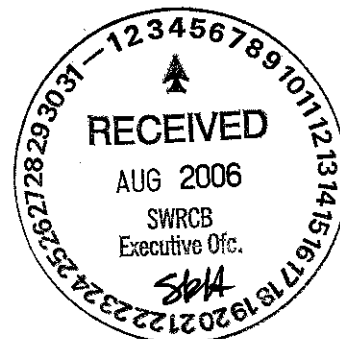




August 4th, 2006

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



Comment Letter – Proposed Statewide Policy for Once-Through Cooling

Dear Ms. Her:

AES Southland LLC (AES) appreciates the opportunity to participate in the scoping process for the State Water Resource Control Board's proposed 316(b) statewide policy. AES owns and operates three generating stations in Southern California that would be subject to the proposed policy. Together these facilities generate enough electricity to supply more than 4 million homes and businesses in California.

In general, we are opposed to the elimination of the U.S. Environmental Protection Agency's (EPA's) site-specific determinations and considerations in complying with Section 316(b). AES feels that the flexibility of the Phase II regulations is vital to the health of California's fragile electrical grid system. We strongly feel that replacing the Federal Rule with the State Policy as proposed will have severe negative impacts on our business activities as well as California's power supply. In the Final Phase II regulations, EPA recognized the importance of site-specific facility information and biological communities, and we encourage California to implement the Federal regulations. Our specific comments are detailed below.

Proposed Performance Standards

EPA based the performance standards on a range "because of the uncertainty inherent in predicting the efficacy of any one of these technologies, or a combination of these technologies, across the spectrum of facilities subject to today's rule. The lower end of the range is being established as the percent reduction that EPA, based on the available efficacy data, expects all facilities could eventually achieve if they were to implement design and construction technologies and operational measures on which the performance standards are based. The lower end of the range also reflects, in part, higher mortality rates at sites where there may be more fragile species that may not have a high survival rate after coming in contact with fish protection technologies at the cooling water intake structure (e.g. fine mesh screens).... In specifying a range, EPA anticipates that facilities will select the most cost-effective technologies or operational measures to achieve the performance level (within the stated range) based on the conditions found at their site."

AES believes that the elimination of EPA's range will severely restrict our facilities' ability to comply, and that the net environmental benefits have to be considered. AES has contracted with Alden Research Laboratories to investigate our compliance options in light of the proposed State Policy. In their letter dated August 4th 2006 (attached), Alden stated that short of retrofitting with closed-cycle cooling or significant flow reductions, the 90% entrainment performance standard could not be achieved at any of the AES facilities. They also stated that compliance with the 95% impingement standard could not be expected. However it is likely that the 80% standard of the Federal Phase II rule could be met by two of the three facilities. The three AES facilities account for 10.3 pounds of fish impinged each day. The cost of retrofitting with closed cycle cooling to mitigate



for these 10.3 pounds of fish is estimated to be in the tens of millions of dollars each year. ERPI Solutions is currently investigating the precise costs for retrofitting each facility, and we would like to be able to present those costs to your staff for inclusion into the public record by year's end. Regarding flow reductions, AES has entered into long term contracts to supply electricity to our off-takers. Reducing flows to levels commensurate with achieving compliance with the proposed standards would severely impact our ability to serve those contracts and supply electricity to the 4 million homes and businesses mentioned above. The recent heat wave and new record peak load demonstrated once again that these power plants play a vital role in meeting the ever growing energy demands of this state.

Calculation Baseline

AES believes that establishing the calculation baseline using the average annual flows is inappropriate. This approach would ignore the fact that peaking generation plants or Units that may run for only a short period of the year will be faced with the same technologies and cost options as base loaded facilities. AES has units such as Redondo Beach 5 and 6 that are in this category. While they entrain relatively small numbers of organisms and operate only during periods of peak demand or periods when base loaded Units or not operating, they will none the less be faced with the high capital costs of retrofitting or operation curtailment. AES believes this requirement poses an unfair economic burden on such Units and will have impacts that would prevent some Units from fulfilling contract obligations.

Implementation

AES is concerned with the timeframe of policy implementation since our contractors have either finished comprehensive impingement mortality and entrainment (IM&E) studies, or will complete those studies by December 2006. It is unclear how the proposed requirements that fall outside of the approved scopes of work could be fulfilled in the current permit cycles.

CEQA / Economic Information

We are concerned that the economic implications of the proposed policy have not been adequately considered. Additionally, the anticipated environmental benefits associated with these reductions in IM&E have not been evaluated.

EPA considered and rejected basing the Federal regulations on implementation of closed-cycle cooling because *"a national requirement to retrofit existing systems is not the most cost-effective approach and at many existing facilities, retrofits may be impossible or not economically practicable."* EPA cited costs for large facilities as greater than \$100 million with annual operation and maintenance costs on the order of \$4 to 20 million, and pointed out the differences between requiring such a system at a new (Phase I) facility compared to retrofitting an existing facility.

The economic environmental benefits of the proposed policy are quantitatively ignored. There are currently multiple 316(b) studies underway that will provide the necessary information to quantify the environmental benefits of compliance. We encourage the Board to review that information before implementing the proposed policy.

Monitoring and Modeling

It is unclear why ongoing IM&E studies are required beyond the 316(b) IM&E Characterization Study since the Phase II regulations already require verification monitoring for all compliance pathways (technologies, operational measures, and restoration).

The identification, enumeration, and analyses of all zooplankton collected in entrainment samples would be especially burdensome. The approach taken by AES in its IM&E Characterization Studies is consistent with all recently conducted 316(b) studies (or 316(b)-like studies) in California. Currently, entrainment samples are analyzed for all fish larvae, all fish eggs, and all crab megalopae. This provides a broad cross-section of organisms for which entrainment can be assessed. Studies conducted at the San Onofre Nuclear Generating Station, which utilizes up to 2.2 billion gallons per day of seawater for cooling, determined "*that in fact no substantial changes have occurred in the zooplankton*" as a result of plant operations¹. The reason for this was hypothesized to be the small fraction of zooplankton actually entrained compared to the populations in the vicinity of the generating station. A similar study was conducted at the Long Beach Generating Station, and there were no detectable effects from plant operation on local zooplankton populations. In addition, the cost to perform adequate sampling to conduct the Empirical Transport Models on zooplankton would be very significant and burdensome.

It is unclear how Reference Sites would be incorporated into the Calculation Baseline since no explanation was provided either during the July 31st meeting in Sacramento or in the Scoping Document on how exactly the stations would be used in the compliance process.

The HPF is not a model, but an expression of Probability of Mortality (P_m) results calculated through use of the Empirical Transport Model (ETM). While the HPF can be very useful, it does have limitations, and in some cases other models could be more useful. Situations can arise where HPF could be limited in its application:

- There is a need for adequate representation of organisms in source water surveys;
- There is a need for larval growth data to estimate duration of exposure.

Dictating HPF does not allow flexibility for advancement of other assessment techniques or models. While HPF may be viewed as the best way to assess impacts, in addition to the limitations described previously, other techniques or models may prove more valuable. This approach should be viewed as another tool in the toolbox, but not the definitive method of determining the extent of entrainment losses. The use of any particular model should take into account the assumptions and sources of error associated with each, as well. Lastly, this approach must be coupled to EPA's restoration requirements for the replacement of fish/shellfish as specified in the Phase II regulations, not habitat. In summary, we would argue against specifying modeling techniques as part of the implementation policy.

The role of a cumulative impacts analysis in §316(b) compliance is not understood. If the Board is going to require a cumulative impact analysis of "*plants with overlapping intake water source areas*", it should define what that proximity is and which plants are required to perform this. Similarly, the Board should define which generating stations and treatment facilities they consider to be "*overlapping*" to warrant an analysis of wastewater as an alternative source of cooling water

Restoration

AES encourages the Board to consider restoration as a compliance pathway for both impingement mortality and entrainment. It is not clear why the Board would limit the use of restoration to entrainment since the ultimate goal of Section 316(b) is fish protection. While the proposed policy indicates that "*existing power plants can feasibly implement controls to achieve a 95% reduction in*

¹ Murdoch, W.W., R.C. Fay and B.J. Mechalas. 1989. Final Report of the Marine Review Committee to the California Coastal Commission. MRC Doc. 89-02. Aug. 1989.



impingement", the relevant performance standard is for impingement mortality. The use of restoration should be maintained as a means of compliance with Section 316(b).

Expert Review Panel

AES questions the ability of any panel to thoroughly review 316(b) submittals in a timely manner for all generating stations subject to Section 316(b). The Comprehensive Demonstration Study documents will likely be several hundred pages long. Additionally, the study designs for all three AES facilities are all based on similar studies conducted under the auspices of a Technical Working Group (the CEC-required studies at AES Huntington Beach, Diablo Canyon Power Plant, and the Duke Energy Morro Bay and Moss Landing Power Plants).

New York §316(b) Policy

The §316(b) Phase II implementation policy by the New York State Department of Environmental Conservation is described (and summarized in the Appendix) as an example of state requirements that are "*more stringent*" than those required by EPA in the Phase II regulations. Beyond this, its relevance to the State of California is not clear.

The New York state policy was shaped by the lengthy, costly, and controversial impingement mortality and entrainment (IM&E) impact studies performed along the Hudson River in the 1960s and 1970s, culminating with the Hudson River settlement agreement in 1980. There are several differences between generating stations and fish populations in California and New York that should be taken into account if designing a California state policy fashioned after the one undertaken by New York:

- There is already a wealth of IM&E data on New York facilities;
- Many of the facilities are already constructed with shoreline intakes, facilitating the use of return systems to the source waterbody;
- Many of the facilities are constructed on rivers, allowing the use of the compliance alternative which allows for use of a pre-approved technology to meet the IM&E performance standards – at present, wedgewire screens at river intakes (with adequate flow velocities) is the only EPA pre-approved technology, This technology is however unproven in marine applications.
- Many of the facilities have already implemented some form reduction technologies and/or operational measures (including fish return systems and strategic flow reductions);

In addition, due to the regional climatology, many of the fish species spawn only during a limited period, allowing flow reductions to be more effective during portions of the year.

During the July 31st scoping meeting, Board staff requested information on 316(b) policies of other states. Ohio is implementing the Phase II Federal Regulations without any apparent modifications (see http://www.epa.state.oh.us/dsw/permits/316b_PhaseII_Guidance_Doc.pdf). There are approximately 25 Phase II facilities in Ohio.

Technical Errors

There are several technical errors in the Proposed Policy:

- II.B. State Law and Policy



The statement that §316(b) applies to "all industrial facilities that use seawater for cooling" is incorrect. Section 316(b) Phases I and II apply only to facilities that generate electricity, and Phase III applies to new coastal and offshore oil and gas extraction facilities with cooling water flow volumes of greater than 2 mgd. Section 316(b) also applies to electrical generation facilities that utilize fresh water as cooling water, as well.

IIC. Coastal Power Plants in California

The design intake flow listed for Huntington Beach Generating Station (517 mgd) is not design intake flow, but the permitted discharge volume, which includes both intake flow and permitted waste discharges. The actual maximum cooling water flow at Huntington Beach is approximately 507 mgd.

IIE. §316(b) Summary

Performance standards described in the section on Phase II are not relative to "uncontrolled levels", but to the Calculation Baseline, defined as a once-through cooling system, intake structure oriented at, and parallel to, the shoreline at the surface of the waterbody, conventional 3/8" traveling screens, and baseline practices, procedures, and structural configuration.

Conclusions

Implementation of this policy could have enormous economic impacts on both AES and the people of the state of California. It will have critical reliability impacts on the state's electrical grid. The tremendous costs associated with the marginal reduction of impinged or entrained organisms must be considered. There is little or no scientific basis for passing a more restrictive policy than that presented by the Federal 316(b) Phase II Rule; therefore the Board should wait for the results of IM&E studies currently being conducted throughout the state before any policy decisions are made. AES hopes that the Board will act responsibly to restore the flexibility and fairness of the Federal Phase II rule.

AES is committed to 316(b) compliance at all three of its facilities and appreciates the opportunity to provide comments. If you have any questions or comments regarding this letter or our compliance efforts please utilize the contact information below. We also request permission of the Board to submit additional comments and materials relative to the development of this policy on or after August 15th 2006.

Sincerely,

A handwritten signature in black ink that reads "Steve Maghy". The signature is written in a cursive style.

Steve Maghy
Environmental Manager
AES Southland LLC
(562) 493-7384
steven.maghy@aes.com

cc: Gerald Secundy, State Water Resources Control Board
Dominic Gregorio, State Water Resources Control Board

August 4, 2006

Mr. Steve Maghy
AES
690 North Studebaker Road
Long Beach, CA 90803

California State 316(b) Policy

Dear Mr. Maghy:

As requested, Alden Research Laboratory, Inc. (Alden) has reviewed the proposed California State 316(b) Policy and considered the implications of the Policy in terms of our previous analysis of compliance alternatives under the Federal 316(b) Rule. The proposed California Policy standards and options for impingement and entrainment reductions are as follows:

1. The California State Water Resources Control Board Scoping Document (July 13, 2006) proposes three alternatives to address impingement that include:
 - i. Reduce intake flow to that commensurate with a closed-cycle recirculating system, or
 - ii. Reduce the maximum through-screen design intake velocity to 0.5 feet per second (ft/s) or less, or
 - iii. Reduce impingement mortality for all life stages of fish and shellfish by 95 percent from the calculated baseline by any combination of operational or structural controls.
2. The Scoping Document's proposed compliance alternatives for entrainment are:
 - i. Reduce intake flow to that commensurate with a closed-cycle recirculating system, or
 - ii. If the power plant has a capacity utilization rate of 15 percent or greater, reduce entrainment of all life stages of fish and shellfish by 90 percent of the calculated baseline by any combination of operational or structural controls.
 - iii. Existing power plant owners or operators who satisfactorily demonstrate to the Regional Water Board that no combination of operational and structural controls can feasibly achieve the 90 percent reduction in entrainment must comply with the following:

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- a. The owner or operator must reduce entrainment of all life stages of fish and shellfish by a minimum of 60 percent from the calculated baseline by any combination of operational or structural controls, and
 - b. Restoration measures must be employed to achieve the remaining percent reduction in entrainment over the minimum achieved in a (above), up to 90 percent, of all life stages of fish and shellfish from the calculated baseline.
3. Additionally, the proposed policy would not allow use of Site-Specific Standards that include the Cost-Cost and Cost-Benefit Test. The result is the proposed requirements are significantly more stringent than those required by the Federal Rule. Based on the proposed requirements and currently available information, here are the implications for each of your three facilities:
- Alamitos – The only option identified for entrainment reduction, other than closed-cycle cooling or major flow reductions, was use of fine-mesh traveling screens. The data needed to support a 90 percent entrainment reduction at coastal California plants is limited. Survival of fish and invertebrates following collection from fine-mesh screens is highly variable and species-/life stage-specific. The limited available data indicate that the performance standard would not be met for two important species: northern anchovy and giant kelpfish (Edwards et al 1981). Goby and white croaker, on the other hand, proved to be quite hardy, showing survival levels approaching 100 percent. Therefore, it is clear that some species will not be protected by fine-mesh screens even at a 60 percent level. Therefore, there is some level of risk associated with the application of this technology. This risk is increased for Alamitos (based on the original recommendation) since any of the entrained organisms collected off the fine-mesh screens will need to be transported over a mile and a half to the ocean in order to ensure they would not be re-entrained. Such travel will subject organisms to predation by abundant, attached fouling organisms and possible mechanical injury. However, this could be minimized with a judicious thermal treatment during non-peak abundance periods. This consideration could be re-visited based on the results of the IM&E studies being conducted. Finally, gobies and blennies, the dominant species entrained at Alamitos, live in inshore coastal environments. The fate of such organisms if transported to an offshore release location is unclear.
 - Huntington Beach – For entrainment, two technologies were identified: fine-mesh traveling screens and narrow-slot wedgewire screens. The same issues apply to use of fine-mesh screens at Huntington Beach that were discussed for Alamitos. While narrow-slot wedgewire would be likely to comply with the performance standards, there are questions as to whether such screens could be maintained in an operational condition given biofouling issues in the California coastal environment. Specifically, the issues are biofouling control inside the intake tunnel and on the screen modules themselves. The screen manufacturer has questioned the ability to use the air

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backwash process at such a great distance. This would require manual cleaning by divers. The frequency of cleaning cannot be estimated at this time. The issue of clearing backwashed biofouling organisms during the current heat treatment would require a new valving approach. This concept has never been tested. Currently there has been no deployment of these screens at large, once-through cooling generating facilities such as Huntington Beach. Additional research and testing would be necessary to address these issues prior to full-scale deployment in order to ensure that cooling water supply to Huntington Beach would be ensured.

Because the Scoping Document would not allow any credit for current capacity utilization which is well below 50%, depending on the amount of credit that can be taken for existing operational characteristics or intake location, use of closed-cycle cooling or major flow reductions that would limit the facility's generation of electric power are the only feasible proven options that would meet the proposed maximum entrainment standards.

The same consideration of credits would affect impingement mortality reduction performance standards. Since the MIS is an unproven technology and coarse-mesh Ristroph screens have not been tested in California, site-specific pilot-scale studies would be warranted. As with any other technology, 95% survival of all species cannot be expected.

- Redondo Beach - Three entrainment reduction technologies were considered for this facility: fine-mesh traveling screens, narrow-slot (0.5 mm) wedgewire screens, and, 2.0 mm fixed-panel screens around the offshore intake structure. All the issues discussed for Huntington Beach are appropriate for Redondo. Also, compliance with the impingement mortality reduction performance standard of 95% is subject to the same reservations discussed above with the exception of wide-slot wedgewire screens. This exclusion technology could meet the standard; however, it is subject to the same concerns expressed for the narrow-slot screens at Huntington Beach.

As with Huntington Beach, depending on the amount of credit that can be taken for existing operational characteristics or intake location, closed-cycle cooling or major flow reductions are the only feasible proven options that would meet the proposed maximum entrainment standard of 90%.

The same consideration of credits would affect impingement mortality reduction performance standards. Since the MIS is an unproven technology and coarse-mesh Ristroph screens have not been tested in California, site-specific pilot-scale studies would be warranted. As with any other technology (except wide-slot wedgewire screens), 95% survival of all species cannot be expected.

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Mr. Steve Maghy

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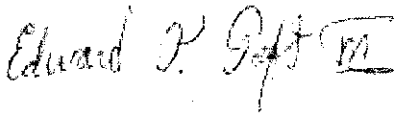
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4. Based on the above discussions, short of retrofitting with closed-cycle cooling or cooling water flow reductions, the 90% maximum, entrainment performance standard could not be achieved at any of the facilities.

Although 95% survival of all impinged species cannot be expected with most fish collection and return technologies, depending on the dominant species impinged, overall survival may be relatively high. However, pilot studies would be required to quantify rates. Because of the CWIS location credits discussed above for Huntington and Redondo, although the 95% maximum, impingement mortality reduction cannot be expected, the 80% minimum could possibly be met.

Should you have additional questions, please give Ray Tuttle a call at x492 or me at x410.

Sincerely,



Edward P. Taft III
President

EPT/sjb