Rule is Thorough, Prescriptive, and Scientifically Sound

Substantial time and effort has gone into the development of the 316(b) rule. SCE believes that the federal Environmental Protection Agency (EPA) has performed an exhaustive technical evaluation and has developed a highly detailed regulation. The federal rule requires that power plants that utilize once through cooling must reduce the entrainment of marine organisms by 60-90% and the impingement by 80-85%. The rule has established a strict compliance schedule in which the owners must complete studies to evaluate the current impacts of the power plant in relation to a theoretical baseline, analyze potential mitigation measures, and develop a comprehensive strategy for compliance. The rule represents nearly 30 years of development, is very detailed and prescriptive and is based on an enormous technical record. Given these facts, the most valuable role for the state is to simply administer the federal rule and develop guidance as needed for the Regional Boards to ensure that each facility complies with the rule.

California Cannot Add Value to the Federal Rule in a Timely Manner

The federal rule imposes strict deadlines for compliance. In order to comply, subject facilities have already begun lengthy and costly studies. Development of additional policies and regulations by California after such studies are well underway or completed could impose substantial additional costs. Given the comprehensive nature of the

federally-prescribed studies, it is unclear how additional and possibly duplicative state-mandated studies would add value. By the time California complies with its own administrative laws and regulations governing adoption of policy or rules, SCE will have already spent in excess of \$2 million on monitoring entrainment and impingement at SONGS and developing compliance strategies for the federal EPA. .

Claims Regarding CWIS Impacts to Sportfishing are Overstated

Dr. Michael Foster, a consultant to the California Energy Commission, erroneously asserted that once through cooling water intake systems (CWIS) are responsible for impingement of 8-30% of the Sport Fishing Catch in southern California. Furthermore, Dr. Foster claimed that SONGS was responsible for 90% of southern California impingement¹. Although SONGS does impact local fish populations, these impacts are insignificant and must be considered with proper perspective. The majority of the fish impinged by SONGS, both by weight and numbers, are considered bait fish species and not recreational fish. Thus, their impingement should be compared to the commercial fisheries that actively take these species and not recreational fishing. In comparison to the annual take of this industry, the fish impinged by SONGS constitute only a small portion of the Southern California area catch. Northern anchovies and Pacific sardines impinged at SONGS represent only 4% and 0.2% of the commercial catch in southern California, respectively (see below).

Pacific sardines and northern anchovy are considered bait species and are excluded from most recreational fishing lists. These two species constitute over 75% of SONGS impingement². Although used for recreational bait, these fish are primarily consumed by commercial fishing boats. Impacts to these species do not directly impact the recreational fishing industry. Thus, assertions that SONGS impacts recreational fishing are false.

Commercial landings of northern anchovies and Pacific sardines into Port of Los Angeles in 2004 were 14.7 metric tons (mt) and 23,677 mt, respectively³. Compared to the SONGS impingement of 0.60 mt and 44 mt, SONGS accounts for 4% and 0.2%, respectively. The Pacific sardine harvest guideline established by National Oceanic and Atmospheric Administration (NOAA) was set at 136,179 mt for the 2005 calendar year⁴. This is a guideline set to ensure that there is no overall impact to the species. Thus, in comparison with commercial impacts, the impacts of SONGS are negligible.

Claims that once through CWIS consume approximately 30% of the annual recreational fish catch are misleading. Such assertions are based primarily on impingement data for a single species, queenfish. Queenfish only occasionally appear on recreational lists, but

¹ Transcripts from SWRCB meeting on Sept 26th 2005, Laguna Beach

² Southern California Edison 2004 Annual Marine Environmental Analysis and Interpretation, San Onofre Nuclear Generating Station

³ CDFG 2004 Commercial Fish Landings

⁴ NOAA Fisheries Assessment of the Pacific Sardine Stock for U.S. Management in 2005

most recreational databases do not include this species, as they are considered fodder for other species.

Queenfish comprise about 21% of SONGS impingement. Based on comparisons made in 2005⁵, the number of fish impinged by the coastal power plants was equivalent to approximately 34% of the total number of fish reported by recreational fisherman. However, queenfish are not considered a desirable fish by recreational anglers, except as bait. To include them in an analysis of recreational fish impacts is inappropriate. More desirable recreational fish impinged, such as barred sand bass and kelp bass, constituted only about 0.1% of the total reported recreational catch, and this is a total for all 11 southern California coastal generating stations.

Claims Regarding CWIS Impacts to Statewide Fish Populations are Unfounded

Dr. Foster claimed that approximately 50 million marine and estuarine fish are entrained per day in California by 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. Additionally, this number is based on certain assumptions that exaggerate the total.

The first assumption is that the powerplant CWIS are 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 species 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.

Some have argued that even though most larvae do not reach adulthood, they represent an important link in the natural food web. While this is true, even dead larvae are not removed from the water column by CWIS. They are discharged back to the ocean where they are available as a food source. This food source is utilized by numerous fish and has been repeatedly observed by divers at power plant outfalls, including SONGS. In fact, the number of adult fish observed near CWIS outfalls including SONGS is generally higher due to this abundant food source. Many recreational fishing boats often ply these waters for the same reason.

Studies are now being planned to study the entrainment of ichthyoplankton (fish larvae) into the plant to comply with 316(b), studies which will shed more light on the topic.

⁵ AES Huntington Beach L.L.C. Generating Station Entrainment and Impingement Study – Final Report April 2005

Studies were conducted by the California Coastal Commission's independent Marine Review Committee in the 1980's to assess the CWIS impacts on other components of the offshore plankton such as macro-zooplankton and phytoplankton. These studies determined that there was no substantial change to these classifications of plankton within the area of the powerplant⁶.

Furthermore, SONGS employs a fish return system which returns entrained fish back to the ocean. Although the effectiveness of the system in returning eggs and larval organisms has not been determined, a large proportion of adult fish are returned to the ocean alive. Studies conducted over an eleven year period indicated an average live return efficiency of over 70%.

It should also be noted that significant restoration in the form of coastal wetlands, artificial reefs, and fish hatcheries has been or is being implemented by SCE to offset potential impacts. The restored coastal wetlands and estuary will provide spawning habitat for numerous fish, thereby offsetting ichthyoplankton losses by increased spawning habitat.

Early 316b Studies Assessed Cumulative Impacts and are Still Valid

Dr. Foster stated that "it is presently impossible to accurately analyze the effects [of CWIS] on a cumulative level." The reason is due to the natural variation of the marine environment due to its expansiveness, and also due to differences in the fish species themselves. The 316(b) rule does not require assessment of cumulative impacts. However, studies were conducted during the 1970s throughout the southern California Bight to determine fish population levels (both adult and larval) and potential impacts associated with coastal power plants in the region.

These studies were performed by SCE and the Los Angeles Department of Water and Power to comply with Sec. 316(b) after the Clean Water Act was enacted. Although the studies were conducted over 25 years ago, the study design is still sound by today's standards and if repeated today would likely be conducted in the same manner. The investigators identified various target species of ecological, recreational or commercial importance, in collaboration with local university experts and resource agency staff. Extensive trawls throughout the region inventoried the presence of these species at every life stage; from egg to sub-adult. This data was analyzed with known ocean current transport patterns to determine the probability of individual entrainment into any of the region's eleven coastal generating stations. Powerful statistical analyses showed that the likelihood of any individual from any life stage of any target species being entrained in a power plant CWIS was less than 3%⁷.

Given the exhaustive and still valid methods used in these seminal studies, it is clear that power plant CWIS cumulative impacts in southern California are insignificant.

⁶ Final Report of the Marine Review Committee Submitted to the California Coastal Commission Aug 1989

⁷ SCE San Onofre Nuclear Generating Station Unit 1 316(b) Demonstration January 1983

Repeating such studies today (at a cost of tens of millions of dollars) would likely yield the same result, if not a lesser impact, since fewer coastal power plants operate full-time as baseload resources as they did during the 1970s. The State would add little or no value by requiring repetition of these exhaustive cumulative impact studies on entrainment and impingement, which some commenters have advocated.

Cooling Towers are Economically Unjustified

Throughout the prior public meeting, various speakers advocated replacing once through CWIS with closed cycle cooling towers. Santa Monica Baykeeper and Heal the Bay, claimed the costs of installing cooling towers were to be "modest in the context of capital costs (<10%), annual plant revenue (approximately 2.9%), and annual plant profit." These claims are baseless and without merit.

The U.S. EPA extensively analyzed the costs of cooling towers long before issuing its final 316(b) rule. The reason EPA excluded cooling water towers from the final rule was that the agency's economic analyses showed towers were an infeasible alternative. Analyses performed by SONGS in 1990 showed the cost of cooling towers would exceed \$300 million dollars (1990 dollars). This does not include an estimated \$30 million in annual operating costs or the cost of 3000 feet of pipeline that would be required for each tower⁸. The costs would be substantially greater today, and it is unlikely that such structures could be permitted in the coastal zone given current regulatory restrictions on coastal development, absent an unimaginable showing of substantial environmental benefit.

Additional indirect costs associated with cooling towers include the loss of habitat, scenic value, and other environmental impacts. Coastal power plants are sometimes surrounded by sensitive habitat such as coastal sage scrub, which is habitat to numerous endangered and sensitive species. Impacts from increasing the footprints of these plants with cooling water towers would be substantial. In the case of SONGS, over 8 acres would be required for the footprint of the towers alone.

One must also consider the issue of getting water to these towers. Using fresh water for cooling towers is costly and wasteful considering the state of California's fresh water resources, and presently conflicts with SWRCB policy. Reclaimed water can be used in cooling towers, but the infrastructure to deliver reclaimed water to coastal power plants is not present, requiring pipeline as well as water treatment facility construction. To be used in cooling towers, reclaimed water must be pretreated to remove dissolved solids and salts that are corrosive to equipment. This necessary step creates solid waste disposal issues that do not exist with once-through CWIS.

⁸ PLG Assessment of Marine Review Committee Recommendations for SONGS Units 2 & 3 February 1990

Other environmental impacts associated cooling towers include salt drift (if saltwater cooling towers are employed) and visual impairment (towers can be 500 feet tall), both from the structures themselves and from their condensation plumes⁸.

State of New York Regulations

Finally, some have suggested modeling California State's policy after those employed by the state of New York. The fallacy in such proposals is that the New York approach is tailored for a hydrologic and ecological landscape completely different from the California coast. The potential for impacts from once through CWIS in New York are therefore incomparable to the California situation. The power plants in New York draw cooling water from a highly impacted freshwater river system, primarily on the Hudson. These 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 understandably significant for these reasons.

Conversely in the case of southern California, we have widely separated and comparatively miniscule impacts to the southern California Bight of the Pacific Ocean. The Bight is a very large and dynamic system linked to ocean regions north, west and south. Just within the southern California bight (between Point Conception and San Diego, including Santa Monica Bay as well as the Channel Islands), there are two major currents that influence the effects of CWIS. A southward moving current resides offshore and a northward moving current is present along the coast. This creates substantial circulation through numerous eddies. The impacts from CWIS to this larger water body are not nearly as significant as those on a confined river. The New York model is therefore inapplicable. This is only one of many reasons the EPA regulations are tailored for site-specific applicability, and dissuade any one-size-fits-all cookie-cutter approaches.

Conclusion

In summary SCE feels that the current federal regulations under Section 316(b) of the Clean Water Act represent an extensive and thorough approach to evaluating and mitigating the potential impacts of once through cooling. SCE believes that the State Water Resources Control Board should take an active role by providing guidance on the implementation of the federal regulations as they stand.

As stated above, numerous public comments have been made at board meetings regarding the impacts of once through CWIS on the marine environment. Many of these claims have been exaggerated and in some cases are erroneous. Coastal power plants have conducted studies on potential impacts for 30 years and have proven the impacts minimal and insignificant, particularly when compared to industries that have much larger impacts, such as commercial fishing. The overall benefit of these power plants is enormous. These plants supply a critical resource to the state of California, representing approximately 40% of the state's total electrical generation. With no new power plant

construction presently on the horizon, we must rely upon our existing facilities to fulfill ever-increasing demands.

SCE appreciates this opportunity to respond to previous comments and express our opinions and recommendations. If you should have any questions, feel free to contact me at (626) 302-3066.

Sincerely,

Patrick Tennant
Aquatic Biologist



SOUTHERN CALIFORNIA
EDISON

An EDISON INTERNATIONAL Company

Environmental, Health & Safety
P.O. Box 800
2244 Walnut Grove Avenue
Rosemead, CA 91770
FAX (626) 302-9730

Fax

To: Jerry Secundy From: Patrick Tennant

Fax: (916) 341-5620 Pages: 8 (including cover)

Phone: (626) 302-3066 Date: 12/2/05

Re: Dec 7th 316(b) Meeting cc:

Urgent For Review Please Comment Please Reply Please Recycle

• Comments: