PROPOSED AMENDMENT TO THE WATER QUALITY CONTROL POLICY ON THE USE OF COASTAL AND ESTUARINE WATERS FOR POWER PLANT COOLING

Draft Staff Report

State Water Resources Control Board
California Environmental Protection Agency

May 20, 2011

Amended June 23, 2011 (edits in blue font)

1. SUMMARY OF THE POLICY AMENDMENT

This Draft Staff Report supports a proposed amendment to the statewide *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* ("Policy"). The proposed amendment language is included as Appendix A of this document, and consists of (1) an addition to the "Immediate and Interim Requirements" in Section 2.C of the Policy, and (2) changes to the "Implementation Schedule" in Table 1 in Section 3.E of the Policy.

The Policy establishes uniform, technology-based standards to implement federal Clean Water Act (CWA) section 316(b), which requires that the location, design, construction, and capacity of cooling intake structures reflect the best technology available for minimizing adverse environmental impact. The Policy was adopted by the State Water Resources Control Board (State Water Board) on May 4, 2010, under Resolution No. 2010-0020. The Policy was approved by the Office of Administrative Law on September 27, 2010, and became fully effective on October 1, 2010[1].

The policy applies to 19 existing power plants located along the California coast that withdraw coastal and estuarine waters for cooling purposes, using a single-pass system known as once-through cooling (OTC). Cooling water withdrawals cause adverse impacts when larger aquatic organisms, such as fish and mammals, are trapped against a facility's intake screens (impinged) and when smaller life forms, such as larvae and eggs, are killed by being drawn through the cooling system (entrained).

The Policy is implemented through National Pollutant Discharge Elimination System (NPDES) permits. Section 3.A of the Policy required the owner or operator of an affected fossil-fueled power plant to submit an implementation plan to the State Water Board by April 1, 2011. The implementation plan must identify the selected compliance alternative, describe the general design, construction, or operational measures that will be undertaken to implement the alternative, and propose a realistic schedule (including any requested changes to the default final compliance dates identified in the Policy) for implementing these measures that is as short as possible.

The State Water Board has received implementation plans from all owners and/or operators as requested, including implementation plans for the three OTC power plants that are owned and operated by the Los Angeles Department of Water and Power (LADWP). These facilities are the Harbor Generating Station (Harbor GS), Haynes Generating Station (Haynes GS), and the Scattergood Generating Station (Scattergood GS).

In its submissions (see Appendix B), LADWP commits to repowering all their OTC plants with more efficient facilities that use closed-cycle cooling, which requires no or

[1] The Policy and supporting documentation can be found on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/policy.shtml

little seawater intake or discharge. However, LADWP also states that it is not able to comply with the final compliance dates required in the Policy for various reasons.

Based upon its review, the State Water Board proposes to amend the default final compliance deadlines found in Table 1 of the Policy for the LADWP power plants as follows:

Harbor GS Unit 5	12/31/2031 (previously 12/31/2015)
Haynes GS Units 1 and 2	12/31/2027 (previously 12/31/2019)
Haynes GS Units 5 and 6	12/31/2013 (previously 12/31/2019)
Haynes GS Unit 8	12/31/2035 (previously 12/31/2019)
Scattergood GS Units 1 and 2	12/31/2024 (previously 12/31/2020)
Scattergood GS Unit 3	12/31/2015 (previously 12/31/2020)

In addition to amending the default compliance deadlines for LADWP in Table 1 of the Policy, the amendment would require that those fossil-fueled power plants that are not able to comply with the Policy by December 31, 2020 install devices by that date that will minimize the continued impacts of entrainment and impingement.

2. REGULATORY BACKGROUND

In 1972, Congress enacted the federal Clean Water Act (CWA) to restore and maintain the chemical, physical, and biological integrity of the Nation's waters[2]. CWA Section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available (BTA) for minimizing adverse environmental impact.

In 2001, the U.S. Environmental Protection Agency (USEPA) adopted a rule for ***new*** power plants (Phase I) that established a performance standard based on closed-cycle wet cooling. In 2004, EPA published the Phase II rule applicable to ***existing*** power plants with a design intake flow greater than or equal to 50 millions of gallons per day (MGD), which was remanded following legal challenge. USEPA proposed a new rule on March 28, 2011 for existing power plants that have a design intake flow of at least two MGD and use at least 25 percent of the water they withdraw exclusively for cooling purposes. However, the Phase II rule is not yet in effect[3].

USEPA concluded in its analysis[4] that closed-cycle cooling reduces impingement and entrainment mortality to the greatest extent, but may not be practically feasible in a number of circumstances. Regarding alternative control technologies for entrainment, USEPA concluded that investigated screening technologies are significantly less

[2] See 33 United States Code (U.S.C.) §1251 *et seq.*

[3] For further information on the Phase I and Phase II rules, please visit USEPA's website at http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/index.cfm

[4] See "Cooling Water Intake Structures at Existing Facilities and Phase I Facilities", Federal Register, Vol. 76, April 20, 2011.

effective than initially thought in reducing entrainment mortality, and could not identify single technology that represented Best Technology Available (BTA) for all facilities. For alternative impingement mortality controls, USEPA is proposing the use of modified traveling screens with a fish handling and return system or reduced intake velocity as BTA. Facilities that withdraw at least 125 MGD would be required to conduct studies to determine whether and what site specific entrainment mortality controls, if any, would be required.

The State Water Board is designated as the state water pollution control agency for all purposes under the CWA. The state Porter-Cologne Water Quality Control Act[5] of 1969 authorizes the State Water Board to adopt statewide water quality control plans and Policies, which are implemented through NPDES permits and waste discharge requirements[6]. The Policy adopted by the State Water Board on May 4, 2010, under Resolution No. 2010-0020, established requirements for the implementation of Section 316(b) for existing power plants in California, using Best Professional Judgment in determining BTA for cooling water intake structures. BTA was determined to be closed-cycle wet cooling, or equivalent. The Policy is implemented through NPDES permits, issued pursuant to CWA Section 402, which authorizes the point source discharge of pollutants to navigable waters.

Because the Policy is more stringent than the proposed USEPA rule, it will remain in effect when the proposed USEPA rule is promulgated. The proposed USEPA rule explicitly states that it is within the States' authority to implement requirements that are more stringent than the federal requirements.

"Track 1" of the Policy requires that intake flow rates at each power-generating unit be reduced to a level commensurate with that which can be attained by a closed-cycle wet cooling system (see Section 2.A.(1) of the Policy). A minimum 93 percent reduction in intake flow rate for each unit is required for compliance, compared to the facility's design intake flow rate. In addition, the through-screen intake velocity must not exceed 0.5 feet per second.

However, if the owner or operator of a facility can demonstrate that compliance with Track 1 is not feasible, the owner or operator may comply by reducing environmental impacts to marine and estuarine life comparably through other means, using operational or structural controls, or both, as described under the "Track 2" requirements in the Policy (see Section 2.A. (2) of the Policy).

Section 3.E of the Policy includes an implementation schedule with default final compliance dates for each facility. Section 2.C of the Policy includes immediate and interim requirements, which all facilities must comply with. Facilities must cease intake flows if not engaging in power-generating activities or critical system maintenance by October 1, 2011. Facilities with offshore intakes must further install large organism

[5] See Wat. Code §13000 *et seq.*
[6] See Wat. Code §13263.

exclusion devices by October 1, 2011. Any interim impacts must be mitigated beginning October 1, 2015, until final compliance is achieved.

Section 3.A of the Policy requires the owner or operator of a fossil-fueled power plant subject to the Policy to submit an implementation plan to the State Water Board by April 1, 2011. The implementation plan must identify the compliance alternative and measures selected and propose a realistic schedule for implementing these measures that is as short as possible. Letters were sent to all owners or operators notifying them of this requirement pursuant to the Policy and California Water Code Section 13383. Owners and/or operators were additionally requested to specify how they intend to meet interim Policy requirements, and some were further requested to submit a Report of Waste Discharge. The State Water Board has received information from all owners and/or operators, as requested[7].

Section 3.B of the Policy requires the establishment of a Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS), comprised of representatives from relevant agencies and entities. The purpose of SACCWIS is to advise the State Water Board on the implementation of the Policy to ensure that the implementation schedule takes into account electrical local area and grid reliability, including permitting constraints. SACCWIS has been convened and the first meeting was held on April 8, 2011. A Memorandum of Agreement has been signed by the members, setting forth principles, procedures and agreements to which the signatory agencies commit in establishing and participating in SACCWIS. SACCWIS is currently reviewing the plans and schedules submitted by the generators to ensure that the schedules and plans are realistic and will not jeopardize the reliability of the electrical grid system. The Policy requires SACCWIS to present its recommendations to the State Water Board by October 1, 2011[8].

3. OVERVIEW OF LADWP'S COASTAL OTC POWER PLANTS

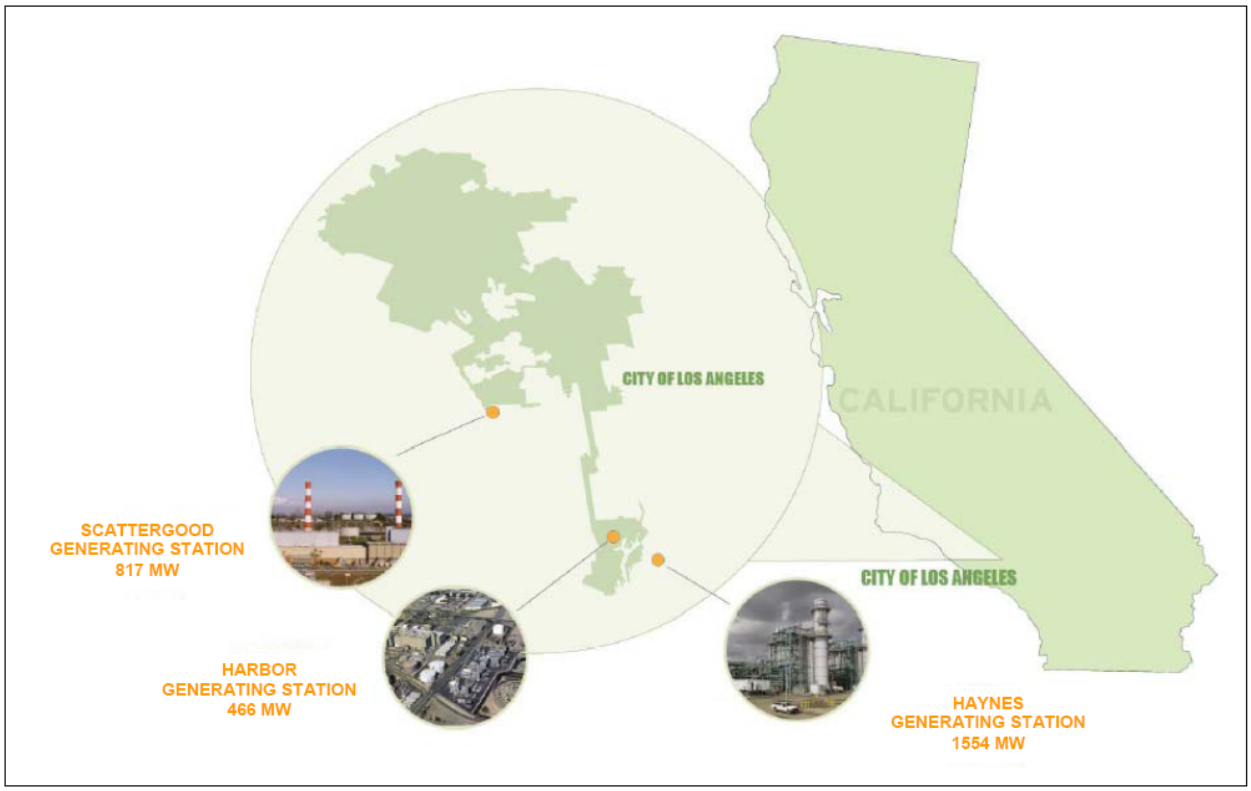
LADWP is a municipally-owned utility, serving approximately 1.4 million people in the City of Los Angeles and other areas. LADWP owns and operates its own generation, transmission, and distribution systems, including three coastal OTC power plants. These three facilities (their location is indicated in Figure 1 below) are the Harbor GS, Haynes GS, and Scattergood GS, which are all natural gas-fired facilities. They have a combined capacity of 2,839 Mega Watts (MW), which is approximately 85 percent of the total generating capacity within the City of Los Angeles and 39 percent of the total generating plant capacity owned by LADWP[9].

[7] The submitted implementation plans have been posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/

[8] Further information on SACCWIS can be found on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/saccwis/

[9] Source: Implementation Plan submitted by LADWP on April 1, 2011.

Figure 1: Location of LADWP's Coastal OTC Power Plants[10]



Harbor GS is the smallest of LADWP's OTC facilities, both in terms of size and capacity. It was built in 1954 and sits on 20 acres in the Inner Los Angeles Harbor (ILAH), where it provides peaking and load-following service to LADWP's system. Units 1 and 2 are rated at 80 MW each, Unit 5 at 75 MW, and Units 10-14 each at 43 MW. All units are gas-fired combustion turbines that are air-cooled, except for Unit 5, which is a Westinghouse high-pressure steam turbine that requires cooling water. A heat recovery steam generator captures exhaust heat from Units 1 and 2 to generate steam for Unit 5 (Units 1, 2, and 5 are known as combined-cycle units)[11].

The intake for Unit 5 is along the shore of Slip 5, and the water is discharged into the West Basin of the ILAH. Two circulating water pumps have a design intake flow of 108 MGD[12]. However the average flow during 2000-2005 was 59 MGD with estimated annual fish impingement of about 10,600 fish and about 85 million fish larvae[13]. In

[10] Source: Implementation Plan submitted by LADWP on April 1, 2011.
[11] Source: Appendix 2 of the Harbor Implementation Plan submitted by LADWP on April 1, 2011.
[12] Source: Appendix 2 of the Harbor Implementation Plan submitted by LADWP on April 1, 2011.
[13] Source: Appendix F of the Substitute Environmental Document for the Policy, "Entrainment and Impingement Estimates Updated for Delta Plants", Steinbeck, January 2010, posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/sed_final_f.pdf

2000, 49 taxa representing 44 unique species of fish larvae and 13 categories of fish eggs were collected from the harbor complex. Special status fish species that could occur in the vicinity of HGS and that have planktonic larvae potentially at risk of entrainment include garibaldi (Hypsypops rubicundus), tidewater goby (Eucyclogobius newberryi), and California grunion (Leuresthes tenuis)[14].

Scattergood GS occupies 56 acres near Vista del Mar on the shore of Santa Monica Bay, near the Hyperion Wastewater Treatment Plant and the Los Angeles International Airport (LAX). The first unit was built in 1958, the last in 1974. Scattergood GS has two oil/gas boilers (Units 1 and 2) rated at a capacity of 179 MW each, and one gas boiler (Unit 3) rated at a capacity of 460 MW, for a total generating capacity of 818 MW. A shared submerged offshore intake equipped with a velocity cap located approximately 1,600 ft offshore at a depth of about 11 feet serves all three units. Units 1 and 2 each have two circulating water pumps, while Unit 3 has four pumps. Unit 1 and 2 pumps are each rated at 56 MGD, while the four pumps for Unit 3 are each rated at 68 MGD. The horizontal water velocity at the velocity cap opening was calculated to be 0.5 meters per second (m/s). The discharged water exits through a 7.5 ft diameter vertical riser located 400 ft away from the intake velocity cap[15].

The design intake flow for Scattergood GS is 495 MGD. The average flow during 2000-2005 was 309 MGD with estimated annual fish impingement of about 146,000 fish and about 316 million fish larvae[16]. From October 2005 through September 2006, at least 53 distinct fish species were impinged during normal operations. The most abundant taxa were queenfish, jacksmelt, northern anchovy, topsmelt, and white croaker. Special-status fish species that could occur in the vicinity of SGS and that have planktonic larvae potentially at risk of entrainment include garibaldi (Hypsypops rubicundus), giant sea bass (Stereolepis gigas), and California grunion (Leuresthes tenuis)[17].

Haynes GS is the largest of LADWP's OTC facilities, both in terms of size and capacity (1,663 MW). It is mostly located in the City of Long Beach on 122 acres and was built starting in 1962. Units 1 and 2 are rated at 222 MW each and are conventional steam boilers. Units 5 and 6 are also conventional steam boilers and are rated at 322 MW each. Unit 8 is a combined-cycle unit that utilizes a heat recovery steam generator to capture waste heat generated by two gas combustion turbine units to power a steam turbine. It is rated at 575 MW and was added recently in 2005. Haynes GS operates one cooling water intake structure to provide cooling water to the five generating units. Units 1 and 2 each have two circulating water pumps each rated at 59 MGD. Units 5 and 6 each have two circulating water pumps each rated at 115 MGD. Combined-cycle Units 8, 9 and 10 have 4 pumps rated at 58 MGD each. Water is withdrawn from

[14] Source: Appendix 2 of the Harbor Implementation Plan submitted by LADWP on April 1, 2011.
[15] Source: Appendix 2 of the Scattergood Implementation Plan submitted by LADWP on April 1, 2011.
[16] Source: Appendix F of the Substitute Environmental Document for the Policy, "Entrainment and Impingement Estimates Updated for Delta Plants", Steinbeck, January 2010, posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/sed_final_f.pdf
[17] Source: Appendix 2 of the Scattergood Implementation Plan submitted by LADWP on April 1, 2011.

Alamitos Bay in the northeast corner of the Long Beach Marina and piped under the San Gabriel River to a manmade canal extending 1.5 miles northeast to the power plant. The cooling water is discharged to the San Gabriel River[18].

The design intake flow for Haynes GS is 968 MGD. However, the average flow during 2000-2005 was only 258 MGD (less than Scattergood GS) with an estimated annual fish impingement of about 17,800 fish and about 1,160 million fish larvae[19]. At least 53 distinct fish taxa were collected during impingement sampling in 2006. Queenfish, topsmelt, pipefishes, and northern anchovy were most abundant. Combtooth blennies, gobies, and silversides accounted for 93 percent of the larval densities. Special status fish species that could occur in the vicinity of Haynes GS and that have planktonic larvae potentially at risk of entrainment include garibaldi (Hypsypops rubicundus), tidewater goby (Eucyclogobius newberryi), and California grunion (Leuresthes tenuis)[20].

4. RATIONALE FOR THE PROPOSED AMENDMENT TO THE POLICY

LADWP has submitted comments throughout the process of developing and adopting the Policy, and has previously noted cost, permitting, and technological concerns with meeting the default deadlines contained in the Policy.

In a letter to the State Water Board, dated December 8, 2009[21], LADWP states:

> *"LADWP is very concerned with the compliance dates as published in the revised Draft Policy, along with the procedure used to evaluate whether or not these dates can be changed, both in the Policy and in the NPDES permits. LADWP has, and continues to recognize, that repowering efforts require a thorough and thought out replacement strategy. Concurrent repowering efforts do not allow for proper planning, and more importantly would remove needed megawatts (MWs) from the system without a source of replacement. LADWP cannot relinquish any of the MWs provided by the current plants, via repowering or retrofitting, without first installing replacement MWs in place at the site. The reality is that every MW of capacity from these plants is vital to the essential public service of electricity supply to the City and any loss of capacity must be made up by construction of new power generating facilities in essentially the same location."*

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[18] Source: Report by TetraTech, February 2008. This report is posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/alternativecoolingsystem.shtml

[19] Source: Appendix F of the Substitute Environmental Document for the Policy, "Entrainment and Impingement Estimates Updated for Delta Plants", Steinbeck, January 2010, posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/sed_final_f.pdf

[20] Source: Appendix 2 of the Haynes Implementation Plan submitted by LADWP on April 1, 2011.

[21] This letter is posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/ cwa316_2009dec/ comments/aram_benyamin.pdf

State Water Board staff responded by changing the proposed default final compliance dates for the three LADWP OTC facilities, based on new information from LADWP.

In a later letter to the State Water Board, dated April 13, 2010[22], LADWP states:

> *"LADWP appreciates that the [State Water Board] has changed the compliance dates for its Harbor and Haynes facilities and will make every effort to comply with the Scattergood date of 2020."*

LADWP was contemplating complying with the Policy by following Track 2. However, in the same letter, LADWP also states:

> *"This well intended policy as currently written, with a 'one size fits all' focus, will impose a multi-billion dollar burden on the Los Angeles rate payer and pose a serious threat to the reliability of LADWP's power supply."*

When the policy was adopted on May 4, 2010, several changes were made by the State Water Board to the proposed Policy, including a requirement to show that Track 1 is infeasible before proceeding to Track 2, a requirement that Track 2 be met on a unit-by-unit basis, and that Track 2 reductions be measured against actual flows. Thus LADWP no longer believed it possible for them to use the Track 2 approach. They requested an amendment to the Policy with changes allowing more provisions for facilities with combined-cycle units under Track 2, if they committed to phasing out OTC.

State Water Board staff proposed an amendment to the Policy, which was sent out for public comment on October 1, 2010[23]. In a letter to the State Water Board, dated December 8, 2010[24], LADWP states:

> *"LADWP commends SWRCB staff for in vesting the time and resources necessary to develop an Amendment that clearly specifies how facilities can meet the goals of the Clean Water Act and the recently adopted SWRCB OTC policy, while allowing a financially sustainable path forward. As a vertically integrated, publicly owned utility, LADWP must balance numerous mandates: the need to operate in an environmentally sensitive manner, provide cost-efficient power to our ratepayers, and ensure grid reliability. This Amendment allows such considerations. Without this option, LADWP could not afford to simultaneously achieve 33 percent renewables by 2020, comply with SB 1368 (Green House Gas emission levels for imported power), significantly reduce CO_2 emissions, reduce its coal portfolio, and meet the current SWRCB OTC Policy deadlines.*

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[22] This letter is posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/comments041310/aram_benyamin.pdf

[23] This amendment is posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/otc_dec2010/sra092910.pdf

[24] This letter is posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/otc_dec2010/comments/austin_beutner.pdf

To date, LADWP has reduced its original OTC fleet from 14 to 9 units. LADWP is about to embark on a three phase repowering program that will completely eliminate OTC usage. The first phase will remove three more units from OTC by 2013 and 2015, representing LADWP's largest capital investments to date: approximately $1.3 billion. LADWP has switched the repower of Scattergood Generating Station (SGS) Units 1 and 2 with SGS Unit 3, increasing capital outlay by $100 million, but also increasing the reduction of OTC by 10 percent. At the conclusion of Phase 1, LADWP's overall use of OTC will be reduced by 56 percent. Phase 2 entails removing four more units from OTC, reducing total OTC usage by 82 percent. During the third and final phase, two recently repowered units will be removed from OTC, for a 100 percent reduction.

During the time period that LADWP is working toward total elimination of OTC, LADWP's dedication to environmental stewardship also requires other significant investments:

- *LADWP's draft Integrated Resource Plan (IRP) and CARB regulations call for 33 percent renewables by 2020, which will entail installation of 320 MW of geothermal, 630 MW of solar, and 580 MW of wind, during the OTC policy implementation period of 2011 to 2020.*
- *To comply with SB 1368 and reduce $C0_2$ emissions, LADWP has committed to replace the power provided through its contract with a coal-fired power plant with clean power, prior to the contract expiration in 2019.*

The financial outlay for the programs bulleted above, during this time period (2011 - 2020), will be between $8 and $10 billion. All of which is shouldered by our ratepayers. This is why this amendment with its extended compliance schedule is so critical to our city. The Amendment does take into consideration the financial impacts associated with the Policy, but it does not, in any way, reduce LADWP's obligations or responsibilities to adhere to the administrative process for all approvals. LADWP's extended compliance plan must still be submitted for SWRCB approval through the standard public review process."

The amendment was considered by the State Water Board on December 14, 2010. The State Water Board did not act on the amendment, but stated that the Board would revisit special provisions for LADWP after receiving further data from them, and after their implementation plan had been reviewed by SACCWIS, if possible by July 2011.

State Water Board further directed staff to hold an informational stakeholder meeting in February, 2011 with staff from other relevant State agencies and entities to address concerns by power plant owners and operators regarding implementation of the Policy. The meeting was held (on February 7, 2011) with a focus on the implementation plan that all power plant owners and operators ware required to submit before April 1, 2011, but staff also addressed questions about interim measures, permitting, and other immediate implementation concerns.

On April 1, State Water Board staff had received implementation plans from all OTC owners and operators, including LADWP[25]. State Water Board staff has reviewed LADWP's implementation plan and their suggestion for extended deadlines (see Appendix B of this document) and discussed it with representatives from the SACCWIS agencies and entities, to determine if extended deadlines for LADWP pose an electric grid reliability concern. The matter will be brought in front of SACCWIS at a public meeting before this amendment is heard by the State Water Board.

5. REQUIREMENTS WHEN AMENDING THE POLICY

The State Water Board must comply with all state and federal public participation requirements and state laws governing environmental and peer review when amending the Policy.

The State Water Board is the lead agency for this project under the California Environmental Quality Act (CEQA)[26] and is responsible for preparing environmental documentation for the proposed amendment. The California Secretary of Resources has certified the State Water Board's water quality planning process as exempt from certain CEQA requirements[27] when adopting plans, policies, and guidelines, including preparation of an initial study, negative declaration, and environmental impact report. The California Code of Regulations, Title 23, Section 3777(a) requires that a Staff Report includes a description of the proposed activity, an alternatives analysis, an identification of mitigation measures to minimize any significant adverse impact and an "Environmental Checklist" (See Appendix C).

In addition, CEQA imposes specific obligations on the State Water Board when it establishes performance standards. Public Resources Code §21159 requires that an environmental analysis of the reasonably foreseeable methods of compliance be conducted. The environmental analysis must address the reasonably foreseeable environmental impacts of the methods of compliance and reasonably foreseeable alternatives and mitigation measures.

The State Water Board is not required to prepare a "project level analysis". Rather, the State Water Board must prepare a program-level analysis, i.e. a Tier 1 analysis, that takes into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites. Site-specific or project-level impacts will be considered by the appropriate public agency that is ultimately responsible for approving or implementing individual projects.

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[25] The submitted implementation plans have been posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/powerplants/

[26] Public Resources Code, §21000 *et seq*.

[27] Cal. Code Regs, tit. 14, §15251(g); see Public Resources Code, §21080.5.

This amendment to the Policy is within the scope of the original Policy and the environmental documentation that was prepared and approved by the State Water Board when it approved the original Policy. Staff has identified no new significant environmental effects or a substantial increase in the severity of previously identified significant effects that will result from the amendment to the Policy compared to current conditions. In addition, staff has not identified any new information of substantial importance that shows that the amendment to the Policy will result in additional feasible mitigation measures that were previously found to be infeasible, or mitigation measures or alternatives that are significantly different from those analyzed at the time that the original Policy was adopted. Therefore, this staff report incorporates by reference the substitute environmental documentation (SED) that was prepared for the original Policy; no additional environmental analysis or documentation is required.

The Health and Safety Code section 57004 requires external scientific peer review of the scientific basis for any rule proposed by any board, office, or department within the California Environmental Protection Agency (Cal/EPA). However, because this amendment is not based on any scientific data, peer review requirements do not apply.

6. PROJECT DESCRIPTION

The amendment language is shown in Appendix A of this document, and consists of (1) an addition to the "Immediate and Interim Requirements" in Section 2.C of the Policy, and (2) changes to the "Implementation Schedule" in Table 1 in Section 3.E of the Policy.

The facilities affected by the amendment are the Harbor GS, Haynes GS, the Scattergood GS, and other fossil-fueled power plants that are not able to comply with the Policy by December 31, 2020.

Deadlines in Table 1 (Section 3.E of the Policy) would be changed for the listed facilities as follows:

Harbor GS Unit 5	12/31/2031 (previously 12/31/2015)
Haynes GS Units 1 and 2	12/31/2027 (previously 12/31/2019)
Haynes GS Units 5 and 6	12/31/2013 (previously 12/31/2019)
Haynes GS Unit 8	12/31/2035 (previously 12/31/2019)
Scattergood GS Units 1 and 2	12/31/2024 (previously 12/31/2020)
Scattergood GS Unit 3	12/31/2015 (previously 12/31/2020)

Additionally, a paragraph added to Section 2.C of the Policy, would require fossil-fueled power plants that are not able to comply with the Policy by December 31, 2020 to install devices by that date to minimize the continued impacts of entrainment and impingement. The amendment language reads:

(4) Owners or operators of fossil fueled units that utilize OTC after December 31, 2020 shall:

(a) Commit to eliminate OTC for all units at the facility.

(b) Conduct a study or studies, singularly or jointly with other facilities, to evaluate new technologies or improve existing technologies to reduce impingement and entrainment.

(c) Submit the results of the study and a proposal to minimize entrainment and impingement to the Chief Deputy Director no later than December 31, 2015.

(d) Upon approval of the proposal by the Chief Deputy Director, complete implementation of the proposal no later than December 31, 2020.

7. ENVIRONMENTAL SETTING

Please see the "Environmental Setting" section and the other sections in the "Background" chapter of the Final Substitute Environmental Document (SED) for the Policy[28]. The location of the three LADWP plants is shown in Figure 1 above.

8. ANALYSIS OF ALTERNATIVES AND ISSUES

The statewide Policy to implement CWA Section 316(b) has been adopted and approved, but not yet implemented through NPDES permits for the individual facilities. The environmental baseline for this amendment is therefore the same as described in the SED for the Policy.

Alternatives and Discussion:

***Alternative 1*: No Action.**
The State Water Board would not adopt the proposed amendment to the Policy. Under this alternative, the compliance deadlines for LADWP's OTC facilities would remain as currently stated in the Policy. LADWP has stated that it cannot meet these deadlines without incurring substantial rate increases to the ratepayers.

***Alternative 2*: Delay Action.**
Consider the amendment only after the SACCWIS has submitted their first report to the

[28] The Final SED has been posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/ cwa316may2010/sed_final.pdf

State Water Board on October 1, 2011. This would allow the State Water Board the opportunity to consider other changes to the Policy, such as other changes to the compliance deadlines, simultaneously.

***Alternative 3:* Adopt the Proposed Amendment as described.**
This alternative would, as described earlier, allow LADWP more time to comply with the Policy for selected power-generating units. However, LADWP is committing to complying earlier for some units. This would offset some of the additional impingement mortality and entrainment incurred with the amendment, but not all.

State Water Board staff calculated the amendment's effect on projected interim impingement mortality and entrainment by employing the following assumptions: (1) data in LADWP's implementation plans were used to calculate the design intake flows for each unit; (2) the design flow was used to calculate the maximum amount of entrainment and impingement possible (the worst-case scenario) under either the Policy or the amendment; (3) to meet Track 1 requirements under the Policy and amendment, there would be no impingement after elimination of OTC because BTA requires that the intake velocity be less than 0.5 foot per second; (4) the average numbers of fish larvae entrained and the average numbers of fish impinged per million gallons of water withdrawn were derived from Appendix F in the Final SED[29]; (4) the numbers impinged and entrained during the interim period for the Policy and the amendment were compared over the period 2010-2040. This period was chosen as a reasonable timeframe.

The LADWP Implementation Plan (Appendix B) did not specify whether dry cooling or wet cooling towers would be used to comply with the Policy. Specifically with regard to wet cooling towers, it was unclear if any withdrawal of seawater would be required for use as make-up water for evaporative cooling. Subsequently, LADWP staff has confirmed that if wet cooling towers are employed, LADWP would use only recycled wastewater, and would not require withdrawal of seawater for use as make-up water. Therefore, when LADWP referred to eliminating OTC in their implementation plan, it is meant in the broader sense of eliminating the use of seawater for cooling purposes.[30]

Based on the above described assumptions, staff calculated impingement and entrainment values under the existing Policy and under the amendment. Table 1 provides a comparison of worst-case impingement under the Policy and the amendment for the period 2010-2040. Note that the impingement impact would be the same whether dry cooling or wet cooling is utilized.

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[29] Source: Appendix F of the Substitute Environmental Document for the Policy, "Entrainment and Impingement Estimates Updated for Delta Plants", Steinbeck, January 2010, posted on the State Water Board's web site at http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/sed_final_f.pdf

[30] Telephone communication between Dominic Gregorio (State Water Board) and Katherine Rubin (LADWP) on May 20, 2011.

Table 1. A comparison of impinged numbers of fish under the Policy and the amendment (2010-2040). (Negative numbers indicate additional impingement under the amendment.)

Scenario	Harbor GS	Haynes GS	Scattergood GS	All LADWP OTC Facilities
Policy	127,875	668,614	1,636,045	2,432,534
Amendment	468,876	885,117	1,499,419	2,853,413
Difference	**-341,001**	**-216,503**	**136,625**	**-420,879**

Table 2, below, provides a comparison of worst-case entrainment under the Policy and the amendment (2010-2040), assuming compliance is by dry cooling and/or wet cooling towers relying solely on recycled wastewater for make-up water.

Table 2. A comparison of entrained numbers of larval fish under the Policy and the amendment (2010-2040). (Negative numbers indicate additional entrainment under the amendment.)

Scenario	Harbor GS	Haynes GS	Scattergood GS	All LADWP OTC Facilities
Policy	1,323,036,547	49,851,591,388	6,270,630,369	57,445,258,305
Amendment	3,756,504,075	57,536,191,331	5,098,121,277	66,390,816,683
Difference	**-2,433,467,527**	**-7,684,599,943**	**1,172,509,092**	**-8,945,558,378**

For comparison purposes, Table 3 provides entrainment under the Policy and the amendment (2010-2040), assuming compliance is by wet cooling towers using seawater instead of recycled water for make-up water.

Table 3. A comparison of entrained numbers of larval fish under the Policy and the amendment (2010-2040) if compliance was by wet cooling towers with seawater intakes for make-up water. (Negative numbers indicate additional entrainment under the amendment.)

Scenario	Harbor GS	Haynes GS	Scattergood GS	All LADWP OTC Facilities
Policy	1,322,036,547	49,851,591,388	6,270,630,369	57,445,258,305
Amendment	3,864,007,121	62,940,040,092	5,838,613,103	72,642,660,316
Difference:	**-2,540,970,574**	**-13,088,448,704**	**432,017,267**	**-15,197,402,011**

The calculations for the worst-case scenario and other scenarios are shown in Appendix D of this document.

Under the amendment, LADWP (and other facilities with deadlines stretching beyond December 31, 2020) must also investigate applying alternative technology to mitigate the additional impingement mortality and entrainment that would occur under this alternative after December 31, 2020. State Water Board staff believes that there would be a reduction of impingement and entrainment as a result of the implementation of new or improved interim control technologies required after 2020 under the amendment. However, due to the inability at this time to quantify those reductions (until the proposed studies are completed) staff did not include (in Tables 1, 2, and 3) the interim technology reductions in the comparison of impingement mortality and entrainment between the Policy and the amendment.

The amendment proposes delaying full compliance for Harbor GS Unit 5 until December 31, 2031 (previously December 31, 2015). Staff estimated that this delay could result in about 341,000 more fish impinged (see Table 1) and 2,433,000,000 more fish larvae entrained (see Table 2), calculated over the period 2010-2040 and using design flow.

The amendment proposes delaying compliance for Haynes GS Units 1 and 2 until December 31, 2027 (previously December 31, 2019) and Units 8, 9, and 10 until December 31, 2035 (previously December 31, 2019). However, the amendment also proposes an early compliance deadline for Units 5 and 6 of December 31, 2013 (previously December 31, 2019). Staff estimated that the amendment overall could result in about 217,000 more fish impinged (see Table 1) and about 7,685,000,000 more fish larvae entrained (see Table 2), calculated over the period 2010-2040 and using design flow.

The amendment calls for postponing compliance for Scattergood GS Units 1 and 2 until December 31, 2024 (previously December 31, 2020), but hastening compliance for Scattergood GS Unit 3 for December 31, 2015 (previously December 31, 2020). Staff estimated that overall for Scattergood GS this would save about 137,000 fish from impingement (see Table 1) and about 1,173,000,000 fish larvae from entrainment (see Table 2), calculated over the period 2010-2040 and using design flow.

LADWP has stated that the amendment would save its rate payers billions of dollars by allowing a more staged approach to compliance; but due to lack of information, it is not possible to determine the savings for ratepayers.

Staff Recommendation: Alternative 3.

9. Environmental Effects and Mitigation

Title 23, Cal. Code Reg., §§ 3720-3782 require the State Water Board to evaluate potential environmental impacts that may be caused by complying with the proposed amendment with one or more of the reasonably foreseeable compliance methods. The

SED for the Policy describes various technologies to minimize impingement mortality and/or entrainment at the affected facilities in order to comply with the Policy. The SED for the Policy also describes and evaluates potential environmental impacts associated with these technologies, and potential mitigation measures for these impacts. The proposed amendment would not affect the identified reasonably foreseeable means of compliance with the Policy.

Nor would the amendment in itself cause any additional environmental impacts beyond what has been identified in the SED for the Policy. The attached Environmental Checklist (see Appendix C) reflects these findings of no additional impact to the environment beyond those identified in the SED for the Policy. The existing policy allows an adaptive management approach for implementation of the Policy, including explicitly contemplating revisions to the compliance dates, while maintaining electrical grid reliability. It is understood that impacts will continue until BTA implementation occurs. The policy provides a compliance schedule and the necessary flexibility to meet the goal of final compliance while ensuring grid reliability. The amendment would provide an approach to addressing interim impacts from entrainment and impingement and the testing and implementation of fine mesh screening devices, or equivalent devices, for fossil-fueled power plants whose compliance deadlines extends beyond December 31, 2020.

10. ECONOMIC ANALYSIS

The SED for the Policy provides information on the costs of compliance with the Policy. The costs for the proposed amendment are consistent with those costs in the SED for the Policy. LADWP has furthermore stated that the amendment would save its rate payers billions of dollars; however due to lack of information, staff cannot estimate the effect on rates in the LADWP's service area.