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A 04/17/06
Statewide
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CONSIDER ADOPTION OF A RESOLUTION ON ONCE-THROUGH COOLING AT COASTAL POWER PLANTS

The California State Lands Commission is considering adoption of a resolution which would express its intent not to approve any leases for new power plants using once-through cooling (OTC) systems and imposing certain conditions on lease renewals and extensions for existing facilities. Intake of large volumes of water for OTC has impacts on coastal organisms by entrainment and impingement. Impingement occurs when marine organisms are trapped against components of the cooling water system, such as screens, where they die. Entrainment is the induction of smaller marine organisms into and through the cooling water system where most, if not all, of the organisms are destroyed by mechanical damage, temperature increases or toxic stress. In addition, OTC results in biological impacts through thermal discharge. Thermal discharge refers to the release of cooling water at temperatures above ambient conditions resulting in elevation of the temperature of marine waters in the immediate vicinity of the outfall. These effects adversely impact coastal and ocean resources and uses that are within the jurisdiction of the State Lands Commission.

The Facilities:

There are presently 21 coastal power plants that utilize OTC systems with cumulative cooling water intake flow estimated at 16 billion gallons per day and one facility, GWF Power Plant, that utilizes wet cooling tower technology. Of these, ten have leases issued by the Commission. The other 12 coastal power plants are located within legislative grants to cities and counties. The ten power plants that discharge into sovereign lands under the jurisdiction of the Commission are as follows:

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Power Plant Name	Power Plant Location	Location of Discharge	Lessee/Operator	Lease Term
Mirant-Delta	Antioch, Contra Costa County	2 discharges into San Joaquin River	Southern Energy Delta, LLC	25 years 6/14/99 to 6/13/24
Gaylord Container	Near Antioch/Doland Island, Contra Costa County	1 discharge into San Joaquin River	Gaylord Container	10 years 1/8/81 – 1/7/97
Pittsburg	Near city of Pittsburg, Contra Costa County	Sacramento River	Mirant Delta, LLC	35 years 6/21/80 to 6/20/15
GWF Power Plant This power plant does not utilize OTC, but wet cooling technology and discharges heated water onto sovereign lands.	Antioch and Suisun Bay, Contra Costa County	San Joaquin River (currently not discharging) and Suisun Bay	GWF Power Systems, LP	30 years 8/1/88 to 7/31/18
Diablo Canyon	Pt. Buchon, San Luis Obispo County	Pacific Ocean	PG&E	49 years 6/1/70 – 5/31/19
Ormond	Ormond Beach, Ventura County	Pacific Ocean, 1 intake channel/ 1 discharge channel	Reliant Energy Ormond Beach	14 years 2/24/03 – 4/23/17
El Segundo	Santa Monica Bay, LA County	Pacific Ocean, 2 intake channels/ 2 discharge channels	El Segundo Power, LLC	49 years 10/27/53 – 10/26/02 Lease in holdover
San Onofre Nuclear	San Onofre near San Clemente, San Diego County	Pacific Ocean	Southern California Edison Co	42 years 3/1/81 to 2/28/23
Huntington Beach Generation Station **POTENTIAL DESAL**	Huntington Beach, Orange County	Pacific Ocean	AES Huntington Beach, LLC	49 years 8/8/57 to 8/7/06
Encina **POTENTIAL DESAL**	Carlsbad, San Diego County	2 intake lines, 2 discharge lines, Pacific Ocean	Cabrillo Power	10 years 7/8/89 to 7/7/99 Lease in holdover

The 21 coastal plants generate approximately 24,000 megawatts of power annually. Many of these plants are "peaker" facilities, operated (or operated at higher output) at times of greatest demand. Commission staff has no information indicating a firm date for plants that are to be shut down within the foreseeable future. However, operators of

the South Bay Power Plant in San Diego and the Humboldt facility have stated that they will re-power using methods other than OTC.

Other State Agencies:

California Energy Commission (CEC)
In addition to the State Lands Commission, the state agencies that exercise jurisdiction over coastal power plants are the CEC and the Regional Water Quality Control Boards. The CEC is the State's primary energy policy and planning agency. In addition to forecasting energy needs, developing energy technologies and promoting energy efficiency, the CEC licenses thermal power plants having a capacity of 50 megawatts or more. Substantial modifications to such plants in the form of expansion, replacement or re-powering are also reviewed by the CEC. (The California Coastal Commission does not have jurisdiction to issue coastal development permits for plants having a capacity of 50 megawatts or more). Applications for new plants or modifications of existing facilities are assessed in compliance with the Warren-Alquist Act and the California Environmental Quality Act. This includes an assessment of cooling water impacts to coastal resources and mitigation for those impacts. The CEC has also been conducting studies of coastal power plants in order to document and analyze the engineering and environmental issues associated with each power plant to address such issues when applications are received to expand, re-power or replace existing power plants. The CEC has prepared an inventory of existing facilities, permits, and operational levels in order to understand the facilities and their role in meeting the state's electrical power needs. Finally, the CEC has conducted studies to define and analyze the performance, economic, and environmental tradeoffs among the available cooling system alternatives.

Regional Water Quality Control Boards
There are nine Regional Water Quality Control Boards (Boards) in California. The Boards have jurisdiction over discharges to land or surface waters under the Porter-Cologne Act and have Clean Water Act authority exercised through the National Pollution Discharge Elimination System (NPDES). NPDES permits are reviewed every five years. Thus, the primary responsibility for the assessment of thermal, impingement and entrainment impacts rests with the Boards. The Boards have in some cases issued temporary extensions of NPDES permits in light of pending litigation challenging the U.S. Environmental Protection Agency's rules on OTC issued in 2004. Those rules require that existing facilities permitted to pump/discharge 50 million gallons per day must perform impingement and entrainment analyses. The facilities must demonstrate reductions in impingement and entrainment of fish and shellfish of 80-95% and 60-90%

respectively. The rules allow for these reductions to be made while the facilities continue to use the existing OTC systems.

State Water Quality Control Board (SWQCB)

To date, the State Water Board has held two public workshops to gather information on whether a Statewide 316(b) Policy should be adopted. At the December 7, 2005, State Water Board Workshop in Oakland, staff proposed the development of a Statewide 316(b) Policy that would become part of the existing State Water Board's California Thermal Plan. Thermal requirements for power plants are currently covered by this Plan. Except for the potential addition of 316(b) requirements to the California Thermal Plan, no new action is planned for thermal requirements at this time. The California Thermal Plan requirements will be addressed and updated at a later date.

As described above, to date, the requirements under 316(b) have been primarily implemented independently by the Regional Water Boards through the National Pollutant Discharge Elimination System (NPDES) permitting program. However, the current approach of the staff of the SWQCB would result in the development of a Statewide 316(b) Policy (Policy) with requirements for both new and existing OTC power plants.

The staff's recommended approach to the development of the Policy includes the following points:

- Include the policy in the California Thermal Plan.
- Standardize data collection methods for consistency throughout the State.
- Develop baseline calculation – Actual vs. Permitted maximum
- The upper end of the U.S. EPA 316(b) Performance Standards should be targets for the Policy (reductions of 95% and 90% for impingement and entrainment, respectively).
- Discourage cooling water use when no power is being generated in order to reduce impacts.
- Standardize Mitigation/Restoration Requirements.
- Cumulative impacts will need to be evaluated when more that one plant is in close proximity.

The proposed Policy will take a statewide approach in order to assure consistency throughout the various RWQCBS. The proposed Statewide 316(b) Policy could go before the State Water Board by the end of 2006; however all existing dates are tentative and the proposed plan and policy will be subject to approval of the SWQCB.

Desalination:

At the February Commission meeting and in subsequent discussions, interested parties have questioned whether the proposed resolution would present unreasonable barriers to the location of desalination facilities at coastal plants using OTC. Based on these comments, staff has concluded:

1) The principal benefit afforded to desalination projects located with power plants would be savings in construction costs because it would not be necessary to construct intake and discharge facilities serving only the desalination plant. Instead, the desalination facility would use intake and discharge conduits previously built to serve the power plant's cooling water system.

2) Desalination requires a great deal of electricity, which is a significant cost of operating a desalination plant. Co-location of desalination facilities with existing coastal power plants may help to reduce the electricity costs of a desalination plant because co-location utilizes both the power plant's seawater cooling system and the direct power supplied at the plant. However, existing regulations generally do not allow for a preferential electrical rate, so this benefit is not currently available. Anticipated lower rates could come about only through a change in state or federal utility laws.

3) The merits of proposed desalination projects at existing power plants will be greatly affected by the specific location and impacts of the power plant's OTC system. For example, systems drawing large volumes of water from coastal estuaries, enclosed bays and lagoons would be expected to have far greater biological impacts than would facilities on the open coast. The benefits of co-location of desalination facilities at the power plants having these greater impacts require site-specific analysis, but may not justify the long-term impacts of OTC systems.

4) In theory, any of the 21 coastal power plants could be used in conjunction with a desalination facility. However, as mentioned above, at least two of the plants have already indicated that they will modify plant operations so as to eliminate OTC.

5) Coordination of operations with a power plant will have its own economic and regulatory costs and those costs, including mitigation requirements, will vary depending on the characteristics and location of the power plant.

6) Co-location of desalination facilities and power plants can reduce environmental impacts of each. Desalination facilities can help cool discharges from power plants and power plant discharges can dilute the high salt content of desalination discharges.

7) Co-location can also interfere with phasing out OTC facilities because the desalination facility could occupy land otherwise needed for replacement cooling facilities. The economic advantages of co-location could also cause a power plant to remain economically viable for a longer period of time.

The California Coastal Commission also exercises jurisdiction over desalination plants. While the Coastal Commission recognizes that seawater desalination will provide some of California's future water supply, each proposed facility has different design characteristics and each proposed location raises different issues, so the Coastal Commission will evaluate proposals on a case-by-case basis. The most common issues of review will likely be the following: a facility's effects on marine organisms if open-water intakes are used; feasible and less environmentally damaging alternatives to various components of a proposed project including energy use; whether a project is a public or private and whether private ownership would affect the state's ability to regulate the facility's effects on coastal resources; how the water supply fits into local or regional water quality portfolios and growth plans and whether the project will affect public access and use of the shoreline.

Information on Individual Power Plants:

At the February Commission meeting, the Commissioners asked several questions about particular plants and their susceptibility to conversion to systems other than OTC. Whether a facility is a likely candidate for conversion depends, however, on a detailed analysis of many site-specific factors. For example, the relative need for and availability of alternatives to OTC systems will require consideration of such issues as the magnitude of impacts of the existing cooling system, site constraints limiting the construction of alternative systems, engineering and technical feasibility, water supplies, energy costs of alternative systems and the relative costs and benefits of the alternatives. Such an analysis is beyond the scope of this discussion. The Commission will consider these site-specific variables as it decides the conditions of renewal of individual power plant leases. In some cases, these variables have, to some extent, been considered by other state agencies. For example, on February 2, 2005 the CEC approved the application to replace two existing generating units at the El Segundo

Power Plant with a natural gas-fired combined cycle generation facility. The new units were, however, permitted to use the existing OTC system without modification of the intake lines or flow rates. The CEC found that conversion of the facility to use water from the nearby Hyperion wastewater facility for cooling, as was suggested by staff of the Coastal Commission, would result in greater environmental impacts than the proposed project as conditioned.

Similarly, the analysis of the Diablo Canyon nuclear power plant by the Regional Water Quality Control Board concluded that it would be very difficult, if not impossible, to construct an alternative cooling system there. Staff of the Board estimated the cost would be between one and three billion dollars.

Incentives:

The Commission has almost no ability to offer financial incentives for conversion of OTC to other technologies. To encourage coastal power plant owners/operators to replace OTC with alternative cooling systems, the Commission could offer extended lease terms that would coincide with the useful life of the facility. This incentive would provide the owners/operators with some assurance that they would be able to operate without having to apply to the Commission for reauthorization. However current law restricts the term to 49 years. Further, the Commission has often found that long lease terms interfere with its ability to update mitigation requirements or respond to changing needs for public trust lands.