



Memorandum

To: ISO Board of Governors
From: Karen Edson, Vice President External Affairs
Date: July 10, 2009
Re: **Briefing on Once-Through Cooling**

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memorandum updates the ISO Board of Governors (the Board) on Management's ongoing efforts to ensure that proposed restrictions on the use of once-through cooling in coastal power plants do not jeopardize the reliability of the electric grid.

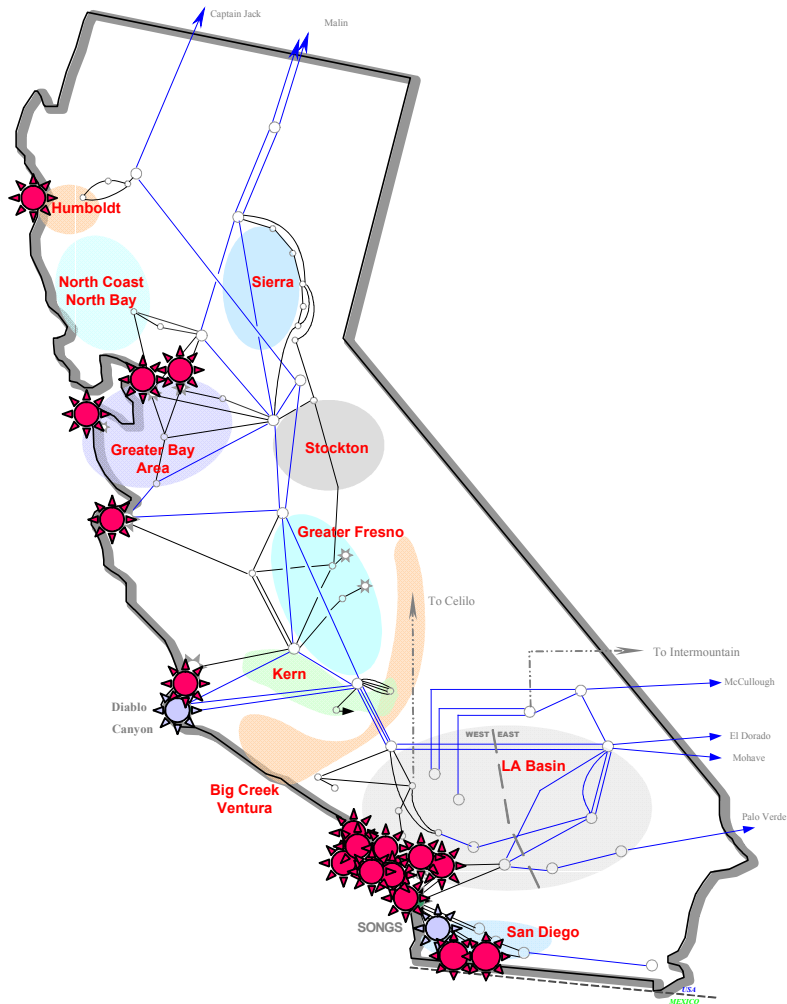
- The ISO is working with the State Water Resources Control Board (Water Board) as part of a joint effort with the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), and other state agencies.
- The Water Board released a draft statewide water quality control policy on the use of coastal and estuarine waters for power plant cooling on June 30 that incorporates many of the recommendations provided jointly by the ISO, CEC and CPUC. The recommendations are intended to mitigate reliability risks through appropriate planning studies and procurement mechanisms.
- Management believes the proposed framework is workable, but that flexibility is essential to success. Major uncertainties persist related to air regulatory issues that prevent generation development in southern California, impediments to transmission siting, the impact of the Water Board's proposal on nuclear generation, and operational issues associated with integrating intermittent renewable resources.
- The Water Board expects to finalize the policy by the end of 2009 following a 60 day comment period and public hearings.

BACKGROUND

Affected Generation

California's nineteen coastal and estuarine power plants, including California's nuclear plants, have a combined generating capacity of over 21,000 MW. Sixteen of these plants provide essential reliability services in locally constrained areas. Many are steam turbine units that provide the operating flexibility needed to successfully integrate intermittent renewable resources. As shown below, sixteen plants are located in the ISO Balancing Authority Area (BAA), and three are located in the Los Angeles Department of Water and Power (LADWP) BAA.

California Power Plants Using OTC Technology



Together, these plants have permits allowing the use of up to 17.1 billion gallons per day of once-through cooled water per day. Marine life mortality is caused by impingement, entrainment and thermal effects. According to the Water Board, once-through cooled power plants are the largest volume dischargers in the state. For example, fourteen of California's coastal and estuarine power plants have a permitted discharge rate in excess of 500 million gallons per day (MGD), and of these, six discharge more than 1,000 MGD. (Two of these are nuclear-fueled-plants.) The Water Board's materials note that in comparison, the largest wastewater treatment plant that discharges into the ocean releases 420 MGD, and most other wastewater treatment facilities discharge less than 50 MGD.

Regulatory Background

Since 1972, Section 316 (b) of the federal Clean Water Act has required that the location, design, construction and capacity of cooling water intake structures reflect the use of the best technology available for minimizing adverse environmental impacts. States have enforced this requirement on a case-by-case basis in the absence of a specific federal rule. California parties have expressed concerns that federal regulations are inadequate and should be addressed by a clearer, more prescriptive California rule.

The Water Board first described a California regulatory approach in March 2008 when it published a scoping document entitled *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* to implement Section 316(b) of the Clean Water Act, 33 U.S.C. § 1326(b). The scoping document contained a draft phased regulatory approach:

- Units with less than 20% annual capacity factors would be required to comply by 2015
- Units with greater than 20% annual capacity factors would be required to comply by 2018
- Nuclear power plants would be required to comply by 2021

The proposed approach directed generator owners to prepare implementation plans which would be reviewed by a statewide task force prior to a decision by Water Board. The task force would have been comprised of the Water Board, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), the State Lands Commission, the California Coastal Commission and the California Air Resources Board. This proposal was followed by a report sponsored by Water Board and the Ocean Protection Council addressing reliability concerns raised by the ISO and others.

ISO Comments

The ISO has submitted comments in formal filings, public hearings and meetings with Water Board officials, other government officials and stakeholders. Our comments have addressed the following concerns:

Reliability

The power plants affected by the proposed rule represent approximately 32% of the installed capacity in California and have important local, zonal and system reliability benefits that cannot realistically be satisfied with transmission upgrades alone. The policy should accommodate replacement or repowering of at least some once-through cooled power plants.

Renewable Integration

Many of the affected power plants are those with the operating flexibility necessary to integrate intermittent renewable resources onto the system. California needs comparable operating flexibility provided by these plants to meet its renewable generation goals.

Timing

Any rule must realistically account for the time necessary to provide replacement power in the form of a repowered facility, a replacement facility in the same area, or new transmission to serve local load coupled with replacement power procured from elsewhere on the system. Design, permitting and development timelines generally require 5 years for generation and 7-10 years for transmission. Current regulatory uncertainty, such as southern California air quality regulations, increase the uncertainty of these time lines. Thus, any rule should provide flexibility to accommodate development and permitting delays.

Joint Energy Agency Recommendation

In recognition of reliability and timing challenges, the Water Board created an interagency working group to advise them on policy and implementation issues. In addition, the Water Board asked the CEC, CPUC and ISO (Energy Agencies) to develop a proposal for implementation of any policy.

The ISO has worked with the CEC and CPUC to develop a proposal for replacing or repowering of OTC fossil plants consistent with maintaining reliability of the electric system and meeting California's environmental policy goals. The key elements of the proposal, which was delivered to the Water Board in mid-May, included important timing considerations and recommends the following actions:

- The ISO would prepare enhanced, 10-year Local Capacity Requirement (LCR) studies identifying the impacts of specific OTC retirements or transmission developments. The studies would be based on planning assumptions developed jointly with the CEC and CPUC.
- The ISO, CPUC and CEC would jointly identify the complete set of infrastructure needed to make OTC plants/units redundant for grid reliability and advise the Water Board about the reliability designations of specific power plants.
- The analysis would serve as the basis for the implementation schedule adopted by water regulators, which would inform the CPUC's long-term planning and procurement process as well as the ISO's transmission planning and market development processes.

WATER BOARD DRAFT POLICY

The Water Board released a draft policy to the public on June 30, 2009. Key elements of the policy include:

- A compliance schedule based upon the Energy Agencies' recommendations.
- Creation of a Statewide Advisory Committee on Cooling Water Intake Structures (Agency Committee), which includes representatives from state energy regulators, state environmental regulators and the ISO. The Committee will review generator implementation plans and schedules and make recommendations regarding compliance dates within one year of the effective date of the policy and every two years thereafter until all OTC plants are in compliance.
- Creation of a review committee comprised of representatives from SCE, PG&E, the Agency Committee, the environmental community, and staffs of the Water Board, the Central Coast Regional Water Board, and the San Diego Regional Water Board.
 - Within one year of the effective date of the policy, the review committee shall provide a public report detailing the scope of an independent study to investigate alternatives for SONGS and Diablo Canyon nuclear power plants to meet the requirements of the policy, including the cost of the alternatives.
 - The review committee shall report to the Water Board on the results of the study within three years of the effective date of the policy. The Water Board can modify requirements of nuclear-fueled plants based upon the results of the study.
- Consideration of less stringent requirements for nuclear-fueled plants and fossil-fueled plants with a heat rate of 8,500 BTU/kWh or less if the owner or operator can demonstrate that the cost of compliance is wholly disproportionate to the environmental benefits to be gained.

NEXT STEPS

The Water Board will issue a notice in the near future to commence a 60-day comment period on the draft policy, and will also hold a public workshop during that time. In addition, the CEC will conduct a workshop on July 28 to consider policy and implementation issues. Key issues requiring additional attention include those related to California's nuclear plants, the implications of litigation limiting the availability of emission credits in South Coast Air Quality Management District and the perspective of the Los Angeles Department of Water and Power. The CEC workshop will be the first opportunity for a public review of the Energy Agencies' recommendations to the Water Board.

The Water Board expects to adopt the OTC policy by the end of 2009 with an effective date by the end of the first quarter of 2010.