



# CALIFORNIA OCEAN PROTECTION COUNCIL

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Mike Chrisman, *Secretary for Resources, Council Chair*  
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Pedro Nava, *State Assemblymember, Ex officio Member*

**Date:** April 20, 2006

**To:** California Ocean Protection Council Members

**From:** Neal Fishman, Deputy Executive Officer, Coastal Conservancy  
Jon Gurish, Staff Counsel, Coastal Conservancy  
Christine Blackburn, Ocean Program Project Manager, Coastal Conservancy

**Re:** Resolution Regarding the Use of Once-through Cooling Technologies

## REQUESTED ACTION

Staff recommends the adoption of the attached resolution identifying the Ocean Protection Council's policy on the use of once-through cooling technologies at coastal power plants and other actions as identified in the resolution.

## INTRODUCTION

At the January 2006 meeting, the Ocean Protection Council (OPC) requested that staff further evaluate once-through cooling technologies used by coastal power plants for energy production and draft a resolution outlining position and actions for possible adoption by the OPC.

Since the January meeting, OPC staff has continued to meet with state officials and other interested parties to determine the role the OPC could take in integrating actions and facilitating progress toward reducing impacts from once-through cooling. Attached is a draft resolution proposing a set of policies and actions that, if adopted by the OPC, could help resolve issues regarding the adverse impacts of once-through cooling.

This memo includes additional information about each proposed action or policy included in the resolution.

## BACKGROUND

The U.S. Environmental Protection Agency (U.S. EPA) recently published its administrative rule implementing the requirements of section 316(b) of the Clean Water Act. The U.S. EPA engaged in a thorough, national evaluation of the environmental and economic effects of once-through cooling technologies. U.S. EPA's record in support of the 316(b) rule establishes that "there are multiple types of undesirable and unacceptable environmental impacts associated with once-

through cooling technologies, depending on conditions at the individual site.” The 316(b) rule states that these types of impacts include:

- entrainment and impingement
- reductions of threatened and endangered species
- damage to critical aquatic organisms, including important elements of the food chain
- diminishment of a population’s compensatory reserve
- losses to populations including reductions of indigenous species populations, commercial fisheries stocks, and recreational fisheries
- stresses to overall communities and ecosystems as evidenced by reductions in diversity or other changes in system structure and function

As a result of these findings, the U.S. EPA section 316(b) rule establishes the standard for the location, design, construction, and capacity of cooling water intake structures to reflect the best technology available for minimizing adverse environmental impacts.

At the state level, the California Energy Commission has compiled a report reviewing existing data about once-through cooling impacts.<sup>1</sup> This report contains an analysis of the studies used to detect impacts to the marine environment by California’s coastal power plants. They found that only seven of the twenty-one existing coastal power plants have recent studies of entrainment impacts that meet current scientific standards. However, all of the seven studies have found adverse environmental impacts of entrainment. Entrainment losses quantified in these studies are equivalent to the loss of productivity of thousands of acres of coastal habitat. Impingement impacts were found to add to the entrainment losses. Other findings in the report state that the thermal impacts of particular plants can be large when discharges occur in enclosed water bodies; and the cumulative impacts of once-through cooling, or how these impacts interact with other stressors in the marine environment, are not currently understood.

The attached resolution puts the OPC on record in support of the U.S. EPA findings and encourages the reduction of the harmful impacts associated with once-through cooling technologies.

## **THE CLEAN WATER ACT AND ROLE OF THE STATE AND REGIONAL WATER BOARDS**

The federal government has delegated enforcement of the Clean Water Act to the State Water Resources Control Board. Under section 316 of the Clean Water Act and Porter-Cologne Water Quality Control Act,<sup>2</sup> National Pollution Discharge Elimination System (NPDES) permits are required for power plants that use once-through cooling. Each plant must request renewal of its NPDES permit every five years through the appropriate Regional Water Quality Control Board, following any rules or procedures adopted by the U.S. EPA and State Water Resources Control Board.

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<sup>1</sup> California Energy Commission, *Issues and Environmental Impacts Associated with Once-through Cooling at California’s Coastal Power Plants*, staff report, June 2005.

<sup>2</sup> Water Code, Div. 7, Ch. 5.5.

In 2004, the U.S.EPA adopted Phase II rules for section 316(b) of the Clean Water Act that require the best technology available be used in large, existing once-through cooling plants to reduce impingement losses by 80 to 95 percent and to reduce entrainment losses by 60 to 90 percent. The U.S. EPA rules allow habitat restoration in lieu of the specified reduction in impingement and entrainment losses, if the reduction is infeasible. The allowance for habitat restoration in these rules is being challenged in federal court.<sup>3</sup>

The State Water Resources Control Board is developing its own rules for how the state will implement the new section 316(b) standards for NPDES permits relating to once-through cooling based on the regulatory minimum criteria set by EPA's 316(b) rule. The State Water Resources Control Board held public workshops in September and December of 2005 and the staff is planning to release their draft recommendations this summer. The State Water Board may rule on the staff proposal as early as the end of 2006.

While the state rule making process is proceeding rapidly, there is still a need to implement standard monitoring protocols to measure the ecological impacts of once-through cooling, including cumulative impacts.

#### **ROLE OF THE OCEAN PROTECTION COUNCIL**

The California Ocean Protection Act mandates that the Ocean Protection Council coordinate and improve the protection of California's ocean and coastal resources. The Governor's Ocean Action Plan calls for the Ocean Protection Council to play a leadership role in managing and protecting California's oceans, bays, estuaries and coastal wetlands, including integration of coastal water quality programs to increase their effectiveness. Further, the California Energy Commission's 2005 Integrated Energy and Policy Report to the California Legislature recommended the Ocean Protection Council work with other agencies to improve assessment of the ecological impacts of once-through cooling and to address once-through cooling issues in the broader context of protecting the state's fragile coastal marine ecosystem.

The attached draft resolution recognizes that the coastal power plants that use once-through cooling make a major contribution to California's energy infrastructure during peak demand periods, yet supports the principle that all possible actions be taken to protect coastal water quality. The resolution also supports the actions of the state agencies to reduce the impacts of once-through cooling and does not interfere in the State Water Board's rule making process or any regulations that may come from that action.

Because of the complexity of the problem and diversity of the environments in which once-through cooling technology is used, evaluation of non-traditional methods to address this problem have been suggested by a variety of state entities that are involved in the regulation of this technology. As the California Energy Commission staff has observed, the Ocean Protection Council is uniquely situated to coordinate with other agencies, environmental organizations, and the concerned public to address once-through cooling issues. The OPC staff will continue to evaluate other possible regulatory and non-regulatory avenues for reducing the impacts of once-through cooling. Additionally, the staff will continue to work with the Water Boards, California

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<sup>3</sup> *Surfrider, et al. v. EPA*, Civ. No. 04-6692-ag(L) (2<sup>nd</sup> Cir., July 6, 2005).

Energy Commission (CEC), Public Utilities Commission (PUC), California Coastal Commission (CCC), the Department of Fish and Game and others to determine if further coordination could help in these other areas.

## **PROPOSED ACTIONS**

### Technical Review Group

The renewal of NPDES permits requires that each plant submit a Proposal of Information Collection (PIC). Each of these PICs is then reviewed by the appropriate regional water board. All coastal power plants are currently required to submit a PIC based on the new EPA rule. Due to the delegated authority of the regional water boards, there is no consistent, statewide approach to the review of these proposals. In addition, the PICs are highly technical and specific expertise is required to adequately review and critique them—expertise that does not necessarily exist in each regional board.

The resolution proposes that the OPC support the State Water Board's creation of a technical review group. It is envisioned that the technical review group will be available to provide guidance for PIC reviews, but will also be available to assist in assessing the results of studies and evaluate proposals for mitigation and restoration.

Creating a statewide review panel will ensure that all plants are reviewed fairly, using the same statewide criteria. In addition, this will ensure that each proposal is proposing data collection that will actually result in a baseline for measuring future decreases in entrainment and impingement.

### Interagency Coordinating Committee

Currently agency personnel from various state agencies meet on an *ad hoc* basis to discuss mutually beneficial activities. These meetings have identified inefficiencies in the way in which coastal power plant permitting is conducted. Some of these inefficiencies have been addressed through the memorandum of understanding between the Energy Commission and the Coastal Commission regarding filing requirements for power plant re-powering studies.<sup>4</sup>

The *ad hoc* state interagency meetings have proven to be extremely valuable to the participants in sorting through the complex issues related to once-through cooling at coastal power plants. The resolution proposes to formalize the establishment of this committee to promote continued coordination among state agencies as new regulations arise and other non-regulatory programs develop.

### Feasibility Study

The range of possible modifications to reduce the impacts of once-through cooling will differ for each coastal power plant. For example, a plant could try to meet the section 316(b) rule (or the subsequent State Water Board regulations) through design and operational modifications (i.e., the reduction in the volume and/or velocity of cooling water), conversion to a dry or closed-loop cooling system, specific habitat mitigation measures, or payment of a fee for mitigation. Each decision will need to take into account cost and the physical location of the plant.

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<sup>4</sup> *Memorandum of Agreement Between the California Energy Commission and the California Coastal Commission Regarding the Coastal Commission's Statutory Role in the Energy Commission's AFC Proceedings*, April 14, 2005.

Many questions need to be answered as determinations are made on how to comply with new regulations at individual facilities. The resolution suggests that the OPC fund, and quickly conduct, an independent study that will evaluate the feasibility of (1) converting to alternative cooling technologies or (2) implementing other technologies or practices to achieve regulatory goals. The concept is to develop an engineering study on existing power plants to provide objective information on alternative technologies and associated costs and benefits on a plant-by-plant basis. The power generators and the regulatory agencies can then use the data provided for each plant to discuss the best course of action. This study would be completed within 6 months at an estimated cost of \$150,000 to \$250,000.

#### Incentives and other programs

The resolution states the Council's goal to reduce impacts from once-through cooling as soon as possible, while still supporting the regulatory processes. To this end, the staff will work with the Water Boards, CEC, PUC, CCC, and others to examine whether possible market-based or governmental incentives would encourage plants to meet or exceed the state and federal standards on a faster timeline.