

San Luis Obispo COASTKEEPER®



April 13, 2010

Charlie Hoppin, Chair and Board Members  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814  
*Via electronic mail:* [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

**Re: Comments on Draft Final Substitute Environmental Document and Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (March 22, 2010)**

Dear Chair Hoppin and Board Members:

The undersigned groups respectfully submit the following comments on the State Water Resources Control Board (“State Board”) Draft Substitute Environmental Document for the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (“SED”) and the draft Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (“Policy”). We include and incorporate by reference our previous five comment letters on this topic, dated December 8, 2009, September 30, 2009, May 20, 2008, September 15, 2006, and February 23, 2006, attached separately.

In brief, while we raised a number of points both of support and concern with the draft Policy last fall, the current draft is such a marked step backwards from previous versions that it not only fails to meet the letter and intent of the Clean Water Act, it also fails to meet CEQA requirements, and so requires additional environmental analysis and comment response before the Board may move forward. It is extremely disappointing after almost five years of hard work by all parties involved to see such significant changes, many of which ignore progress and agreements made to date. This deals a blow both to the protection of our ocean, coast, bays and estuaries and also to the future of stakeholder collaboration and active participation in Board processes. For these reasons, and the reasons expressed below, we oppose the Policy in its new form.

As the Water Board and multiple federal and state agencies have recognized, once-through cooling (“OTC”) causes significant, ongoing devastation to our valuable marine, coastal and Delta ecosystems and their inhabitants. Coastal power plants are permitted to withdraw more than 16 billion gallons of water for cooling *daily*, or over 17.9 million acre-feet per year. To put this into context, the State Water Project delivers “from 1.4 million acre-feet in dry years to almost 4.0 million acre-feet in wet years.”<sup>1</sup> That is, the amount of cooling water power plants may run through their facilities each year – killing virtually everything drawn in – is 4½ to almost 13 times the amount of water running through the entire State Water Project, which serves 23 million Californians and irrigates 755,000 acres of farmland.<sup>2</sup> The Water Board notes further in the SED OTC kills an estimated 79 billion fish and other marine life annually, and that just the 12 Southern California plants kill up to 30% of the number of fish recreationally caught in the Southern California Bight each year. These are fish that California is at the same time struggling to save

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<sup>1</sup> DWR, “California State Water Project Water Contractors,” [http://www.water.ca.gov/swp/contractor\\_intro.cfm](http://www.water.ca.gov/swp/contractor_intro.cfm).

<sup>2</sup> DWR, “California State Water Project Overview,” <http://www.water.ca.gov/swp/>.

through the Marine Life Protection Act, Marine Life Management Act<sup>3</sup>, and other initiatives. The proposed Policy moreover would contravene California’s own Water Code mandates to minimize the intake and mortality of marine life from the withdrawal of seawater for new and/or expanded industrial facilities.<sup>4</sup> In sum, the unnecessary destruction of marine life through the use of “once-through cooling” is significantly undermining state policy to restore both the commercial value and intrinsic wealth of a healthy ocean, coast and Delta – and the true loss is inherently impossible to quantify.

Clean Water Act Section 316(b) was written almost 40 years ago to compel the development and use of technology to replace and minimize the adverse impacts of OTC, the cooling system employed at the time the law was enacted and the focus for change. After decades of inaction by the U.S. Environmental Protection Agency (U.S. EPA) to implement this mandate effectively, the Water Board OTC Policy was supposed to put California on track to phase out OTC impacts using the Clean Water Act’s “Best Technology Available” (BTA) standard. Unfortunately, because the Policy fails to ensure implementation of Clean Water Act protections, the Policy would (if adopted as is) potentially fail to meet federal regulations that are finally projected to be released in draft form later this year.

In brief, our main concerns with the latest Policy include the following:

- The Policy treats the Clean Water Act’s required “Best Technology Available” (BTA) standard as optional by eliminating the feasibility test required of an owner/operator before moving to Track 2, and then allowing for paths in Track 2 that fall short of the mandate to implement “best” technology.
- The Water Board weakens Track 2 so significantly, including by allowing use of “design” flow to determine compliance with entrainment mandates, that it is now not even “comparable to” BTA.
- The Policy allows certain facilities and units, including combined-cycle generators, to opt-out of compliance with BTA requirements by using “after the fact” mitigation and restoration, options that the courts have deemed illegal under *Riverkeeper II*.<sup>5</sup>

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<sup>3</sup> Fish and Game Code §§ 7050 *et seq.* The MLMA directs the Department of Fish & Game to manage fisheries for sustainable harvests based on the principles of “ecosystem-based management.” That is, the harvest of fish must consider the impacts of the loss of species on marine ecological systems. Complementing the overarching goal of a “sustainable ecological system” in the MLMA, the Marine Life Protection Act (MLPA) directs the State to set aside areas protected from the take of species to provide the citizens of the State the “intrinsic value” of healthy marine ecological systems. Fish and Game Code §§ 2850 *et seq.*

<sup>4</sup> Calif. Water Code Section 13142.5(b).

<sup>5</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83, 110 (2d Cir. 2007) (“*Riverkeeper II*”). “Restoration measures are not part of the location, design, construction, or capacity of cooling water intake structures, . . . and a rule permitting compliance with the statute through restoration measures allows facilities to avoid adopting any cooling water intake structure technology at all, in contravention of the Act’s clear language as well as its technology-forcing principle. As we noted in *Riverkeeper I*, restoration measures substitute after-the-fact compensation for adverse environmental impacts that have already occurred for the minimization of those impacts in the first instance. . . . The Agency’s attempt to define the word “minimize” to include “compensati[on] . . . after the fact,” . . . is simply inconsistent with that word’s dictionary definition: “to reduce to the smallest possible extent,” Webster’s Third New Int’l Dictionary 1438 (1986). . . . Accordingly, the

- The Policy undermines the Water Board’s authority to enforce compliance deadlines by illegally delegating virtually all deadline implementation power to outside entities, including a nonprofit corporation with no Clean Water Act expertise and far more limited public accountability than the Water Board. Prior versions of the Policy had the Water Board and energy agencies working together; that process has been eviscerated in the latest draft.
- The Policy provides for interim mitigation measures that may illegally allow mitigation and restoration in lieu of BTA, given lengthy compliance schedules and indeterminate deadlines for compliance with BTA.
- The Policy fails to place the burden on the regulated entities to support changes to deadlines, and instead illegally places that burden on the Board itself.
- The Policy allows unspecified and essentially unlimited loopholes for the nuclear facilities, contrary to prior U.S. EPA direction and to recent implementation of Section 316(b) by the State of New York at the Indian Point plant.<sup>6</sup>
- The Policy significantly dilutes monitoring requirements that are essential to show progress towards BTA and ecosystem health.
- The Policy fails to implement clear Clean Water Act compliance schedule requirements, contrary to a recent U.S. EPA audit of state compliance schedules and contrary to California’s own Compliance Schedule Policy.
- The Policy violates numerous CEQA requirements that the Board has acknowledged it must meet.
- The Policy fails to comply with Porter-Cologne OTC mandates.
- The Policy ignores the Water Board’s public trust responsibilities.
- The Policy retards the state’s progress toward its laudable goals of reducing greenhouse gas emissions, increasing generation efficiency, and increasing use of renewable energy.

We describe each of these concerns further below, and urge the Water Board to redirect the Policy back to a path of Clean Water Act compliance, sustainable management of our energy systems, and protection of our fragile marine, coastal bay and estuarine ecosystems.

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EPA impermissibly construed the statute by allowing compliance with section 316(b) via restoration measures.”

<sup>6</sup> New York Department of Environmental Conservation, “Notice of Denial of Joint Application for CWA § 401 Water Quality Certification NRC License Renewal – Entergy Nuclear Indian Point Units 2 and 3,” DEC Nos.: 3-5522-00011/00030 (IP2) and 3-5522-00105/00031 (IP3) (April 2, 2010), available at [http://www.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/ipdenial4210.pdf](http://www.dec.ny.gov/docs/permits_ej_operations_pdf/ipdenial4210.pdf) (last accessed April 10, 2010) and incorporated herein by reference.

## **I. RECENT, SIGNIFICANT CHANGES TO THE POLICY UNDERMINE THE PUBLIC PROCESS**

### **A. Significant Changes from the Prior Draft Policy Require Further Analysis and Responses to Comments to Ensure Compliance with CEQA**

The State Water Board is the lead agency for this project under the California Environmental Quality Act (CEQA), and is responsible for preparing environmental documentation for the proposed Policy.<sup>7</sup> The SED describes the Water Board’s CEQA responsibilities as including the following:

the Water Board must comply with CEQA’s overall objectives, which are to: 1) inform the decision makers and public about the potential significant environmental effects of a proposed project; 2) identify ways that environmental damage may be mitigated; 3) prevent significant, avoidable damage to the environment by requiring changes in projects, through the use of alternative or mitigation measures when feasible; and 4) disclose to the public why an agency approved a project if significant effects are involved.<sup>8</sup>

The SED further notes that responses to public comments<sup>9</sup> and consequent revisions to the information in the Draft SED must be included in a Draft Final SED for consideration by the State Water Board. It also notes that CEQA imposes specific obligations on the Water Boards when they adopt rules or regulations establishing performance standards or treatment requirements. Public Resources Code §21159 requires that the Water Boards concurrently perform an environmental analysis of the reasonably foreseeable methods of compliance.

One of the overarching goals of CEQA is to ensure that the public is not deprived of the opportunity to provide input on the new Policy.<sup>10</sup> The public must have a “meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project’s proponents have declined to implement.”<sup>11</sup> The major new changes to core elements of the Policy since the last draft are in most cases unsupported by adequate analysis – and in some key cases are not even mentioned at all<sup>12</sup> – in the SED. Without an adequate presentation and analysis of the changes, the potential significant environmental effects of these changes to the Policy, the ways in

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<sup>7</sup> SED p. 10.

<sup>8</sup> SED pp 10-11. *See also* Title 23, Cal. Code of Reg., Div. 3, Ch. 27, § 3777, “Documentation Required for Adoption or Approval of Standards, Rules, Regulations, or Plans.”

<sup>9</sup> Title 23, Cal. Code of Reg., Div. 3, Ch. 27, § 3779.

<sup>10</sup> *See, e.g.*, Public Resources Code Sec. 21003(b): “Documents prepared pursuant to this division [must] be organized and written in a manner that will be meaningful and useful to decisionmakers and to the public.” Substantial changes in the Policy itself unsupported by references in the SED have precluded the public from a meaningful opportunity to provide useful comments on key areas of the Policy that will significantly impact compliance with Section 316(b).

<sup>11</sup> CEQA Guidelines Sec. 15088.5, [http://www.ucop.edu/facil/pd/CEQA-Handbook/chapter\\_02/pdf/2.3.11.pdf](http://www.ucop.edu/facil/pd/CEQA-Handbook/chapter_02/pdf/2.3.11.pdf); *see also* Public Resources Code Sec. 21092.1.

<sup>12</sup> As just one example, the SED is silent on the significant delegation of authority to CAISO to call for compliance deadline suspensions (with a high burden on the Water Board to reject such suspension proposals), despite the clearly significant impacts of this change on the implementation of the Policy.

which the Board considered mitigation for such changes as needed, and the methods by which significant avoidable damage to the environment could be prevented by requiring changes in the Policy, the public has been deprived of the meaningful opportunity to comment, and the SED is inadequate under CEQA.

Applicable state regulations also require the Water Board to prepare written responses to comments “containing significant environmental points raised during the evaluation process, if such comments are received at least fifteen days before the date the board intends to take action on the proposed activity.” Copies of such written responses “shall be available at the board meeting for any person to review.”<sup>13</sup> Moreover, pursuant to federal regulations applicable to Section 316(b) compliance, the State Board must include in the administrative record responses to “all significant comments raised” on the final draft Policy, which will guide all NPDES permit implementation of adopted OTC requirements.<sup>14</sup> Given the numerous core elements of the Policy that have been significantly changed since the last draft, the Water Board cannot move forward without responding in writing to the public’s comments on these major new amendments and Policy directions. The comments contained herein raise “significant environmental points” that were previously unraised due to the significant departure of the current Policy from past directions on critical issues, such as when (or whether) deadlines will be implemented and enforced. In light of these requirements, and considering the significant changes on core environmental issues contained in the March 22, 2010 Policy, the Board must provide written responses to comments received on this latest Policy and consider them in its final decision.

Without staff’s provision of sufficient information and analysis related to the changes in the Policy, not only will the public and other agencies be shortchanged on their ability to provide meaningful comments, but the Water Board itself also will not be able to fully consider and mitigate (or prevent) the range of potentially significant impacts associated with the new Policy. State law requires that

[t]he board shall not approve a proposed activity if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the proposed activity may have on the environment.<sup>15</sup>

The SED fails to contain the analysis needed to allow the Board to approve the Policy as written consistent with CEQA and 23 CCR § 3780. The Board simply has not identified fully the significant adverse impacts of the Policy, let alone developed the required feasible alternatives or mitigation measures that should be adopted in place of the proposed changes.

In sum, the numerous, significant changes to the latest draft of the Policy have triggered CEQA requirements that the Water Board has yet to meet. Significant further analysis consistent with CEQA and its implementing regulations, as well as written responses to comments including the comments herein, need to be provided to ensure full compliance with CEQA’s important mandates.

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<sup>13</sup> Title 23, Cal. Code of Reg., Div. 3, Ch. 27, § 3779(a).

<sup>14</sup> 40 CFR 124.17(a)(2); *see also Reytblatt v. Nuclear Regulatory Commission* (105 F.3d 715 (1997)) (failure of an administrative agency implementing federal laws to cogently explain why the agency acts in a certain way renders a decision arbitrary and capricious).

<sup>15</sup> Title 23, Cal. Code of Reg., Div. 3, Ch. 27, § 3780.

## **B. Major New Changes to the Draft Policy Undermine Future Efforts at Collaboration on Policies and Permits**

Multiple federal and state agencies, including U.S. EPA, CEC, OPC, and State Lands Commission (“SLC”), have studied, analyzed, recognized, commented on, and passed resolutions related to the significant impacts of OTC over the past five years.<sup>16</sup> The Legislature has also expressed significant interest in this issue, with a letter from the Senate pro Tem and other Senate leaders last June calling for a strong Policy,<sup>17</sup> and a letter on the current draft similarly calling for a protective Policy from nine Senators and Assembly Members.<sup>18</sup> NGOs have provided five sets of joint, formal written comments to the Water Board alone, along with significant oral testimony and numerous individual comment letters. NGOs moreover have worked extensively in other venues with the OPC, SLC, SLC, CAISO, the Legislature and other lawmakers and decisionmakers to ensure a sound, workable Policy.

NGOs have also alerted the interested public to the Policy’s developments, with significant responses directed to the Water Board in favor of a strong Policy that phases out OTC expeditiously. We have attached separately to these comments a compilation of all responses as of April 13, 2010 to identical action alerts on the OTC Policy released by California Coastkeeper Alliance and Surfrider Foundation; these total 2,743 responses to date and the number is growing. Additional alerts just released by Sierra Club and Pacific Environment have resulted in another 6,185 letters sent directly to the Water Board, for a total of 8,928 letters in support of a protective OTC Policy. We fully expect that many more Californians will directly register their support to the Water Board for a strong Policy by the scheduled May 4<sup>th</sup> hearing.

We commented last September that “[the draft Policy] is a step in the right direction,” and requested specific clarifications to ensure that the final Policy would fully protect the beneficial uses of the state’s coastal and estuarine waters, and that it would be consistently applied throughout the state. The CEC, PUC and CAISO took a similar position in written comments in September, stating collectively that the draft Policy “incorporates a workable schedule and process to implement the WRCB’s objectives while considering the need to maintain reliable operation of the electric grid.”<sup>19</sup> In light of such comments, and in light of unbiased, state-commissioned studies showing that the vast majority of power plants using OTC (including the two nuclear facilities)

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<sup>16</sup> Clean Water Act Section 316(b); California Energy Commission, “Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants: Staff Report” (2005), available at: [www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF](http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF); California State Lands Commission, *Resolution of the California State Lands Commission Regarding Once-Through Cooling in California Power Plants* (adopted April 17, 2006), available at <http://www.cacoastkeeper.org/document/resolution-on-otc.pdf>; California Ocean Protection Council, *Resolution Regarding the Use of Once-Through Cooling Technologies in Coastal Waters* (adopted April 20, 2006), available at: <http://www.opc.ca.gov/2006/04/resolution-of-the-california-ocean-protection-council-regarding-the-use-of-once-through-cooling-technologies-in-coastal-waters/>.

<sup>17</sup> Letter from Senator Darrell Steinberg *et al* to Charlie Hoppin, Chair and Board Members, SWRCB, “State Policy Governing Once-Through Cooling at Coastal Power Plants” (June 22, 2009).

<sup>18</sup> Letter from Senator Ellen Corbett *et al* to Charlie Hoppin, Chair and Board Members, SWRCB, “State Policy Governing Use of Coastal and Estuarine Waters for Once-Through Cooling” (April 12, 2010).

<sup>19</sup> Letter from Karen Douglas, CEC, Michael Peevey, CPUC and Yakout Mansour, CAISO to SWRCB, “Comment Letter – Draft Statewide Water Quality Control Policy for the use of Coastal and Estuarine Waters for Power Plant Cooling,” p. 4 (Sept. 14, 2009) (emphasis added).

could feasibly comply with the Policy's provisions, the extensive changes released at the end of March are unsupportable. Indeed, the dearth of necessary information and analysis in the SED regarding the majority of these significant changes raises significant concern about the Policy's ability to ensure a permit program that complies with the Clean Water Act and considers the need to maintain reliable operation of the electric grid. It unfortunately remains to be seen how the public and other agencies, who spent their own funds on the studies supporting a sound implementation path for Section 316(b), will respond to future Water Board policymaking efforts that could similarly be undermined with a last-minute overhaul that steps well away from years of prior effort.

## II. REMOVAL OF THE “INFEASIBILITY” TEST RENDERS BTA OPTIONAL, CONTRARY TO THE LAW AND SUBSEQUENT JUDICIAL INTERPRETATION

In 1972 Congress recognized the serious impacts of once-through cooling and consequently enacted CWA section 316(b), the language of which bears repeating at the outset:

### **32 U.S.C. § 1326(b). Cooling water intake structures**

Any standard established pursuant to section 1311 of this title or section 1316 of this title and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the *best technology available* for minimizing adverse environmental impact.

(Emphasis added.)

“Track 1” of the Policy appropriately calls for BTA (closed-cycle cooling) to be implemented on a *unit-by-unit* basis. One of the most significant changes to the Policy is the elimination in Section 2.A. of the preference for Track 1. By removing the preference for compliance with Track 1 and the safeguard process requiring owner/operators to show that compliance with Track 1 is not technically feasible, the revisions make a major change in how this Policy will be implemented. In the current draft, no agency review is required of permit applicants who choose Track 2, which is also now considerably weaker than Track 1. Most plants will likely use Track 2 instead of Track 1, particularly in light of vocal December testimony with regard to seeking and taking advantage of any ambiguities and “loopholes” in the final regulations (a concern NGOs raised in our December written comments). Given the major revisions providing arguably illegal exemptions to the CWA for certain facilities, and given implementation and enforcement language rife with ambiguity, it is reasonably foreseeable that the Policy will fall significantly short of the law.

Congress intentionally drafted Section 316(b) to force improvements in technology by requiring the “best technology available” to minimize adverse impacts.<sup>20</sup> The court found in *Riverkeeper II* that Section 316(b) does not allow “second best” technology in place of the best technology available requirement.<sup>21</sup> The sole issue appealed from *Riverkeeper II* to the Supreme Court was the question of using a cost-benefit analysis in determining BTA; the Supreme Court

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<sup>20</sup> *Kennecott v. United States EPA*, 780 F.2d 445, 448 (4<sup>th</sup> Cir. 1985) found that it was the intention “of Congress to use the latest scientific research and technology in setting effluent limits, pushing industries toward the goal of zero discharge as quickly as possible.”

<sup>21</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d at 108.



held that a cost-benefit test, while not expressly authorized in the §316(b) statute, is not prohibited either.<sup>22</sup>

While the U.S. Supreme Court narrowly found that cost considerations in determining BTA were allowable, the Water Board has gone even further than permitted by Justice Scalia by allowing actions *less* than BTA. As discussed in more detail below, Track 2 can no longer be justified as even “comparable to” BTA, which the Water Board reasonably describes in Track 1 as closed cycle wet or dry cooling. By elimination of the “not feasible” showing, the Water Board would allow facilities to ignore both the BTA language in the statute and the resulting interpretation of that BTA requirement in subsequent litigation all the way to the U.S. Supreme Court.

The rationale behind the significantly problematic elimination of the feasibility test using Track 2 is limited primarily to a brief reference in the SED.<sup>23</sup>

Staff believes the determination of infeasibility will be problematic and subjective, likely resulting in inconsistencies from Region to Region, and at the very least would burden the Regional Water Boards with an unnecessary additional workload.

In other words, the staff response to comments about defining when Track 1 is “not feasible” was to eliminate the requirement and associated analysis altogether. Contrary to both CEQA and the development of thoughtful public policy, there is no mention in the SED that staff considered any less environmentally harmful alternatives, of which there are numerous potential options.

For example, the 2008 Tetra Tech Report,<sup>24</sup> commissioned by the Ocean Protection Council (OPC) and discussed at length in the SED, actually did analyze the “feasibility of impingement and entrainment control technologies that can meet the 2006 [OPC] Resolution benchmark in the most cost-effective manner.”<sup>25</sup> The referenced benchmark in the OPC’s adopted Resolution called on the state to “implement the most protective controls to achieve a 90–95 percent reduction in [impingement and entrainment] impacts.”<sup>26</sup> The Report found that “[t]he most effective technology that can meet these criteria is closed-cycle cooling.”<sup>27</sup> Indeed, the Water Board relied on this finding in stating that the TetraTech report “supports State Water Board staff’s basis for establishing BTA based on closed-cycle wet cooling.”<sup>28</sup> The TetraTech Report concluded that “retrofitting existing once-through cooling systems with the preferred wet cooling design could be

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<sup>22</sup> *Entergy Corp. v. Riverkeeper, Inc. et. al.*, 129 S.Ct. 1498 (April 2009). As the SED remarks, “[n]otably, the *Entergy* decision does not require US EPA to consider a cost-benefit approach in any future §316(b) rulemaking effort, including a revised Phase II rule.” SED p. 7.

<sup>23</sup> SED p. 65 (*see also* below).

<sup>24</sup> TetraTech, “California’s Coastal Power Plants: Alternative Cooling System Analysis” (Feb. 2008) (TetraTech Report).; available at:

[http://www.opc.ca.gov/webmaster/ftp/project\\_pages/OTC/engineering%20study/CA\\_Power\\_Plant\\_Analysis\\_Complete.pdf](http://www.opc.ca.gov/webmaster/ftp/project_pages/OTC/engineering%20study/CA_Power_Plant_Analysis_Complete.pdf). The CEC also studied different cooling approaches back in 2002; *see* CEC, “Comparison of Alternate Cooling Technologies for California Power Plants: Economic, Environmental and Other Tradeoffs” (Feb. 2002), available at: [http://www.energy.ca.gov/reports/2002-07-09\\_500-02-079F.PDF](http://www.energy.ca.gov/reports/2002-07-09_500-02-079F.PDF).

<sup>25</sup> TetraTech Report p. ES-1.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.* p. ES-8.

<sup>28</sup> SED p. 63.

technically and logistically feasible at 12 of the 15 active coastal power plants (Table ES-2)”<sup>29</sup> – including the two nuclear facilities. The report was clear about the variables that were and were not considered in the analysis. If the Water Board so chose, it could require plants to duplicate this analysis, or add one or more variables to the analysis, to determine “feasibility.”<sup>30</sup>

There are numerous other methodologies that could have been used to determine whether Track 1 was “not feasible.” One other approach would be similar to how penalties are set in enforcement cases under Water Code 13327, where a list of specific factors in determining administrative civil liability are given to the Regional Boards who then apply them.<sup>31</sup> The Regional Boards apply these types of analyses regularly; with sufficient guidelines, this situation need be no different. Variables could be chosen based on past studies, and consistency provided in the form of a State and Regional Water Board coordinated oversight body. Given the relatively high volume of ACL fines the Regional Boards issue on an ongoing basis, versus the extremely limited number of “not feasible” determinations that would need to be made for the very few plants making this one-time argument, we think that this is a task that the Regional Boards can handle.

As we stated in our September 2009 comments, another definition of “feasible” would follow the generally-accepted definition of “capable of being done or carried out.”<sup>32</sup> This is the definition being applied in New York State, which defines “feasible” as “capable of being done” with respect to the physical characteristics of the facility site but does not involve consideration of cost.<sup>33</sup> Application of this accepted definition of “feasible” allows Regional Board staff to apply objective technical knowledge and focus on technological infeasibility.

The fact that the Water Board nonetheless ignored the option to set criteria for making decisions that protect the environment – a task far from new for the state – is particularly ironic in the current instance. The SED states that even though the TetraTech Report did identify closed cycle cooling as feasible for almost all of the state’s power plants, “additional [unnamed] site-specific factors may make intake flow rate reductions infeasible at a particular site when a more detailed analysis is conducted.”<sup>34</sup> The SED then concludes from this statement that “[f]or this

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<sup>29</sup> TetraTech Report p. ES-8.

<sup>30</sup> Indeed, many of the plants themselves already have collected some of the necessary data to help determine “feasibility”; for example, in the form of analyses begun under the old Phase II rule. In preparation for the Proposal for Information Collection (PIC) process, most facilities conducted source water monitoring and other activities that could be used to help inform the information baseline. The PIC was required for compliance with the Clean Water Act Section 316(b) Phase II Final Rule for existing electric generating stations, and was published in the *Federal Register* on July 9, 2004.

<sup>31</sup> Water Code Section 13327: “In determining the amount of civil liability, the regional board, and the state board upon review of any order pursuant to Section 13320, shall take into consideration the nature, circumstance, extent, and gravity of the violation or violations, whether the discharge is susceptible to cleanup or abatement, the degree of toxicity of the discharge, and, with respect to the violator, the ability to pay, the effect on ability to continue in business, any voluntary cleanup efforts undertaken, any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters as justice may require.”

<sup>32</sup> Merriam-Webster OnLine, <http://www.merriam-webster.com/dictionary/feasible>.

<sup>33</sup> State Water Resources Control Board, “Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations,” Appendix II, p. 4 (June 13, 2006), available at: [http://www.waterboards.ca.gov/water\\_issues/programs/npdes/docs/cwa316b/316b\\_scoping.pdf](http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/cwa316b/316b_scoping.pdf).

<sup>34</sup> SED p. 63.

reason, the proposed Policy allows for a two track approach to determine BTA at each location.” The SED unfortunately ignores the clear discontinuity in its logic: that is, the Policy allows for Track 2 because other, unnamed factors could demonstrate Track 1’s infeasibility if “a more detailed analysis” is conducted, but the Policy now completely fails to require this “more detailed analysis.” If Track 2 may in fact needed because of “additional site-specific factors” that come out through further analysis, the Board can and must describe what power plants need to do to make that showing. Otherwise, the Board’s apparent concerns with implementing the infeasibility test could just as easily be addressed by eliminating Track 2 altogether.

### **III. THE RECENT, SIGNIFICANT WEAKENING OF “TRACK 2” PUSHES THE POLICY EVEN FURTHER FROM BTA**

#### **A. All Plants Must Reduce Impingement and Entrainment Consistent with BTA**

As discussed in our comment letter dated September 30, 2009, the Policy suggests in Section 2.A.(2) that plants that fall under Track 2 will have to achieve a 90% reduction of the reduction that could be achieved under Track 1; in other words, 90% of 93%, which is 83%. In our September letter we urged the State Board to require that all plants reduce entrainment and impingement consistent with the Track 1 standard. This recommendation is even more appropriate now given the fact that there is no analysis or showing required to use Track 2.

The new changes in the Policy also allow plants to comply with IM/E requirements by reductions in mortality “comparable to” Track 1. However, the impingement studies under Section 4.A., and entrainment studies under 4.B., do not actually require any calculation or formal determination of the reductions would be achieved if Track 1 were pursued. Accordingly, it is impossible for staff or the public to know if the required 90% reduction in comparison to Track 1 has been achieved based on the studies in Section 4.A. and 4.B. As discussed in more detail in Section V. of this letter, we urge the State Board to amend the monitoring provisions to require a 2000-2005 baseline IM/E study to inform Track 2 compliance.

#### **B. Generational Flow by Unit, Rather Than Design Flow Averaged over the Facility, Should Be the Baseline for Determining Compliance with Entrainment Standards for BTA**

While Track 1 applies to each unit of a facility, Track 2 currently allows for measures of entrainment and impingement reduction to be applied to a plant “as a whole.” This creates a loophole where a facility could convert some of its units away from OTC, yet still run OTC on the remaining units, as long as the sum across all units is in compliance with the Policy. This loophole is significant because peaker plants only run as needed, and often only certain units within a peaker plant are utilized. It is inconsistent with the actual use of these plants to base Track 2 compliance on the facility as a whole, as the rare use of a facility at full capacity may create a scenario where the flow volume calculations can be fixed to achieve compliance without actually minimizing marine life mortality. Entrainment and impingement reductions need to be calculated on a unit-by-unit basis to truly achieve a reduction in marine life mortality at a “comparable level to that which would

be achieved under Track 1,<sup>35</sup> since intake flow rate reductions under Track 1 are determined on an individual *unit* basis. It has been suggested that allowing Track 2 as a compliance alternative for limited types of facilities rewards owners that have invested in more efficient generating units. While encouraging greater efficiency in generating capacity is a laudable goal, it is *not* a factor in determining BTA for cooling water intakes or crafting guidance for full enforcement of the CWA.

One of the more glaring changes in Track 2 is the new compliance determination for entrainment reductions in Section 2.A.(2)(b)(i), which allow compliance based on a 93% reduction in design flow averaged over the entire plant, rather than actual or generational flow unit-by-unit.<sup>36</sup> We support the State Board's approach of providing a flow basis for entrainment compliance, as intake volume is widely recognized as the primary cause of entrainment.<sup>37</sup> However, the Policy's Track 2 entrainment reduction basis on design flow is severely flawed. This can be shown to allow plants to avoid action to achieve BTA. Most facilities operate well below their permitted maximum flows and none of the peaker plants are operating according to design flow.<sup>38</sup> Even some plants that operate regularly, such as Haynes and Huntington Beach Generating Stations, currently withdraw less seawater than their design flow. For example, according to the 2000-2005 five-year average flow volumes provided in Table 13 of the SED,<sup>39</sup> Haynes Generating Station operates at over 73% below its design flow, while Huntington Beach and Redondo Beach Generating Stations operate at over 65% below their original design flows. As a result, some facilities may have to take little to no action to "comply" with the Policy on paper. As the SED describes:

Because many of these units used to function as base-load units, with a correspondingly high capacity utilization rate, intake volumes were also higher as a proportion of the unit's intake capacity. The construction of more modern, more efficient power plants, combined with older units' declining efficiencies and deregulation of the electric power industry, have changed the status of many units to that of peaking or intermittent (load-following) generators that operate at a fraction of their boilerplate capacities. Thus, the amount of

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<sup>35</sup> Policy Sec. 2.A.2

<sup>36</sup> SED p. 64: "While Track 1 is intended to require compliance on a unit-by-unit basis, Track 2 permits a facility as a whole to use alternative means to achieve an IM/E reduction that is the same or comparable to the Track 1 reduction, which is defined as no less than 90% of the IM/E reduction in Track 1... Credit may be taken for other technologies and/or operational measures if they were implemented prior to the effective date of the proposed Policy with the explicit intent of reducing IM/E." (Emphasis added.)

<sup>37</sup> SED p. 30: "Accordingly, the preferred method to reduce the adverse effects of entrainment is to prevent the interaction of susceptible organisms and the cooling system altogether. This can be accomplished in one of two ways: the use of a barrier technology with pores small enough to exclude entrainable organisms, or by reducing the facility's intake flow."

<sup>38</sup> SED p. 67: "Because many of these units used to function as base-load units, with a correspondingly high capacity utilization rate, intake volumes were also higher as a proportion of the unit's intake capacity. The construction of more modern, more efficient power plants, combined with older units' declining efficiencies and deregulation of the electric power industry, have changed the status of many units to that of peaking or intermittent (load-following) generators that operate at a fraction of their boilerplate capacities. Thus, the amount of cooling water used, on an annual basis, has dropped dramatically" from the original design flow, and "[a]nnual water usage (for conventional facilities) is not expected to increase in the future." Indeed, one could argue in the alternative that now that most of these older plants are never going to be used in their original capacity, the current flow is now arguably the "design" flow for their current use, and reductions accordingly need to be taken from that point.

<sup>39</sup> SED p. 68.

cooling water used, on an annual basis, has dropped dramatically as well [from the original design flow] and remains low. Annual water usage (for conventional facilities) is not expected to increase in the future.<sup>40</sup>

Based on this information, the State Water Board's choice to base entrainment reduction compliance on "design" flow for an entire facility rewards owners and operators maintaining inefficient power generation activities well past their initial design function. We urge in the alternative that the State Board use monthly generational flow as the basis for entrainment reductions instead of design flow. Generational flow is an appropriate metric to achieve real reductions in marine life mortality, as it reflects the flow required to generate electricity, rather than flow volumes OTC facilities were designed for decades ago. In this scenario we recommend defining "generational flow" as the intake flow required for the generation of electrical power as currently articulated in the definition of "power generating activities." A basis on generational flow would account for the facilities that draw in more seawater than is necessary for generating electricity.<sup>41</sup> For example, generating Units 1 & 2 at El Segundo Generating Station ceased producing electricity in 2002; however the mean annual flow at Intake 001 (which draws in cooling water for Units 1 & 2) from 2002-2004 continued *at or above* the level prior to 2002, in order to prevent biofouling.<sup>42</sup> Without a compliance basis on generational flow, some plants may only have to make minor operational or structural changes to meet entrainment requirements that are supposed to satisfy, but fall short of, BTA.

Furthermore, Section 2.A.2(b)(i) of the Policy is unclear as to whether monthly flow compliance is calculated for each individual month, or if it is averaged across months. We are concerned that this ambiguity regarding monthly flow reduction calculations again could result in little-to-no operational change for many of the plants, in direct contravention of the Clean Water Act and the intent of this Policy to minimize marine life impacts. This uncertainty is significant because peaker plants run during times of peak energy demand – during the summer – when larval abundance for most species in Southern California is at its highest.<sup>43</sup> By averaging across months, these seasonal impacts would be unaccounted for, and peak summer intake may be diluted by a facility's low intake volumes throughout the rest of the year.

For example, Morro Bay Generating Station achieved an over 97% reduction from design flow during winter months (October through May) based on 2005 monthly median flows. Redondo Beach and Pittsburg (Units 5 & 6) generating stations also achieve an over 93% reduction from design flow in the winter based on 2005 monthly median flows.<sup>44</sup> Even in the summer months (June through September), Morro Bay achieves a 75% reduction from design flow from based on 2005

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<sup>40</sup> SED p. 67.

<sup>41</sup> See, e.g., SED at pp 40-41: "In some cases, the ratios of cooling water flow to generated electricity are elevated because the power plants operate the cooling water system operation without the production of energy."

<sup>42</sup> El Segundo Power, LLC Monitoring Data for NPDES Permit No. CA0001147, Order No. 00-084.

<sup>43</sup> SED, p. E-10.; AES Huntington Beach L.L.C., "Generating Station Entrainment and Impingement Study Final Report," (April 2005), prepared by MBC Applied Environmental and Tenera Environmental, see Section 4.3.1 Entrainment Results;

"Southern California Time Series: SCOR WG125: Global Comparisons of Zooplankton Time-Series" (May 19, 2008), available at [http://planktondata.net/time-series/calcofi-sc\\_us/index.html](http://planktondata.net/time-series/calcofi-sc_us/index.html).

<sup>44</sup> Calculations based on Design Flow volumes from SED Table 4 and 2005 Monthly Median Flow volumes from SED Table 6.

monthly median flows due to the Policy's flaw of basing Track 2 entrainment compliance on a facility's original design. Our understanding within the Policy is that the volume must represent a 93% flow reduction *every month* for compliance; however this must be clarified to ensure consistent application. Moreover, the State Board should enumerate within the Policy how it will approach enforcement of this provision if a facility is noncompliant for a single month during the year.

In sum, we urge the State Board to base Track 2 entrainment reduction compliance on the monthly generational flow, rather than design flow, averaged over the past five years. If the State Board chooses not to move forward with a generational flow basis for Track 2 entrainment reduction requirements, at a minimum, the Policy should reflect current OTC operations and establish the mandated reductions on a recent five-year average of *actual* (not design) flow.

### **C. Loopholes for Combined-Cycle Facilities Are Unsupported and Inconsistent with Section 316(b)'s BTA Mandate**

The Policy's new language for the combined-cycle generators in 2.A.(2)(d) creates significant and potentially illegal loopholes for Harbor, Haynes Units 9&10 and Moss Landing Units 1 and 2, all of which use combined-cycle generation. The SED justifies these actions, which are discussed further below, as follows:

State Water Board staff recognizes existing combined-cycle units as special cases requiring alternative requirements. Existing combined-cycle units are generally very energy efficient, produce lower air emissions for most pollutants and carbon dioxide, are more efficient in water use and therefore have fewer OTC impacts relative to electricity generated, and represent relatively recent capital expenditures. For these reasons, providing alternate requirements under Track 2 of the policy for combined cycle units, and plants where those units are located, would result in better statewide consistency and would reduce the burden on Regional Boards.<sup>45</sup>

While energy efficiency, air emissions, the temporal nature of capital expenditures, Regional Board workload and statewide consistency are all variables that potentially could be considered in the development of strategies to comply with Section 316(b)'s BTA requirement, they do not "trump" the BTA requirement. They may only be considered in the larger context of how to best comply with the law. They cannot – as they do here – be used an excuse to ignore or violate it.

Virtually none of the above factors form a rational basis for compliance with CWA Section 316(b)'s mandate for BTA. First, the reduced air emissions are a laudable, albeit a side-benefit of, combined-cycle generators. The SED makes no argument that any associated air quality benefits are directly related to the reduction of entrainment and impingement. Second, technology changes that reduce cooling water use in proportion to electricity generated are positive steps toward Section 316(b) compliance. But they are not BTA and may not in fact significantly reduce entrainment and impingement – especially considering that many of the combined-cycle units work harder than the units they replaced, and considering the fact that any marginal reduction numbers are "diluted" because the benefit per unit is now calculated into the entire facility's reduction percentages. Finally, there is absolutely no rational basis for a narrowly tailored exemption for facilities with some or all combined-cycle units simply because the owner/operator recently invested "capital

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<sup>45</sup> SED p. 65.

expenditures” in the new expansion.<sup>46</sup> The generator design efficiencies *should* show a greater return on investment than the units that were replaced from an economic perspective. This language seems to create a type of new “cost” exemption that has not been scrutinized by the courts – or in the Policy – as of yet. These facilities did not demonstrably invest for the purpose of complying with Section 316(b), and consequently their past “capital expenditures” are irrelevant to the prospective regulations.

### 1. Section 2.A.(2)(d)(i) Side-Steps Section 316(b)-Mandated Reductions

The new Policy amendments allow combined cycle facilities to get credit for reductions in IM/E based on reductions in intake flows. Because this “credit” amendment would allow facilities to side-step additional structural controls, it should be carefully scrutinized to ensure that the state is implementing BTA requirements in accordance with the statute and interpretive case law. Unfortunately, the Policy’s choice to allow for entrainment reductions based on differences in permitted discharges falls well short of that mark.

The Policy now would allow combined cycle facilities to get credit for reductions in entrainment based on reductions in intake flows, calculated by the difference between the facilities’ maximum permitted discharge<sup>47</sup> under the prior NPDES permits (for steam units) versus the permitted discharge now allowed for the plant (with the combined-cycle units). However, it is too simplistic to assume that the increased efficiencies of the combined-cycle units automatically and directly translates to reduced water use and hence reduced impacts. The level of operation, timing of operation, and other factors need to be considered to determine whether *in fact* there are IM/E reductions. This is particularly true where a technology *not* designed and implemented with 316(b) compliance in mind – like combined-cycle generation – is granted special status in the Policy.

Steam boilers replaced by the combined-cycle units generally had either barely operated or had been shut down in the years prior to their replacement with combined-cycle units. The combined-cycle units now have an increasing capacity factor compared to the older steam units.<sup>48</sup> Therefore, if the original intake (measured as original permitted discharge) is compared to the current permitted intake (measured as permitted discharge with the combined-cycle units in operation), the increasing levels of operation could yield a relatively *higher* level of intake (and

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<sup>46</sup> Assuming the replacement of the old steam generators with combined-cycle units “expanded” the capacity of the facility, these facilities also must be regulated under Calif. Water Code section 13142.5(b).

<sup>47</sup> The use of the difference in *discharges*, as opposed to the difference in *intakes*, is unexplained. The language is at odds with Section 316(b), which specifically focuses on the “location, design, construction, and capacity of cooling water *intake* structures” (emphasis added), contrary to other sections of the Clean Water Act that specifically focus on discharges. The Policy thus overrides the Act’s distinction between intake and discharge regulation without an explanation of why this change was needed or how it would better ensure compliance with the Act. One concern with this choice of words is that if the discharge is intended to be used for desalination, it could further increase the difference between the permitted discharge before the combined-cycle units and after, allowing for more unearned “credits” toward entrainment reductions, as well as encouraging energy-inefficient water sources.

<sup>48</sup> ICF Jones & Stokes, “Electric Grid Reliability Impacts from Regulation of Once-Through Cooling in California,” prepared for OPC and SWRCB, Table 3-1: Coastal Plant Generation and Capacity Factors (2008), available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/power\\_plant\\_cooling/reliability\\_study.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf) (see, e.g., Moss Landing units broken out by capacity factor and type of unit).

hence discharge) flow than if only the efficiency of the plant – outside of the relative level of its use – is considered. As was the case in Section 2.A.2.(b)(i), the use of maximum permitted flows in the calculations may again show a paper reduction in intake flows, when the reality is the actual intake flow may have increased since the combined cycle units came online.

Accordingly, we urge the Board to look specifically at each relevant facility to determine the impacts of the combined-cycle units based not only on their increased efficiency but also other variables such as their potentially increased activity, which could mitigate the water savings of increased efficiencies and reduce the level of potential compliance. Of course, *every* unit at facilities with combined-cycle units needs to reduce impacts to the BTA level. Any technology-based reductions at individual combined-cycle units that can be demonstrated (rather than assumed) to reduce impingement and entrainment may apply only to those units.

## 2. *Past Mitigation Should Not Be Counted as Prior Entrainment Reductions*

The Policy also now provides other opportunities for combined cycle facilities to potentially side-step BTA in Section 2.A.2.(d)(i) (page 6 of red-lined Policy). This section allows credits for prior entrainment reductions through mitigation, presumably for actions such as Moss Landing’s payment about a decade ago of \$7 million into a fund for mitigation-related activities. The Policy attempts to argue that the mitigation should count toward compliance with entrainment requirements because the plant was already at BTA. However, this argument is circular – if the plant was indeed already at BTA, then there would be no need to mention the mitigation requirements or attempt to allow any kind of “credit” for them. Moreover, this argument is incorrect; for example, there was in fact no “BTA determination” for the combined cycle units at Moss Landing. The NPDES permit instead stated that BTA would be met through the mitigation funding, as the state vigorously argued during subsequent litigation. After *Riverkeeper II*, the state changed its argument, stating on appeal that BTA was determined first and the mitigation funding was added on top of BTA.<sup>49</sup> That is the issue now being litigated at the California Supreme Court. We would refer the Water Board to the best evidence on this matter, which is the permit language itself.

As was the case for the Phase I rules, the court in *Riverkeeper II* found illegal the Phase II rule’s use of restoration or mitigation measures as a substitute for BTA standards under Section 316(b). The court based its analysis on its prior holding in *Riverkeeper I* that the restoration provision in the Phase I Rule “contradicts Congress’s clearly expressed intent” because it “was not based on a permissible construction of the statute.”<sup>50</sup> The Second Circuit reiterated its prior holding that “however beneficial to the environment, [restoration measures] have nothing to do with the location, design, the construction, or the capacity of cooling water intake structures, because they are unrelated to the structures themselves. Restoration measures *correct* for the adverse environmental impacts of impingement and entrainment . . . but they do not *minimize* those impacts

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<sup>49</sup> *Voices of Wetlands v. California State Water Resources Control Bd.*, 69 Cal.Rptr.3d 487 (Cal. App. 6 Dist., 2007); see also *Voices of Wetlands v. California State Water Resources Control Bd.*, 74 Cal.Rptr.3d 453 (Cal., 2008).

<sup>50</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 at 109. See also SED p. 7: Findings in *Riverkeeper II* included the clear directive that “Restoration provisions are plainly inconsistent with the statute and impermissible in the Phase II rule.”



in the first place.”<sup>51</sup> This issue was not appealed to the Supreme Court and, therefore, constitutes the definitive minimum legal standard that California must implement. Accordingly, the Policy’s attempt to use mitigation as a replacement for actual, technology-based reductions that meet BTA must be rejected.

3. *New Section 2.A.(2)(d)(ii)’s Exception for Existing Combined Cycle Units is Patently Illegal and Unsupported by the Evidence and the Findings.*

New Section 2.A.(2)(d)(ii) of the Policy attempts to allow existing combined cycle generating units to be deemed in compliance with the Policy if they address impingement by reducing the through-screen intake velocity 0.5 fps, and if they (presumably) address entrainment through the same interim mitigation requirements outlined in Section 2.C., but here for the *life* of the unit. While we have concerns, raised in prior comment letters, about the methodology for calculating intake flow,<sup>52</sup> we are astonished at this new attempt to avoid BTA and flatly contradict the clear directive of *Riverkeeper II*, which prohibited mitigation as a compliance option. There is not even a pretense that there will be additional action to ensure that the combined cycle units meet BTA requirements for entrainment; mitigation is simply allowed forever, no questions asked.

Nowhere does the Policy or the SED state that Section 2.A.(2)(d)(ii) is the equivalent of BTA or that BTA has been previously achieved at all the facilities eligible for this section. Not only has the Board failed to make a finding that the new section achieves BTA, the proposed provisions in this section are *directly contrary* to the SED findings regarding BTA. Indeed, the SED clearly states that “the BTA standard is technology driven and cannot include restoration, which compensates for an adverse impact after it [has] occurred rather than minimizing its occurrence in the first place.”<sup>53</sup> And even if the provision was not patently illegal in its use of restoration as a means of compliance, there is no evidence in the record that for entrainment impacts, “complying with the immediate and interim requirements described in Section 2.C...for the life of the combined cycle power generating units” is anything on par with a 93% reduction in intake flow, or even the equivalent of other, weaker provisions of Track 2.

The SED discussion ostensibly supporting Section 2.A.(2)(d)(ii) only makes matters worse. Instead of addressing the BTA question directly, the SED merely makes a conclusory finding that the exception is justified for combined cycle units as “special cases requiring alternative requirements.”<sup>54</sup> This exception is not supported by the evidence or the findings, nor is it consistent with Section 316(b)’s requirements for facilities to achieve BTA. Again, the SED and the Draft Policy do not conclude that the provisions in this exception are the equivalent of BTA. The SED and the Draft Policy also do not conclude that the exception is justified based on a cost-benefit analysis or prior compliance with BTA at these facilities. Nor do the SED and the Draft Policy state that the exception is based on thermal efficiencies or water reduction achieved from combined-cycle units.

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<sup>51</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 at 109-110.

<sup>52</sup> See September 30, 2009 joint NGO comments, recommending use of a definition for “intake flow rate” as “the instantaneous rate at which water is withdrawn through the intake structure, expressed as gallons per minute per kilowatt hour generated.”

<sup>53</sup> SED p. 59.

<sup>54</sup> SED p. 93.

Instead, the SED attempts to claim, in a wholly unsupported way, that *all* of these reasons are justification for the Policy, while at the same time acknowledging that *none* of them are. While these issues are discussed only in broad generalities, the SED acknowledges that neither a detailed cost analysis nor a cost-benefit analysis was actually conducted.<sup>55</sup> The SED also acknowledges that the Policy language is not specifically based on thermal efficiency issues.<sup>56</sup> The Policy moreover does not limit the exception as being applicable to low water demand units or even compare water intake from combined-cycle units using OTC with the water demand from steam units on closed-cycle cooling. Further, even if one accepts that combined cycle units may use less water than steam boilers to produce the same amount of energy, the State Board has not provided any explanation as to how that is the equivalent of BTA, particularly if the combined-cycle units are working harder than their predecessors. The water use in Figure 17 of the SED certainly does not equate to a 93% reduction in water use or demonstrate how it is the equivalent of BTA under Track 1. The State Board also fails to recognize that some of these units may now be producing *more energy* than the unit was before the retrofit, so water efficiency *per energy unit* is less relevant to the combined cycle unit's overall use of water.

The SED attempts to justify such alternative requirements for the combined cycle units (and nuclear facilities, see below) with no analysis – cost-benefit, cost-cost, wholly disproportionate,<sup>57</sup> or otherwise – on the basis that such analyses are difficult to do and burdensome on the Regional Boards. The SED also cites statewide consistency concerns:<sup>58</sup>

simply stating the alternate requirements in the policy, without requiring a complex and likely problematic cost-benefit test, would result in better statewide consistency and would reduce the burden on Regional Boards.<sup>59</sup>

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<sup>55</sup> SED p. 92 (“A detailed cost analysis *would* account for these investments when determining BTA”) (emphasis added). To claim to consider economics without providing any data or findings on the costs that were considered is improper. *See, e.g., Kuhn v. Department of General Services* (1994) 22 Cal.App.4th 1627, 1633 (“evidence [supporting agency action] must be of ponderable legal significance” and “inferences that are the result of mere speculation or conjecture cannot support a finding.”); *See also Kolender v. San Diego County Civil Service Commission* (2005) 132 Cal.App.4th 716, 721 (“The agency’s discretion is not unfettered, and reversal is warranted when the administrative agency abuses its discretion, or exceeds the bounds of reason.”).) *See also* SED p. 93 (the preferred alternative does not require “a complex and likely problematic cost-benefit test”).

<sup>56</sup> SED p. 93 (the preferred alternative “would not use a minimum thermal efficiency”).

<sup>57</sup> The June 30, 2009 Draft Policy allowed for an exception from Tracks 1 and 2 based on a formal process to determine wholly disproportionate cost-benefit at nuclear and combined cycle units. Now the State Board provides an even broader exception for these same facilities (*i.e.* allowing the use of interim measures for the duration of the unit’s lifecycle) without even bothering to conduct formal wholly disproportionate analysis. (*See* June 30, 2009 Draft Policy p. 9.) In essence, the new Policy concludes that a wholly disproportionate test should not be considered in order to justify a future exception for nuclear and combined cycle facilities; instead, the exception should just be given now. This makes the Policy even worse, from both a legal and procedural standpoint, than the one with which this process began.

<sup>58</sup> SED pp. 93-94 (the SED did not examine the idea of having the state do all the analyses for the limited number of combined cycle and nuclear facilities to promote the desired consistency and reduce the cited burden on the Regional Boards).

<sup>59</sup> SED p. 93.

Granting an exception to BTA under the rubric that it reduces the burden of having to do a complete analysis is not proper under the technology-forcing Section 316(b). In addition, the exception is further unjustified – and contrary to the evidence in the record – as the Tetra Tech feasibility study cited in the SED specifically found that closed cycle wet cooling is “technically and logistically feasible” at Harbor, Haynes and Moss Landing.<sup>60</sup> The economic analysis on pages 122-123 of the SED further justifies the economic feasibility of compliance by these facilities.

Finally, providing this exception for Harbor Unit 10A is especially egregious in that this unit does not even fit the weak explanation provided in the SED on energy and cost issues. For example, Harbor Unit 10A, by staff’s own account, does not meet the 8500 BTU/kWh threshold and is on par with the average heat rates and efficiencies of existing steam boiler units.<sup>61</sup> It also is 15 years old<sup>62</sup> and has had significant time to recoup much of the initial investment. Initial capital costs at Harbor, as presented in the SED, are also the lowest among those listed.<sup>63</sup>

In sum, there is no rational basis in the law supporting this “get out of jail free” card for combined cycle units. Section 2.A.(2)(d)(ii) must be struck in its entirety.

#### **IV. NEW, EXCESSIVELY BROAD LOOPHOLES FOR THE NUCLEAR FACILITIES ARE UNSUPPORTED AND INCONSISTENT WITH SECTION 316(b)’S BTA MANDATE**

Contrary to the recent actions in New York State to comply with the Clean Water Act,<sup>64</sup> there are now loopholes in Sections 2.D and 3.D. so large for the two nuclear facilities that they are now essentially exempt from Section 316(b).<sup>65</sup> Rather than focusing on safety, the new loopholes allow consideration of permitting, site design, economic and “any other relevant information” in determining alternatives to compliance with Track 1 or Track 2.<sup>66</sup>

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<sup>60</sup> SED p. 62 (also found feasible for the two nuclear facilities).

<sup>61</sup> SED p. 90.

<sup>62</sup> SED p. 92.

<sup>63</sup> SED p. 92.

<sup>64</sup> See, New York Department of Environmental Conservation, Notice of Denial of Joint Application for CWA § 401 Water Quality Certification NRC License Renewal – Entergy Nuclear Indian Point Units 2 and 3, DEC Nos.: 3-5522-00011/00030 (IP2) and 3-5522-00105/00031 (IP3) (April 2, 2010), available at [http://www.dec.ny.gov/docs/permits\\_ej\\_operations\\_pdf/ipdenial4210.pdf](http://www.dec.ny.gov/docs/permits_ej_operations_pdf/ipdenial4210.pdf) (last accessed April 10, 2010) and incorporated herein by reference.

<sup>65</sup> SED p. 94 lists the new criteria that could be used to “modify this Policy” just for nuclear facilities; they now go well beyond the previous, appropriate focus on NRC-supported safety issues.

<sup>66</sup> Interestingly, the SED Introduction has not been updated in this regard; e.g., SED p. 14 states: “The Policy allows for alternative requirements for nuclear facilities in the event compliance with Track 1 or Track 2 would conflict with Nuclear Regulatory Commission (NRC) safety requirements.” No mention is made of all the new opportunities in the revised Policy for the nuclear facilities to off-ramp themselves. Further, the SED notes on p. 50 that the *Riverkeeper III* court examined the issue of nuclear facility alternatives based on a broad industry challenge, and that the 2<sup>nd</sup> Circuit court “rejected the challenge,” concluding that “the site-specific compliance alternative deferring to the NRC in the event of a conflict provided sufficient protection for nuclear-fueled facilities....” *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 at 127-28. In this respect, it appears that this Policy may be giving nuclear facilities even more than the U.S. EPA under President George W. Bush was willing to give.

### **A. Section 2.D Has Been Weakened without Findings or Legal or Evidentiary Justification**

Section D of the Policy originally contemplated site specific determinations of BTA for nuclear power plants where compliance with Track 1 or Track 2 resulted “in a conflict with a safety requirements established by the Nuclear Regulatory Commission [(“NRC”)].” This safety-focused provision has now been changed to allow site specific determination of BTA where compliance with Track 1 and Track 2 results in a conflict with *any* requirements of the NRC. However, the justification for this change is not explained anywhere in the SED. Indeed, the SED continues to reflect that Alternative 3 is the preferred alternative and that this section should include “an explicit provision that defers to NRC requirements if compliance with the proposed Policy compromises *safety*.”<sup>67</sup> The Policy now allows for many more off-ramp opportunities than just safety. Yet nowhere does the SED make mention of any other NRC requirement that should be considered or that would be justification for a site specific determination. This change is not even discussed in the SED and has been made without any support in the findings or the evidence, contrary to the above-discussed CEQA mandates. Other nuclear issues are explored much later in the SED, which then simply lists – rather than analyzes the need for – numerous other exemption options and not in the context of the NRC.<sup>68</sup>

In addition to the above deficiencies, this section is now inconsistent with the language used by EPA in its Phase II regulation – language that, as the SED acknowledges, was upheld by the court in *Riverkeeper II* decision as providing sufficient protection for nuclear facilities.<sup>69</sup>

We recommend returning to the language in Section 2. D. of the prior draft, which made clear that exceptions are only warranted for NRC public safety concerns.

### **B. New Loopholes Have Been Added to Section 3.D. without Adequate Findings or Legal or Evidentiary Support.**

Under the latest draft of the Policy, the State Board shall consider, in special studies just for nuclear facilities, factors such as cost, engineering, space & permitting constraints, public safety, air emissions and “any other relevant information.” The Policy then proposes to use the information obtained from the special studies to determine whether alternatives to Track 1 and Track 2 are warranted based on whether costs and other “factors” are “wholly out of proportion to the costs considered by the State Water Board in establishing Track 1 and Track 2.” This approach suffers numerous flaws and should be abandoned in favor of strict compliance with BTA, with the above-described safety consideration.

First, this approach appears to be taking a BPJ approach to nuclear facilities rather than BTA. Yet, the SED concludes that “there is no basis to assume the case-by-case BPJ approach that has been in effect for 30 years will yield any better results now than it has in the past.”<sup>70</sup> There is

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<sup>67</sup> SED p. 51 (emphasis added).

<sup>68</sup> SED p. 94.

<sup>69</sup> SED p. 50.

<sup>70</sup> SED p. 51. In fact, the SED concludes that “impacts associated with OTC operation, including those from Diablo and SONGS, have not been sufficiently addressed such that they can be considered compliance with § 316(b)’s technology-based mandate.” *Id.*

no explanation of how this approach will prove better than the past 30 years of failure<sup>71</sup> to regulate these facilities under BTA, or why factors other than safety are worthy of consideration in creating exceptions to Track 1 and Track 2. In this respect, the approach proposed in the latest draft is not supported by the evidence or the findings. One also must ask what the purpose of the Policy is if the facilities with the largest impact on California's coastal waters are simply eligible for such a broad exception from both Track 1 and Track 2.

Second, the proposed policy now also includes multiple exceptions to be considered after "special studies" have been conducted. This approach is also flawed and unsupported.

For example, the draft Policy contains new "cost-cost" considerations for nuclear facilities that allow alternatives to compliance if costs for nuclear facilities "to implement Track 1 or Track 2 . . . are wholly out of proportion to the costs considered by the State Water Board in establishing Track 1 or Track 2." In providing the option for an exception from Track 2 based on a cost-cost comparison, the proposed Policy fails to recognize that neither the SED nor the State Board has in any way considered or evaluated the costs of complying with Track 2, which makes this calculation impossible and unsupportable.

Further, the SED only provides justification for exceptions to the Policy for nuclear facilities based on safety<sup>72</sup> with some limited discussion of costs. The SED makes no mention of how or why the other "factors" to be considered under Section D.(7) are relevant to BTA or a cost-cost calculation. In particular, the SED does not provide any explanation of: (1) how or why the other factors in paragraph 7 are being considered, or (2) how the factors of paragraph 7 are relevant to a cost-cost approach or to BTA. While we disagree with the use of cost-cost as a component of this policy, if the State Board is going to include a cost-cost approach, it may not sweep in matters other than those strict economic considerations inherent in a cost-cost approach to achieve BTA. The additional "factors" listed in 3.D.(7), such as engineering, permitting and space constraints, are not relevant to the determination of BTA or a cost-cost calculation. Indeed, how will the Water Board determine that "permitting constraints," for example, are "wholly out of proportion to the costs considered by the State Water Board in establishing Track 1 or Track 2?" "Permitting constraints" are not "costs" unless they are converted into an economic value. Neither the SED nor the Policy explains how such a process will – or even could – be undertaken. There is also no definition of "other relevant information," nor an explanation of how such information might be relevant to costs. This new language also ignores the TetraTech report, which found upgrades were "feasible" at the nuclear facilities.<sup>73</sup> For all these reasons, Paragraph 3.D.(8)'s consideration of "factor(s) of paragraph 7" in addition to "cost" is illogical and not supported by the record.

Finally, the proposed Policy now allows for mitigation in lieu of BTA for the nuclear facilities, in violation of *Riverkeeper II*. We disagree with this unlawful approach for the reasons discussed above with respect to the combined-cycle facilities.

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<sup>71</sup> See *infra* Section VI. regarding attempted, significant rollbacks in agreed-upon SONGS mitigation. Letter from Warner Chabot and Linda Sheehan, Center for Marine Conservation to Chair Louis Calcagno and Commissioners, California Coastal Commission, "Coastal Commission Meeting, October 8, 1996, Agenda Item # 15: SONGS Permit Amendment Proposal" (Oct. 7, 1996) (available upon request).

<sup>72</sup> SED p. 51.

<sup>73</sup> Tetra Tech Report p. ES-8; see also SED p. 62.

## V. MEANINGFUL MONITORING REQUIREMENTS HAVE BEEN REDUCED TO INSIGNIFICANCE

With loss of preference for Track 1, we believe most plants will opt for Track 2 compliance, particularly in light of December industry testimony to this effect. Therefore, sound monitoring strategies and a sound baseline understanding are of utmost importance. According to the Policy, monitoring for Track 2, Sections 2.A.2(a)(i) and 2.A.2(b)(i) will be based on flow reductions. However, as discussed in Section III(B) of this letter, it is critical that these flow reductions reflect current facility operations, rather than design flow, as is called for within the Policy. As noted above, we urge the State Board to base Track 2 entrainment reductions on monthly generational flow, averaged over a recent five-year period (2000-2005).

Furthermore, the current entrainment and impingement monitoring requirements in the Policy are insufficient for measuring marine life mortality reductions based on operational and structural changes.<sup>74</sup> The Track 2 monitoring provisions, described in Sections 4.A and 4.B, are insufficient for gauging whether compliance measures under Track 2 Sections 2.A.2(a)(ii) and 2.A.2(b)(ii) effectively minimize impingement and entrainment.

First, the Policy only requires a 12 consecutive month monitoring period as a baseline for facilities to determine past impingement and entrainment impacts for future compliance monitoring. This design fails to account for annual variability and source water depletion in the determination of baseline entrainment and impingement impacts. It also gives discretion to power plant operators to choose an advantageous 12-month period that would potentially create a scenario where impingement and entrainment reductions are easier to meet. We recommend that a longer duration of time be used to determine the Track 2 operational and structural control impingement and entrainment baseline; for example a five-year average based on source water and impingement monitoring from 2000-2005. As noted above, in preparation for the Proposal for Information Collection<sup>75</sup> process, most facilities conducted source water monitoring, which could be used to help inform the entrainment baseline. Additionally, most facilities have conducted impingement monitoring (species impinged and impingement rates) for the last decade or more as part of their NPDES permit requirements, which should be used to help determine baseline impingement impacts.

More importantly, the monitoring provisions in the Policy only require 12 consecutive months of monitoring after Track 2 operational and structural controls are implemented. As previously discussed, this limited time frame will not reflect annual variability. It will also fail to reflect any changes in the effectiveness of these alternative Track 2 controls (e.g. increased impingement due to biofouling or other complications). Regular monitoring (at a minimum monthly) should be required to accurately reflect the ability of operational and structural Track 2

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<sup>74</sup> There are also potential monitoring issues for Track 1 compliance. We interpret Track 1 to require repowering or retrofitting to closed-cycle cooling. However, if a facility opts for a different approach to achieve “a level commensurate with that which can be attained by a closed-cycle wet cooling system,” which is also permissible under Track 1, no detail is provided in the monitoring provisions to inform how that “commensurate level” will be determined.

<sup>75</sup> The Proposal for Information Collection (PIC) is required for compliance with the Clean Water Act Section 316(b) Phase II Final Rule for existing electric generating stations published in the *Federal Register* on July 9, 2004.

controls to meet impingement and entrainment reduction requirements. Regular monitoring by permittees is not a new concept under the State Board; NPDES waste water dischargers are required to perform continuous monitoring of numerous constituents in their discharges for the entire lifespan of their permit. Likewise, OTC permits should require impingement and entrainment monitoring throughout the permit lifecycle to capture seasonal and annual variability, and to ensure that accurate information is provided regarding the effectiveness of Track 2 controls at meeting marine life mortality reductions.

## **VI. THE REVISED POLICY LACKS CLEAR, ENFORCEABLE, SUPPORTABLE INTERIM AND FINAL DEADLINES**

After almost four decades since enactment of Section 316(b), the state is nearing adoption of a Policy to address the ongoing, devastating impacts of once-through cooling. Though the regulated facilities have known for many years of their Section 316(b) responsibilities, the Policy nonetheless builds in lengthy deadlines for compliance. Indeed the most recent version extends deadlines three to four more years for two facilities; the last deadline is currently 2024.

While we understand that construction of needed improvements takes time, the Policy provides more than sufficient consideration of the requests for extra time sought by facilities and utilities. The Policy should balance this consideration with *strengthened* requirements on the part of the facilities to show cause for altering the compliance schedules, rather than weakened requirements as the Policy now reads. The hurdle for being granted an extension should be high; it should occur only when the owner/operator has fully exhausted every alternative to comply with their deadline, and it should require significant evidentiary support that demonstrates extraordinary changes from the circumstances at the time this Policy is finalized. Only Section 3.D.(8) makes any mention of the responsibilities on parties requesting alternative requirements (here in the narrow context of nuclear facilities exercising the cost-cost option), stating that “[t]he burden is on the person requesting the alternative requirement to demonstrate that alternative requirements should be authorized.” This burden requirement should at a minimum be extended to all requests for deadline changes or suspensions, compliance alternatives, etc.; currently, there is no articulation of any burden on the part of facilities seeking to avoid meeting responsibilities within a definitive time frame.

Past experience indicates, unfortunately, that a clear, strong assertion of the regulated entities responsibilities, and effective oversight to ensure that those responsibilities are carried out effectively, is essential in the context of addressing the impacts of once-through cooling. As just one example, the owners and operators of the San Onofre Nuclear Generating Station avoided addressing the massive OTC impacts of their units for decades; when finally forced to agree to conduct at least some restoration activities, they not only avoided compliance but actively sought to reduce key elements of the necessary and required restoration by *over 90%* of the original agreement.<sup>76</sup> Decades of such delays and attempted rollbacks demand that the Water Board

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<sup>76</sup> Letter from Warner Chabot and Linda Sheehan, Center for Marine Conservation to Chair Louis Calcagno and Commissioners, California Coastal Commission, “Coastal Commission Meeting, October 8, 1996, Agenda Item # 15: SONGS Permit Amendment Proposal” (Oct. 7, 1996) (available upon request).

exercise strenuous, vigilant oversight and insist on a significant burden on regulated entities to deviate from the steps or timelines required to meet 316(b)'s mandates "as soon as possible."<sup>77</sup>

The Policy as written will not ensure that these goals are met. Rather, the recent changes to the Policy make enforcement of Section 316(b)'s mandate far more difficult and staff-intensive, and will likely lead to the continued delays that unfortunately have plagued this program. In particular, the Policy does not address the need for specific commitments in facility permits to ensure adherence to and progress towards the extended compliance deadlines. It also substantially increases the likelihood of potentially unsupported and unnecessary extensions by delegating, to a nonprofit corporation (CAISO) unaccountable to the Water Board or U.S. EPA, the *right* to start the process for changing deadlines, without at the same time establishing the requisite *responsibilities* to ensure that those requesting deadline extensions or suspensions bear the burden of demonstrating the need for such changes. These sections must be revised to ensure that the Policy, and the permits written based on the Policy's direction, comply with the range of Clean Water Act safeguards and mandates that have been set up to ensure that the Act's provisions are carried out.

#### **A. Compliance Schedules in the Policy Run Afoul of Clean Water Act Mandates**

The Clean Water Act is clear on the need for demonstrated, specific, measureable, reported and *actual* compliance by regulated entities towards meeting the Act's mandates. Section 316(b) calls for "the location, design, construction, and capacity of cooling water intake structures [to] reflect the best technology available for minimizing adverse environmental impacts." It does not say BTA "at some indefinite point in the future." Implementing regulations do acknowledge the time necessary for establishing specific compliance technologies, but they are narrowly tailored to ensure compliance "as soon as possible" and require clear accountability in the permits on the part of the regulated entity.

Implementing regulations at 40 CFR § 122.2 define "schedule of compliance" as a "schedule of remedial measures included in a 'permit,' including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the CWA and regulations." Regulations at 40 CFR § 122.47 describe the mandates for such schedules of compliance as follows:

- (a) General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with CWA and regulations.
- (1) Time for compliance. Any schedules of compliance under this section shall require compliance as soon as possible, but not later than the applicable statutory deadline under the CWA . . . .
- (3) Interim dates. Except as provided in paragraph (b)(1)(ii) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.
  - (i) The time between interim dates shall not exceed 1 year . . . .
  - (ii) If the time necessary for completion of any interim requirement (such as the construction of a control facility) is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

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<sup>77</sup> 40 CFR § 122.47(a)(1).



Note: Examples of interim requirements include: (a) Submit a complete Step 1 construction grant (for POTWs); (b) let a contract for construction of required facilities; (c) commence construction of required facilities; (d) complete construction of required facilities. (4) Reporting. The permit shall be written to require that no later than 14 days following each interim date and the final date of compliance, the permittee shall notify the Director in writing of its compliance or noncompliance with the interim or final requirements, or submit progress reports if paragraph (a)(3)(ii) is applicable.

(Emphasis added.)

The State Board's Resolution adopting its Policy for Compliance Schedules in NPDES Permits similarly states unequivocally that "the entire compliance schedule, including interim requirements and final permit limitations, *shall* be included as enforceable terms of the permit, whether or not the final compliance date is within the permit term."<sup>78</sup> The Resolution also makes clear that a compliance schedule must include an "enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitations, prohibition, or standard."<sup>79</sup>

U.S. EPA has been paying increasing attention to the adequacy of compliance schedule documentation and adherence. In a relatively recent audit of numerous compliance schedules in 12 randomly-selected NPDES permits, prompted by a settlement agreement on the issue with environmental groups, U.S. EPA found that *none* of the 12 adequately explained why any of the compliance schedules were "appropriate" as required by 40 CFR § 122.47(a).<sup>80</sup> EPA also found that none of the randomly-selected permits required compliance with final effluent limits "as soon as possible" as required by 40 CFR § 122.47(a)(1), and none of them contained adequate justification for the specific length of the compliance schedule.<sup>81</sup> The EPA Audit emphasized that:

[t]he CWA and its implementing regulations define a compliance schedule as an "enforceable sequence of actions or operations leading to compliance with an effluent limitation..." EPA regulations at 40 CFR § 122.47(b)(3) require any compliance schedule longer than a year to "set forth interim requirements and the dates for their achievement." The regulation includes a note giving examples of interim requirements such as (a) submit a construction grant application, (b) let a construction contract, (c) commence construction or (d) complete construction of required facilities....<sup>82</sup>

EPA's emphasis on the need for specific interim requirements in permits that go beyond planning and studies is particularly relevant here. Given the decades of delays to date and the need for facilities to take action, careful adherence not just to planning but also to action will be essential to avoid further delays and avoid the situation of a critical mass of plants waiting until the end of shared deadlines. The need for strict adherence to the Clean Water Act's regulations for

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<sup>78</sup> SWRCB, Resolution No. 2008-0025, "Policy for Compliance Schedules in NPDES Permits," para. 8, p. 6 (April 15, 2008) (emphasis added); available at: [http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2008/rs2008\\_0025.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2008/rs2008_0025.pdf).

<sup>79</sup> *Id.* para. 1(a), p. 2.

<sup>80</sup> U.S. EPA Region IX and Office of Water, "California Permit Quality Review Report on Compliance Schedules," p. 2 (Oct. 31, 2007) (EPA Audit).

<sup>81</sup> *Id.* p. 3.

<sup>82</sup> *Id.* p. 4.

compliance schedules is also essential in light of the extraordinary rights – without equivalent responsibilities – that the Policy now proposes to grant to CAISO with respect to changing and suspending deadlines.

A close look at the Policy’s Implementation language in Sections 3.A. and 3.C., and in the Table 1 Schedule, demonstrates that the needed adherence to Clean Water Act mandates and regulations is lacking. This is particularly true in light of the changes to the Policy allowing other entities to call for deadline suspension hearings with only a written notification (and without reopening the permit). For example, Section 3.A. calls for power plant operators (other than the nuclear facilities) to submit an “implementation plan” within six months of Policy adoption. As described in Section 3.A.(1), the implementation plan must, among other things,

identify the “compliance alternative selected by the owner or operator, describe the general design, construction, or operational measures that will be undertaken to implement the alternative, and propose a realistic schedule for implementing these measures that is as short as possible.

Assuming that these provisions are written in a manner sufficiently specific to satisfy 40 CFR § 122.47, they potentially could be dropped into the permit renewal applications that virtually all of the power plants presumably will have to complete to move forward with reissuance under the Policy. However, no mention is made in Section 3.A. of 40 CFR § 122.47 requirements; instead permit reissuance and modification is addressed in Section 3.C. Disturbingly, clear guidance in Section 3.C. with respect to a key element of the regulations – that the permittee comply “as soon as possible” – has been deleted in the last round of amendments. Section C.(1) had previously required compliance schedules that require compliance “as soon as possible” but no later than the Policy’s deadlines; the “as soon as possible” language has been deleted, allowing further latitude to power plants to continue long-established pattern of delay. Other useful language that provided direction to the Regional Boards on 40 CFR § 122.47’s mandates has also been deleted; specifically the following in Section 3.C.(1):

The compliance schedule shall be as short as possible, given the type of facilities being constructed, and industry experience with the time typically required to construct similar facilities; and, taking into account the amount of time reasonably required for the discharger to implement actions, such as designing, permitting, securing, financing and constructing facilities.

The only significant language left in Section 3.C.(1) is language emphasizing the State Water Board’s ability to allow for a *longer* compliance schedules (“[i]f the State Water Board determines that a longer compliance schedule is necessary . . .this delay shall be incorporated into the compliance schedule”).<sup>83</sup>

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<sup>83</sup> As discussed in more detail below, the new Policy provision in Section 3.C.(4) allowing suspensions and modifications to permit compliance schedules *without* reopen permits runs contrary to the mandates of 40 CFR § 122.47 to ensure compliance “as soon as possible” by precluding U.S. EPA and public review of the impacts of the proposed changes within the context of the permit as a whole. This provision must be changed to allow for the necessary input.

Through its recent NPDES permit audit, U.S. EPA has put California clearly on notice that the state's use of compliance schedules will be closely scrutinized to ensure compliance "as soon as possible" and to avoid more delays. We urge the Water Board to revise the Policy to provide far more specific guidance to the Regional Boards and the regulated community with regard to what is required and expected to be included in permit-based compliance schedules, to ensure consistency with the Clean Water Act and 40 CFR § 122.47. Specific guidance is essential in light of the substantial workload facing the Regional Boards in reissuing long-expired permits for virtually all of the power plants in the Policy. As EPA noted in comments last fall:

the Policy must "provide a consistent framework which will allow the Regional Water Quality Control Boards to better manage the substantial workload of reissuing the expired NPDES permits for the existing power plants. Keeping NPDES permits current is important to ensure permit quality and consistency throughout the State. According to EPA's records, one-quarter of California's NPDES permits that expired during or prior to 2006, and are still expired, are power plants listed in the draft policy."<sup>84</sup>

U.S. EPA's focus on prompt reissuance of these expired permits in a manner that ensures "permit quality and consistency throughout the State," as well as its findings in the EPA Audit, both require the Policy to be far more specific in its guidance to the Regional Boards with regard to the mandates that compliance schedules must follow.

At a minimum, the deleted language in Section 3.C.(1) must be reinstated, and additional guidance that reflects the language of 40 CFR § 122.47 must be added so that the Regional Boards and the regulated community are put on notice as to their obligations. Language should also be added to clarify the need for specific interim requirements other than studies and permit applications, consistent with 40 CFR § 122.47(a)(3). For example, an interim requirement could be the installation of variable speed pumps that reduce impacts while larger changes are implemented at the facility. Additional changes need to be made to SACCWIS' review of the implementation plans in Section 3.B. to narrow SACCWIS' focus to Section 316(b) compliance and grid reliability, and away from extraneous permit matters that add to compliance delays.<sup>85</sup> Finally, 40 CFR § 122.47 applies equally to the nuclear powered facilities as to the fossil fueled plants; the mandates of this section in ensuring clear, enforceable, supportable, permit-based interim and final deadlines must be written into the Policy as well.<sup>86</sup>

## **B. The Water Board Has Effectively and Illegally Delegated Its Deadline Compliance and Enforcement Authority to Other Agencies**

Commenters recognize and support the important roles of CAISO, LADWP, CEC and CPUC in maintaining and managing the energy needs of the state. Accordingly, we support a meaningful coordination and collaboration process among the Water Boards and energy entities to ensure implementation of each entity's mandates. Indeed, in joint comments, CAISO, CEC and

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<sup>84</sup> Letter from Alexis Strauss, U.S. EPA Region IX, to SWRCB, "Comment Letter – Power Plant Cooling Policy" (Sept. 30, 2009) (emphasis added).

<sup>85</sup> SACCWIS' expanded role in the current draft of the Policy is discussed further in Section VIII. below.

<sup>86</sup> Policy Sections 2.D. and 3.D. as recently amended will significantly and inappropriately expand the ability of nuclear powered facilities to seek compliance deadline extensions based on factors other than safety. The problems and implications associated with these new Policy amendments are discussed in Section IV. above.

CPUC similarly indicated their support for the Policy’s “workable schedule and process to implement the WRCB’s objectives while considering the need to maintain reliable operation of the electric grid.”<sup>87</sup> The current changes to the Policy unfortunately are a marked departure from last fall’s agreements on a coordinated process draft and require significant revision to ensure the Policy provides the appropriate legal guidance to the regulated community and to the Regional Boards reissuing or modifying permits.

*1. The Revised Policy Grants Unprecedented, Inappropriate and Illegal Authority to Entities Other than the State and Regional Water Boards with Regard to Implementation of the Clean Water Act*

Our concerns with the most recent changes to the Policy in Section 2.B. “Final Compliance Dates,” are not with regard to the Board’s appropriate consideration of specific, supported concerns by CAISO, LADWP, CEC and CPUC with regard to grid reliability. We fully expect that the Board will indeed closely coordinate with these entities and respect their expertise in grid and energy related matters. Rather, the issue is more with regard to the changes in the Policy that skew power over the decisionmaking process to an entity unaccountable under the Clean Water Act. The prior version of the Policy balanced the decisionmaking authority and responsibility appropriately to ensure that grid reliability concerns were carefully considered in light of the Water Board’s mandate to comply with the Clean Water Act. The current draft Policy takes away this balanced decisionmaking process and allows CAISO merely to provide a “written notification” – unsupported by any evidence – of grid reliability issues, to which the Water Board *must* respond. Moreover, the evidentiary hurdle that the Water Board must meet is unprecedented and contrary to its mandate to implement Section 316(b) consistent with the Clean Water Act, implementing regulations, and the Board’s own mandates pursuant to its status as a delegated agency. These issues are discussed in more detail below.

Specifically, the new Policy in Section 2.B. provides for essentially automatic deadline compliance date suspension for 90 days if CAISO notifies the State and Regional Water Board that it has determined this extension is “necessary to maintain the reliability of the electric system in the short-term.” No showing or hearing is required for this extension. The CEC or CPUC may object to this notification within ten days; notably, the Water Boards are *not* allowed to object, and instead must simply comply without a hearing unless another agency requests one. Moreover, neither the Policy nor the SED provide discussion or direction for the potential scenario in which multiple, or back-to-back, automatic “short-term” extensions are ordered, which could be a potentially significant loophole.

The new Policy similarly provides CAISO with great latitude to suspend or extend compliance deadlines in the longer term. The CAISO may notify (again, with no documentation) the State and Regional Water Board that it is suspending final compliance dates for 90 days where CAISO determines that is “necessary to maintain the reliability of the electric system.” In this case the Water Board “shall” conduct a hearing within that 90 days to determine whether to suspend the final date longer than 90 days “pending, if necessary, full evaluation of amendments to final

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<sup>87</sup> Letter from Karen Douglas, CEC, Michael Peevey, CPUC and Yakout Mansour, CAISO to SWRCB, “Comment Letter – Draft Statewide Water Quality Control Policy for the use of Coastal and Estuarine Waters for Power Plant Cooling,” p. 4 (Sept. 14, 2009).

compliance dates contained in the policy.”<sup>88</sup> The Policy then goes on to institute an unprecedented burden on the Board to “implement the recommendations of the CAISO [to suspend final compliance dates] *unless* the State Water Board finds there is compelling evidence not to follow a recommendation *and* makes a finding of overriding considerations.”<sup>89</sup> No guidance is provided to the Water Board or CAISO with regard to setting a new compliance deadline; rather, the section simply calls for “suspension of final compliance date” rather than the “adoption of a revised compliance date.” Indeed, without some boundaries on the duration of allowable suspensions, it is unclear whether they could simply continue *ad infinitum* in violation of the Section 316(b) and the Act’s regulations with regard to compliance schedules.<sup>90</sup> There also appear to be no requirements on the facilities to address BTA mandates in the interim while the deadlines are “suspended,” which also leaves open the issue (discussed further in Section VII. below) as to when the proposed “interim” mitigation measures become illegal substitute mitigation for BTA.

These concerns with regard to the removal of much of the Water Board’s – and hence the public’s – oversight and implementing authority are heightened by the status of CAISO as a nonprofit corporation. As a legislatively created nonprofit corporation, CAISO, unlike the Water Boards, is not bound by the protections afforded the public by the California Public Records Act<sup>91</sup> and other safeguards required of state agencies.<sup>92</sup> As a result, the Policy’s current refusal to assign CAISO specific documentation responsibilities for its assertion of the need for Section 316(b) compliance schedule suspensions is exacerbated by the relative inability of the public to access this information from CAISO through the PRA. In other words, the legislative finding expressed in the PRA that “access to information concerning the conduct of the people’s business is a *fundamental and necessary right of every person in this state*,”<sup>93</sup> a finding reinforced by the public’s overwhelming approval of Proposition 59,<sup>94</sup> is compromised by the new Policy. CAISO new right

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<sup>88</sup> Policy Section 2.B.(2)(b).

<sup>89</sup> (Emphasis added.) See also similar new language in Section 3.B.(5).

<sup>90</sup> 40 CFR § 122.47.

<sup>91</sup> California Public Records Act, Calif. Government Code §§ 6250 *et seq.* (“PRA”).

<sup>92</sup> CAISO does have disclosure rules that were very recently revised and that somewhat parallel the PRA. California ISO, “Information Availability Policy” (rev’d March 26, 2010), available at: <http://www.caiso.com/275e/275eed0c218e0.pdf>. Significant differences in language, however, raise questions with regard to the public’s (and the Water Boards’) ability to obtain necessary information to inform compliance deadline decisions prompted by CAISO. For example: (a) the PRA allows the disclosure of “[p]reliminary drafts, notes and memoranda” not retained in the ordinary course of business *only* if “the public interest in withholding those records clearly outweighs the public interest in disclosure” (Gov’t Code § 6254(a)), while the CAISO’s Information Availability Policy (IAP) would prohibit their disclosure completely (IAP Sec.2.3.1); (b) the PRA allows agencies to withhold documents if the agency can “justify” its position by “demonstrating” that the public interest served by not disclosing the record clearly outweighs the public interest served by disclosure (Gov’t Code § 6255(a)), while the IAP allows the CAISO Board to make that broad exclusion determination with *no* justification or demonstration to the public at all (IAP Sec.2.3.9). The IAP also allows CAISO to withhold requested documents that may be particularly necessary to a determination of whether compliance deadlines should be extended as per the new Policy. For example, the IAP allows CAISO to withhold requested documents such as individual generator outage programs (IAP Sec.2.3.2), market monitoring activities (IAP Sec.2.3.2), and records referring to “commercially sensitive matters” that may “compromise the efficiency of the market as a whole or of the efficient and nondiscriminatory access to the transmission grid” (IAP Sec.2.3.6).

<sup>93</sup> Calif. Gov’t Code § 6250 (emphasis added).

<sup>94</sup> Proposition 59, “Public Records, Open Meetings” (Nov. 2004), available at: <http://vote2004.sos.ca.gov/propositions/prop59-title.htm> (approved with over 83% of the vote).

to call for deadline suspensions to the CAISO is given without the responsibility to provide the public – and the Water Board – with the information necessary to make that judgment consistent with other Clean Water Act decisionmaking processes. As changed, the Policy severely limits the ability of the public and the Board to get the information needed to participate meaningfully, an exclusion whose negative impacts are heightened by the extraordinary evidentiary burden now placed on the Board.

The CAISO’s purposes and objectives, as articulated in its By-Laws,<sup>95</sup> focus on the operation and maintenance of the ISO Controlled Grid. The Water Board’s responsibilities under Section 316(b) of the federal Clean Water Act can of course coordinate with the CAISO’s grid responsibilities, but it is inappropriate and illegal to allow one to so trump the other.<sup>96</sup> Moreover, the case-by-case, virtually automatic deadline suspension process further *erodes*, rather than sustains, grid reliability by creating a state of continued uncertainty brought about by suspended and amended deadlines on a facility-by-facility basis. Such ongoing deadline changes could have a spillover effect on the next facilities in line, further complicating the compliance process, delaying the Policy’s implementation, and throwing grid reliability into more uncertainty than if a more orderly process were followed.

Finally, it should be noted that there are no requirements on the *facilities* themselves for making specific showings for proposed deadline suspensions. Facilities under the current Policy could raise the issue of grid reliability, which facilities have done repeatedly over the development of this Policy despite the conclusions of multiple studies (and the energy entities themselves) that grid reliability *and* Section 316(b) compliance could be achieved. CAISO could then take those claims and provide only “written notification” to the Water Board of deadline suspensions, again with the burden on the Water Board, not on the facility. The potential opportunities in the new Section 2.B. for circumventing compliance deadlines are thus magnified.<sup>97</sup>

## 2. State Board Authority over Water Protection Matters Must Be Maintained

The Policy’s new Section 2.B.(2)(d) provides that in revisiting compliance deadlines based on grid reliability issues, the State Board “shall implement the recommendations of the CAISO unless the State Water Board finds there is compelling evidence not to follow a recommendation and makes a finding of overriding considerations.” However, it is an abuse of discretion and contrary to the authority delegated to the State Board for the State Board to choose to defer to CAISO in this manner and impose an arbitrary standard constraining its authority, ability and obligation to implement the Clean Water Act.

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<sup>95</sup> California ISO, “Bylaws of California Independent System Operator Corporation, a California Nonprofit Public Benefit Corporation,” pp. 1-2 (Oct. 8, 2009), available at: <http://www.aiso.com/2441/244191b7370c0.pdf>.

<sup>96</sup> Indeed, the PRA states that “[a] state or local agency may not allow another party to control the disclosure of information that is otherwise subject to disclosure pursuant to this chapter.” Calif. Gov’t Code § 6253(b). The delegation of authority by the Water Board to CAISO to set the terms and conditions of information provided to the public appears to violate this PRA provision.

<sup>97</sup> The LADWP may similarly seek suspension of final compliance deadlines within its service area. Unlike CAISO, a “public process” is required to make that determination. However, the final burden on the Water Board to overcome LADWP’s determinations only through “compelling evidence” and a “finding of overriding considerations” raises the same issues of concern as for the CAISO deadline suspension process. We accordingly oppose this process as well, for the reasons discussed in this and the following section.

Congress empowered approved state agencies to implement the NPDES permitting program.<sup>98</sup> Federal regulations at 40 CFR §§ 123.1 *et seq.* establish the procedures for U.S. EPA approval of a state program and for assigning the responsibilities of that program. Program approval can be withdrawn under the procedures at 40 CFR § 123.63 if the program “no longer complies with the requirements of this part, and the State fails to take corrective action.”

The NPDES Memorandum of Agreement between the U.S. EPA and the State Water Board recognizes the State Board as the state water pollution control agency for purposes of the Clean Water Act.<sup>99</sup> The USEPA/California MOA makes clear that it is the *State Board* that administers California’s NPDES program as meant by the federal regulations.<sup>100</sup> The USEPA/California MOA also makes clear that the State Board is responsible for “[d]eveloping and implementing regulations, policies, and guidelines as needed to maintain consistency between State and federal policy and programs operations....”<sup>101</sup> Moreover, the State Board is to act “on its own motion as necessary to assure that the program is administered in conformance with Federal and State legislation, regulations, policy, [and] this MOA...”<sup>102</sup> The Legislature confirmed the State Board’s role in the Porter-Cologne Act.<sup>103</sup>

Meanwhile, CAISO is *not* delegated such authority under the Clean Water Act or through agreement with U.S. EPA, nor is CAISO delegated such authority under California law. While the State Water Board should of course coordinate and collaborate with CAISO, the Water Board still has its own, independent obligation to review and address matters relating to water protection.

The California courts recently confronted a similar situation in *Pacific Lumber Co. v. California State Water Resources Control Bd.* (2004) 116 Cal.App.4th 1232, *aff’d*, 37 Cal.4th 921 (2006). In *Pacific Lumber*, a timber company advanced a claim that the Forest Practices Act ousted the State Board from properly exercising its authority under the Porter-Cologne Act. The courts found such preclusion inappropriate, and the Court of Appeal summarized it thusly: “[t]he Department of Forestry may permit trees to be cut, but the State Water Board may require that when trees are cut, water quality be preserved.”<sup>104</sup> Case law with regard to the interplay between energy regulation and environmental protection is in accord.<sup>105</sup>

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<sup>98</sup> 33 U.S.C. § 1342(b).

<sup>99</sup> See 54 Fed.Reg. 40664 (Oct. 13, 1989); see also “NPDES Memorandum of Agreement between the U.S. Environmental Protection Agency and the California State Water Resources Control Board” (“USEPA/California MOA”) (Sept. 22, 1989).

<sup>100</sup> See, e.g., *id.* at 1 (“State Board is the State water pollution control agency for all purposes of the Clean Water Act....”).

<sup>101</sup> *Id.* at 5.

<sup>102</sup> *Id.*

<sup>103</sup> Cal. Water Code § 13160.

<sup>104</sup> *Pacific Lumber*, 116 Cal.App.4th at 1247.

<sup>105</sup> See *Orange County Air Pollution Control Dist. v. Public Util. Com.* (1971) 4 Cal.3d 945, 953-954 (“We conclude that the Legislature has established one statutory scheme for the general regulation of public utilities, another for the general regulation of air pollution. . . [The PUC] must share its jurisdiction over utilities regulation where that jurisdiction is made concurrent by another (especially a later) legislative enactment.”).

Likewise, in the present case, while CAISO may have authority over energy transmission issues, the State Board may require that when energy is generated, water resources be protected. While it is fair and appropriate for CAISO to have an important advisory role in State Board Section 316(b) matters, neither state nor federal law imposes any additional, unique burdens or restrictions on the State Board when it is fulfilling its statutorily mandated duties where energy transmission is involved. The draft language, while not directly ousting the State Board from its proper role, nevertheless achieves the same result by imposing a fundamentally new standard and burden for how the State Board is to implement its duties under the Clean Water Act and Porter-Cologne. Indeed, the draft language invents a new standard requiring that the State Board make a “finding of overriding consideration” based on “compelling evidence” if it chooses to not follow the recommendations of CAISO. Under this draft language, Section 316(b) no longer dictates or constrains the outcome of the State Board’s analysis, contrary to the mandates that the State Water Board must follow as the designated entity responsible for implementing this program. Instead, the new Section 2.B.(2)(d) creates an arbitrary standard that allows the unsupported and undocumented wishes of a nonprofit corporation (not even a state agency) to constrain State Board decisions. Despite the Policy’s straining to the contrary, the State Board is charged with administering the Clean Water Act, and this role does not allow the agency to ignore or abdicate that duty. Indeed, “the right of the public must receive active and affirmative protection at the hands of the [agency].”<sup>106</sup> So, too, must the statute that the State Board is charged with administering be given full effect.<sup>107</sup> For the State Board to execute anything less than its delegated duties is also a violation of the State’s memorandum of agreement with EPA, an action that makes the State Board’s delegation authority vulnerable under 40 CFR § 123.63.

The Regional Boards’ responsibilities under the Act have been similarly compromised in the Policy by the recent changes to the Policy. In addition to the discussion above with regard to Section 2.B.(2), the Regional Boards’ authority is impacted by a new Section 3.C.(4), which states that:

3.C.(4). NPDES permits issued by the Regional Water Boards *shall* include appropriate permit provisions to implement suspensions of final compliance dates authorized in Section 2.B(2) and modifications to final compliance dates specified in this policy, *without reopening the permits*.

(Emphasis added.) To require the Regional Boards to insert suspensions of compliance schedules, or modifications of such schedules, *without* reopening permits runs contrary to the mandates of 40 CFR § 122.47 to ensure compliance “as soon as possible.” It also precludes appropriate U.S. EPA and public review of the impacts of the proposed changes within the context of the permit as a whole. Public process in the oversight of the use of the public’s waterways is a core element of the Clean Water Act that is severely compromised by this proposal.<sup>108</sup> This provision must be changed

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<sup>106</sup> *Scenic Hudson Preservation Conference v. Federal Power Commission*, 354 F.2d 608, 620 (2 Cir. 1965).

<sup>107</sup> *See, e.g.*, 5 U.S.C. § 706(2)(c) (providing legal basis for reversal where agency action is “short of statutory right”; *See also, Marathon Oil Co. v. Lujan*, 937 F.2d 498, 500 (10th Cir.1991) (holding that “[a]dministrative agencies do not possess the discretion to avoid discharging the duties that Congress intended them to perform”).

<sup>108</sup> 33 U.S.C. § 1251(e) (“Public participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States”).



to allow for the necessary public and agency review and oversight of such significant changes as permit deadline modifications, and particularly deadline *suspensions* that can (under the Policy) occur with no new deadlines specified at all.

Despite the mandate on the State Board (and Regional Boards) to perform statutory duties, the record is void<sup>109</sup> of any legal or factual justification for this change in the State Board’s operating standard – and, indeed, none exists, contrary to clear CEQA direction as discussed above in Section I.A. Moreover, even if the State Board intends (as is expected) to give strong deference to the recommendations of CAISO, it would be unprecedented, illegal and irresponsible for this Water Board to impose the proposed new legal standard on itself – let alone on future Boards – charged with the protection of our waterways and aquatic habitats.

For the reasons articulated above, we oppose the significant, unwise, and illegal changes to Section 2.B.(2), which allow for almost indefinite extension of compliance deadlines with little meaningful input allowed by the public and the State and Regional Boards as compared with current NPDES permit processes, including the Water Board’s Compliance Schedule Policy. We urge the amendments to this language that will ensure the implementation of Section 316(b) in accordance with the Act, and in consideration of – *not* in almost total deference to – the energy oversight entities in the state.

## **VII. EXTENDED OPPORTUNITIES TO COMPLY MAY RENDER INTERIM MITIGATION ILLEGAL UNDER *RIVERKEEPER II***

As discussed above, *Riverkeeper II* followed the lead of *Riverkeeper I* with respect to mitigation and restoration in lieu of BTA. Specifically, the *Riverkeeper II* court held that “a rule permitting compliance with the statute through restoration measures allows facilities to avoid adopting any cooling water intake structure technology at all, in contravention of the Act’s clear language as well as its technology-forcing principle.” The court concluded that U.S. EPA had “impermissibly construed the statute by allowing compliance with section 316(b) via restoration measures.”<sup>110</sup> This holding was not appealed to the U.S. Supreme Court and so remains the law of the land.

The Second Circuit was presented with a relatively black-and-white decision with regard to the question of whether to use mitigation and restoration in lieu of BTA. The court was not required to address the question of when allowed “interim” mitigation/restoration for facilities that ostensibly are on the road to BTA becomes illegal due to excessively long and/or suspended compliance deadlines. The Policy in Section 2.C. has chosen to allow the use of “interim” mitigation measures during the period that the plants should be coming into compliance with Section 316(b). However, these extended deadlines can reach out many years and be suspended on only an *assertion* of grid reliability by another entity (with an extremely high rebuttal burden on the

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<sup>109</sup> In fact, the SED makes not a single mention of why this change has been made, or what “compelling evidence” would be required to justify a finding of “overriding considerations.” It also fails to discuss the reason for the almost insurmountable burden placed on the Water Board in comparison with CAISO’s right to initiate the deadline suspension process with only an unsupported “written notification.” Policy, Section 2.B.(2) and 2.B.(3).

<sup>110</sup> *Riverkeeper II* 475 F.3d at 110.

Water Boards). Based on the new Policy’s language, for some facilities it may well be the case that “interim” mitigation at some point turns into long-term mitigation with no BTA implementation in sight – thereby becoming *de facto* illegal use of mitigation and restoration in lieu of BTA.

The SED articulates that “[i]nterim measures are appropriate when the compliance period is lengthy for some facilities (up to ten years for fossil fueled units) and IM/E impacts are expected to continue unabated.”<sup>111</sup> Since six of the fossil-fueled plants already have deadlines over ten years out, and another facility just under ten, this raises the question of the appropriateness of “interim” mitigation for such extended periods in light of the likelihood of even more deadline extensions and suspensions under Section 2.B.<sup>112</sup>

While we support interim mitigation measures that are written into those permits that have clear, enforceable, effective interim and final BTA-focused deadlines which demonstrably lead to compliance “as soon as possible,”<sup>113</sup> we do *not* support the illegal use of mitigation *in place of* BTA. Accordingly, the Policy should clarify the use of “interim” mitigation consistent with these comments, and should include unambiguous, accountable direction to the Regional Boards to ensure all permits make demonstrable progress toward BTA within a definite timeframe, strictly considered “as soon as possible.”

## **VIII. SACCWIS’ NEWLY EXPANDED AUTHORITY CONFLICTS WITH LEGAL AND EFFECTIVE IMPLEMENTATION OF SECTION 316(b)**

The significant revisions to the Policy under Section 3.B. effectively constitute wholly new review authority for SACCWIS that goes well beyond the issue of local area and grid reliability. This in turn effects the implementation of the Policy within any predictable timeframe.

As discussed in Section VI. above, we oppose making exceptions to compliance schedule deadlines that will undermine the clear, coordinated implementation of the Policy (and reissued permits) on a schedule that meets Section 316(b) while ensuring grid reliability through pre-determined timing. Indeed, as noted above, continued uncertainty brought about by suspended and amended compliance dates could have a spillover effect on the next facilities in line, further complicating the compliance process and delaying the Policy’s implementation. It is reasonably foreseeable that a new suspension of the deadline of any one facility could trigger something of a “leap frog” effect where facilities “race for last position” in the now overly flexible implementation schedule.

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<sup>111</sup> SED p. 83 (emphasis added). Note that the nuclear facilities’ schedules extend far past this reference, which addresses fossil-fueled plants.

<sup>112</sup> Further, as described above with regard to SONGS, past experience illustrates that the facilities may not even complete or fund the “interim” mitigation as expected or agreed, further extending the impacts already suffered by affected ecosystems for decades.

<sup>113</sup> Along the same lines, we support use of appropriate (*i.e.* legal) use of interim mitigation and restoration *immediately* – not in five years, as suggested in Section 2.C.(3). Impacts have been continuing for decades, and the environment and the public need to be made whole. Permits, almost all of which are overdue, will be soon updated, and interim mitigation should be included in the new permit conditions. If time for project planning is an issue (*i.e.* for facilities that are close to compliance with BTA), funding for appropriate projects can be used in the alternative.

The regulated community has had decades since the enactment of Section 316(b), and five years since the commencement of this Policy development process, to consider and plan for the phase out of OTC impacts consistent with the Clean Water Act. Accordingly, the Policy should establish a high burden on any facility to show cause for an exemption to the again-revised Implementation Schedule. Further, the State Board should have broad discretion to reject an application for an extension – contrary to the new revision placing the burden on the State Board and severely limiting their current discretion. The new language in Section 3.B. runs counter to this common-sense approach by significantly expanding the opportunities for facilities to seek further deadline extensions.

Moreover, as is the case in the new Section 2.B.(2), the new Policy amendments to Section 3(B)(5) have inexplicably shifted a significant burden onto the Water Board for overriding SACCWIS decisions. Unlike in Section 2.B.(2), however, the new language here is not just limited to grid reliability, but also includes self-identified “permitting constraints.” Further, there is no enforceable burden of proof or standards for facilities seeking deadline extensions to exhaust all remedies to seek other permit requirements.<sup>114</sup> This new section instead puts the burden on the *Board* to demonstrate as specious a facility’s claim that it cannot obtain “required” permits – not just in the area of grid reliability, but with respect to any permitting issue that the facility claims is related to the Policy. If the Board cannot meet its new burden to make this determination, then the Board “shall” suspend the final compliance date for the applicant for up to two years. This is an inappropriate use of the Policy to address compliance deadline issues unrelated to grid reliability. SACCWIS’ prior role as providing useful recommendations that ensure movement toward Section 316(b) compliance while ensuring grid integrity has been impermissibly expanded in the current Policy

The problems associated with the potential new opportunities for significant juggling of permit compliance dates is exacerbated by changes to Section 3(B)(3) mandating yearly “reliability studies.” These yearly studies run counter to the prior Policy’s conclusion that, at most, biennial studies were sufficient. Again, the constant re-review of compliance schedule deadlines, as opposed to clear, mandatory deadlines, will only increase concerns about grid reliability as the orderly upgrade of facilities collapses. We understand there may be circumstances demanding extensions, but the Policy should be clear that these are to be unusual exceptions, limited to grid reliability issues that have been raised by the appropriate oversight entity, and supported by clear evidence with the burden on the applicant for the extension to provide such evidence.

Such major revisions raise numerous objections. For example, as discussed earlier, the State Board cannot effectively delegate their authority to enforce the Clean Water Act to other entities. We support the coordination of the energy agencies (and the Air Resources Board) in the implementation of this policy, but the burden of proof for any exception to the Implementation

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<sup>114</sup> For example, we understand that the El Segundo partial re-power application was being held up over an inability to secure air quality permits. However, it is also our understanding that the owner/operator has offered to demolish the remaining generators on-site to resolve the problem of finding credits in the market. It is unlikely, in our view, that opponents to complying with the mandates of BTA would go to such creative measures without some regulatory burden of proof they have exhausted their alternatives, as well as opportunity for the public to suggest alternatives.

Schedule should clearly and unambiguously rest with the facilities seeking the exception and the coordinating agencies assembled in the SACCWIS – not the Water Board.

Finally, the Policy must reinstate the language in Section 3.C.(1) requiring implementation dates “as soon as possible.” As the Policy is currently written, the two-year extension may become the norm. Consistent enforcement of current deadlines, developed over an intensive five-year process with significant stakeholder input and independent studies, will far better ensure implementation of Section 316(b)’s mandates and the integrity of the electric grid than continued suspensions and extensions.

## **IX. THE POLICY MUST COMPLY WITH PORTER-COLOGNE**

Porter-Cologne addresses OTC issues at Water Code Section 13142.5(b) as follows:

For each new *or expanded* coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.

(Emphasis added.) The Policy must comply with both state as well as federal law. However, the Policy in fact appears to violate Porter-Cologne’s mandates with respect to “expanded” power plant units. For example, at Moss Landing, old units 1-5 were mothballed in 1995, before deregulation. The new, combined-cycle replacement units did not come on line until several years later, and after the new owner had applied for a new NPDES permit and CEC site license; therefore they were an “expansion” of existing operations at the time. Accordingly, the proposed Policy’s significant exceptions for combined-cycle units would contravene California’s own Water Code mandates to “minimize the intake and mortality of all forms of marine life” for new and/or expanded units. “After the fact restorative measures,” which are allowed in the current draft Policy but prohibited by *Riverkeeper I* and *II*, do not minimize or mitigate the intake and mortality of marine life. For these reasons and the reasons stated above, we urge the Board to eliminate these exceptions, which threaten ecosystems and violate state and federal law.

We also urge the State Board to better implement the protections afforded under Porter-Cologne for new and expanded facilities by including in this Policy a clear definition of “new” and/or “expanded” operations to include all major re-tooling projects. These additions would clarify that capital investments at California’s industrial facilities must include full and strict compliance with the law and policies of this state, and ensure that we fully protect and restore our precious, yet threatened, aquatic ecosystems.

## X. THE POLICY RUNS COUNTER TO THE STATE WATER BOARD'S PUBLIC TRUST RESPONSIBILITIES

As described in a detailed memorandum prepared by the California State Lands Commission,<sup>115</sup> consistent with State Water Board summaries of the topic,<sup>116</sup> the public trust doctrine is an valuable tool and mandate in ensuring healthy, resilient coastal and ocean ecosystems. The origins of the public trust doctrine are traceable to Roman law, under which the air, the rivers, the sea and the seashore were incapable of private ownership and instead were dedicated to the use of the public.<sup>117</sup> Under English common law, this principle evolved into the public trust doctrine, under which the sovereign held the navigable waterways and submerged lands “as trustee of a public trust for the benefit of the people” for uses such as commerce, navigation and fishing.<sup>118</sup> After the American Revolution, each of the original states succeeded to this sovereign right and duty and became trustee of the tide and submerged lands within its boundaries for the common use of the people.<sup>119</sup> Subsequently admitted states, like California, possess the same sovereign rights over their tide and submerged lands under the equal-footing doctrine.<sup>120</sup> That is, title to lands under navigable waters up to the high water mark is held by the state in trust for the people. These lands are not alienable, in that all of the public’s interest in them cannot be extinguished.<sup>121</sup>

Today the public trust doctrine creates a duty for states to protect the common heritage of their coastal lands and waters for preservation and public use. The California Supreme Court has specified that the public trust doctrine protects a wide variety of environmental and recreational uses in addition to the traditional navigation, commerce and fishing uses.<sup>122</sup> These include “the preservation of those lands *in their natural state*, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and *climate* of the area (emphasis added).”<sup>123</sup> Even where it no longer owns tidelands and submerged lands, a state’s retained public trust easement allows it to protect public trust uses.

Given the importance of the public trust doctrine in ensuring the State Water Board’s stewardship over, and accountability for, the use of public trust resources, the failure of both the

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<sup>115</sup> Calif. State Lands Commission, “The Public Trust Doctrine: (2001), available at: [http://www.slc.ca.gov/policy\\_statements/public\\_trust/public\\_trust\\_doctrine.pdf](http://www.slc.ca.gov/policy_statements/public_trust/public_trust_doctrine.pdf); see also Memorandum from Will Travis and Tim Eichenberg, BCDC to BCDC Commissioners, “Using the Public Trust Doctrine to Adapt to Climate Change in San Francisco Bay” (Feb. 27, 2009), available at: [http://www.bcdc.ca.gov/meetings/commission/2009/03-05\\_Public\\_Trust\\_Climate.pdf](http://www.bcdc.ca.gov/meetings/commission/2009/03-05_Public_Trust_Climate.pdf).

<sup>116</sup> See, e.g., SWRCB, “The Water Rights Process – Public Trust,” available at: [http://www.waterboards.ca.gov/waterrights/board\\_info/water\\_rights\\_process.shtml#public](http://www.waterboards.ca.gov/waterrights/board_info/water_rights_process.shtml#public) (“Under the public trust doctrine, certain resources are held to be the property of all citizens and subject to continuing supervision by the State. Originally, the public trust was limited to commerce, navigation and fisheries, but over the years the courts have broadened the definition to include recreational and ecological values.”).

<sup>117</sup> Institutes of Justinian 2.1.1.

<sup>118</sup> *Colberg, Inc. v. State of California ex rel. Dept. Pub. Works* 67 Cal.2d 408, 416 (1967).

<sup>119</sup> *Martin v. Waddell*, 41 U.S. (16 Pet.) 367, 410 (1842).

<sup>120</sup> *Pollard’s Lessee v. Hagen*, 44 U.S. 212, 228-29 (1845).

<sup>121</sup> *People v. California Fish Co.*, 166 Cal. 576, 597-99 (1913); *City of Berkeley v. Superior Court*, 26 Cal.3d 515, 524-25 (1980).

<sup>122</sup> *National Audubon Society v. Superior Court*, 33 Cal.3d 419 (1983).

<sup>123</sup> *Marks v. Whitney*, 6 Cal. 3d, 251, 259-60 (1971).

Policy and the SED to even mention the significant role of the doctrine in guiding the Water Board's implementation of the Policy is a significant oversight. This is particularly true in light of the major changes in the Policy discussed above that allow for almost indefinite extension of compliance deadlines. We urge the Water Board to specifically incorporate the directives of the doctrine in the Policy and SED to ensure that permits appropriately implement the doctrine in a way that protects and enhances the coastal, marine and estuarine ecosystems being damaged.

## **XI. THE POLICY WILL PROP UP CONTINUED OPERATION OF AGING COASTAL STEAM GENERATING PLANTS CONTRARY TO CALIFORNIA'S GREENHOUSE GAS REDUCTION, GENERATION EFFICIENCY AND RENEWABLE ENERGY GOALS**

Fourteen of the 19 once-through cooled power plants covered under the Policy are aging, inefficient coastal steam generating plants. The coastal steam generating facilities were largely built in the 1950-60s, operate at a 35% efficiency rate, and have very low usage rates; *collectively* contributing less than 5% of California's electricity needs.<sup>124</sup> As the ISO has noted, the aging coastal steam generating plants "tend to have higher heat rates than newer combined-cycle generating plants, and ... higher green house gas emission rates and other pollutants than new generation sources."<sup>125</sup>

The use of coastal waters for cooling offers a significant subsidy to the inefficient coastal steam generating plants, allowing them to continue to operate despite their limited overall contribution to California's energy needs and relatively high air quality impacts. These high environmental and efficiency costs are placed on the environment and the public. A Policy that effectively phases out the impacts of once-through cooling would encourage retirement or modernization of the coastal steam plants. Modernization of these plants is a stated goal of California's Energy Action Plan and AB 1576 (Nunez, 2005).<sup>126</sup> Unfortunately, the current Policy, for the reasons described in detail above, fails to require this expeditious and certain phase-out of the impacts of OTC at these facilities. An unfortunate byproduct of the inadequacy of the Policy will be the continued use of these highly inefficient and polluting plants.

The Substitute Environmental Document finds that "the age and relative inefficiency of many OTC units ... increase the likelihood that facilities will opt to comply with the proposed Policy by retiring one or more units or replacing them with new, more efficient generation technologies that use dry or alternative cooling systems."<sup>127</sup> The SED further recognizes that "new power plants have been constructed that use more advanced generating technologies and operate

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<sup>124</sup> All but one of the coastal steam plants produce less than 1% of California's total energy; in many cases the plants produce much less than 1%. See SED, p. 39, Figure 9 - Percentage of Total Energy Production by OTC Power Plants in 2005.

<sup>125</sup> California Independent System Operator, "Mitigation of Reliance on Old Thermal Generation Including Those Using Once-Thru Cooling Systems," Study Plan, Draft Version 2.0, p.1 (Sept. 14, 2007), available at: <http://www.caiso.com/1c58/1c58e92e2cc30.pdf>.

<sup>126</sup> AB 1576 (Nunez, 2005) authorizes utilities to enter into long-term contracts for the electricity generated from the replacement or repowering of older, less-efficient electric generating facilities.

<sup>127</sup> SED p. 67.

more efficiently and cost effectively compared to the older steam OTC units . . . .”<sup>128</sup> However, the current version of the OTC Policy does not support this positive outcome, instead retreating from binding deadlines for compliance with the Policy that would have encouraged these aging, inefficient facilities to be retired or repowered.

Repowering the inefficient coastal facilities would not only bring about cleaner and more efficient energy sources, it also would help the state meet its renewable energy goals.<sup>129</sup> For example, new combined cycle units that operate at high efficiencies and have “fast start”/“fast shut” down capabilities can provide “integration services” critical to grid reliability when renewable energy sources experience temporary shortages. These attributes are important to California’s success in reaching its renewable energy mandate—which in turn is crucial to the state’s greenhouse gas (GHG) emissions reduction goals. Accordingly, the longer the deadlines are for compliance with the OTC Policy, the longer these older facilities will be propped up by the indirect subsidy of free coastal waters, rather than be encouraged to consider development of new, more efficient and more versatile units.

Power plant operators have demonstrated that repowering is often a preferred alternative for compliance with Section 316(b), one that offers an opportunity to address multiple environmental impacts and improve energy efficiency.<sup>130</sup> Some companies, such as NRG, appropriately view repower projects as an investment in the future transition to a renewable portfolio. To date four power plants, including El Segundo, Encina, Humboldt and Gateway, have announced their intention to repower to combined-cycle operation without the use of once-through cooling.<sup>131</sup> Additionally, approximately 3,000 MW of new combined cycle replacement projects have been permitted at coastal steam plants.<sup>132</sup>

The SED recognizes that GHG emissions would likely go down when OTC power plants are replaced, finding that:

[t]he effects of the proposed Policy on net power plant sector emissions . . . . would be significant only if *all* OTC plants (*including the nuclear units*) are retired, which would result in a modest one to 2% increase in carbon dioxide emissions sector-wide. Under the current Policy, nuclear plants are scheduled last for compliance, at which point the power sector and available replacement technologies could be considerably different. Any potential for GHG emissions impacts is merely a basis for further study, as required under previous versions of the Policy. *All other scenarios* examined showed either no change or a modest *reduction in net carbon dioxide emissions* because the plants replacing the retired OTC plants in general would be considerably more efficient.<sup>133</sup>

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<sup>128</sup> SED p. 67.

<sup>129</sup> California’s renewable energy targets under AB 32 are 20% by 2010 and 33% by 2050.

<sup>130</sup> See California Energy Commission, “2007 Environmental Performance Report of California’s Electrical Generation System,” Draft Staff Report, CEC Report No. 700-2007-016-SD, p. 54 (Nov. 2007) available at: <http://www.energy.ca.gov/2007publications/CEC-700-2007-016/CEC-700-2007-016-SD.PDF>.

<sup>131</sup> *Id.*

<sup>132</sup> ICF Jones & Stokes, “Electric Grid Reliability Impacts from Regulation of Once-Through Cooling in California,” (April 2008), Table 1-1, p. 9, available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/power\\_plant\\_cooling/reliability\\_study.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf).

<sup>133</sup> SED pp. 119-20 (emphasis added).

In sum, a strong OTC Policy will advance the state's laudable goals of reducing GHG emissions, increasing efficient energy generation, and enhancing the use of renewable energy in the state.

## **XII. CONCLUSIONS**

In sum, after five years of significant effort, numerous studies, and several Resolutions to phase out OTC, the proposed changes to the Policy have now moved the state *further* away both from compliance with Section 316(b) and from a reliable process for maintaining grid integrity. The Policy is now significantly more confusing and difficult for the Regional Boards to implement (especially given the now-shifting nature of compliance deadlines), and is more significantly more harmful to the ecosystems that have waited almost 40 years for compliance with this mandate. If compliance with the Clean Water Act, increased clarity, reduction in Regional Board burdens, and statewide consistency were all initial goals of an OTC Policy, this Policy fails to achieve them. The Policy also fails to meet several key CEQA requirements, which is not only a legal and policy failing but also a lapse in the exercise of the Water Board's overarching responsibility to implement fully the Clean Water Act and protect the public trust resources of the people of California.

Accordingly, we must regretfully oppose the current version of the Policy, and urge the Water Board to correct its deficiencies as outlined above.

Sincerely,

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December 8, 2009

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Via Electronic mail: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

**RE: Comment Letter – OTC Policy**

Dear State Water Board Members and Staff:

We are writing on behalf of the organizations listed below and our memberships – all of whom are dedicated to the restoration and protection of our coast and ocean. Thank you for all your hard work on the draft regulations and your consideration of comments we have provided during this process. While we are anxious to complete the long-overdue enforcement of Clean Water Act Section 316(b) – we very much appreciate your deliberative approach and broad public outreach.

As directed by the State Water Resources Control Board (“State Board”), we are limiting our comments to issues raised in the recent revisions to the draft “Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling” (hereinafter referenced as “draft cooling water policy,” “regulations” or “policy”) released on November 24, 2009, and the discussion of those amendments at your December 1, 2009 informational hearing.

The discussion of the draft cooling water policy at the State Board’s December 1, 2009 raised significant concerns that we will address below. While we remain concerned with some of the language and substantive amendments proposed in the revisions to the draft cooling water policy, we are equally concerned with the comments made by the industry representatives. The comments from many industry representatives, as well as those of the California Independent Systems Operator (CAISO), lead us to believe the overwhelming trend in the industry will be to expand and take advantage of any ambiguities and “loopholes” in the final regulations.

In light of those concerns, we feel even more compelled to recommend removing some exemptions and revising the current language with the purpose of ensuring full compliance with the purpose of the document – that is, full enforcement of Clean Water Act Section 316(b) and the policies embedded in that law to compel Best Available Technology for reducing marine life mortality and adverse impacts on marine ecological systems caused by entrainment and impingement.

Our detailed comments are attached below. In Summary we:

- Strongly support and appreciate the deletion of the “wholly disproportionate” cost-benefit exemption from the draft regulation;
- Appreciate the Board’s discussion of achieving the goal of “beneficial outcomes” -- but we believe amendments to the current draft are necessary to achieve these goals;

- Generally oppose any special treatment for nuclear facilities, except the provision to ensure public safety;
- Commend the State Water Board staff and the energy agencies for their considerable effort coordinating the Compliance Schedule, and the regulated entities should be held to the schedule except under extremely rare exceptions. While we are not opposed to some reasonable and limited flexibility in meeting the Compliance Dates, we recommend strict enforceable limits and prescribed procedures to ensure only the rare exemption from the timeline; and we
- Recommend some clarification language in the Definitions section.

Thank you for your hard work and diligence working with the public, the regulated community and the energy agencies to craft regulations and a reasonable timeline for finally implementing the mandates of the Clean Water Act section 316(b).

Sincerely,

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Surfrider Foundation

Linda Sheehan, Executive Director  
California Coastkeeper Alliance

Jim Metropulos, Senior Advocate  
Sierra Club California

Mark Gold, Executive Director  
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## ISSUES AND REVISIONS

### 1. BENEFIT/COST CONSIDERATIONS

As we have stated in previous written and oral testimony, the State Board is not compelled to allow a “cost-benefit test” as an exemption to strict compliance with the legal mandates of Section 316(b). There were comments made at the December hearing by industry representatives that the US Supreme Court looked favorably upon a cost-benefit test and US EPA’s exercise of the “wholly disproportionate” standard in the past – implying that the Court’s decision should stand as a signal to agencies that it is the standard to apply. We disagree with that read of the Court’s deliberations and decision. To the contrary, it was clear that some cost/benefit test was within the discretion of the US EPA – but was not mandatory.

We are opposed to any cost-benefit exemption for practical and policy reasons explained in detail in our comment letter submitted on September 30, 2009. We strongly support the elimination of the “Wholly Disproportionate” exemption, or any other cost-benefit test, from the regulations.

While numerous studies have documented the significant loss of marine life through current “once through cooling” systems (OTC), there is an insurmountable challenge to quantifying the benefit of reducing marine life mortality in comparable terms as the cost of retrofitting a generating unit with improved cooling technology. Simply put, the complexities of marine ecological systems coupled with the dynamics of ever-changing ocean physical processes, are difficult to fully understand and quantify. Consequently, the indiscriminate removal of species from the marine environment, during either natural or man-made periods of abundance and scarcity, is not a constant number. Yet it is clearly a significant impact – a fact implicit in the enactment of section 316(b) and substantiated by US EPA and numerous California regulatory agencies. However, converting this significant impact to a dollar figure is a task that is impossible to accomplish with any confidence. Further, California law, such as the Marine Life Protection Act, also recognizes the “intrinsic value” of healthy and relatively undisturbed marine life populations and eco-systems – another economic value that is not easily converted to monetary figures.

Second, compliance through retrofitting existing facilities is more easily quantified in monetary terms. However, considering the considerable opposition to compliance expressed by industry representatives, we believe the cost estimates offered by permit applicants would require rigorous third-party verification. Further, testimony given by the California Energy Commission suggested that the entire fleet of steam generators is in need of replacement with more efficient units – and the marginal cost of cooling towers for re-power projects will be dramatically lower than retrofitting already outdated units.

From a legal and policy perspective, the State Board should fully recognize that OTC was a standard cooling technology when Congress enacted Section 316(b). It follows that OTC was considered an unacceptable cooling technology in 1973 and therefore cannot be considered the “best technology available” now. That OTC is still commonly used in California is testament to industry’s reluctance to embrace the change mandated by Congress. Allowing virtually

unquantifiable cost-benefit exemptions to the regulations results in undermining the policy goal of forcing technological advancements to minimize marine life mortality.

From a practical perspective, quantifying the “benefits” of reducing marine life mortality and the significant disruption of robust marine ecological systems is virtually impossible. Resolving the easily foreseeable conflicts that will arise in each permit proceeding, and differing applications of a cost-benefit exemption by the several Regional Boards, will result in unnecessarily throwing off the Compliance Schedule, resulting in an indefinite delay in enforcement of the law. Thirty-five years of non-compliance with the mandates of 316(b) is an embarrassment. Allowing exemptions after this long delay of enforcement is unacceptable.

**In conclusion, we support the exclusion of the “wholly disproportionate” cost-benefit exemption, or any other cost-benefit test, in order to enforce the clear policy goals of section 316(b) – as well as alleviation of concerns that it will be impracticable and result in case-by-case litigation and delay.**

## 2. TRACK 2

First we want to re-emphasize our previous written and oral comments that Track 2 should be an extremely limited exception to Track 1 compliance. We are concerned that the emphasis by representatives from power plant owners and the utilities suggests that Track 2 will be the standard as opposed to the rare exception to the rule. Ensuring full compliance with the intent of the policy and goals of the policy will only be weakened by further amendments to Track 2 requested at the hearing.

We also want to highlight that the Track 2 “90% of 93%” standard is effectively “double-counting” the 10% margin of error accepted by the court in the *Riverkeeper II* decision. As stated above, dry cooling is the “best technology available.” The court was very clear that interpreting the term “best technology available” did not mean “second best.”

Nonetheless, we are not opposed to setting Track 1 reduction standards on “wet cooling” technology because we believe it is consistent with the court’s definition of a “cost effectiveness” exception to the absolute best technology for minimizing entrainment and impingement. But, if the State Board is applying the court’s rationale for allowing a “margin of error” in US EPA’s Phase 2 “performance standards” – that 10% margin of error should be applicable to the performance of “dry cooling” systems, not the second best alternative of “wet cooling” systems. **We recommend changing the current draft to reflect that Track 2 compliance “...achieves at least a 90% reduction of the best technology available, which would be the reduction of entrainment and impingement commensurate with a dry cooling system.”**

We also want to re-state and condition our objection to the Track 2 allowance of “operational” changes to existing OTC cooling systems. As noted above and repeatedly stated in previous comments, OTC cannot be considered “best technology available” – and simply changing the operation of non-compliant technology is not consistent with the clear mandate in section 316(b) to compel the industry to implement BTA.

Nonetheless, we appreciate the Board’s discussion that the regulations should be focused on the “beneficial outcome”. However, as explained below, even setting aside the legal question of whether “operational” changes to OTC is consistent with enforcing section 316(b) – we are concerned the “beneficial outcomes” will not result from the current draft of Track 2.

The changes in the provisions in Track 2 still fail to ensure the stated goal of reducing entrainment at these exempted facilities by 90% of the required reductions in Track 1.

Track 2 changes the Track 1 requirement that each “unit” of a power station transitions to “wet cooling” or some structural equivalent for reducing marine life mortality. Instead, facilities eligible for the draft Track 2 compliance would be compelled to a reduction of less marine life mortality (the odd 90% of 93% reduction target, which equates to approximately 84%) for the entire “facility.” We assume this “facility-wide” inconsistency is to allow a broader set of “operational changes” options. This provision becomes a troublesome loophole when read in conjunction with Section 4(B) -- defining the methods for establishing entrainment baselines, and monitoring operations for achieving the reduction of entrainment. The proposed baseline assessments are a “guess” at larval composition and abundance in the “source water” and are subject to significant error as they do not accurately account for reproductive variability, seasonal larval concentrations and dynamic physical ocean changes. Compliance monitoring is also subject to error from not accounting for all the differing and poorly understood survival strategies of the myriad marine life entrained – as well as their response to dynamic physical ocean changes.

Given the complexity of the marine environment and ecological systems, and the inherent risk of inaccurate baseline assessments and monitoring for proof of meeting the mandatory reductions in marine life mortality, **we strongly urge the Board to revise Section 4(B)**. It is widely accepted that the intake volume is the primary cause of entrainment<sup>1</sup>. Therefore, intake volume is a reliable proxy for actually attempting to calculate entrainment and associated reductions. **Should the State Board choose to interpret 316(b) in a way that allows “operational changes” in place of technological improvements to reduce marine life mortality<sup>2</sup>, we strongly urge the following amendment of the compliance measurement for Track 2 from actual entrainment reductions to flow reductions as a measurement for entrainment. In place of the current language, we recommend:**

- **Establishing a baseline for each facility that is calculated as an average of the monthly “generational flow” from data collected over the 5-year period preceding adoption of this regulation. For generators that have re-powered some or all of their units to combined-cycle generators, the baseline data would be an average of five**

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<sup>1</sup> The Expert Review Panel convened to inform this policy agreed that flow was an appropriate proxy for entrainment.

<sup>2</sup> We reserve the right to judicial review of the use of “operational changes” in place of Best Technology Available for compliance with the mandates of Clean Water Act section 316(b) and CA Water Code section 13142.5(b).

**years of monthly “generational flow” prior to commencing operation of the new generators<sup>3</sup>;**

- **The Track 2 standard for reducing marine life mortality commensurate with the achievement of implementing the “best technology available”, including the court’s exception for a “margin of error”, would be a reduction of “generational flow” by 90%, per month, from the baseline defined above.**

**“Generational flow” should be defined in the policy as the intake flow required for the generation of electrical power as currently articulated in the definition of “power-generating activities.”** Generational flow is different from “actual flow”, which also includes intake flow for maintenance operations. So, as defined in the “Immediate Requirements” at Section 2(C)(2), it is reasonable to accommodate an exception for “critical” system maintenance.

“Generational flow” is appropriate for both the baseline and reduction compliance proxy, as power plants may falsely elevate “actual flows” in order to minimize compliance – and consequently minimize the “beneficial outcome” discussed by the Board. For example, El Segundo Generating Station units 1 and 2 ceased producing power in 2002, yet maintained a higher annual flow intake in 2002 than 2001. **Basing entrainment reductions on generational flow would not allow for such flow adjustments and achieve results consistent with the intent of the Board’s discussion and goal of “beneficial outcomes” from operational changes rather than the arguably legal mandate of technological changes.**

We feel very strongly that generational flow as an entrainment “proxy” would improve the simplicity and accuracy for reducing entrainment by avoiding all the limitations of current efforts to calculate source water populations, actual entrainment baselines, and monitoring protocols to prove mandatory reductions<sup>4</sup>. We also believe this approach to establishing a proxy based on monthly “generational flow” for both the baseline over a five-year period, and the mandatory reductions, will improve the goal of reducing operational changes during periods of peak biological productivity – as well as improve the approximation of compensating for environmental and ecological variability over multiple years.

### 3. COMPLIANCE DATES/IMPLEMENTATION SCHEDULE

As expressed by the Board in an earlier hearing, we remain concerned that the industry appears focused on provisions in the policy, and recommended amendments, that allow exemptions to the goal of compelling the “best” technological improvements to their cooling water systems that minimize marine life mortality. With that in mind, we are opposed to ambiguities for meeting the

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<sup>3</sup> In regard to the comments made by representatives of the Moss Landing Power Station that they had invested in OTC for their re-power project in reliance on decisions made by the Regional Board, we want to point out that the use of OTC at the plant was challenged for compliance with Section 316(b) and the legal challenge is, as yet, not finally resolved. Certainly, the owners were on notice that their investments and reliance on an unresolved challenge to the permit were taken at their own risk.

<sup>4</sup> As we have stated before, there must be different “reference site” baselines and monitoring protocols for the Interim Requirement to compensate for past mortality and the mortality that will occur during the Implementation Schedule.

reasonable compliance deadlines that both ensure grid reliability and enforce Section 316(b) as soon as possible.

Staff very carefully integrated energy and coastal resources agencies into the policy implementation through the SACCWIS and this is an important advisory body. Given the cooperative and extensive effort to devise the SACCWIS, provision 2(B)(2) in the proposed changes seems redundant to the advisory role of the SACCWIS, as CAISO, CPUC and the CEC already have the ability to address grid issues through the SACCWIS. **We urge you to remove provision 2(B)(2). Giving these agencies individual discretion to recommend changes in compliance dates may cause unnecessary delays in compliance and take away from the goals of the policy.**

**Further, we are strongly opposed to an automatic stay (or noticed stay) at the individual request of CAISO, which was raised in public comment at the December 1, 2009 workshop.** The SACCWIS already has discretion to recommend changes to the policy compliance timeline, and the policy clearly states that SACCWIS meetings can be convened as needed and that if any member of the SACCWIS has a dissenting opinion from the group, a minority report can be issued.

We are also concerned with the alternative approach discussed by the Board that a hearing could be convened within thirty days to consider and possibly accommodate an amendment to the Compliance Dates. We are not opposed to an expeditious resolution of these potential requests for changes in the prescribed schedule. However, we feel that, while the powerplant operators, utilities and the SACCWIS may be prepared to present to the Board in thirty days -- having been the parties who prepared the request -- that short time period is an undue hardship on the public and public-interest organizations to research and prepare comments and effectively participate in the public debate. **Any potential request for changes to the Compliance Dates can be predicted far enough in advance to allow meaningful participation by the public; therefore adequate notice and time for review should be granted if such a provision is added to the policy.**

***We suggest the request for a waiver to the Compliance Dates be: 1) published for public review immediately upon receipt by SACCWIS and 2) scheduled for review and public comment at the next scheduled SACCWIS meeting, but not sooner than 90 days.***

#### 4. IMMEDIATE AND INTERIM REQUIREMENTS

We are generally supportive of the “Immediate and Interim Requirements” in Section 2(C)(2) of the regulations. We hope that it is clear to the State Board, Regional Boards, regulated entities and the public that some provisions in this section are “immediate” and “on-going” (e.g.; sub-section (2)) and other provisions are “immediate” and “interim” (e.g.; sub-section (3)).

Any interim mitigation requirements should be based on actual impingement and entrainment data, as monitoring is key to identifying past and present damages and appropriate mitigation measures. This approach should include a regional reference location component to better determine ecological productivity in areas unaffected by once-through cooling and more accurately assess impingement and entrainment impacts. Ecological impact assessment based on current impingement and entrainment rates is not appropriate because it rewards power plants



that have already caused large ecological impacts by not holding them accountable for these environmental damages. Although we urge the State Board to utilize flow as a proxy for entrainment to determine Track 2 compliance, impingement and entrainment monitoring is still critical for the determination of appropriate mitigation measures.

Further, the policy must make it clear that power plants must implement an impingement and entrainment monitoring program over the life of their permits. While generational flow is the best proxy for entrainment, an understanding of actual impact reductions (both impingement and entrainment) should be built into compliance monitoring. Currently, the policy requires monitoring for only a year, which does not adequately account for seasonal and annual variability (e.g. La Nina, El Nino and other potential factors affecting variability). Monitoring over the permit lifecycle is the typical requirement for all coastal sewage treatment plants. Even stormwater monitoring requirements have increased over the last 19 years. Requiring coastal power plants to routinely monitor their impingement and entrainment impacts on coastal marine resources must become standard operating procedure.

In addition, we remain opposed to the amendment to sub-section (3)(c). As we have expressed repeatedly, the science of “restoration scaling” is in a constant state of improvement – as is most science. Therefore, references to “habitat production foregone” or so-called “comparable alternatives” is unnecessarily restrictive and does not recognize the current advances in “restoration-scaling methodology” nor adequately allow for future advances in the scientific community. Further, we believe that it is the intent of the policy to achieve “full replacement” value for the loss of marine life from entrainment and impingement. Finally, we agree with concerns raised by industry representatives that funding habitat restoration and/or habitat creation projects will potentially exceed the replacement of marine life they are liable for. In contrast to the static calculation of “habitat production foregone”, alternative restoration-scaling methodologies may include a time variable such as “discounting for present value” and other variables that will allow a more accurate compensation calculation. **Therefore, we strongly urge deleting the current language in sub-section (3) (C) and replacement with:**

***“The best available restoration-scaling methodology approved by the Regional Water Board shall be used to determine the habitat and area to meet the full replacement value of marine life lost to operation of the facility’s cooling system.”***

An important component of the amended language above is the elimination of the term “mitigation.” It is our belief that the intent of the policy is to compel “restorative measures” to fully compensate for the loss of marine life. Given that assumption, **we strongly urge removal of the terms “mitigate” and “mitigation” in the section -- and replacement with the term “restorative measures to fully replace marine life losses”.**

These amendments will not only help to clarify the interim requirements of this policy for existing facilities. These amendments will additionally avoid future inconsistencies in interpreting the term “mitigate” and it’s meaning in CA Water Code Section 13142.5(b), and the enforcement of that section, for withdrawals of seawater for “new” industrial facilities – including coastal generators. The law is settled that “after the fact restoration” is not a legal substitute for “best available technology.” We agree with the limited application of restorative measures for compensation of past marine life mortality and the interim mortality until the

Compliance Dates are achieved. However, “mitigation” for new facilities cannot be interpreted to include “after the fact restoration.”

The Board need not rule on the meaning of “mitigate” in the context of CA Water Code Section 13142.5(b) in this policy adoption. Nonetheless, we strongly urge the Board to adopt these amendments because the changes simply clarify the language and better ensure uniform implementation of the intended policy by the several Regional Boards.

Finally, we agree with the industry representatives that it would be most efficient and effective to calculate the costs of “full replacement value” for the past and interim marine life mortality, and require that sum of money be deposited with a third-party with on-going expertise in restorative measures. Power plant operators are not experts in the science and lack experience in projects to meet restoration of marine life populations and robust and healthy ecological systems. Further, we believe the government of California can best prioritize and allocate funds more efficiently and effectively from regional or statewide planning and implementation. **To that end, we strongly encourage designating the California Coastal Conservancy as the recipient of compensation costs paid by power plant owners, and that the funding be earmarked for habitat restoration and/or creation projects to meet full replacement value. To the extent the funds are spent on on-going or future projects, it should be required that the addition of these funds account for additional replacement value above what would have been achieved in the absence of the funding. Lastly, these funds should be deposited in the Coastal Trust Fund of the State Coastal Conservancy. The Coastal Fund has the proper structure to best assure that the monies dedicated to restoration are applied in full and in a continuous and adaptive manner.**

#### 5. NUCLEAR FACILITY SPECIAL CONSIDERATIONS

We agree, in general, that the nuclear facilities mandate special consideration to ensure public safety. Therefore, **we agree with section 2(D) that compliance with the regulations by nuclear power plants needs to be deemed safe by the Nuclear Regulatory Commission. We also agree that it is the facility’s burden to show, through some documentation by the NRC, that compliance with the regulations would create a public safety hazard before any exceptions to the rule are considered.**

However, we strongly disagree with the special considerations of “cost” in Section 3 (D) (1) and (D) (7). At the December 1, 2009 hearing, neither the representatives of the nuclear facilities, nor the Board’s staff, offered an adequate explanation or rationale explaining why “costs” are any more of a “feasibility” issue for nuclear facilities than others. In fact, because the nuclear facilities are owned and operated by utilities, they are not included in the State’s de-regulation of the industry and consequently can actually recuperate not only their costs, but also a reasonable return on the investment in cooling water technological upgrades. Arguably, “cost” is less of a concern for the nuclear facilities than other generators.

Further, because the nuclear facilities operate as baseload generators and constitute a major part of the cumulative cooling water withdrawals in the State, exemptions to the rule for these facilities will have a dramatic impact on achieving not only the legal mandate to implement “best

technology available” – but would even undermine the Board’s discussion of achieving “beneficial outcomes” commensurate with BTA through other operational means.

In that vein of discussion, we were not impressed with the Diablo Canyon statistics offered at the December 1, 2009 hearing showing a high percentage of the total water withdrawn statewide -- yet a relatively lower percentage of entrained organisms statewide. Diablo Canyon representatives did not offer any baseline data prior to operation of the OTC system – so the lower entrainment numbers may be evidence of a massive mortality event in the area surrounding the facility at commencement of operation. Further, as noted above, 316(b) embodies a technology-forcing policy. It is not dependent on a showing of a certain level of impact at a given facility before the law applies.

**Therefore, we strongly urge the Board to remove any reference to cost considerations in Section 3 (D). We also urge the Board to adopt a policy that, aside from the special consideration of public safety concerns, eliminates any special considerations or exemptions for the nuclear facilities.** We absolutely abhor the implication and inherent threat that seems to follow the logic of “too big to fail” that has plagued the financial industry. It would turn sound public policy on its head to allow the facilities withdrawing the lion’s share of seawater in the State to somehow use the greatest violation as a rationale for special exemptions.

## 6. DEFINITIONS

**“Not Feasible”** - We appreciate the inclusion of a definition to clarify the considerations of what is “not feasible” – an important consideration in strictly limiting the facilities eligible for Track 2. As we have state above, we remain concerned that the posture and comments from industry representative indicate a trend towards utilizing Track 2 as the rule, rather than the intended rare exception to the rule.

With that in mind, the definition of “Not Feasible” (and similar language in Section 2 (C)(1)) is overly-broad and does not provide any review standard to ensure “due diligence”.

In the current draft, the list of factors to consider includes: “space constraints, inability to obtain necessary permits due to public safety considerations, unacceptable environmental impacts, local ordinances, regulations, etc.”

**This list is non-exhaustive by concluding with “etc”. We strongly encourage the Board to eliminate the non-conclusive “etc” and adopt an exhaustive list. Or, if there is sound reasoning for an open-ended list, in the alternative, the Board should adopt a non-exhaustive list with some clear sidebars for inclusion of more issues to be considered. However, because we cannot imagine other compelling considerations in making a determination of “not feasible” – we have no sidebar language to offer. Hence, our preference for concluding the list with the considerations already identified and eliminating the open-ended “etc” at the end.**

Further, given the apparent trend in the industry’s focus on exemptions to the rule, there is a major concern that a facility can “game” the “not feasible” considerations by simply not attempting to comply through exhausting every conceivable opportunity. For example, for those

operators resistant to complying with Track 1, there is an incentive to passively accept the denial of a permit without creatively exhausting all remedies. An example may be the recent denial of air quality credits for the El Segundo re-power project. Because NRG was compelled in their own interest to remedy the permit problem, we understand they now have voluntarily offered to de-commission one more of their units to create the air quality credits needed to complete the re-power project. We are deeply concerned that this type of creativity and diligence to alleviate the considerations listed in the “not feasible” definition, in a strategic effort to be granted the Track 2 exception to the rule, will not be commonplace.

**We strongly recommend some standard to ensure full diligence in exploring ways to comply with other laws while still complying with this cooling water policy. Therefore, we recommend inserting language at the appropriate place to guide the Regional Boards to exercise Best Professional Judgment and seek the assistance of an unbiased third-party review if necessary.**

**“Feasibility”** - We also strongly support the clarification that “cost” is not a factor in “feasibility.” However, as stated above, there is a conflict created by allowing “cost” as a factor to be considered for nuclear facilities. **We recommend eliminating the conflicting rules by eliminating cost as a factor for the nuclear facilities to create an even playing field and consistent application of the policy and regulations.**

**“Power Generating Activities”** – We support the definition of “Power-generating Activities”. We believe the intent of eliminating the unnecessary mortality through the “immediate” and “on-going” mandate in Section 2 (C) (2) for running the pumps only for power-generating activities and critical system maintenance could be improved by clarifying in the Definition section that the pumps cannot be run for co-located industrial uses other than power generation. **We strongly believe that if the Board’s discussion of “beneficial outcomes” is to be achieved, the elimination of marine life mortality from enforcement of this rule for the electrical generating industry cannot be undermined by allowing other industrial seawater withdrawals to take the electrical industry’s place.**

**“Intake Flow Rate** - Track 1 of the Draft Policy sets a standard for reducing “intake flow rate” and highlights the definition of this term. However, there is no clear guidance defining when the reduction of intake flow rate is applicable. We assume from the prohibitions in the “Immediate and Interim Requirements” that prohibit seawater intakes during times when the generating unit is not generating electricity (with the limited exception for “critical system maintenance”) that the definition and regulation of intake flow rate in Track 1 is applicable to times when the units are generating electricity. A minor clarification of the definition would eliminate any confusion. **The definition for “intake flow rate” should be clarified to read “refers to the instantaneous rate at which water is withdrawn through the intake structure, expressed as gallons per minute per kilowatt hour generated.”**

## CONCLUSION

We want to quickly conclude where we started: we genuinely appreciate the effort spent to draft regulations that will finally achieve the goals of implementing Best Technology Available that

Congress established over 35 years ago. We especially want to recognize and congratulate the staff of the State Water Board and the energy agencies for diligently working out a reasonable compliance schedule that ensures grid reliability and the mandate to minimize marine life mortality at our coastal power plants as soon as possible.

We think our recommendations are consistent with the goals the Board has articulated during the several hearings. With a balance of strengthening the regulations in places and eliminating loopholes – while simultaneously allowing the limited flexibility for unforeseeable circumstances to meet the Compliance Schedule – California will be able to proudly proclaim a major step towards eliminating a significant adverse impact on our precious coast and ocean.

Thank you for your work to date, as well as your careful consideration and acceptance of our good faith effort to meet that tricky balance of strict enforcement and flexibility where it is absolutely necessary.



September 30, 2009

Charlie Hoppin, Chair and Board Members  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814  
Via Email: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

**Re: Comments on “Water Quality Control Policy on the use of Coastal and Estuarine Waters for Power Plants” Draft Substitute Environmental Document and Draft “Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling.”**

Dear Chair Hoppin and Board Members:

The undersigned groups respectfully submit the following comments on the State Water Resources Control Board (“State Board”) and California Environmental Protection Agency Draft Substitute Environmental Document for the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (“Draft SED”) and the draft Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (“Draft Policy”). We welcome the opportunity to comment on this important issue and include and incorporate by reference our previous two comment letters on this topic, dated May 20, 2008 and September 15, 2006, which are attached separately. We also include and incorporate by reference testimony that California Coastkeeper Alliance provided to the Assembly Committees on Natural Resources and Utilities and Commerce at their joint hearing regarding once-through cooling on March 2, 2009, attached separately.

We thank the State Board and staff for their dedication to this important issue. Staff has done a commendable job of coordinating with the California Energy Commission (“CEC”), the California Independent Systems Operator (“Cal ISO”), the Ocean Protection Council (“OPC”) and its member agencies, and other agencies in the continued development of this policy.

Multiple federal and state agencies, including the U.S. Environmental Protection Agency (“U.S. EPA”), CEC, OPC, and State Lands Commission (“SLC”), have recognized that once-through cooling (“OTC”) causes significant, ongoing devastation to our valuable marine resources.<sup>1</sup> Coastal power plants are permitted to withdraw more than 16 billion gallons of cooling water off of the California Coast daily and kill an estimated 79 billion fish and other marine life annually.<sup>2</sup>

These facilities, many of which have been in operation for decades, present a considerable threat to California’s coastal ecosystems. Today’s impacts are not reflective of the 40-50 years of marine life impacts due to OTC, where adjacent ecosystems have suffered a long history of entrainment and impingement. Eliminating this significant impact on marine life may allow many depleted or “overfished” species to recover to population abundance well beyond what we see in population assessments today. In other words, the reduction of entrainment and impingement goes beyond the value of saving the individuals entrained and impinged -- their survival and recruitment to maturity can have an exponential benefit in restoring robust populations that may be currently in decline or stabilized at far less than past levels of abundance.

This is especially true for once-through cooled plants located on enclosed bays and harbors, such as Haynes Generating Station and Alamitos Generating Station on Alamitos Bay. It is estimated that these power plants take in the entire volume of Alamitos Bay every five days.<sup>3</sup> It is likely that the abundance and community structure of life in Alamitos Bay and other source water areas for OTC have been significantly impacted by decades of water intake. Ecological impact assessment based on current impingement rates does not reflect true damages and rewards power plants that have caused long-term ecological impacts.

A 2005 study estimated that for the 12 power plants in the Southern California Bight, there is an overall cumulative entrainment mortality of 1.4% of larval fish in the Bight. Further, when considering only recreational fish species, impingement was somewhere between 8-30% of the number of fish caught in the Bight.<sup>4</sup> All of the federally listed and imperiled salmon species that migrate in and out of the Sacramento and San Joaquin River watersheds, including the Chinook salmon, Coho salmon, and steelhead trout, must pass the intakes for two aging power plants on the San Francisco Bay-Delta Estuary (Pittsburg and Contra Costa) on their way in and out of the Delta. Records for both of these plants demonstrate that they illegally entrain and impinge endangered species, including the Delta smelt and the Chinook salmon.<sup>5</sup> In bays such as the Santa Monica, Monterey, and San Diego, and estuaries such as the Elkhorn Slough and the Morro Bay National Estuary, the impacts from OTC can be more pronounced due to the high biological productivity of these areas and the concentration of the power plants’ impacts in light of the area affected. In Santa Monica Bay three power plants using

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<sup>1</sup> Clean Water Act Section 316(b); California Energy Commission *Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants: Staff Report*. (2005) Available at: [www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF](http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF). Accessed 9.29.09 (“Issues and Environmental Impacts Associated with OTC”); California State Lands Commission, *Resolution of the California State Lands Commission Regarding Once-Through Cooling in California Power Plants* (adopted April 17, 2006); California Ocean Protection Council, *Resolution Regarding the Use of Once-Through Cooling Technologies in Coastal Waters* (adopted April 20, 2006). Available at: <http://www.opc.ca.gov/2006/04/resolution-of-the-california-ocean-protection-council-regarding-the-use-of-once-through-cooling-technologies-in-coastal-waters/> Accessed 9.29.09 (“OPC Resolution”).

<sup>2</sup> State Water Resources Control Board, *Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (March 2008) p.1. (“2008 Scoping Document”). Available at: [http://www.waterboards.ca.gov/plans\\_policies/docs/coastal\\_estuarine/scope\\_doc031808.pdf](http://www.waterboards.ca.gov/plans_policies/docs/coastal_estuarine/scope_doc031808.pdf).

<sup>3</sup> Issues and Environmental Impacts Associated with OTC, *supra* note 1 p.37.

<sup>4</sup> *Id.*

<sup>5</sup> Environmental Protection Agency, *Case Study Analysis for the Proposed Section 316(b) Phase II Existing Facilities Rule, Part E: San Francisco Bay/Delta Estuary*, EPA 821-R-02-2002, (February 28, 2002), p. E3-15. Available at: <http://www.epa.gov/waterscience/316b/phase2/casestudy/che1.pdf> Accessed 9.29.09.

OTC (Scattergood, El Segundo, and Redondo Generating Stations) cycle 13% of the Bay's water every six weeks.<sup>6</sup>

In a state where the foundation of our economic activity is fueled by the health of our coastal resources, and in a state leading the nation in a strong commitment to sustainable energy, there is no question that California has the right and responsibility to move past this antiquated cooling technology.<sup>7</sup> It has been over 35 years since the Clean Water Act ("CWA") first outlined requirements for power plant cooling technology. We are long overdue for a clear, consistent statewide policy on cooling water technology that protects marine ecosystems and advances greener and more efficient energy production.

We have reviewed the Draft Policy and, although it is a step in the right direction, some important clarifications must be made in order to ensure that the final policy will actually protect the beneficial uses of the state's coastal and estuarine waters and that it will be consistently applied throughout the state. The Draft Policy follows five separate tracks that can be pursued by operators – any combination of which may or may not result in reduction in impingement and entrainment: These tracks are as follows: (1) Track 1, setting forth best technology available ("BTA"); (2) Track 2, providing an exception to BTA where Track 1 proves not feasible; (3) Nuclear exceptions; (4) Grid Reliability exceptions; and (5) a Wholly Disproportionate exception. We are concerned that the numerous loopholes in the various tracks will allow operators to comply without actually achieving the goal of protecting marine life.

In brief, we make the following key points and suggest amendments below:

- Closed-cycle cooling should be best technology available.
- All units of each OTC plant should be required to reduce impacts by at least 93%.
- Key terms including "intake flow rate" and feasibility must be defined to ensure consistent application of the policy.
- The calculation baseline should be based on generational flow.
- The wholly disproportionate demonstration is not necessary and should be removed.
- The nuclear plants should not be exempted.
- Interim requirements are important but should not distract from planning and compliance with the actual policy requirements.
- Plant owners and operators should fund restoration projects designed and implemented by government agencies rather than conduct the projects themselves.
- A statewide policy should be adopted and implemented as soon as possible.
- The Statewide Advisory Committee should be used as a streamlining tool to facilitate the various permitting processes of the multiple agencies involved.

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<sup>6</sup> Issues and Environmental Impacts Associated with OTC, *supra* note 1.

<sup>7</sup> National Ocean Economics Program, *California's Ocean Economy: Report to the Resources Agency, State of California*, (July 2005), p.1. Available at: [resources.ca.gov/press\\_documents/CA\\_Ocean\\_Econ\\_Report.pdf](http://resources.ca.gov/press_documents/CA_Ocean_Econ_Report.pdf). Accessed 9.27.09. Finding that "The total GSP of California's Ocean Economy in 2000 was approximately \$42.9 billion. California's Ocean Economy directly provided approximately 408,000 jobs in 2000, and almost 700,000 jobs when multiplier effects are included. It provided more than \$11.4 billion in wages and salaries in 2000, and more than \$24 billion when multiplier effects are included. The NOEP also evaluated the total value of all economic transactions within 19 coastal counties (mainland coast and four additional counties added within San Francisco Bay and the Sacramento River Delta) and identified approximately \$ 1.15 trillion of economic activity, (86% of total state economic activity), that is referred to as the "Coastal Economy." The natural resources of the coast and coastal ocean are a solid foundation for California's economy and these resources must be sustained to maintain the strength in the six sectors evaluated within the Ocean Economy and the much larger Coastal Economy."



## **I. TRACK 1**

### **a. The Adopted Policy Should Use the 2008 Draft Policy Language Setting Closed Cycle Cooling as Best Technology Available.**

We supported the language in the 2008 Draft Policy setting “closed cycle cooling” as the standard for best technology available.<sup>8</sup> Under that language, a plant could choose to either retrofit or repower to closed-cycle wet or air cooling.<sup>9</sup> In 1972 the United States Congress recognized that once-through cooling was creating unnecessary adverse impacts on marine life and consequently enacted CWA section 316(b). Congress intentionally drafted language in the CWA to force improvements in technology by requiring the best technology available to minimize adverse impacts.<sup>10</sup> As the court articulated in *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2d Cir. 2007) (“*Riverkeeper II*”), Section 316(b) of the CWA does not allow “second best” technology to the best technology available requirement. As currently written, the Draft Policy sets closed-cycle wet cooling as the best technology available and does not mention that in some cases closed-cycle air cooling could be the better option. We urge the State Board to change the language in the policy to “closed-cycle cooling” as it was in the 2008 version of the policy to allow for inclusion of both wet and air cooling for compliance.

Further, the Draft SED does not provide a complete analysis of why dry cooling was rejected as BTA, nor does it provide a complete analysis of why Track 1 alone (without Track 2) was rejected as the best alternative.<sup>11</sup> This latter point is particularly important given the State Board’s previous acknowledgement that the type of alternative technologies available under Track 2 “to meet the required reduction in entrainment are unproven.”<sup>12</sup> We do not believe anything has changed in the last six years and believe the State Board should explain any change in its opinion.

### **b. “Intake Flow Rate” Should be Clarified.**

Track 1 of the Draft Policy sets a standard for reducing “intake flow rate” and highlights the definition of this term. However, there is no clear guidance defining when the reduction of intake flow rate is applicable. We assume from the prohibitions in the “Immediate and Interim Requirements” that prohibit seawater intakes during times when the generating unit is not generating electricity (with the limited exception for “critical system maintenance”) that the definition and regulation of intake flow rate in Track 1 is applicable to times when the units are generating electricity. A minor clarification of

<sup>8</sup> 2008 Scoping Document, *supra* note 2 at p.84.

<sup>9</sup> The Ocean Protection Council commissioned a feasibility study that found in most cases retrofitting to closed-cycle wet cooling is feasible, and some power plant operators have shown that in some cases repowering with air cooling is preferable. See Tetra Tech, Inc., *California’s Coastal Power Plants: Alternative Cooling System Analysis*, prepared for the California Ocean Protection Council (February 2008), p. ES-1. Available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/npdes/docs/cooling/fullreport.pdf](http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/cooling/fullreport.pdf) Accessed 9.27.09.

(“Alternative System Analysis”); and Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project, CEC-800-2005-001-CMF, June 2007.

<sup>10</sup> *Kennecott v. United States EPA*, 780 F.2d 445, 448 (4<sup>th</sup> Cir. 1985) found that it was the intention “of Congress to use the latest scientific research and technology in setting effluent limits, pushing industries toward the goal of zero discharge as quickly as possible.”

<sup>11</sup> State Water Resources Control Board and California Environmental Protection Agency, *Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling Draft Substitute Environmental Document*. (July 2009), p. 55-61. Available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/npdes/docs/cwa316/draft\\_sed.pdf](http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/cwa316/draft_sed.pdf) Accessed 9.27.09 (“Draft SED”).

<sup>12</sup> State Water Resources Control Board, *Comments on National Pollution Discharge Elimination System Proposed Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities*, letter to U.S. Environmental Protection Agency (August 2002), p. 3 (attached) (“State Board Letter to US EPA”).

the definition would eliminate any confusion. The definition for “intake flow rate” should be clarified to read “refers to the instantaneous rate at which water is withdrawn through the intake structure, expressed as gallons per minute per kilowatt hour generated.”

## II. TRACK 2

### a. All Plants Should Reduce Entrainment and Impingement Consistent with Track 1.

The current phrasing of the policy suggests that plants that fall under Track 2 will have to achieve a 90% reduction of the reduction that could be achieved under Track 1; in other words, 90% of 93%, which is 83%. We urge the State Board to require that all plants reduce entrainment and impingement consistent with the Track 1 standard.

In 2004 the California Legislature passed the California Ocean Protection Act (“COPA”) to protect and restore state coastal waters. Through COPA the Legislature created the OPC and charged this body with the responsibility to “coordinate activities of state agencies, that are related to the protection and conservation of coastal waters and ocean ecosystems, to improve the effectiveness of state efforts to protect ocean resources...” in a manner “consistent” with the stated goals of COPA.<sup>13</sup> The OPC exercised its responsibility under COPA in 2006 by passing a resolution regarding OTC, which officially resolved to

urge the State Water Resources Control Board to implement Section 316(b) and more stringent state requirements requiring reductions in entrainment and impingement at existing coastal power plants and encourages the State to implement the most protective controls to achieve a **90-95 percent reduction in impacts**.<sup>14</sup>

Track 2 in this Draft Policy falls short of this clear guidance set by the OPC by allowing plants to only reduce 83% of their total impacts. According to the 2008 OPC funded study evaluating the feasibility of impingement and entrainment control technologies that can meet the 90-95% reduction goal in the most cost effective manner, “the most effective technology that can meet [these criteria] is closed-cycle cooling, commonly referred to as “wet” or “dry” cooling towers.”<sup>15</sup>

Maintaining Track 2 so separate technologies may be used from Track 1 to comply with the ultimate policy is understandable, but the percent reduction targets should be equivalent in both Tracks. As the court articulated in *Riverkeeper, Inc. v. U.S. E.P.A.*, 358 F.3d 174 (2<sup>nd</sup> Cir. 2004) (*Riverkeeper I*), there is a reasonable margin of error in the actual performance records given the complexities of monitoring dynamic physical processes and seasonal, annual or decadal changes in fish abundance and location. However, allowing for a margin of error in the performance monitoring should not be confused with allowing a margin for the targeted reduction in entrainment. The court noted that a “facility must aim for 100 percent, and if it falls short within 10 percent, that will be acceptable. It may not, however, aim for 90 percent and achieve only an 89 percent reduction in impingement and entrainment.”<sup>16</sup> We urge the State Board to avoid actions that conflict with the *Riverkeeper cases*, and to instead follow the guidance sent by the OPC to reduce entrainment by at least 93% at all plants with no exceptions.

<sup>13</sup> California Public Resources Code section 35615(a)(1).

<sup>14</sup> OPC Resolution, *supra* note 1 (emphasis added).

<sup>15</sup> Alternative System Analysis, *supra* note 8.

<sup>16</sup> *Riverkeeper, Inc. v. U.S. E.P.A.*, 358 F.3d 174, 189 (2<sup>nd</sup> Cir. 2004).

**b. Reduction of Intake Should be Required For each Unit of a Plant.**

While Track 1 would apply to each unit of a plant, Track 2 currently allows for the plant “as a whole” to achieve reductions in impingement and entrainment, thereby creating a loophole where a plant could convert some of the units away from OTC and still run OTC on the remaining units. This loophole is significant because the remaining OTC “peaker” plants would likely run during times of peak energy demand – during the summer – when peak larval abundance for most species in Southern California is at its highest.<sup>17</sup> So while a power plant in Southern California might be able to reduce its annual water intake at an OTC unit by only running it in the summer, this would not result in the desired reduction of entrainment and impingement impacts. This loophole undermines and is contradictory to the “technology based” and “technology forcing” policies in the Clean Water Act. We urge the State Board to require impingement and entrainment reductions for each unit of a plant.

Further, as written, Track 2 violates the clear mandate in Section 316(b) by allowing a change in “operation” of the plant as a substitute for “best technology available” to reduce adverse impacts. Allowing a reduction or other juggling of the operation of one or more units at a power plant is not the same as meeting the mandate to improve the technology itself.

Staff has suggested that allowing Track 2 as a compliance alternative for limited types of facilities rewards these owners that have invested in more efficient generating units. While encouraging greater efficiency in our overall generating capacity is a laudable goal, it is not a factor in crafting guidance for full enforcement of the CWA. Further, these facilities have obviously found a financial incentive to greater efficiency and re-powered some of their units without any incentive provided by an unrelated exception to the rule.

**c. “Feasibility” Must be Defined to Ensure Consistent Implementation Among Regional Boards.**

Under the current language of the Draft Policy for Track 2, plants can avoid meeting the best technology standard under Track 1 if they can show to a Regional Board’s satisfaction that it is “not feasible” for them to do so. Of great concern is the fact that “feasibility” is not defined. Without a definition, there is risk that interpretations of “feasible” by Regional Board staff are likely to be extremely divergent. Implementation of the policy will result in a hodgepodge of compliance measures determined mainly by the persuasiveness of industry representatives at the regional level, rather than by consistent and fair application of the performance standards across the state.

The policy must include a definition for the term “feasibility” in order to achieve the stated goal of the Draft SER of providing “clear standards and guidance to permit writers to ensure consistent implementation across Regional Water Boards.”<sup>18</sup> State Board Staff indicated at the September 16, 2009 hearing in Sacramento that their intention was not to include economic considerations in the definition of feasibility, but rather physical and technological feasibility. As noted above, economic considerations were already built into the rule by allowing wet cooling towers, along with the lower end of the performance range, as compliance in Track 1.

We strongly urge the State Board to define feasibility in the final policy that articulates clear physical, and technological standards for the Regional Boards to use. A better definition of “feasible”

<sup>17</sup> AES Huntington Beach L.L.C., *Generating Station Entrainment and Impingement Study Final Report*, (April 2005), prepared by MBC Applied Environmental and Tenera Environmental, see Section 4.3.1 Entrainment Results; “Southern California Time Series: SCOR WG125: Global Comparisons of Zooplankton Time-Series” (May 19, 2008), available at [http://planktondata.net/time-series/calcofi-sc\\_us/index.html](http://planktondata.net/time-series/calcofi-sc_us/index.html).

<sup>18</sup> Draft SED, *supra* note 10 at p.14.

would follow the generally-accepted definition of “capable of being done or carried out.”<sup>19</sup> This is the definition being applied in New York State, which defines “feasible” as “capable of being done” with respect to the physical characteristics of the facility site but does not involve consideration of cost.”<sup>20</sup> Application of this accepted definition of “feasible” allows Regional Board staff to apply objective technical knowledge and focus on technological infeasibility.

We also encourage the State Board to direct Regional Boards to consider the state funded feasibility studies already completed on behalf of the State Board and the OPC when evaluating technical feasibility.<sup>21</sup> Although the OPC study assumes that transition from OTC to closed-cycle cooling would only occur by retrofit, it finds this scenario feasible for many of the coastal power plants in California, including San Onofre Nuclear Generating Station and Diablo Generating Station.<sup>22</sup> In reality, most of the coastal generators would likely repower to transition away from OTC. Long Beach Generating Station transitioned to dry cooling in 2007 through repowering. The El Segundo Generating Station and Encina Power Plant in Carlsbad have submitted permit requests to the CEC to repower some of their units to dry cooling – with the plan to eventually retire the remaining units. In fact, it is possible that the El Segundo Generating Station may retire its remaining units in the near future to receive air quality credits necessary to finish the repower project -- and Encina’s remaining OTC units should be retired within the Implementation Plan timeframe. All of the properties for these plants are relatively limited in space, but are evidence that repowering with dry cooling is a feasible, efficient option.

**d. Calculation Baseline Should be Based on Generational Flow and Take into Account the Seasonal Variability of Larvae to Ensure Actual Reduction in Entrainment.**

The goal of the policy is to minimize actual damages to marine life. We are concerned that the ambiguity in the Draft Policy for calculating impact reductions could result in little-to-no operational change for many of the plants, in direct contravention of the Clean Water Act and the intent of this policy to minimize marine impacts. It is unclear how reductions in marine life mortality will be measured and a calculation baseline for Track 2 reductions will be determined. Track 2 requires reduction in “impingement mortality and entrainment of all life stages of marine life for the facility, as a whole, to a comparable level to that which would be achieved under Track 1;” however it does not specify how reductions will be measured. Ironically, in 2002 the State Board raised with EPA during comments on the federal Phase II Rule similar concerns about measuring reductions. In particular, the State Board stated:

“The Proposed Rule is unclear as to how to measure the required reduction in impingement and entrainment. Do you measure the reduction by counting the organisms impinged and entrained? Do you weigh the organisms impinged and entrained? If so, do you use dry weight over wet weight? Do you have to measure the reduction for each life stage, or do you lump all life stages together and use a combined count or weight?”<sup>23</sup>

We see the same problems with the State Board’s proposal and the challenges of measuring impact reductions. For that reason, we urge the State Board to set flow as a proxy for entrainment by using

<sup>19</sup> Merriam-Webster OnLine, <http://www.merriam-webster.com/dictionary/feasible> Accessed 9.29.09.

<sup>20</sup> State Water Resources Control Board, *Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations*, (June 13, 2006), Appendix II, at p.4. Available at: [http://www.waterboards.ca.gov/water\\_issues/programs/npdes/docs/cwa316b/316b\\_scoping.pdf](http://www.waterboards.ca.gov/water_issues/programs/npdes/docs/cwa316b/316b_scoping.pdf) Accessed 9.27.09 (“2006 Scoping Document”).

<sup>21</sup> Alternative System Analysis, *supra* note 8.

<sup>22</sup> *Id.*

<sup>23</sup> State Board Letter to US EPA, *supra* note 11 at p. 3.

generational flow as a baseline. The approach of using flow as a proxy for entrainment is supported by the OTC Expert Review Panel and is a simple and clear method of calculating entrainment reductions.

State Board staff has considered various options for establishing a baseline on flow, including permitted maximum flow (also known as design flow), actual flow and generational flow. Generational flow is an appropriate metric to achieve actual reductions in marine life mortality, as it reflects the flow actually required to generate electricity, and would not allow compliance to be based on elevated intake during periods of non-generation. Reductions based on permitted maximum or actual flow raise further concern.

Simply reducing flows based upon the permitted maximum flow will not truly achieve entrainment reductions at many OTC plants in California, as most facilities operate well below their permitted maximum flows at what is commonly called, actual flow. Furthermore, at some coastal power plants, the actual flow is significantly greater than the generational flow. For example, generating Units 1 & 2 at El Segundo Generating Station ceased producing electricity in 2002; however the mean annual flow at Intake 001 (which draws in cooling water for Units 1 & 2) from 2002-2004 continued at or above the level prior to 2002 in order to prevent biofouling.<sup>24</sup> Therefore, if the State Board chooses to base entrainment reductions on permitted maximum flow or actual flow instead of generational flow, actual entrainment reductions may not be achieved.

If flow is used as a proxy for entrainment, the policy should also specify a time period for the determination of baseline flow from which to establish entrainment reductions. Otherwise, if facilities are given discretion to independently establish their baseline flow and actual flow is used as the metric, they may elevate their actual flow levels beyond the necessary amount for generation to augment the baseline (yet still remain within their permitted flow levels). This would make it easier for generators to comply with the policy without actually achieving true entrainment reductions. Such an approach echoes similar problems with early efforts to reduce residential water use in the face of droughts – those overusing water when the baseline was set were “rewarded” while conservers were punished. There has been a steady decline in the use of cooling water at coastal power plants over the past decade. It is critical that recent flow information be used to establish a calculation baseline to best reflect current conditions. Therefore, we recommend that average generational flow over the 5-year period preceding this policy (2004-2009) be used as the baseline.

#### **e. Impingement and Entrainment Impact Monitoring Provisions Should be Strengthened.**

The Draft Policy only requires 12 consecutive months for facilities to determine past impingement and entrainment impacts to use as a basis for future impingement and entrainment reductions under Track 2. This design fails to account for annual variability and source water depletion in the determination of baseline impingement impacts. It also gives discretion to power plant operators to choose an advantageous 12-month period that would potentially create a scenario where impingement and entrainment reductions are easier to meet. As mentioned above, we recommend generational flow be used as a proxy for entrainment. We further recommend that current source water monitoring be used to help provide a basis for compliance monitoring of Track 2 controls. Most facilities have conducted impingement monitoring (species impinged and impingement rates) for the last decade or more; this data should be used to help determine baseline impingement impacts to minimize any bias due to annual variability and provide a reference for Track 2 compliance monitoring.

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<sup>24</sup> El Segundo Power, LLC, *El Segundo Generating Station flow data 1996-1999 & 2000-2004*, El Segundo Power GS, CA0001147, CI-466. Available at [http://www.waterboards.ca.gov/losangeles/water\\_issues/programs/power\\_plants/index.shtml](http://www.waterboards.ca.gov/losangeles/water_issues/programs/power_plants/index.shtml). Accessed 9.29.09.

Section A.1(b) of the monitoring provisions requires that impingement and entrainment be measured during “different seasons” when the cooling system is operating. This requirement is overly general and may provide the power plant operator discretion to choose monitoring times that reflect select impingement and entrainment reductions, but do not accurately reflect true reductions. Periods of peak use (such as the summer months when energy is in high demand) and biofouling maintenance should be included in the monitoring provisions to ensure accurate reflection of impingement and entrainment impacts and reductions.

**f. After Track 2 Controls are Implemented, Permittees Should be Required to Perform Regular (Monthly) Impingement and Entrainment Monitoring.**

The monitoring provisions in the Draft Policy currently require 12 consecutive months of monitoring after Track 2 controls are implemented. As previously discussed, this limited time frame will not reflect annual variability. It will also fail to reflect any changes in the effectiveness of Track 2 controls (e.g. increased impingement due to biofouling or other complications). Regular (such as monthly) monitoring should be required to accurately reflect the ability of Track 2 controls to meet impingement and entrainment reduction requirements. Regular monitoring by permittees is not a new concept under the State Water Board; NPDES waste water dischargers are required to perform continuous monitoring of constituents in their discharges for the entire lifespan of their permit. Likewise, once through cooling permits should require impingement and entrainment monitoring throughout the permit lifecycle to capture seasonal and annual variability, and to ensure that accurate information is provided regarding the effectiveness of Track 2 controls at meeting marine life mortality reductions.

### **III. WHOLLY DISPROPORTIONATE DEMONSTRATION**

**a. The Wholly Disproportionate Demonstration Exception is not Necessary and Should be Removed.**

The inclusion of an exception for a Wholly Disproportionate Demonstration presents a host of problems and provides industry with yet another unneeded exception in this important policy. For the reasons explained below, this exception should be removed.

First, there is no valid reason for the State Board to provide more excuses for continued harm to our waterways than even the U.S. Supreme Court says is required.<sup>25</sup> The Draft SED properly notes that this exception is not required<sup>26</sup> and that at the state level, cost-benefit approach is “not a common practice.”<sup>27</sup> Moreover, unlike the federal rule, which attempted to regulate more than 500 facilities nationwide, California is faced with a relatively small number of facilities using once-through cooling. Given the work already performed by various state agencies to address this problem, it seems the State Board should be able to adopt a policy without this exception. Indeed, based on available information, it is far easier for the State Board to conclude that the economic benefits of our coasts make closed cycle cooling worth the costs to retrofit. Moreover, public policy based on sound economic principles dictate the internalization of environmental externalities such as those caused by once through cooling.

Second, the Policy as drafted already contemplates economic considerations. For example, the Draft SED recognizes that dry cooling has not been chosen as BTA because of some cost considerations.<sup>28</sup> Moreover, notwithstanding a recognized range of 93-97% achievable reduction in intake through closed cycle cooling, the Draft Policy chooses the low end of that performance range –

<sup>25</sup> *Entergy Corporation v. Riverkeeper* (2009) 556 U.S. \_\_ [129 S.Ct. 1498].

<sup>26</sup> Draft SED, *supra* note 10 at p. 80.

<sup>27</sup> *Id.* at p. 79.

<sup>28</sup> *Id.* at p. 57.

93% reduction – rather than the high end of the range, 97% reduction. While not completely clear in the Draft SED, the basis for this also seems to be economic in nature. Finally, economic considerations also appear inherent in the grid reliability exception.

Third, inclusion of a Wholly Disproportionate Demonstration does not promote the stated goals of the Draft Policy, namely producing clear guidance and reducing the burden placed on the Regional Boards as well as migrating away from case-by-case best professional judgment application.<sup>29</sup> Indeed, by deferring to the Regional Boards on one of the more significant and intensive portions of the Policy, the State Board is essentially leaving the most difficult decisions to the Regional Board. Intensive economic studies will be required and even then Regional Boards will still be left determining what the remaining “extent practical” standard will be if a facility qualifies for the exception. This will not save time, create consistent permits nor reduce the burden on the Regional Boards.

Fourth, the Wholly Disproportionate Demonstration invites litigation at both the State Board and Regional Board level. At the State Board level, industry has already expressed a desire that the exception apply to all facilities, not just those identified in the Draft Policy. This could lead to litigation instead of a shift to modernizing California’s power plants. Litigation will be pursued at the Regional Board level because of the disparity in resources and inconsistent approaches. The numerous difficulties of accurately measuring both the benefits and the costs lend itself to extensive dispute – resulting in extensive litigation. As discussed in the *Riverkeeper* cases and analysis of the State Board itself, benefits also are typically undervalued and subject to inconsistent approaches, especially when compared to costs.<sup>30</sup> For example, industry already disputes any non-use valuation methodologies and likely will continue to do so at the Regional Board level. Further, this approach moves the debate away from technology and more towards water impacts –which often is more contentious and more difficult. Moreover, “Congress rejected a regulatory approach that relies on water quality standards, which is essentially what [industry] argues in focusing on fish populations and consequential environmental harm.”<sup>31</sup>

Finally, as is discussed more fully below, we agree with the rationale and ruling of the Second Circuit Federal Court in the *Riverkeeper* cases<sup>32</sup> that benefit/cost analyses are unworkable. Accurately quantifying the impacts of entrainment and impingement from an ecosystem-wide perspective is beyond the abilities of the current state of marine sciences. Further, the numerous difficulties of accurately measuring both the benefits and the costs lends itself to unlimited dispute – resulting in unlimited litigation. In contrast, eliminating this unworkable exemption to the rule eliminates any potential for the inevitable disputes, disparities between Regional Boards’ decisions and the resulting litigation and unpredictable final results.

In 2002, the State Board expressed uncertainty about the usefulness of a wholly disproportionate analysis in the U.S. EPA’s draft Phase II rule. In a letter from then Executive Director Celeste Cantu (attached), the State Board stated that:

Our experience is that it is difficult to obtain agreement on costs or benefits. The result is a long series of arguments involving dueling cost/benefit analyses. Cost estimates vary widely between estimates generated by the applicant and those generated by independent consultants. Estimates of biological impacts are even more variable, and the applicant often asserts that

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<sup>29</sup> *Id.* at p. 14.

<sup>30</sup> *See, infra* p.10 and notes 32, 33.

<sup>31</sup> *Riverkeeper, Inc. v. U.S. E.P.A.*, 358 F.3d 174, 196 (2<sup>nd</sup> Cir. 2004).

<sup>32</sup> *Id.*; *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2<sup>nd</sup> Cir. 2007).

there will be no net impact. Even if agreement could be obtained on the benefits to a biological community of meeting the performance standards, agreeing on the monetary value on this benefit would still be difficult. If U.S. EPA decides to adopt this portion of the Proposed Rule, we request that the Proposed Rule require the applicant to fund an independent analysis. We also request that "wholly disproportionate" be substituted for "significantly greater" to ensure that site-specific determinations will only be used in unusual circumstances. A rule that requires cost/benefit analyses for most decisions will be difficult to administer.<sup>33</sup>

The inevitable disputes invited by this exemption has the potential to undermine the Implementation Schedule. In contrast, the removal of this exemption is consistent with the US Supreme Court ruling in *Entergy*,<sup>34</sup> because it would significantly reduce potential litigation, and eliminates an unnecessary loophole that undermines otherwise clear guidance for compelling use of the best technology available.

### **i. Calculating Benefits**

First, it is currently impossible to accurately determine what is considered a "sustainable yield" for the majority of species controlled under fishery management plans.<sup>35</sup> Compounding this problem is that the data on non-commercial species is, for the most part, equally poor, if not more so. Further, there is limited information about the role of both commercially valuable species and non-commercial species in the marine ecological system and impossible to quantify in any discrete conclusions. Finally, the complexities of an ever-changing ocean physical environment results in unreliable data for long-term ecosystem based management. Not only is the ocean a physically dynamic place involving El Nino events, oscillating regime shifts, and other factors that have limited understanding, knowledge about these complex dynamics is complicated by the on-going effects of climate change.

Simply put, we currently do not adequately understand the numerous complexities of the ocean environment, including the marine living resources and the physical processes, to accurately determine the impacts of entrainment and impingement either in an immediate "snap shot" -- or more importantly in the long-term. Moreover, traditional benefit analysis also tends to reward facilities in degraded waterways because the benefits are more difficult to accurately calculate due to the long term degradation of the resource.

Second, given the limits of science to accurately determine the adverse impacts on the environment, quantifying the impacts in monetary or any other comparable terms to compare the benefits of reducing entrainment and impingement to the cost of improved cooling technology is simply impossible. Indeed, "neither statute, regulation, nor guidance memorandum dictates how benefits should be assessed."<sup>36</sup> Moreover, "EPA does not believe that [it is] necessarily required to prepare any monetized assessments at all."<sup>37</sup> Further, in order to avoid an underestimate of benefits, "care should be taken to assure that quantitative factors do not dominate important qualitative factors

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<sup>33</sup> State Board Letter to US EPA, *supra* note 11.

<sup>34</sup> *Entergy Corporation v. Riverkeeper* (2009) 556 U.S. \_\_ [129 S.Ct. 1498] (cost-benefit considerations allowed but not required).

<sup>35</sup> California Department of Fish and Game, *California's Living Marine Resources: A Status Report*, (December 2001).

<sup>36</sup> U.S. Environmental Protection Agency "Response to Comments: Public Review of Brayton Point Station, NPDES Permit No. MA0003654 (Oct. 3, 2003) at IV-18-31" Available at <http://www.epa.gov/region01/braytonpoint/pdfs/finalpermit/sectionIV.pdf> Accessed 9.28.09 ("Brayton Point Response to Comments").

<sup>37</sup> *Id.* at p. IV-24.



in decision-making.”<sup>38</sup> The complexity of the issue is showcased by the fact that the State Board Draft SED fails to mention benefits at all in the Economic Analysis section.<sup>39</sup>

## ii. Calculating Costs

It is also important to note that there is an assumption that the calculation of the cost to implement BTA is relatively straightforward in comparison to calculating the benefits. While it is true that estimating costs has the advantage of calculating variables that are “monetized” in the market, that relative ease of calculating costs does not eliminate disputes. Efforts at estimating the cost of compliance are a source of controversy amongst experts.<sup>40</sup> For example, estimates are dramatically impacted by choice of discount values as well as terms of amortization (e.g. 20 or 30 years<sup>41</sup>) for capital projects of this nature. It is also important to put costs in perspective. Hundreds of millions of dollars in capital expenses—once spread out over time and across the population—equal a change of 6-18 cents a month in terms of household costs, for example.<sup>42</sup> Moreover, as EPA noted in the adoption of the Brayton Point power plant in Massachusetts, the courts have been clear that under the analogous BPT wholly disproportionate cost test, environmental controls might be required where costs could cause some “economic dislocation” and even plant closures to achieve the stated environmental objective.<sup>43</sup> While this approach is generally supported by the environmental community, this also leads to debate with industry. In addition, there is another benefit that is often overlooked when viewing costs: costs drive conservation as well as the more efficient use of resources.

There has been a great deal of effort already invested in trying to craft a benefit-cost rule for enforcing CWA Section 316(b). This considerable effort has not resulted in a standard formula that is workable—nor would it benefit the industry with clear guidance for future planning or investment. Arguably, efforts to craft a benefit/cost exemption to the rule compelling the use of best technology available stand as a clear example of why a mandate passed by Congress in 1972 remains unenforced. We strongly agree with the *Riverkeeper* decisions that this exemption is simply unworkable and should be removed from the final Guidance Document.

## b. The Wholly Disproportionate Demonstration Fails to Articulate the Benefits of Reducing OTC.

The Draft Policy currently relies on calculating the benefits of compliance in several ways and raises several concerns:

### Entrainment:

First, the Draft Policy requires documentation of the benefit of reducing entrainment “...in terms of ‘habitat production foregone’, or some other appropriate method approved by the Regional Board.” This language explicitly invites disparity and inconsistency by the several Regional Boards in determining what methodology to use. Again, this type of ambiguity results in inconsistent enforcement of the rule, costly disputes and implementation, and the strong likelihood of resorting to the judicial system to enforce the law.

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<sup>38</sup> *Id.* at p. IV-21.

<sup>39</sup> Draft SED, *supra* note 10 at pp. 108-110.

<sup>40</sup> For example, the State of New York has applied a very different attempt to calculate costs after comments from experts in economics.

<sup>41</sup> See e.g. *Id.* at IV-34 (“EPA believes that 30 years is a reasonable estimate of the useful life of fiberglass cooling towers.”)

<sup>42</sup> U.S. Environmental Protection Agency, *Brayton Point Station Fact Sheet*, Available at <http://www.epa.gov/region01/braytonpoint/pdfs/finalpermit/braytonpointfactsht2003.pdf>. Accessed 9.29.09.

<sup>43</sup> Brayton Response to Comments, *supra* note 32 at p. IV-16.

We strongly urge the Board to first and foremost set the clear standards for any attempt to calculate the benefits of reducing entrainment, including:

- the methodology must be the “best science available”;
- given the unavoidable complexities of calculating the eco-system impacts, the method should include the “precautionary principle”;
- the method should calculate “full replacement”; and
- opportunity for public comment.

Given these standards, the use of “habitat production foregone” (HPF) will fall short and should not be a suggested methodology. We strongly urge the Board to consider a “restoration scaling” methodology in an effort to more accurately reflect “full replacement” value.<sup>44</sup> Additionally, the policy should incorporate a strict and definitive margin of error to compensate for the lack of certainty inherent in calculating the benefits to a natural ecological system that is so poorly understood. Further, in order to avoid an underestimate of benefits, care should be taken to assure that quantitative factors do not dominate important qualitative factors in decision-making. It also should be clear that it is perfectly appropriate for the Regional Boards to include non-monetized and qualitative benefits in their consideration.<sup>45</sup>

### Impingement

It is not clear why the sub-section 4(A)(2)(b) concerning impingement is not similar in detail to the section on entrainment. We strongly urge the Board to include the recommendations above regarding entrainment reduction benefit calculations in the sub-section on attempting to calculate the benefits of reducing impingement.

### **c. There is No Basis For Giving Gas-Fired Facilities a Wholly Disproportionate Exception.**

The Economic Analysis in the Draft SED essentially concedes that based on capacity on a cost per MWh basis, all of the gas-fired facilities experience similar and only modest costs associated with phasing out once-through cooling. To the extent that the final policy retains the wholly disproportionate exemption, it should do so on a more limited basis. Based on data in the Draft SED, the two nuclear plants are the most likely facilities to face real retrofit cost and downtime constraints.<sup>46</sup> When these two facilities are taken out of the equation, statewide costs of retrofit drop significantly.<sup>47</sup> It is also not clear why the gas-fired facilities that repowered over the last several years using antiquated and environmentally destructive cooling technology should now be given a competitive advantage over similar plants that will repower over the next several years.

Although new gas turbine units are more efficient than older facilities and, therefore, tend to use somewhat less intake water per kilowatt of output, they nevertheless consume hundreds of millions of gallons of intake water per day and destroy billions of marine organisms in the process. Moreover, because these units are very new, unlike the nuclear plants, they will continue to wreak environmental destruction for many decades to come. Had these facilities properly employed BTA at the time of their recent repower, they would now be amortizing those costs. There is no legitimate reason for allowing them to avoid BTA compliance for the next several decades.

<sup>44</sup> Peterson, Charles H, et al: *Scaling restoration actions in the marine environment to meet qualitative targets of enhanced ecosystem services*; Marine Ecological Press Services, Vol. 264, 173-175, (December 15, 2003).

<sup>45</sup> Brayton Point Response to Comments, *supra* note 32 at p. 18-31.

<sup>46</sup> Draft SED, *supra* note 10 at p. 110.

<sup>47</sup> Without the nuclear facilities, the costs on page 110 of the Draft SED drop from staff’s estimated 0.45 cents per kWh to 0.157 cents per kWh and drop from a range of 3.5%-8.7% to a range of 1.2%-6.9%.

Accordingly, we urge the Board to exclude the gas-fired facilities from any available wholly disproportionate exemption. At the very least, older units at the same plant that have not yet been repowered clearly should not be entitled to utilize a cost exemption, either as part of a permit renewal or as part of a permit for a repower.

#### IV. NUCLEAR PLANTS

##### a. Nuclear Plants Should Not Be Exempted

The two nuclear plants, Diablo Canyon and San Onofre Nuclear Generating Station (SONGS), each use 2.5 billion gallons per day of seawater<sup>48</sup> and account for nearly two-thirds of the once-through cooling water utilized by the state's combined population of coastal nuclear and natural gas-fired steam boiler plants.<sup>49</sup> Because of the enormous amount of water withdrawn from the nuclear plants, their impacts on the local marine ecosystem are quite significant. For example, it has been documented that SONGS has destroyed over two hundred acres (59,000 kelp plants) of kelp forest. This, in turn, caused the displacement or death of thousands of individuals from numerous other species. In total it is estimated that the kelp fish population in the area has declined by 80%, all due to that single plant.<sup>50</sup> Also, the argument that SONGS has already mitigated environmental harm does not hold up because of the court ruling prohibiting mitigation as a substitute for compliance with Section 316(b). Although SONGS restoration efforts have been important, additional restoration is required to make up for the impacts caused by the nuclear power plant until they comply with requirements.

Despite these clear harms from the nuclear plants, these facilities are given numerous exceptions. Most notably, the nuclear facilities are given an exception for nuclear safety and one if special studies result in "alternative" recommendations. These exceptions are in addition to the Track II and Wholly Disproportionate exceptions, which are also available to the nuclear facilities.

Although the safety of nuclear power plants should always be an important concern, in *Riverkeeper II* the court found that there was "adequate consideration by the EPA of the nuclear plants concerns" and upheld that Section 316(b) does apply to nuclear facilities and that additional exceptions beyond safety were not required.<sup>51</sup> Yet, leaving the compliance determination solely to the operator is inappropriate in providing a safety exception. The Nuclear Regulatory Commission, the State Board and the plant owner/operator should all be part of any safety exception in order to ensure accountability, and the decision and information leading to it should be made available to the public. Furthermore, the State Board should clarify in its final policy what information that is required for "appropriate documentation" to make any decision about safety and nuclear plant requirements under the policy. A formal recommendation or requirement from the NRC is an important and necessary part of any such safety consideration.

##### b. Special Studies on Nuclear Plants Should be Conducted by a Third Party and Peer Reviewed.

The Draft Policy calls for special studies to "investigate alternatives" for the nuclear plants to meet the requirements of this policy and calls for a review committee to oversee the special studies and to provide a report for public comment detailing the results of the studies within three years of the effective date of the policy. Other than for safety reasons, we disagree with the general notion that nuclear facilities should be given another special exception to the policy or from the requirements to

<sup>48</sup> Issues and Environmental Impacts Associated with OTC, *supra* note 1 at, p. 12, Figure 1.

<sup>49</sup> Draft SED, *supra* note 10 at Table 2-3, p. 31-32.

<sup>50</sup> UN Atlas of the Oceans (2002), <http://www.oceansatlas.org>; see also CA Dep't of Fish and Game, *California's Living Marine Resources: A Status Report* (December 2001).

<sup>51</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2<sup>nd</sup> Cir. 2007); see also Draft SED, *supra* note 10 at p. 46.

achieve BTA. Rather, the only purpose of this special study should be to determine how nuclear facilities will achieve either Track 1 or Track 2 (not “alternatives” to those provisions). This language in the policy should be clarified to indicate that type of approach. In that vein and that vein alone, we would support the inclusion of a review committee and ask that the State Board clarify that the review committee will also be involved in setting the parameters for the third party study before it begins. Further, we urge the State Board to ensure that all studies included in the decision making process are peer-reviewed.

## **V. INTERIM REQUIREMENTS**

### **a. Interim Requirements Should Not Distract from Planning and Compliance with the Actual Policy Requirements.**

We support the general intent of the interim requirements to immediately reduce negative impacts to our marine and estuarine ecosystems; however the complexity of these requirements raises concern. If interim requirements are included in the final policy, we urge the State Board to clarify that compliance with the actual policy is of primary importance, and further refine the requirements for the interim measures to ensure streamlined compliance.

Technology to prevent the entrainment of organisms such as marine mammals and turtles (such as large organism exclusion bars) and restoration are beneficial measures in the interim, but neither will satisfy the compliance goal of reducing impingement and entrainment by 90%. By comparison, NPDES permits often have interim requirements for certain constituents while a waste water treatment plant installs new technology to improve effluent water quality, but neither these interim requirements nor any past actions count towards compliance with the final effluent limitations. There is no reason that power plants should be provided special treatment or credit for mechanisms employed to remediate the past and present environmental damages caused by OTC.

Also, for even improved clarity, it is important that this definition make a distinction in the “Immediate and Interim Requirements” that the prohibition of seawater intakes is not an “interim” requirement – but a permanent and “immediate” requirement.

### **b. Critical System Maintenance Should be Defined**

Currently interim requirement C(2) allows the intake of water to occur only during “power generating activities or critical system maintenance.” While “power generating activities” are defined in section 6 of the Draft Policy, “critical system maintenance” is not. “Critical system maintenance” needs to be clearly defined so that it does not allow for continued flows for co-located desalination facilities or other practices not included in “critical system maintenance.” Without definition, this provides a significant loophole for plants to continue intake flows, which is contrary to the intention of this policy to actually reduce impacts to marine life. We suggest defining “critical system maintenance” to only include activities that are critical for maintenance of a plant’s physical machinery and absolutely cannot be postponed until the unit is operating to generate electricity. This will help protect against the intake of excess cooling water when no power generation or essential maintenance operations are being performed.

### **c. Restoration should not be confused with Mitigation.**

Currently the interim measures outlined in section C(3) provide three options for compliance: a) demonstrating that the owner or operator is compensating for interim impacts through existing mitigation measures, b) participating in funding an appropriate mitigation project, and c) developing and implementing a mitigation program for the facility approved by the Regional Board. We are concerned by the use of the term “mitigation” in all of these elements, as that is a term also used in the

California Water Code Section 13142.5(b) which establishes standards for regulating new power plant cooling technology and other industrial seawater intakes. “After the fact” restoration as an alternative to implementing BTA has been plainly rejected by the Courts.<sup>52</sup> However, we are not opposed to mandating restoration as an interim measure while all units come into compliance.

To avoid future confusion in defining the term “mitigation” when enforcing the Water Code for all intakes of seawater for industrial purposes, we encourage the replacement of “mitigation” with the term “restoration.” We do not believe the two terms are synonymous. Furthermore, as previously stated, we urge the State Board to not only account for interim damages caused by OTC between adoption of this policy and compliance by facilities in this section, but also for past entrainment and impingement by coastal power plants.

We also urge the State Board to prohibit credit for past mitigation efforts as counting toward compliance with interim requirements. The general intent of the interim requirements is meaningless if the State Board chooses to give credit to power plants for their past mitigation efforts through Coastal Commission or other permitting processes. Therefore, we recommend the deletion of interim requirement section C(3)(a).

**d. Plant Owners and Operators Should Fund Restoration Projects Designed and Implemented by Government Agencies.**

Due to the complexity of restoration projects, we urge the State Board to simplify the interim restoration requirements and exclude section C(3)(b) and (c) of the Immediate and Interim Requirements Section and instead require that coastal power plant owner and operators participate in funding of restoration projects that are designed and managed by experienced entities with knowledge in restoration scaling and ecosystem-level restoration project design and implementation, such as the California Coastal Conservancy or Santa Monica Bay Restoration Commission.

The design and execution of ecosystem-level restoration projects requires significant time, resources and expertise— without the right expertise and direction, restoration efforts can be very expensive without the intended results.. For example, over five years and hundreds of thousands of dollars were invested deliberating over how to replace the loss of fishing opportunity caused by contaminated sediments under the Montrose Settlements Restoration Program.<sup>53</sup> The restoration deliberations for San Onofre Nuclear Generating Station and El Segundo Generating Station repowering projects also required significant time and funds. How will the Regional Boards streamline these processes and ensure the development of a restoration plan that results in ecosystem-level benefits? Furthermore, how will the State Board address the problem of maximizing restoration, but avoiding compromises to ecosystem integrity? For example, fish hatcheries are often used as restoration measures (unfortunately, ineffectively in many cases), but are a species-specific approach that can cause adverse environmental impacts such as habitat degradation and water quality impairments when not properly designed.

Another critical question is: what is the appropriate restoration ratio for the impacts caused by OTC? The California Coastal Commission spent years trying to identify an appropriate mitigation ratio for various damages, and this issue still comes up for debate before the Commission for many

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<sup>52</sup> *Riverkeeper, Inc. v. U.S. E.P.A.*, 358 F.3d 174, 189 (2<sup>nd</sup> Cir. 2004); *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2<sup>nd</sup> Cir. 2007).

<sup>53</sup> Montrose Settlements Restoration Program. (2006) *Montrose settlements restoration program plan, programmatic environmental impact statement, and Programmatic environmental impact report*. Federal Register: January 2, 2001 Volume 66, Number 1.

restoration and mitigation projects. Clearly, restoration for ecosystem-level impacts is complex and many questions need to be addressed before moving forward with appropriate measures.

**e. Historic Source Water Depletion Should be Analyzed With the Use of Reference Sites and Incorporated into Interim Requirements.**

We cannot go back in time to gauge the true impact of these facilities; however, we urge the State Board to include reference location studies to better determine ecological productivity in areas without impacts from OTC to more accurately assess impingement and entrainment impacts. These studies must be multiyear studies to account for seasonal and annual variability and should be used to inform interim restoration requirements (see Section II above). If local source water studies are used to assess current OTC impacts, the impacts will be vastly underestimated. Accurate monitoring and assessment of biological and resource impacts is critical, and the information must be used in an appropriate manner that does not artificially underestimate historical abundance and diversity and the requirements of restoration costs in the Immediate and Interim requirements.

As documented in U.S. EPA, CEC, and other agency records, the persistent use of OTC at coastal power plants has clearly contributed to the loss of biodiversity and the documented population decline of many marine species over the past 50 years. Although we support the simple approach of using generational flow as a proxy for entrainment to achieve marine life mortality reductions in Track 2, this approach does not account for potentially depleted source waters surrounding OTC facilities, and may bias the actual achievement of marine life mortality reductions. To maintain the simplicity of the policy, we urge the State Board to account for historic impacts caused by OTC in the final policy as an interim requirement.

We recommend an approach involving reference site monitoring to help gauge larval and planktonic marine life densities at similar sites not impacted by power plants, stormdrains or point sources, and utilize this information to help designate the interim requirement to mitigate past and present impingement and entrainment impacts before policy compliance. Reference baseline characterization studies should be conducted over multiple years (at least four years and repeated at least once every five years thereafter) to account for seasonal and annual variation. The scientific community broadly accepts the use of reference sites in study design to determine the extent of environmental impacts. These studies typically use a control, or reference site, to provide the data necessary to make comparisons between an impacted and unimpacted site and quantify the ecosystem effects of an environmental stressor.<sup>54</sup>

In addition to academic studies, reference sites have historically been used in management to determine the extent of industrial impacts on marine and coastal resources. For example, both Hyperion Treatment Plant's and the Joint Water Pollution Control Plant's permits have historically and continue to require monitoring both within their outfall impact zone and at reference stations to determine the impacts of sewage discharge to benthic community composition and species abundance.<sup>55</sup> We urge the State Board to incorporate this type of an approach into the assessment of marine life impacts of OTC generators.

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<sup>54</sup> Schroeter *et al.*, "Detecting the Ecological Effects of Environmental Impacts: A Case Study of Kelp Forest Invertebrates," *Ecological Applications*, Vol. 3, No. 2., May 1993; Osenberg *et al.*, "Detection of Environmental Impacts: Natural Variability, Effect Size, and Power Analysis," *Ecological Applications*, Vol. 4, No. 1, Feb 1994.

<sup>55</sup> Phillips, SCCWRP, *Hyperion Monitoring Report*, Available at: [http://www.lacity.org/SAN/EMD/products/\\_pdf/SMB\\_Reports/2001\\_02/Chapter1.pdf](http://www.lacity.org/SAN/EMD/products/_pdf/SMB_Reports/2001_02/Chapter1.pdf). Accessed 9.29.09

## VI. IMPLEMENTATION SCHEDULE & MILESTONES

### a. A Statewide Policy Should Be Adopted and Implemented as Soon as Possible.

The State Board has been working on this policy for over four years. We encourage the Board to move forward with adopting and implementing a policy with clear deadlines as soon as possible. In early 2007, directly after the Second Circuit Court of Appeals decision in *Riverkeeper II*, the U.S. EPA sent a memo to the Regional Administrators directing them to institute best professional judgment regarding permits under section 316(b) of the Clean Water Act.<sup>56</sup> Specifically, U.S. EPA headquarters directed the Regional Offices as follows:

With so many provisions of the Phase II [existing facilities] rule affected by the [*Riverkeeper II*] decision, the rule should be considered suspended . . . . In the meantime, all permits for Phase II facilities should include conditions under section 316(b) of the Clean Water Act developed on a Best Professional Judgment basis.<sup>57</sup>

Despite this specific direction from U.S. EPA and the guidance provided by *Riverkeeper II*, the Regional Water Quality Control Boards (“Regional Boards”) have failed to properly reissue NPDES permits for power plants using OTC. Out of the 19 plants currently using OTC, 15 have NPDES permits that have already expired; Regional Board staff has stated that they are waiting for the statewide policy to update these overdue permits. At the end of 2009, one more plant will have an expired NPDES permit, which means that 84% of the plants using OTC will have overdue permits by the end of 2009 because of the delayed policy.

### b. The Statewide Advisory Committee should be used to Streamline Permitting Processes.

We applaud the State Board for its coordination and partnership with other involved agencies. However, it is imperative that such coordination facilitates, rather than delays, this process. Therefore, we recommend further use of the Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS) as a streamlining tool to expedite the various permitting processes before the multiple agencies involved. At the September 16, 2009 hearing, we heard testimony from industry that in some cases the compliance schedule is infeasible due to complex permitting requirements from other agencies, such as the CEC, for the plant upgrades that would be required by the Draft Policy. Because the relevant permitting agencies including the CEC, CPUC, and California Coastal Commission are members of the SACCWIS, we recommend using this group to expedite and streamline any permit requirements from multiple agencies related to this policy.

### c. The Statewide Advisory Committee’s Role in Extending Compliance Deadlines Should be Better Defined and Opportunity for Public Comment Should be Given.

The Draft Policy includes a provision to allow SACCWIS to review a power plant’s proposed implementation plans ensure that the implementation schedule takes into account local area and grid reliability. The SACCWIS is required to report to the State Water Board with “recommendations on modifications to the implementation schedule every two years starting in 2013.” The language as written is unclear and could be interpreted to require recommendations on modifications on the schedule. We urge the State Board to amend this language to make it clear that the SACCWIS should only make recommendations on modifications to the schedule if necessary for grid reliability.

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<sup>56</sup> Memorandum from Benjamin Grumbles, Assistant Administrator, U.S. EPA to U.S. EPA Regional Administrators, *Implementation of the Decision in Riverkeeper, Inc. v. EPA, Remanding the Cooling Water Intake Structures Phase II Regulation* (March 20, 2007).

<sup>57</sup> *Id.*; see also 40 CFR § 401.14.

Furthermore, the required findings for the SACCWIS to recommend a delay in the compliance schedule are not defined, nor is the State Board's "appropriate" determination based on that recommendation defined or a procedure prescribed. We urge the State Board to include definitions in this section and to make clear that the State Board will retain decision making authority on when and if the compliance schedule is altered.

Finally, the State Board's "appropriate" determinations of the SACCWIS timeline modifications should provide opportunity for public comment. These decisions should not be made behind closed doors, and the public should have the opportunity to review and provide comment on SACCWIS and State Board recommendations.

**d. The Timeline for Compliance Should Reflect Other State Efforts to Move California Towards Modern and Efficient Power Generation.**

Extending the life of these antiquated power plants not only prolongs the damage to our coastal and estuarine ecosystems, but also extends the life of inefficient power generation in California. In its draft report on repowering and retiring once-through cooled plants, the California Independent System Operator noted that many of the older power plants being analyzed tend to have "higher greenhouse gas emission rates and other pollutants than new generation sources."<sup>58</sup> The compliance schedule should reflect the numerous state efforts to move California towards renewable energy sources.

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We are long overdue for the state to embrace a policy on OTC that reflects Californians' desire to protect our valuable marine and coastal resources, while investing in a sustainable, environmentally sound future energy supply. California has consistently set high standards for the protection of the state's world-renowned coastal and marine resources, through the Marine Life Protection Act, the California Ocean Protection Act, and the Marine Life Management Act, among others. The State Board's policy on OTC should be consistent with these laws, with the Clean Water Act and Porter-Cologne, and with other state laws and policies that commit California to a sustainable energy path. We urge the State Board to expeditiously adopt and implement a state policy on OTC that charts an environmentally sustainable course for California's future.

Thank you for your consideration of our comments.

Sincerely,

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<sup>58</sup> California Independent System Operator, *Old Thermal Generation Retirement and Replacement of Once-Thru Cooling Long-Term Transmission Planning Study Version 2.0* (September 2007), p.1.



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May 20, 2008

Tam Doduc, Chair and Board Members  
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Via Email: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

**Re:** Comments on “Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling”

Dear Chair Doduc and Board Members:

The undersigned groups respectfully submit the following comments on the State Water Resources Control Board (“State Board”) staff’s preliminary draft scoping document on the Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (“draft policy”). We thank the State Board and staff for their dedication to this issue. Staff has done a commendable job of improving upon the draft policy from its original draft in 2006. We also appreciate the State Board’s ongoing coordination with the California Energy Commission (“CEC”), Ocean Protection Council (“OPC”) and its member agencies, and other agencies in the continued development of this policy.

Multiple federal and state agencies, including the U.S. Environmental Protection Agency (“U.S. EPA”), CEC, OPC, and State Lands Commission (“SLC”), have recognized that once-through cooling (“OTC”) causes significant, ongoing devastation to our valuable marine resources.<sup>1</sup> In June 2005, the CEC released a comprehensive staff report identifying OTC as a contributing factor to the degradation of California’s fisheries, estuaries, bays and coastal waters.<sup>2</sup> The phase-out of OTC has multiple environmental benefits for the coast and for the State of California. By phasing out this destructive technology, the State would better protect its marine and estuarine ecosystems, while advancing to greener and more energy efficient energy production.

Once-through cooling has caused significant, ongoing harm to California’s marine and estuarine ecosystems for decades. For example, all of the federally listed and imperiled salmon species that migrate in and out of the Sacramento and San Joaquin River watersheds, including the Chinook salmon, Coho salmon, and steelhead trout, must pass the intakes for two aging power plants on the San Francisco Bay-Delta Estuary (Pittsburg and Contra Costa) on their way

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<sup>1</sup> Clean Water Act section 316(b); California Energy Commission, *Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants*: Staff Report, 2005; Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters (adopted April 20, 2006); Resolution By The California State Lands Commission Regarding Once-Through Cooling In California Power Plants (adopted April 17, 2006) (“SLC Resolution”).

<sup>2</sup> California Energy Commission, *Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants*, Staff Report. June 2005.

in and out of the Delta. Records for both of these plants demonstrate that they illegally entrain and impinge endangered species, including the Delta smelt and the Chinook salmon.<sup>3</sup> In bays such as the Santa Monica, Monterey, and San Diego, and estuaries such as the Elkhorn Slough, the impacts from OTC can be more pronounced due to the high biological productivity of these areas and the concentration of the power plants' impacts in light of the area affected. In Santa Monica Bay three power plants using OTC (Scattergood, El Segundo, and Redondo Generating Stations) cycle 13-percent of the Bay's water every six weeks.<sup>4</sup>

It has been over 35 years since the Clean Water Act ("CWA") first outlined requirements for power plant cooling technology. We are long overdue for a clear, consistent statewide policy that protects marine ecosystems and helps to move California towards a future with cleaner, more efficient energy production. We have reviewed the draft policy and, although we believe it is an improvement on the 2006 draft, a few important clarifications must be made in order to ensure that the policy will actually protect the beneficial uses of the state's coastal and estuarine waters. Brief comments and suggestions are outlined below; please refer to the attached comment letter that was submitted in 2006 in response to the first draft policy for more detail.

In brief, we make the following key points and requests below:

- All plants should be required to reduce entrainment by 90 percent.
- The compliance deadlines should be revised so that all plants achieve full compliance within 10 years.
- The calculation baseline should be based on generational flow, not on permitted maximum.
- Interim requirements should not distract from planning and compliance with the actual policy requirements.
- The Statewide Task Force should be used as a streamlining tool to facilitate the various permitting processes before the multiple agencies involved.
- Nuclear plants should not be exempted.

## **I. Track 1: Closed Cycle Cooling Is the Best Technology Available.**

We support the language in this draft policy setting closed cycle cooling as the standard for best technology available. Under this policy, a plant could choose to either retrofit or repower to closed-cycle wet or air cooling.<sup>5</sup> In 1972 the United States Congress recognized that once-through cooling was creating unnecessary adverse impacts on marine life and consequently

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<sup>3</sup> EPA 821-R-02-2002, Case Study Analysis for the Proposed Section 316(b) Phase II Existing Facilities Rule, Part E: San Francisco Bay/Delta Estuary, p. E3-15 (February 28, 2002).

<sup>4</sup> California Energy Commission, *Issues and Environmental Impacts Associated with Once-Through Cooling at California's Power Plants*, California Energy Commission Staff Report Prepared in Support of the 2005 Integrated Energy Policy Report, June 2005, CEC Report No. 700-2005-013.

<sup>5</sup> The Ocean Protection Council commissioned a feasibility study that found in most cases retrofitting to closed-cycle wet cooling is feasible, and some power plant operators have shown that in some cases repowering with air cooling is preferable. See Ocean Protection Council, *California Coastal Power Plants: Cost and Engineering Analysis of Cooling System Retrofits*, and Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project, CEC-800-2005-001-CMF, June 2007.

enacted CWA section 316(b). Congress intentionally drafted language in the CWA to force improvements in technology by requiring the best technology available to minimize adverse impacts.<sup>6</sup> As the court articulated in *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2d Cir. 2007) (“*Riverkeeper II*”), Section 316(b) of the CWA does not allow “second best” technology or any blanket exemptions to the best technology available requirement.

## **II. Track 2: All Plants Should Reduce Entrainment by 90 Percent.**

In 2004 the California Legislature passed the California Ocean Protection Act (“COPA”) to protect and restore state coastal waters. COPA outlined several goals, including “provid[ing] a set of guiding principles for all state agencies to follow, consistent with existing law, in protecting the state's coastal and ocean resources.”<sup>7</sup> Through COPA the Legislature created the OPC and charged this body with the responsibility to “coordinate activities of state agencies, that are related to the protection and conservation of coastal waters and ocean ecosystems, to improve the effectiveness of state efforts to protect ocean resources...” in a manner “consistent” with the stated goals of COPA.<sup>8</sup>

The OPC exercised its responsibility under COPA in 2006 by passing a resolution regarding OTC, which officially resolved to “*urge the State Water Resources Control Board to implement Section 316(b) and more stringent state requirements requiring reductions in entrainment and impingement at existing coastal power plants and encourages the State to implement the most protective controls to achieve a 90-95 percent reduction in impacts.*”<sup>9</sup> However, Track 2 in the draft policy falls short of this clear guidance set by the OPC. The current phrasing of Track 2 states that:

if an existing power plant owner or operator demonstrates to the Water Board’s satisfaction that Track 1 is not feasible, the power plant must reduce the level of adverse environmental impacts from the cooling water intake structure to a comparable level to that which would be achieved under Track 1, using operational or structural controls, or both. A reduction in environmental impacts under Track 2 will achieve a ‘comparable level’ if both impingement mortality and entrainment of all life stages of marine life are reduced to 90-percent or greater of the reduction that would be achieved under Track 1, using closed cycle wet cooling.<sup>10</sup>

According to the 2006 OPC study evaluating the feasibility of impingement and entrainment control technologies that can meet the 90-95% reduction goal in the most cost effective manner, “the most effective technology that can meet [these criteria] is closed-cycle

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<sup>6</sup> *Kennecott v. United States EPA*, 780 F.2d 445, 448 (4<sup>th</sup> Cir. 1985) found that it was the intention “of Congress to use the latest scientific research and technology in setting effluent limits, pushing industries toward the goal of zero discharge as quickly as possible.”

<sup>7</sup> California Public Resources Code Section 35515 (a).

<sup>8</sup> California Public Resources Code section 35615(a)(1).

<sup>9</sup> Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters (adopted April 20, 2006) (emphasis added).

<sup>10</sup> State Water Resources Control Board, *Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling*, P. 84. (“Scoping Document”).

cooling, commonly referred to as “wet” or “dry” cooling towers.”<sup>11</sup> The current phrasing of the policy phrasing suggests that plants will have to achieve a 90 percent reduction of the reduction under Track 1; in other words, 90 percent of 90-95 percent, which is 81-85 percent. We urge the State Board to avoid actions that weaken the findings articulated in *Riverkeeper II*, and to instead follow the guidance sent by the OPC to reduce entrainment by 90 percent with no exceptions. Should the State Board retain the language in Track 2 as is, we ask that the staff report provide a clear explanation as to the reason that the draft policy does not follow the 90 percent reduction recommendation in the OPC’s resolution.

### **III. The Timeline for Compliance Should Reflect Other State Efforts to Move California Towards Modern and Efficient Power Generation.**

We support the intent of this draft policy to categorize the once-through cooled power plants into three classifications for a compliance schedule, rather than acting on a site-specific basis. Determination on a site specific basis would only further delay the process, and these dates are well within an attainable timeframe for all plants. Indeed, some dates are far off when compared with other compliance projections by agencies with expertise in this area. Accordingly, we recommend that the deadlines be revised so that all plants achieve full compliance within 10 years.

The deadline for compliance outlined in this policy is: 2015 for plants with capacity utilization rate of 20 percent or less, 2018 for plants with capacity utilization rates of 20 percent or more; and 2021 for nuclear facilities. However, in its 2005 Integrated Energy Policy Report, and again in testimony given by staff in 2007, the CEC called for studies to plan for the retirement of the coastal steam-powered plants by 2012, *a full 3 years earlier than the earliest deadline set in the proposed policy.*<sup>12</sup> Therefore, the proposed compliance schedule might actually artificially prolong the life of some of these aging plants. We recommend expediting the compliance schedule by adjusting the dates to: 2013 for plants with capacity utilization rates of 20 percent or less, 2015 for plants with capacity utilization rates of 20 percent or more, and 2018 for nuclear facilities. This is more than a reasonable time frame, as some plants are *already* transitioning away from OTC through repowering projects.<sup>13</sup> For example, the proposed timeline for El Segundo Generating Station’s repowering project before the CEC, which would convert two of its units to closed-cycle cooling, is four years.<sup>14</sup>

Extending the life of these antiquated power plants not only prolongs the damage to our coastal and estuarine ecosystems, but also extends the life of inefficient power generation in

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<sup>11</sup>Ocean Protection Council, *California Coastal Power Plants: Cost and Engineering Analysis of Cooling System Retrofits* (p. ES-1).

<sup>12</sup> California Energy Commission, *2007 Environmental Performance Report of California’s Electrical Generation System*, Draft Staff Report, CEC Report No. 700-2007-016-SD, p 56-57 (“2007 Environmental Performance Report”).

<sup>13</sup> Since the *Riverkeeper II* decision in January 2007, four power plants, including El Segundo, Encina, Humboldt, and South Bay, have announced their intention to repower to combined-cycle operation without the use of once-through cooling. See 2007 Environmental Performance Report p. 55.

<sup>14</sup> Petition to Amend Final Commission Decision for the El Segundo Power Redevelopment Project, CEC-800-2005-001-CMF, June 2007. El Segundo submitted their permit amendment to the CEC to repower using closed-cycle cooling instead of OTC in September 2007 and is scheduled to be finished and re-powered in 2011.

California. In its draft report on repowering and retiring once-through cooled plants, the California Independent System Operator (“Cal-ISO”) noted that many of the older power plants being analyzed tend to have “higher greenhouse gas emission rates and other pollutants than new generation sources.”<sup>15</sup>

Further, we encourage the State Board to clearly articulate how the capacity utilization rates for these plants will be calculated. Over the last several years, there has been a downward trend in the capacity utilization rate for the majority of the once-through cooled plants in California. According to the CEC, the total energy production from the coastal fleet decreased by 43 percent between 2001 and 2005.<sup>16</sup> We recommend that the capacity utilization rate be calculated on an average of the last five years from the date that the policy is adopted.

#### **IV. The Calculation Baseline Should be Based on Generational Flow Rather than Permitted Maximum and Take into Account the Seasonal Variability of Larvae to Ensure Actual Reduction in Entrainment.**

We are particularly concerned that some of the options discussed in the scoping document for calculating reductions in impacts would result in *no* changes in operations for many of the plants, in direct contravention of the Clean Water Act and the intent of the draft policy itself. The State Board should provide clear direction on how to calculate the flow reductions required by Tracks 1 and 2 to truly reduce entrainment mortality. The goal of the policy is to reduce actual damages to marine life. Simply reducing flows based upon the permitted maximum flow as described in the draft policy will not actually achieve entrainment reductions at many once-through cooled plants in California, as most facilities operate well below their permitted maximum flows at what is commonly called, actual flow.

Furthermore, at many once-through cooled facilities in California, the actual flow is significantly greater than the generational flow, or the flow actually required to generate electricity. For example, generating Units 1 & 2 at El Segundo Generating Station ceased producing electricity in 2002; however the mean annual flow at Intake 001 after 2002 (which draws in cooling water for Units 1 & 2) continued at or above the level prior to 2002 in order to prevent biofouling.<sup>17</sup> Therefore, if the State Board agrees to base entrainment reductions on permitted maximum flow or actual flow instead of generational flow, then the entrainment reductions may not actually be significant in reduction entrainment. A reduction from permitted maximum flow may not actually require a reduction in the intake of water if the plant (as most are) already operate well below permitted flow. If the entrainment reductions are based on actual flow, depending on how long it takes the policy to be adopted, facilities may elevate their actual flow levels beyond the necessary amount for generation to augment the baseline (yet still remain within their permitted flow levels). This would make it easier for generators to comply with the policy without actually achieving true entrainment reductions. Such an approach echoes similar problems with early efforts to reduce residential water use in the face of droughts – those

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<sup>15</sup> California Independent System Operator, *Old Thermal Generation Retirement and Replacement of Once-Thru Cooling Long-Term Transmission Planning Study Version 2.0* p.1.

<sup>16</sup> 2007 Environmental Performance Report, p 56.

<sup>17</sup> El Segundo Generating Station flow data 1996-2004 (El Segundo Power, LLC), available at [http://www.waterboards.ca.gov/losangeles/water\\_issues/programs/power\\_plants/index.shtml](http://www.waterboards.ca.gov/losangeles/water_issues/programs/power_plants/index.shtml).

overusing water when the baseline was set were “rewarded” while conservers punished. Therefore, we request that entrainment reduction be based on the generational flow in order to ensure a real and significant reduction in water intake, not just one on paper

The policy should also be clear on the temporal scale used to calculate flow/entrainment reductions to avoid seasonal impacts. For example, in Southern California, peak larval abundance for most species in coastal waters coincides directly with peak energy needs – during the summer.<sup>18</sup> The policy should avoid allowing facilities to calculate flow reductions on an annual basis, and instead calculate and assign reductions on a seasonal basis as needed to avoid impacts. If seasonal larval characteristics are not considered, facilities might reduce their intake flow during the winter, and continue using high flow rates in the summer to comply with flow reductions, which would not result in actual reduction of entrainment.

## **V. Calculation Baseline Determination and Monitoring Must Include Reference Sites.**

A reference site approach is traditionally used in management to determine the extent of industrial impacts on marine and coastal resources. For example, the Hyperion Treatment and Joint Water Pollution Control Plants permits have historically and continue to require monitoring both within their impact zone and at reference stations to determine the impacts of sewage discharge to benthic community composition and species abundance.

The issue of already-depleted source water should also be considered when determining how to develop an appropriate baseline by which to calculate entrainment and impingement mortality under Track 2. Many of these plants have been operating for decades, and the adjacent ecosystems have suffered a long history of entrainment and impingement. This is especially true for once-through cooled plants located on enclosed bays and harbors, such as Haynes Generating Station and Alamitos Generating Station on Alamitos Bay. It is estimated that these power plants take in the entire volume of Alamitos Bay every five days.<sup>19</sup> Based on this fact, it is likely that the abundance and community structure of life in Alamitos Bay has been significantly impacted by 30 years of water-intake. Therefore, we urge the State Board to take a reference site approach in determining the baseline to avoid establishing the baseline upon potentially depleted source waters surrounding each facility.

## **VI. Interim Requirements Should Not Distract from Planning and Compliance with the Actual Policy Requirements.**

We support the general intent of the interim requirements to immediately reduce negative impacts to our marine and estuarine ecosystems but are concerned that they will distract from planning and compliance with the actual policy requirements. If interim requirements are included in the final policy, we urge the State Board to clarify that compliance with the actual

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<sup>18</sup> AES Huntington Beach L.L.C., “Generating Station Entrainment and Impingement Study Final Report” (April 2005), prepared by MBC Applied Environmental and Tenera Environmental, *see* Section 4.3.1 Entrainment Results; “Southern California Time Series: SCOR WG125: Global Comparisons of Zooplankton Time-Series” (May 19, 2008), available at [http://planktondata.net/time-series/calcofi-sc\\_us/index.html](http://planktondata.net/time-series/calcofi-sc_us/index.html).

<sup>19</sup> Tenera Environmental and MBC Applied Environmental Science, “Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan,” (September 28, 2005) p. 2.

policy is of primary importance, and further refine the requirements for the interim measures to ensure streamlined compliance. We further urge the State Board to prohibit credit for past mitigation efforts as counting toward compliance with interim requirements. The general intent of the interim requirements is meaningless if the State Board chooses to give credit to power plants for their past mitigation efforts through Coastal Commission or other permitting processes.

Technology to prevent the entrainment of organisms such as marine mammals and turtles (such as large organism exclusion bars) and restoration are beneficial measures in the interim, but neither will move the plants closer to the compliance goal of reducing impingement and entrainment by 90 percent. By comparison, NPDES permits often have interim requirements for certain constituents while a waste water treatment plant has to install new technology to improve effluent water quality, but neither these interim requirements nor any past actions count towards compliance with the final effluent limitations. There is no reason that power plants should be provided special treatment or credit for mechanisms employed to remediate the past and present environmental damages caused by OTC. Furthermore, the Second Circuit U.S. Court of Appeals specifically ruled that restoration measures may not be utilized as a compliance strategy with Clean Water Act section 316(b). This element of the *Riverkeeper II* decision stands, as it was not taken up by the U.S. Supreme Court in 2008. The focus of this policy needs to be on achieving ultimate compliance with 316(b) and not on interim measures which do not help in reaching this goal.

## **VII. A Statewide Policy Should Be Adopted and Implemented as Soon as Possible.**

The State Board has been working on this policy for over two years, and still has not committed to a deadline for completion and implementation. We encourage the Board to move forward with adopting and implementing a policy with clear deadlines as soon as possible. In early 2007, directly after the Second Circuit Court of Appeals decision in *Riverkeeper II*, the U.S. EPA sent a memo to the Regional Administrators directing them to institute best professional judgment regarding permits under section 316(b) of the Clean Water Act.<sup>20</sup> Specifically, EPA headquarters directed the Regional Offices as follows:

With so many provisions of the Phase II [existing facilities] rule affected by the [*Riverkeeper II*] decision, the rule should be considered suspended . . . . In the meantime, all permits for Phase II facilities should include conditions under section 316(b) of the Clean Water Act developed on a Best Professional Judgment basis.<sup>21</sup>

“Best professional judgment” should be informed by the clear judicial review and holdings in *Riverkeeper II*. For example, the federal appeals court found that “after the fact restoration” cannot substitute for best available technology.

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<sup>20</sup> Memorandum from Benjamin Grumbles, Assistant Administrator, U.S. EPA to U.S. EPA Regional Administrators, “Implementation of the Decision in *Riverkeeper, Inc. v. EPA*, Remanding the Cooling Water Intake Structures Phase II Regulation” (March 20, 2007).

<sup>21</sup> *Id.*; see 40 CFR § 401.14.



Despite this specific direction from U.S. EPA and the guidance provided by *Riverkeeper II*, the Regional Water Quality Control Boards (“Regional Boards”) have failed to properly reissue NPDES permits for power plants using OTC. Moreover, the State Board has denied petitions for review of improperly reissued permits, and in at least one case cited the imminence of the long-overdue and still non-existent state OTC policy as the reason. Out of the 19 plants currently using OTC, 11 have NPDES permits that have already expired; Regional Board staff has stated that they are waiting for the statewide policy to update these overdue permits. Three more plants have NPDES permits that will expire in 2008, which means *almost three-quarters of the plants using OTC will have overdue permits in 2008 because of the delayed policy.*

We support the conclusion articulated by Chair Doduc at the May 13, 2008 scoping meeting in Sacramento - that California can move forward with guidance to the Regional Boards *now* as opposed to waiting for any pending court decisions. U.S. EPA specifically directed the state to do so in the above-referenced BPJ memorandum. While U.S. EPA chose not to appeal the *Riverkeeper II* decision, industry continues to resist strict enforcement of 316(b) by making a “cost-benefit” claim. This is not surprising – industry’s historical opposition to 316(b) is why it has taken over three decades to enforce this law. The State Board’s mission and mandate, however, is quite different, and we urge the State Board to act both now and after the policy is adopted to incorporate appropriate conditions into NPDES permits to ensure compliance with 316(b). In addition to the U.S. EPA directive, California also has the authority under state law to implement stricter regulations than the minimum protections of 316(b) – regardless of what the U.S. Supreme Court decides. *Riverkeeper II* was instructional in defining what the minimum conditions must be. The final policy should meet and exceed that minimum as expeditiously as possible.

Finally, the industry also continually calls for delay based on their claim that California’s grid reliability will be compromised if the state implements 316(b). This is simply not true. The State Water Board and the Ocean Protection Council commissioned a study on grid reliability that was recently released; it found that “...a phased in approach for enacting the Board’s new rules could have a relatively modest impact on reliability, and these impacts could be effectively eliminated through proper planning.”<sup>22</sup> In 2006, California’s Lt. Governor, State Controller and Director of Finance *all* concluded that “the elimination, or reduction to insignificance of the adverse environmental impacts, of once-through cooling technologies can be accomplished without threatening the reliability of the electrical grid.”<sup>23</sup>

### **VIII. The Statewide Taskforce Should be used to Streamline Permitting Processes.**

We applaud the State Board for its coordination and partnership with other involved agencies. However, it is imperative that such coordination facilitates, rather than delays, this process. Therefore, we recommend further use of the Statewide Task Force as a streamlining tool to expedite the various permitting processes before the multiple agencies involved. At the May 8, 2008 scoping meeting, we heard testimony from industry that they are concerned that the

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<sup>22</sup> California Ocean Protection Council and State Water Resources Control Board, *Electric Grid Reliability Impacts from Regulation of Once-Through Cooling in California..* p.57 available at: [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/power\\_plant\\_cooling/reliability\\_study.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/power_plant_cooling/reliability_study.pdf)

<sup>23</sup> SLC Resolution, *supra* note 1 (emphasis added).

compliance schedule is infeasible due to complex permitting requirements from other agencies, such as the CEC, for the plant upgrades that would be required by the draft policy. Since the relevant permitting agencies are members of the proposed Statewide Task Force, we recommend using this group to expedite and streamline any permit requirements from multiple agencies related to this policy.

### **VIII. Nuclear Plants Should Not Be Exempted**

Although safety should always be a prime concern, facilities such as the Indian Point power plant in New York proved that a nuclear plant can safely comply with Section 316(b).<sup>24</sup> Further, in *Riverkeeper II* the court found that there was “adequate consideration by the EPA of the nuclear plants concerns” and upheld that Section 316(b) does apply to nuclear facilities.<sup>25</sup> Leaving the compliance determination solely to the operator is inappropriate. The Nuclear Regulatory Commission, the State Board and the plant owner/operator should all be part of the decision in order to ensure accountability, and the decision and information leading to it should be made available to the public. Furthermore, the State Board should clarify in its final policy what information is required for “appropriate documentation” to make any decision about safety and nuclear plant requirements under the policy.

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We are long overdue for the state to embrace a policy on OTC that reflects Californians’ demand for providing the utmost protection for our valuable marine and coastal resources, and for investing in a sustainable, environmentally sound future energy supply. California has consistently set high standards for the protection of the state’s world-renowned coastal and marine resources, through the Marine Life Protection Act, the California Ocean Protection Act, and the Marine Life Management Act, among others. The State Board’s policy on OTC should be consistent with these laws, with the Clean Water Act and Porter-Cologne, and with other state laws and policies that commit California to a sustainable energy path. We urge the State Board to expeditiously adopt and implement a state policy on OTC that charts an environmentally sustainable course for California’s future.

Thank you for your consideration of our comments.

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<sup>24</sup> The New York State Department of Environmental Conservation issued a draft NPDES permit in 2003 determining that closed cycle cooling was the best technology available for that nuclear plant. See New York State Department of Environmental Conservation Draft State Pollutant Discharge Elimination System Discharge Permit No. NY- 0004472.

<sup>25</sup> *Riverkeeper, Inc. v. U.S. EPA*, 475 F.3d 83 (2<sup>nd</sup> Cir. 2007).

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Attachment.

September 15, 2006

Ms. Tam Doduc, Chair and Board Members  
State Water Resources Control Board  
1001 I Street  
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Via Email: [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

**Re:** Comments on “Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations”

Dear Chair Doduc and Members:

The undersigned groups respectfully submit the following comments with respect to the State Water Resources Control Board (“State Board”) staff’s proposed policy (“draft policy”) on once-through cooling (“OTC”). We thank the State Board and staff for its dedication to this issue. Staff has done an excellent job engaging the public through workshops and expeditiously preparing a draft state policy that implements state law and represents a much-needed, and legally required, improvement over the federal Clean Water Act section 316(b) regulations. We also appreciate the State Board’s ongoing coordination with the California Energy Commission (“CEC”), Ocean Protection Council (“OPC”) and its member agencies, and other agencies in the continued development of this policy.

Multiple federal and state agencies, including the Environmental Protection Agency (“EPA”), CEC, OPC, and State Lands Commission (“SLC”), have recognized that once-through cooling causes significant, ongoing devastation to our valuable marine resources. In June of 2005, the CEC released a comprehensive staff report identifying OTC as a contributing factor to the degradation of California’s fisheries, estuaries, bays and coastal waters.<sup>1</sup> The SLC, which includes the Lt. Governor, Director of Finance and State Controller, unanimously adopted a recent resolution opposing the continued use of OTC, finding that “the Governor’s Ocean Action Plan calls for an increase in the abundance and diversity of aquatic life in California’s oceans, bays, estuaries and coastal wetlands, a goal which can best be met by prohibiting, phasing out, or reducing to insignificance the impacts of once-through cooling.”<sup>2</sup> The SLC’s resolution contained a number of findings, including that “once-through cooling significantly harms the environment by killing large numbers of fish and other wildlife, larvae and eggs as they are drawn through the screens and other parts of the power plant cooling system” and that “once-through cooling also significantly adversely affects marine, bay and estuarine environments by raising the temperature of the receiving waters, and by killing and displacing wildlife and plant life.”<sup>3</sup>

Similarly, through a resolution adopted in April 2006, the OPC, representing the Secretaries of the Resources Agency and Cal-EPA and the Chair of the State Lands Commission, unanimously urged the State Board to go beyond the federal rule and implement “more stringent state

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<sup>1</sup> California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants: Staff Report. Available at: [www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF](http://www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF). Accessed 8.2.06. (“CEC Staff Report”).

<sup>2</sup> Resolution By The California State Lands Commission Regarding Once-Through Cooling In California Power Plants (adopted April 17, 2006) (emphasis added). Available at: [archives.slc.ca.gov/Meeting\\_Summaries/2006\\_Documents/04-17-06/ITEMSANDEXHIBITS/R71ExhA.pdf](http://archives.slc.ca.gov/Meeting_Summaries/2006_Documents/04-17-06/ITEMSANDEXHIBITS/R71ExhA.pdf) Accessed 8.2.06 (“SLC Resolution”).

<sup>3</sup> *Id.*

requirements requiring reductions in entrainment and impingement at existing coastal power plants.” The OPC further encouraged the State Board to “implement the most protective controls to achieve a 90-95 percent reduction in impacts.”<sup>4</sup> Through both resolutions, **the top elected and appointed officials in the State, including officials overseeing the health of the state’s economy, agreed that: (a) once-through cooling causes significant, devastating impacts to California’s coastal and estuarine ecosystems, and (b) this antiquated technology needs to be phased out on an expeditious schedule that reflects the state’s strong commitment to a healthy coast and ocean.**

In a state where over 86% of our total economic activity is fueled by the health of our coastal resources, and in a state leading the nation in a strong commitment to sustainable energy, there is no question that California has the right and responsibility to move beyond the minimum standards outlined in section 316(b) of the Clean Water Act (“CWA”).<sup>5</sup> Accordingly, **we support the draft policy’s stated goal of 90-95% reductions in impacts**, language that follows the guidance in the OPC’s and SLC’s Resolutions, and that reflects the leadership asserted by the Governor in support of policies that steer California towards both a sustainable energy infrastructure and a sustainable environment. We also support the proposal to disallow economically-based exceptions in the draft policy, which similarly underscores California’s dedication to protecting our marine and coastal environment by minimizing impingement and entrainment in our waters.

We encourage the State Board to continue along this path and adopt a final policy that effectively and fully prevents impacts from OTC to California’s marine and estuarine environment. Any interim industry steps to evaluate or potentially implement methods to comply with the federal requirements of CWA section 316(b) regulations (which are under legal challenge in the U.S. Court of Appeals for the Second Circuit, *Surfrider Found. v. U.S. EPA*, No. 04-6692) should not deter the State Board from pursuing its own policy on OTC that reflects state law and state needs, as such steps can serve as the basis for plans to comply with the pending state policy.

We provide the following recommendations and comments to address potential loopholes and implementation gaps in the draft policy that may impede progress towards the stated goals. In particular, **to ensure the goal of 90-95% reduction in impacts is achieved rather than thwarted, we urge that, among other things, the draft policy be amended to:** (a) include all plants (rather than exempting the numerous plants impacting our environment and generating little electricity), (b) ensure that the method for calculating the reductions is based on the flow needed to actually generate electricity, (c) narrow the definition of what a “feasible” reduction to prevent a rush to seek exemptions from required prevention of impacts, (d) avoid use of restoration, mitigation and credits in place of actual prevention of impacts, (e) put responsibility for nuclear safety issues on the Nuclear Regulatory Commission, and (f) set clear deadlines for action and for achieving the stated goals. Only if these and other loopholes and gaps are addressed will the policy be effective at protecting the beneficial uses of the waters of the state from OTC’s devastating impacts.

These comments are further delineated in the following pages as outlined below:

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<sup>4</sup> Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters (adopted April 20, 2006). Available at: [resources.ca.gov/copc/docs/060418\\_OTC\\_resolution\\_LH2\\_adopted\\_2006-4-20.pdf](http://resources.ca.gov/copc/docs/060418_OTC_resolution_LH2_adopted_2006-4-20.pdf) Accessed 8.1.06. (“OPC Resolution”).

<sup>5</sup> National Ocean Economics Program (July 2005) California’s Ocean Economy: Report to the Resources Agency, State of California, p.1. Available at: [resources.ca.gov/press\\_documents/CA\\_Ocean\\_Econ\\_Report.pdf](http://resources.ca.gov/press_documents/CA_Ocean_Econ_Report.pdf) Accessed 9.12.06.

- I. The Policy Goal of 90-95% Reduction in Impingement and Entrainment Impacts is Appropriate for California
  - A. It Is Well-Established that Once-Through Cooling Systems Significantly Impact Surrounding Ecosystems
  - B. The Goals Set by the Policy Are Consistent with State and Federal Law
  - C. The Proposed Reductions Are Technologically and Economically Practical
  - D. The Draft Policy Is Consistent with California’s Energy Action Plan
  - E. The Role of the Expert Review Panel Should Be Expanded to Include Review of All Technical Analyses Required by the Policy
- II. Potential Loopholes in the Draft Policy Should Be Closed to Ensure that 90-95% Reduction in Impacts from Existing Power Plants Is Actually and Expeditiously Achieved
  - A. All Plants Must Be Included in the Policy
  - B. “90-95% Reduction from What?” The Calculation Baseline Must Be Set to Ensure that Required Reductions Are Achieved
  - C. There Must be Limits Governing Determinations of “Feasibility”
  - D. Credits Should Be Allowed Only to Reward Decisions Intended to Reduce Impacts
  - E. The Policy Must Include Seasonal Protections for Larval Organisms to Effectively Meet Entrainment Reductions
  - F. Existing Facilities that Repower or Retool Must Be Classified as “New” Facilities.
  - G. The Policy Should Provide a Well-Defined and Expeditious Compliance Deadline
- III. Restoration and Mitigation Are Not Effective Substitutes for Preventing Impacts
  - A. Compliance Alternatives that Rely on Restoration And Mitigation Should Not Be Included in the State Policy, as the Use of Restoration Cannot Achieve the Goals of the Clean Water Act and Porter-Cologne
  - B. A Rigorous Analysis of All Feasible Technological and Cooling Alternatives, Including Use of Treated Wastewater as Coolant, Should Be Conducted at Each Facility
- IV. Nuclear Safety Questions Should Be Addressed to the Nuclear Regulatory Commission
- V. The Policy Must Include Needed Details to Ensure Consistent Implementation
  - A. The Plants Required to Conduct Cumulative Impact Studies Should Be Explicitly Identified
  - B. The Monitoring Provisions Must Be Further Specified to Ensure Consistent Implementation and to Characterize Compliance Accurately
- VI. Conclusions

**The State Water Board would never approve a state policy that allowed chemical pollutants to continually destroy fish, wildlife and habitats impacted by a Clean Water Act-regulated facility. Similar commitment to the Clean Water Act and Porter-Cologne is needed to control impacts associated with once-through cooling.** Accordingly, we applaud the goals of staff’s proposed policy as not only implementing the letter and intent of state and federal law, but also California’s strong commitment towards a sustainable environment and energy future. We urge the Board to make the changes outlined in these comments in order to effectuate those goals most closely. With the amendments suggested below, the State Board will have a policy that finally protects the state’s long-suffering coastal waters and habitats from the enormous local and regional impacts associated with once-through cooling.

## **I. THE POLICY GOAL OF 90-95% REDUCTION IN IMPINGEMENT AND ENTRAINMENT IMPACTS IS APPROPRIATE FOR CALIFORNIA**

As noted above, we support the draft policy's proposed requirements that impingement be reduced by 95% from the calculation baseline, and entrainment by up to 90% but not less than 60% of the calculation baseline. These goals reflect the significant, ongoing damage caused by once-through cooling systems, and are consistent with both California's commitment to a healthy coastal ecosystem and to a sustainable energy policy.

### **A. It Is Well-Established that Once-Through Cooling Systems Significantly Impact Surrounding Ecosystems**

After a thorough review of the comprehensive rulemaking record for implementation of section 316(b) of the Clean Water Act, the U.S. EPA determined conclusively that there are multiple types of undesirable and unacceptable environmental impacts associated with once-through cooling technology. Specifically, the EPA found the impacts to include entrainment and impingement; associated reductions of threatened and endangered species; damage to critical aquatic habitats and 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; and stresses to overall communities and ecosystems, as evidenced by reductions in diversity or other changes in system structure and function.

The CEC has come to similar conclusions. In its comprehensive June 2005 staff report on OTC, the CEC identified OTC as a contributing factor to the degradation of California's fisheries, estuaries, bays and coastal waters.<sup>6</sup> The CEC further found that in addition to the entrainment and impingement impacts, once-through cooling technology causes damage to the nearby aquatic ecosystem through thermal impacts from the discharge of cooling water; this harm is especially damaging in more enclosed water bodies and in areas that are subjected to cumulative effects from closely sited plants.

The SLC and the OPC also both recognized and confirmed the serious impacts OTC has on our marine and estuarine environment in their resolutions, both unanimously passed in April 2006. In addition, the OPC's April Resolution noted that, contrary to industry's assertions in the August 2006 State Water Board workshop, the full negative impacts of OTC have yet to be fully assessed, stating:

a recent report by the California Energy Commission found that, of the 21 Californian coastal power plants that use once-through cooling, only seven have recent studies of entrainment impacts that meet current scientific standards; and all these studies have found that adverse impacts occur due to entrainment of aquatic organisms; impingement and entrainment result in changes to community structure; thermal impacts from the discharge of cooling water may be significant, particularly in enclosed water bodies; and the possible cumulative impacts of entrainment and impingement are currently unknown.

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<sup>6</sup> CEC Staff Report, *supra* note 1, p.1.

**This daily assault on California’s valuable coastal environment causes ongoing, serious harm.** As exhibited in the recent Los Angeles Times 5-part series, *Altered Oceans*, our marine and coastal environments are under incredible amounts of stress and threatened, both globally and locally, by a diverse array of impacts.<sup>7</sup> The decrease of biodiversity in the world’s oceans and declining populations of commercially and non-commercially important marine species are well documented.<sup>8</sup> Recreational fish landings in the Southern California Bight have decreased from an annual mean of 4.25 million fish in 1963 to 2.5 million fish in 1998.<sup>9</sup> Many marine populations, including certain species of rockfish and abalone, are at strikingly low levels, and some species which were common decades ago are now rare off the coast of California. The perilous state of California’s coastal and ocean ecosystems make a meaningful OTC policy all the more important.

Some examples of the local and regional impacts of OTC are instructive. Michael Foster from the **Moss Landing Marine Laboratory estimates that 50 million marine and estuarine fish are entrained by coastal power plants each day in California.**<sup>10</sup> The California Energy Commission has also stated in testimony before the State Water Board that “[o]nce-through cooling is a major, ongoing environmental issue with California power plants,” with “potentially widespread” cumulative effects in Santa Monica Bay and the SF-Bay Delta Estuary in particular.<sup>11</sup> Three facilities – Scattergood, Redondo Beach and El Segundo Generating Station - located within the same six-mile stretch of the Santa Monica Bay consume 13% of nearshore waters in the Bay every six weeks.<sup>12</sup> Even more astonishing is the impact of the facilities on Alamitos Bay; **Haynes and Alamitos Generating Stations turn over the entire Alamitos Bay every five days.**<sup>13</sup> The resulting indiscriminate take of plankton, fish, invertebrates, and other marine life help deplete commercially and recreationally important species; decrease species diversity; and cause further threat to species at risk of extinction and fisheries at risk of economic collapse. **The combined impingement from power plants south of Point Conception amounts to up to 30% of the recreationally caught fish in this region each year.**<sup>14</sup> These impacts can no longer be justified at coastal facilities, given that technologies to reduce these impacts have existed for decades and are used at non-coastal power facilities in California.

Nowhere has OTC’s severe impacts on the California coastal environment been more well-documented than at the San Onofre Generating Station. The intake of this plant is estimated to have destroyed over 200 acres of kelp forest (approximately 59,000 kelp plants).<sup>15</sup> This, in turn, caused

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<sup>7</sup> Weiss, Ken and McFarling Usha Lee (July 30 – August 3, 2006) *Altered Oceans: A five-part series on the crisis in the seas*, *Los Angeles Times*. Available at: <http://www.latimes.com/news/local/oceans/la-oceans-series,0,7842752.special>. Accessed 8.12.06.

<sup>8</sup> Myers and Worm (May 2003) Rapid worldwide depletion of predatory fish communities, *Nature*, vol. 423; Hutchings and Reynolds (April 2004) Marine Fish Population Collapses: Consequences for Recovery and Extinction Risk, *BioScience*, vol. 54, no. 4.

<sup>9</sup> Dotson and Charter (2003) Trends in the Southern California Sport Fishery, *CalCOFI Rep.*, Vol. 44, 2003, p.94.

<sup>10</sup> Foster, Michael, Presentation to the SWRCB (Sept. 26, 2005) [http://www.swrcb.ca.gov/npdes/docs/wrkshp\\_laguna2005/pres\\_mosslandingfoster.pdf](http://www.swrcb.ca.gov/npdes/docs/wrkshp_laguna2005/pres_mosslandingfoster.pdf) Accessed 8.10.06.

<sup>11</sup> CEC, Presentation to SWRCB (Sept. 26, 2005), [http://www.waterboards.ca.gov/plnspols/docs/pres\\_cecmckinney.pdf](http://www.waterboards.ca.gov/plnspols/docs/pres_cecmckinney.pdf).

<sup>12</sup> CEC Staff Report, *supra* note 1, p.37.

<sup>13</sup> Tenera Environmental and MBC Applied Environmental Science (October 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan for Haynes Generating Station, p.2

<sup>14</sup> CEC Staff Report, *supra* note 1, p.31.

<sup>15</sup> UN Atlas of the Oceans, Foster, S. and Shiel, David, “The Ecology of Giant Kelp Forests in California: A Community Profile” (1985), <http://www.oceansatlas.org>. Accessed 9.10.06.



the displacement or death of thousands of individuals from numerous other species. In total, the kelp fish population in the water surrounding San Onofre Generating Station is estimated to have declined by 80%.<sup>16</sup> To understand the magnitude of these kelp losses, one need only compare the plant's destruction of 200 acres (0.3125 square miles) of kelp forest with all existing stands of kelp forest along the entire Southern California mainland coast (3.7 square miles, according to the California Department of Fish & Game's Living Marine Resources Status Report).<sup>17</sup> In other words, this single power plant alone destroyed almost 10% of the kelp forests along Southern California's mainland coast, forests that cannot come back while OTC is in use. These calculations do not even include the associated losses of fish, invertebrate, and other marine life, as well as the ongoing destruction that occurs from the other coastal power plants using OTC. For example, a fish kill due to entrainment in the San Onofre cooling system in August 2005 wiped out over five tons of anchovies in a single event.<sup>18</sup>

OTC also has significant impacts on estuarine environments. For example, a pair of Contra Costa County power plants that have killed up to tens of millions of fish a year are being scrutinized by researchers investigating potential causes of the ecological crash in the Delta.<sup>19</sup> Regulators say that while the pumping stations at Byron and Tracy that deliver water to the San Joaquin Valley and Southern California are heavily scrutinized, **the Mirant pumps in Contra Costa County are almost completely ignored, even though the power plants take water out of more sensitive habitat, "right in the heart of [endangered] Delta smelt area."**<sup>20</sup>

At the State Water Board's Sacramento workshop on July 31, 2006, industry consultants alleged that these decreasing fish populations and other negative resource trends have not been occurring in regions around coastal power plants, and specifically stated that recreational catch per unit effort in and around the waters of the Diablo Canyon nuclear plant has not changed since before the plant was built.<sup>21</sup> These claims are misleading. Both recreational effort and catch in the waters adjacent to Diablo Canyon have been declining since the late 1980s.<sup>22</sup> Concurrently, commercial landings from nearshore rocky habitats in this region have been declining since the late 1990s, and Morro Bay landings have been in decline over the past 15 years.<sup>23</sup> For example, recent studies show that some recreationally and commercially important and threatened fish, including rockfish, croaker, and rock crabs, are among the most abundant species entrained by Diablo

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<sup>16</sup> *Id.*, see also CA Department of Fish and Game, "California's Living Marine Resources: A Status Report" (Dec. 2001) ("Marine Resources Report").

<sup>17</sup> Marine Resources Report, *supra* n. 16, at 279.

<sup>18</sup> NC Times, San Onofre Reports Fish Kill (August 22, 2005) [http://www.nctimes.com/articles/2005/08/23/news/top\\_stories/82205191806.txt](http://www.nctimes.com/articles/2005/08/23/news/top_stories/82205191806.txt) Accessed 9.10.06.

<sup>19</sup> See Taugher, Mike, "Mirant plants attract attention in Delta crisis," *Contra Costa Times* (March 15, 2006), [http://www.sfbayjv.org/news\\_summaries/2006/march/Mirant\\_plants\\_attract\\_attention\\_in\\_Delta\\_crisis.html](http://www.sfbayjv.org/news_summaries/2006/march/Mirant_plants_attract_attention_in_Delta_crisis.html) Accessed 9.14.06

<sup>20</sup> *Id.*, Statement by Jerry Johns, Deputy Director, California Department of Water Resources.

<sup>21</sup> Oral comments given at the Proposed Statewide Policy for Once-Through Cooling [Clean Water Act 316(b) Regulations] Public Scoping Meeting on July 31, 2006 by John Steinbeck, Tenera Environmental

<sup>22</sup> Starr, Richard M, et al. (2002) Trends In Fisheries and Fishery Resources Associated with the Monterey Bay National Marine Sanctuary from 1981 – 2000. Available at: <http://montereybay.noaa.gov/research/techreports/fisherytrends.pdf>. Accessed 9.10.06

<sup>23</sup> California Coastal Commission (February 2, 2001) Periodic Review of the San Luis Obispo County LCP: Preliminary Report (As revised to incorporate errata/clarifications of the July 12, 2001 action). Available at: <http://www.coastal.ca.gov/recap/slo/slo-ch11.pdf> Accessed 9.10.06; Starr, Richard M, et al. (2002) Trends In Fisheries and Fishery Resources Associated with the Monterey Bay National Marine Sanctuary from 1981 – 2000. Available at: <http://montereybay.noaa.gov/research/techreports/fisherytrends.pdf>. Accessed 9.10.06

Canyon.<sup>24</sup> Although many factors contribute to species decline, OTC is an unnecessary and significant added stressor that can be controlled by a meaningful state policy.

Moreover, **the impacts from OTC are likely far more extensive than determined to date.** For example, as stated in our February 23, 2006 letter (Attachment A), the state policy must consider environmental impacts beyond just entrainment and impingement of small organisms. Neither CWA § 316(b) nor Porter-Cologne § 13142.5 make any distinction as to the type or size of marine organism impacted by once-through cooled facilities. In fact, voluntary reporting from marine mammal rescue personnel continues to illustrate that protected species including sea lions, harbor seals, and some sea turtles are “taken” by these facilities.<sup>25</sup> Nevertheless, Regional Boards do not appear to gather data consistently on the impacts of cooling structures on larger, non-fish species, such as marine mammals and sea turtles, although they have been documented to be caught in power plant intakes.<sup>26</sup> The state policy should change this practice and require permit applications to include information on cooling systems’ impacts on larger organisms, including number and type of species swept into plant forebays, as well as those impinged against intake screens. This is all the more important because, despite long-standing mandates in the Endangered Species Act, Marine Mammal Protection Act, and other authorities, the National Oceanic and Atmospheric Administration also has not formally collected data on the impact of these power plants on larger organisms.<sup>27</sup> **Impacts on marine mammals, sea turtles, and other larger organisms, in addition to fish and invertebrates must be evaluated.** Although the scoping document addresses the need to minimize impacts to threatened, endangered, and protected species, this concept is not reflected in the draft state policy itself. We encourage the State Board to incorporate into the policy directorial language requiring evaluation of these species in any permit reviews.

## **B. The Goals Set by the Policy Are Consistent with State and Federal Law**

Both federal and state law mandate the use of the best technology available for minimizing environmental impacts. For the past thirty years, closed-cycle recirculating cooling has been in wide use globally and achieves the 90-95% reductions called for by the draft policy. Also in wide use for many years are technologies that reduce impacts even further, including dry cooling and hybrid cooling systems. The applicable laws do not distinguish among power plants based on capacity factors or particular combustion types. Nor do the statutes speak to cost-benefit analysis or economics; rather, the statutes reflect decades of successful mechanisms intended to ensure the use of modern technology across the state.<sup>28</sup>

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<sup>24</sup> CEC Staff Report, *supra* note 1, p. 15.

<sup>25</sup> See, e.g., 67 Fed. Reg. 61 (Jan. 2, 2002), “Small Takes of Marine Mammals Incidental to Specified Activities; Taking of Marine Mammals Incidental to Power Plant Operations,” <http://www.epa.gov/fedrgstr/EPA-IMPACT/2002/January/Day-02/i32238.htm> Accessed 9.10.06 (Letter of Authorization granted pursuant to Marine Mammal Protection Act to take certain number of harbor seals, gray seals, harp seals, and hooded seals from in power plant operations).

<sup>26</sup> “Radioactive Leak Reaches Nuclear Plant’s Groundwater,” Los Angeles Times (Aug. 18, 2006), available at: <http://www.latimes.com/news/local/la-me-radioactive18aug18,0,1132872,print.story?coll=la-home-local> Accessed 9.10.06. (“Radio Active Leak Reaches Nuclear Plant’s Groundwater”).

<sup>27</sup> Voluntarily reported data is collected for the Marine Mammal Stranding Network by the National Marine Fisheries Service Southwest Regional Office. This data includes take information from only a subset of plants.

<sup>28</sup> See, e.g., Lisa Heinzerling, *Statutory Interpretation in the Era of OIRA*, 33 Fordham L. J. 101 (2006).

## 1. *The Clean Water Act*

The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”<sup>29</sup> To effectuate this goal, in 1972, Congress fundamentally reformed the Act in what this Court has described as a “sea change” in this country’s water pollution control strategy.<sup>30</sup> As amended, the Act prohibits all discharges of pollutants to waters of the United States, except as permitted in a National Pollutant Discharge Elimination System (NPDES) permit.<sup>31</sup> NPDES permits, issued by State agencies or EPA’s regional offices, transform the generally applicable effluent limitations and other standards into specific obligations borne by the individual discharger.<sup>32</sup> These obligations were determined by Congress’s focus on uniform technology standards in the 1972 amendments, which “predicated pollution control on the application of control technology on the plants themselves....”<sup>33</sup> These national technology standards, moreover, become more stringent over time. **As the Supreme Court has recognized, the potential for economic consequences does not dampen these mandates.**<sup>34</sup> Indeed, with the passage of time and the tightening of the standards, cost considerations were to be relegated to a more peripheral role in the selection of best technology.<sup>35</sup>

## 2. *Clean Water Act Section 316(b)*

“[W]ell aware of the dangers posed to aquatic life by the withdrawal of large volumes of water through cooling water intake structures”<sup>36</sup> and of the availability of alternatives (such as closed-cycle cooling), Congress included section 316(b) in the 1972 Act as part of its technology-based framework. Section 316(b) provides:

Any standard established pursuant to [CWA §§ 301 or 306] and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.<sup>37</sup> (Emphasis added.)

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<sup>29</sup> CWA § 101(a), 33 U.S.C. § 1251(a).

<sup>30</sup> *Riverkeeper, Inc. v. EPA*, 358 F.3d 174, 184 (2d Cir. 2004) (“*Riverkeeper*”). The Act defines “pollution” broadly to include aquatic mortality caused by power plants: “The term ‘pollution’ means the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water.” CWA § 502(19), 33 U.S.C. § 1362(19).

<sup>31</sup> CWA §§ 301, 402, 33 U.S.C. §§ 1311, 1342.

<sup>32</sup> *EPA v. California, ex rel. State Water Res. Control Bd.*, 426 U.S. 200, 205 (1976).

<sup>33</sup> *Hooker Chemicals*, 537 F.2d at 623. Water quality standards were retained in the 1972 Act as a supplementary mechanism that can be used to set limitations stricter, but not more lenient, than technology-based limitations. *Riverkeeper*, 358 F.3d at 184 n.10.

<sup>34</sup> *EPA v. National Crushed Stone*, 449 U.S. 64, 80 (1980) (“Comments in the Senate debate were explicit: ‘There is no doubt that we will suffer some disruptions in our economy because of our efforts; many marginal plants may be forced to close.’”).

<sup>35</sup> *NRDC v. EPA*, 822 F.2d 104, 110 (D.C. Cir. 1987); see also *Riverkeeper*, 358 F.3d at 185 *citing cases* (EPA “should give decreasing weight to expense as facilities have time to plan ahead to meet tougher restrictions.”).

<sup>36</sup> In re Brunswick Steam Electric Plant, USEPA, Decision of the General Counsel, EPA GCO 41 at 3 (June 1, 1976). During CWA debate, Senator Buckley cited with approval newspaper articles reporting a decision to require closed-cycle cooling at Hudson River power plants to abate massive fish kills caused by their cooling water intake structures. *Id.* at n.10, citing Senate Com. on Public Works, “A Legislative History of the Water Pollution Control Act Amendments of 1972,” 93d Cong., 1<sup>st</sup> Session, at 196-197.

<sup>37</sup> For a comprehensive discussion of section 316(b)’s legislative history, see Karl R. Rabago, *What Comes Out Must Go In: Cooling Water Intakes and the Clean Water Act*, 16 Harv. Envtl. L. Rev. 429, 445-455 (1992).

Although they govern withdrawals rather than discharges, section 316(b)'s limitations are “technology-based performance requirements analogous to those derived for point sources under sections 301 (existing sources) and section 306 (new sources).”<sup>38</sup> Congress’s use of “best technology available” (BTA) language in section 316(b) – which is textually similar to “best available technology” (BAT)<sup>39</sup> and “best available demonstrated control technology” (BADCT)<sup>40</sup> – and its explicit cross-reference to sections 301 and 306, illustrates its intent to incorporate cooling water standards as an integral component of the NPDES program. In fact, regulations issued under section 316(b) are also promulgated under section 301 and 306.<sup>41</sup> As the Fourth Circuit explained in *VEPCO*, section 316(b) “requires § 301 and § 306 standards to deal with cooling water intake structures.”<sup>42</sup> *VEPCO* cited *Bethlehem Steel*<sup>43</sup> as support for its conclusion that section 316(b) regulations are “closely related to the effluent limitations and new source standards of performance of §§ 301 and 306” and distinguishable from “state-imposed water quality standards under § 303.”<sup>44</sup>

Section 316(b) requires the “best technology available to minimize adverse environmental impact.” Section 301, pursuant to which the Rule was also issued, requires the “best available technology economically achievable” (BAT).<sup>45</sup> BAT should represent “a commitment [by an industrial category] of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges.”<sup>46</sup> The most critical aspect of BAT is that it is a “technology forcing” standard, compelling polluting industries to meet ever more stringent limitations on the path towards complete elimination of water pollution.<sup>47</sup> Sections 316(b) and 301 therefore require EPA to select the technology that both minimizes impact and represents the maximum commitment of industry resources economically achievable.

Finally, Section 316(b) creates a mandatory duty for EPA to promulgate standards for cooling water intake structures within the time limits of sections 301 and 306.<sup>48</sup> Thus, EPA was required to promulgate section 316(b) regulations for new facilities by January 18, 1974,<sup>49</sup> and for existing facilities by July 1, 1977.<sup>50</sup>

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<sup>38</sup> 66 Fed. Reg. 65255, 65285 (Dec. 18, 2001).

<sup>39</sup> See CWA § 301(b)(2), 33 U.S.C. § 1311(b)(2).

<sup>40</sup> See CWA § 306(a)(1), 33 U.S.C. § 1316(a)(1).

<sup>41</sup> *Riverkeeper*, 358 F.3d at 185, citing *Va. Elec. and Power Co. (“VEPCO”) v. Costle*, 566 F.2d 446, 449-50 (4th Cir. 1977); *Cronin v. Browner*, 898 F. Supp. 1052, 1059 (S.D.N.Y. 1995).

<sup>42</sup> *VEPCO*, 566 F.2d at 450.

<sup>43</sup> *Bethlehem Steel Corp. v. EPA*, 538 F.2d 513, 515 (2d Cir. 1976).

<sup>44</sup> *VEPCO*, 566 F.2d at 450-51 & n.17.

<sup>45</sup> CWA § 301(b)(2)(A), 33 U.S.C. § 1311 (b)(2)(A).

<sup>46</sup> *NRDC v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988).

<sup>47</sup> *NRDC v. EPA*, 822 F.2d 104, 123 (D.C. Cir. 1987).

<sup>48</sup> *Cronin*, 898 F.Supp. at 1059.

<sup>49</sup> See CWA §§ 306(b)(1)(A), (B) (requiring new source performance standards no later than one year and ninety days after October 18, 1972); see also *Riverkeeper*, 358 F.3d at 185-86 (“When the EPA ‘established’ new source performance discharge ‘standard[s]’ ‘pursuant to section . . . 306,’ it ought *then* to have regulated new intake structures because, by virtue of section 316(b), section 306’s standards ‘shall require that . . . cooling water intake structures reflect the best technology available.”) (emphasis in original).

<sup>50</sup> See CWA § 301(b)(1)(A), (B) (effluent limitations for existing sources no later than July 1, 1977).

### ***3. California Constitution and the Public Trust Doctrine***

California has a duty, mandated by the state Constitution and a long line of state Supreme Court cases, to hold coastal lands in trust for the people of California. Historically, this Public Trust Doctrine provided for the public our waterways for "commerce, navigation, and fisheries." Later court rulings added hunting, fishing, swimming and recreational boating, and in 1971 expanded the list to include "preservation of those lands in their natural state," in order to protect both scenic and wildlife habitat values. The California Supreme Court held that the State has an "affirmative duty to take the public trust into account" in making decisions affecting public trust resources, and also the duty of continuing supervision over these resources, which allows and may require modification of such decisions.<sup>51</sup>

The Court found in *City of San Diego v. Cuyamaca Water Company*<sup>52</sup> that the public trust doctrine does not allow authorities to make concessions to individuals for the perpetual and exclusive use of portions of the waters without reference to the needs of other inhabitants. Such concessions would be a clear abuse of the public trust. Failure to set stringent regulations for use of once-through cooling by coastal power plants would amount to a grant of such a perpetual and exclusive use of portions of public trust waters, since these plants are destroying coastal resources on a daily basis. **Allowing these plants to use these outdated technologies unfettered, when less harmful technologies are feasible, and giving them a competitive advantage over inland plants by allowing them to use billions of gallons of publicly held seawater each day essentially for free, arguably is an abuse of the public trust that would be recognized by the courts.**

**The State Water Board should take strong and decisive action to exercise its public trust responsibilities,** by implementing stringent regulations for these coastal plants, in order to protect the interests of its coastal residents and other industries that have made California by far the country's biggest coastal treasure and economy.

### ***4. California Law Governing Protection of Coastal and Marine Resources***

Numerous authorities have been enacted in California to provide increasing protection, enhancement, and restoration of the State's coastal and marine resources. The California Coastal Act, Marine Life Protection Act and the Marine Life Management Act are models for the nation. Most recently, the Governor's *Ocean Action Plan*, California Ocean Protection Act (signed into law in 2004), and Ocean Protection Council again put California in the forefront of ocean and coastal management nationwide. These initiatives symbolize the Golden State's recognition of the many values of its world-renowned marine and coastal environment, a recognition that should be considered in developing a policy to protect those resources from the devastating local and regional impacts of once-through cooling.

### ***5. Porter-Cologne Water Quality Control Act***

In continuing to develop the statewide policy, it is imperative that the State Board recall Water Code section 13142.5, which mandates that the "best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of

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<sup>51</sup> *National Audubon Society v. Superior Court*, 33 C.3rd 419 (1983).

<sup>52</sup> *City of San Diego v. Cuyamaca Water Company*, 209 Cal. 105 (1930).

marine life.” Given the inherently destructive nature of once-through cooling systems, anything less than best available technology would fail to meet Porter-Cologne’s mandate to protect the beneficial uses of the waters of the state.

The regulated community has attempted to extricate itself from the requirements of Porter-Cologne by arguing in public workshops that other OTC should not be regulated to the required extent of the law because other threats to marine life, such as fishing, have greater impacts than OTC. This argument is specious on both the facts and the law. First, by making sweeping generalizations about entire ocean ecosystems, this argument ignores the clear facts of the severe localized and regional impacts of OTC, particularly on unique coastal ecosystems such as National Estuarine Research Reserves, among others.

Second, there is no legal support for the regulated community’s argument that some threats to beneficial uses can be ignored or minimized because of the mere existence of other threats to the same beneficial uses. If that were the case, Porter-Cologne would never be implemented. For example, by that logic a municipal POTW could discharge wastewater doused with enough chlorine to kill virtually every living thing in the vicinity of the discharge pipes without penalty, simply because fishing is also a threat to marine life. **It is a rare comment letter where we must emphasize that Porter-Cologne does not allow for unfettered impacts to California’s waters; we urge the Board to reject this argument and to implement the mandates of Porter-Cologne fully in order to protect the waters of the state.**

### **C. The Proposed Reductions Are Technologically and Economically Practical**

Despite the unsupported, sweeping generalizations by some in the regulated community that the proposed, legally required reductions in impacts are “technologically impossible,” **the proposed reductions are both technologically and economically practical**, as has been proven time and again around the country. Steam plants in other states such as New York have been successfully retrofit to updated cooling technology without harm to their energy supply. A nuclear plant in Michigan has also been safely retrofit with updated cooling technology.<sup>53</sup>

In addition, although many coastal plants in California might claim that there is not enough space to build cooling towers as an alternative cooling technology, this is simply untrue. For example, many coastal steam plants are considering the co-location of desalination plants. Any steam plant with space available for a large desalination plant generally has adequate space for a wet cooling tower retrofit.<sup>54</sup> A review of aerial photographs of San Onofre and Diablo Canyon nuclear plants indicates there should be adequate space at both facilities for wet towers.<sup>55</sup> To

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<sup>53</sup> EPA Federal Clean Water Act 316(b) Phase II Technical Development Document, Chapter 4 - Cooling System Conversions at Existing Facilities (April 2002) p. 4-3. Available at: <http://www.epa.gov/waterscience/316b/devdoc/ch4.pdf#search=%22michigan%20nuclear%20retrofit%20once%20through%22> (“EPA 316(b) Phase II TDD Ch.4”)

<sup>54</sup> For example, a 50 million gallon/day desalination plant is under evaluation for an 11-acre site at the AES Huntington Beach steam plant. (City of Huntington Beach, “Seawater Desalination Project at Huntington Beach - Draft Recirculated EIR,” May 2005, p. 3-1.) Units 3 and 4 steam units at Huntington Beach, a total of 450 MW, were recently repowered. (CEC, Huntington Beach Project Description, available at: <http://www.energy.ca.gov/sitingcases/huntingtonbeach/index.html> accessed 9.1.06) Less than 2 acres of land would be needed for inline wet towers for Units 3 and 4. (“CEC Huntington Beach Project Description”).

<sup>55</sup> For example, San Onofre has two reactors and sits on a 257 acre site. (Utilities Service Alliance, San Onofre webpage: <http://www.usainc.org/sanonofre.asp>.) The cooling tower for each 1,100 MW reactor would require from 2 to

address more directly these and other industry claims of technological “impossibility,” the California Coastal Conservancy, as directed by the Ocean Protection Council in its April 2006 Resolution, is currently undertaking a six-month study that will “analyze each of the existing coastal plant’s conversion to alternative cooling technologies or installation of best technology available.”

Conversion and/or phase-out of aging OTC systems can occur concurrently with modernization of coastal steam plants with high efficiency, gas turbine combined-cycle plants, which is a stated goal of California’s Energy Action Plan and recent California energy legislation that supports California’s progress toward reducing greenhouse gases.<sup>56</sup> There are currently 13,000 MW of new power plants under construction (960 MW), approved for construction (7,643 MW), or under formal review by the CEC (approx 4,500 MW).<sup>57</sup> This compares to approximately 14,000 MW of existing aging OTC steam boilers along the California coast.<sup>58</sup> Most steam plants are 30 to 50 years old and at or beyond their expected service life.<sup>59</sup> The MW capacity of these aging OTC plants could be replaced almost entirely by projects already approved or about to be approved by the CEC.

The overall cost of power production of coastal plants would decline over time as more fuel-efficient combined-cycle plants displace steam plants and OTC technology is replaced at those converted plants, as the cooling system is a small part of the overall cost of a new power plant. There is very little difference in the cost of a new combined-cycle plant whether it incorporates OTC, closed-cycle wet cooling, or dry cooling.<sup>60</sup> At plants that are not converted, the cost of power production related to an OTC retrofit would increase by not more than 3 to 4 percent.<sup>61</sup>

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6 acres of land, depending on whether an inline or round cooling tower is used. Inline wet cooling towers can provide 500 to 600 MW of steam plant cooling per acre (210 feet by 210 feet area). (Powers, William, direct and rebuttal testimony, Danskammer Power Station draft permit proceeding – SPDES NY-0006262, October 2005 and December 2005.) Testimony describes design basis for retrofit plume-abated tower measuring 50 feet by 300 feet for 235 MW of steam plant capacity. Only 2 to 4% of the San Onofre site would be needed for the towers.

<sup>56</sup> See, e.g., AB 32 (Nuñez), passed by the Legislature Sept. 2006 to address greenhouse gas emissions; see also AB 1576 (Nuñez, 2005), which authorizes utilities to enter into long-term contracts for the electricity generated from the replacement or repowering of older, less-efficient electric generating facilities.

<sup>57</sup> California Energy Commission Power Plant Fact Sheet (August 9, 2006), Attachment D, bar chart on p. 3. Also available at [http://www.energy.ca.gov/sitingcases/FACTSHEET\\_SUMMARY.PDF](http://www.energy.ca.gov/sitingcases/FACTSHEET_SUMMARY.PDF) Accessed 9.9.06. (“CEC Power Plant Fact Sheet Attachment D”)

<sup>58</sup> California Energy Commission comment letter to SLC dated April 12, 2006, p. 3. MW capacity for each coastal plant category in 2004 (steam, nuclear, combined-cycle, combustion turbine) is calculated from data provided in table on p. 3. Total MW for all four plant categories is calculated at 20,650 MW.

<sup>59</sup> California Energy Commission Staff Paper (July 2003), *Aging Natural Gas Power Plants in California*, Table 1. Available at: [http://www.energy.ca.gov/reports/2003-07-17\\_700-03-006.PDF#search=%22Aging%20Natural%20Gas%20Power%20Plants%20in%20California%22](http://www.energy.ca.gov/reports/2003-07-17_700-03-006.PDF#search=%22Aging%20Natural%20Gas%20Power%20Plants%20in%20California%22) Accessed 9.12.06. (“CEC *Aging Natural Gas Power Plants in California*”).

<sup>60</sup> John Maulbetsch presentation on cost of cooling technologies to the State Water Resources Control Board at State Board Workshop in Oakland on December 7, 2005. Available at: [http://www.swrcb.ca.gov/npdes/docs/wrkshp\\_oakland2005/pres\\_jmaulbetch.pdf](http://www.swrcb.ca.gov/npdes/docs/wrkshp_oakland2005/pres_jmaulbetch.pdf) Accessed 9.8.06.

<sup>61</sup> See fn. 19 (xix) of Attachment B (Fact Sheet on Energy and OTC) for calculation. Retrofitting to a wet tower is fundamentally simple - the OTC pipes going to and from the ocean are rerouted to a cooling tower. At facilities that have been retrofit, the hook-up of the new cooling system has generally been carried-out without requiring an extended unscheduled outage. The cost to retrofit 800 MW Palisades Nuclear (MI) to wet towers was \$68/kW (1999 dollars). The cost to retrofit 750 MW Pittsburg Unit 7 (CA) was \$46/kW (1999 dollars). EPA 316(b) Phase II TDD Ch.4, *supra* note 53.

The power industry estimates that the capital cost to retrofit all existing facilities, approximately 20,700 MW of capacity, ranges from \$2.0 billion for wet cooling to \$2.5 billion for dry cooling.<sup>62</sup> The complete retrofit of the existing fleet of aging coastal steam plants, which represents 14,000 MW of the 20,700 MW total, is not a credible scenario. In reality only the two nuclear plants and a few of the steam units that have recently been upgraded are likely to still be operational in 2020. It is probable that all other steam plants will have converted to combined-cycle using closed-cycle wet or dry cooling technology or been retired by that time.

It is useful, however, to use the industry retrofit cost figure to determine the cost impact of a closed-cycle conversion at California's two coastal nuclear power plants. A large capital investment like a wet tower retrofit would be amortized over 20 to 30 years. Industry estimates the cost to retrofit 20,700 MW of coastal power plant capacity with wet towers at \$2 billion, or \$100 million per 1,000 MW of capacity. Assuming 30 years and 7% interest, the payment per year on the \$100 million capital cost would be \$8 million per year. Nuclear plants are baseload units with high usage levels, typically 90 percent of potential output or greater. The relative cost impact of a wet tower retrofit at nuclear plants would be low relative to natural gas-fired boiler plants due to the very high usage rates, and associated revenue streams, of nuclear plants. Each reactor at SONGS and Diablo Canyon generates approximately 1,000 MW. At a 90 percent annual capacity factor each reactor will produce approximately 8 million MW-hr of electricity per year. The average price of wholesale power in California in 2005 was in the range of \$70/MW-hr.<sup>63</sup> Each reactor would generate a revenue stream of approximately \$550 million per year at a 90 percent capacity factor and current wholesale electricity rates.<sup>64</sup> **The annual capital cost expense of a wet tower retrofit at either SONGS or Diablo Canyon would be in the range of 1.5 percent of annual revenue** using industry's own generic wet tower retrofit cost estimate of \$100 million per 1,000 MW of capacity.<sup>65</sup>

Another cost issue that industry has raised as justification for not retrofitting nuclear plants is the revenue that would be lost during the outage required for the hook-up of the closed-cycle cooling system. However, nuclear plants are characterized by periodic extended outages. If the retrofit hook-up is coordinated with one of these extended periodic outages, **no unplanned downtime** will be caused by the hook-up of the closed-cycle cooling system. As the EPA states:<sup>66</sup>

The Agency learned that for 2000 the industry mean nuclear refueling outage was approximately 40 days (Nucleonics Week, January 18, 2001). In addition, NUREG-1437 shows that nuclear plants undergo periodic and predictable outages for inspections. The following excerpts from NUREG-1437 explain the NRC's view of outages at nuclear plants:

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<sup>62</sup> Letter from CCEEB to State Lands Commission, "Comments on Proposed Staff Resolution" (March 24, 2006).

<sup>63</sup> Energy News Data – Western Price Survey, 2005 weekly archives: <http://www.newsdata.com/wps/archives.html> Accessed 8.2.06.

<sup>64</sup> Nuclear Energy Institute 2006. Nuclear Energy Fact Sheet. Available at: [www.nei.org](http://www.nei.org) Accessed 9.1.06.

<sup>65</sup> The industry estimate of \$100 million per 1,000 MW of capacity is equivalent to \$100/kw. Capital costs are typically presented in the "\$/kw" format in the power industry. The capital cost of the one closed-cycle retrofit carried out on a U.S. nuclear power plant, the Palisades Nuclear Plant in Michigan, was \$68/kw in 1999 dollars. EPA 316(b) Phase II TDD Ch.4 *supra* note 53, p.4-6. The industry estimate is conservative, though reasonable, in the context of the actual cost to retrofit the Palisades Nuclear Plant in Michigan.

<sup>66</sup> Nuclear Energy Institute 2006. Nuclear Energy Fact Sheet. Available at: [www.nei.org](http://www.nei.org) Accessed 9.1.06.



From Section 2.2.6- Nuclear power plants must periodically discontinue the production of electricity for refueling, periodic in-service inspection (ISI), and scheduled maintenance. Refueling cycles occur approximately every 12 to 18 months. The duration of a refueling outage is typically on the order of 2 months. Enhanced or expanded inspection and surveillance activities are typically performed at 5- and 10-year intervals. These enhanced inspections are performed to comply with Nuclear Regulatory Commission (NRC) and/or industry standards or requirements such as the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Five-year ISIs are scheduled for the 5th, 15th, 25th, and 35th years of operation, and 10-year ISIs are performed in the 10th, 20th, and 30th years. Each of these outages typically requires 2 to 4 months of down time for the plant. For economic reasons, many of these activities are conducted simultaneously (e.g., refueling activities typically coincide with the ISI and maintenance activities).

Many plants also undertake various major refurbishment activities during their operational lives. These activities are performed to ensure both that the plant can be operated safely and that the capacity and reliability of the plant remain at acceptable levels. Typical major refurbishments that have occurred in the past include replacing PWR steam generators, replacing BWR recirculation piping, and rebuilding main steam turbine stages. The need to perform major refurbishments is highly plant-specific and depends on factors such as design features, operational history, and construction and fabrication details. The plants may remain out of service for extended periods of time, ranging from a few months to more than a year, while these major refurbishments are accomplished. Outage durations vary considerably, depending on factors such as the scope of the repairs or modifications undertaken, the effectiveness of the outage planning, and the availability of replacement parts and components.

In fact, both SONGS and Diablo Canyon have received authorization from the CPUC to conduct boiler replacement projects. The cost at each facility will be approximately \$700 million.<sup>67</sup> One ideal time to convert SONGS and Diablo Canyon to closed-cycle cooling would be at the time the boiler replacement projects are underway. This approach would eliminate any issues associated with downtime or construction in the vicinity of an operating reactor.

In sum, substantial evidence from both government agencies and the industry itself indicates that the proposed 90-95% reductions in impacts are both technologically and economically practical, and should be adopted and implemented.

#### **D. The Draft Policy Is Consistent with California's Energy Action Plan**

California's Energy Action Plan calls for California to move towards cleaner, more efficient technology. The overarching goal is for "California's energy to be adequate, affordable, technologically advanced, and environmentally-sound," and for our energy to be reliable and

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<sup>67</sup> *Id.*

“provided when and where needed and with minimal environmental risks and impacts.”<sup>68</sup> In order to reach this goal, the Energy Action Plan calls for the establishment of “appropriate incentives for the development and operation of new generation [sic] to replace the least efficient and least environmentally sound of California’s aging power plants.”<sup>69</sup> The Energy Action Plan outlines specific actions needed to achieve electricity adequacy, reliability, and infrastructure including “significant capital investments” to “augment existing facilities, replace aging infrastructure, and ensure that California’s electrical supplies will meet current and future needs at reasonable prices and without over-reliance on a single fuel source.”<sup>70</sup>

Many of the coastal steam plants are 30-50 years old and are beyond their expected lifetimes.<sup>71</sup> It would be inconsistent with state environmental and energy policy to artificially prolong the life of these antiquated, inefficient, polluting power plants with a weak OTC policy. It is not the province of the State Board to facilitate re-licensing of energy plants or to preserve antiquated technology. In fact, California state law mandates the opposite. Moreover, the required changes necessary for power plants to comply with the law would in no way threaten California’s energy supply. According to the CEC website, there is a total of 4056 MW of new energy capacity currently under review by the CEC, some of which include renewable energy developments.<sup>72</sup> Further, the state has a backup of licensed but not-yet-built capacity.<sup>73</sup>

**We strongly encourage the State Board to consult with the expert staff at the CEC to answer any questions about the State’s demonstrated, strong support for a sustainable, environmentally-friendly energy supply.** The alarmist claims made by industry of power shortages resulting from the draft 316(b) policy can be soundly resolved through careful consideration of all of the facts. Please see Attachment B’s “Energy and OTC Fact Sheet” for more information and supporting documentation.

Modernization of coastal steam plants with newer technologies such as high efficiency, gas turbine combined-cycle plants is not only consistent with California’s Energy Action Plan - it is also consistent with recent California energy legislation and with the state’s clear commitment towards reducing greenhouse gases, as evidenced by, among other things, the recent enrollment by the Legislature of AB 32.<sup>74</sup> As stated by Lt. Governor Cruz Bustamante, “new technology [can] provide a way to resolve both our economic issues, our energy issues, as well as the environmental issues. I don’t buy the idea that we have to continue to degrade the environment and do business. I think you can do good environmental work and still have good business.”<sup>75</sup>

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<sup>68</sup> California’s Energy Action Plan II, p. 1 (emphasis added). Adopted by the CA Public Utilities Commission and the CA Energy Commission on September 21, 2005. Available at: [http://www.energy.ca.gov/energy\\_action\\_plan/2005-09-21\\_EAP2\\_FINAL.PDF](http://www.energy.ca.gov/energy_action_plan/2005-09-21_EAP2_FINAL.PDF) accessed 8/30/06.

<sup>69</sup> *Id* at p. 7.

<sup>70</sup> *Id.*

<sup>71</sup> CEC *Aging Natural Gas Power Plants in California*, *supra* note 59.

<sup>72</sup> See CEC Expected and Disclosed Energy Facility Projects in Review 8/9/06, Attachment C. Table created from data available at: [www.energy.ca.gov/sitingcases/all\\_projects.html](http://www.energy.ca.gov/sitingcases/all_projects.html) Accessed 8.8.06. (“CEC Projects in Review 8/9/06, Attachment C”)

<sup>73</sup> CEC Power Plant Fact Sheet Attachment D, *supra* note 57.

<sup>74</sup> See also AB 1576 (2005) - authorizes utilities to enter into long-term contracts for the electricity generated from the replacement or repowering of older, less-efficient electric generating facilities.

<sup>75</sup> Lieutenant Governor Cruz Bustamante, February 9, 2006, speaking at State Lands Commission Hearing regarding the State Lands Commission Resolution regarding Once-Through Cooling.

California’s Lt. Governor, State Controller and Director of Finance all concluded that “the elimination, or reduction to insignificance of the adverse environmental impacts, of once-through cooling technologies can be accomplished without threatening the reliability of the electrical grid.”<sup>76</sup> We urge the State Water Board to follow their leadership, and adopt a strong state 316(b) policy that protects the environment consistent with the state’s commitment to a sustainable energy supply.

#### **E. The Role of the Expert Review Panel Should Be Expanded to Include Review of All Technical Analyses Required by the Policy**

We commend the State Board for proposing to convene an Expert Review Panel to assess the entrainment and impingement impact studies and advise the State Board on technical issues related to OTC. Given the technical focus of the draft policy, we encourage the State Board to expand the role of this Panel to assess additional technical analyses required for the implementation of, and compliance with, the state policy. For example, in addition to the responsibilities of the panel outlined in the draft policy, the Expert Review Panel should also evaluate how the calculation baseline is determined for each plant; how the capacity utilization factor is determined for each plant; the feasibility analyses of alternative technologies (including the use of wastewater for cooling) conducted by each plant; and the design, results, and interpretation of the cumulative impact studies. Expanding the role of this group will maximize the use of its collective technical expertise and assure that the implementation of, and compliance with, the policy is a truly science-based process. Broadening the purview of the Expert Review Panel will also ensure that the analyses conducted by industry consultants for compliance with the policy are given adequate review.

Although we support the State Board’s efforts to identify a balanced expert panel to review the technical aspects required by the policy, we have concerns surrounding the structure of this group. The draft policy proposes that the panel be comprised of three academic members, two technical experts representing industry, two environmental group representatives, and one consulting scientist. However, the role and background of the single consulting scientist is not outlined in the draft policy. Without better characterizing this representative, there is potential that the final composition of the panel will be unbalanced. The single consulting scientist may be biased toward industry or the environmental groups. Instead of featuring an unspecified consulting scientist, we recommend this seat be filled by a member from the CEC staff. Including a member from the CEC staff on the Expert Review Panel would provide additional technical expertise regarding capacity utilization rate, feasibility analyses, and other technical assessments, as well as facilitate further collaboration between the State and Regional Water Boards and CEC.

## **II. POTENTIAL LOOPHOLES IN THE DRAFT POLICY SHOULD BE CLOSED TO ENSURE THAT 90-95% REDUCTION IN IMPACTS FROM EXISTING POWER PLANTS IS ACTUALLY AND EXPEDITIOUSLY ACHIEVED**

In order to ensure that the policy’s appropriate goal of 90-95% reduction in impacts is achieved, the loopholes and potential implementation gaps in the draft policy must be closed and filled. These are described in detail below.

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<sup>76</sup> SLC Resolution, *supra* note 2. (emphasis added).

## A. All Plants Must Be Included in the Policy

**Loopholes created for little-used, inefficient plants must be closed. Entrainment standards should apply to all power plants, not just those with a capacity utilization rate greater than 15%.** As the draft policy is written, plants that have a 15% or less capacity utilization rate will not be subject to the entrainment standards. According to data presented by the CEC at the State Board workshop on July 31, 2006 (“Sacramento workshop”), nine of the old coastal steam powered “peaker” plants operate at a capacity utilization rate less than 15% and so would be exempted from the proposed entrainment standards. Taking into account the recent and upcoming closures of some coastal plants, this means that about 40% of the coastal steam plants potentially affected by this policy would be excused from complying with the new entrainment standards.<sup>77</sup> This exemption was simply lifted from the federal CWA section 316(b) regulations (which, as noted above, are under legal challenge by numerous groups). Yet according to CEC staff, it is difficult to understand why this exemption should apply to California.<sup>78</sup>

California’s coastal power plants are old and inefficient, and should not be given artificial life support through harmful and unsupportable exemptions. Industry claims that such exemptions are essential to the energy grid, but as described in detail above, this is simply not true. It is important to remember that these outdated, now little-used “peaker” plants are only one part of the electrical grid, and they do not operate in a vacuum. According to the CEC, there are new energy projects currently under review that would bring online more capacity using state of the art, cleaner technology. The CEC website shows that fourteen new projects are currently under review, totaling 4,506 MW capacity.<sup>79</sup> Of these new projects, eight are designed as “peaking” plants, and would provide 2,238 MW of peaking capacity.<sup>80</sup> Not only is there new peaking capacity coming on line, but many of these plants are owned by the very same companies that own the coastal, now-“peaking” plants that are using outdated and harmful cooling technology. For example, the CEC is currently reviewing a request by subsidiary company of Southern California Edison to develop two 500 MW “peaker” plants that use new, cleaner technology.<sup>81</sup> Companies with coastal “peaker” plants clearly already are planning for and implementing new generating capacity with more efficient and less polluting inland plants they already own or are building.<sup>82</sup>

The State Board should not encourage the continuance of impacts caused by outdated, polluting, inefficient plants through loopholes. Instead, the loopholes should be eliminated so that the market runs its course and these plants are replaced as needed with more efficient, cleaner, technologically superior alternatives, as was recently done with the Humboldt and Encina power plants. Exempting extremely low capacity plants from the rule makes no sense, as they are the most inefficient of all of the once-through cooled plants and also cause significant environmental

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<sup>77</sup> Oral Comments given at State Water Resources Control Board on July 31, 2006 by California Energy Commission Staff.

<sup>78</sup> *Id.*

<sup>79</sup> CEC Energy Projects in Review 8/9/06, Attachment C, *supra* note 72.

<sup>80</sup> *Id.*

<sup>81</sup> *Id.*

<sup>82</sup> See, e.g., California Energy Commission, “In the Matter of: Application for Certification, AES Highgrove Power Plant Project” (Aug. 16, 2006), [http://www.energy.ca.gov/sitingcases/highgrove/notices/2006-08-16\\_notice\\_pubhrring\\_sitevisit.html](http://www.energy.ca.gov/sitingcases/highgrove/notices/2006-08-16_notice_pubhrring_sitevisit.html) (describing construction by AES of 300 MW inland peaking power plant).

damage. The law does not allow them to continue to damage the public's resources and kill marine life, particularly when peaking power can be generated using more efficient technology.

Finally, a significant related loophole is that the draft policy considers capacity at the plant, not the unit, level. This perspective would enable generators to include old or retired units in the calculation of annual capacity factor. In other words, plants operating over 15% capacity utilization rate may have some inactive units. These plants may factor their idle units into the calculation of capacity utilization rate to reduce it to 15% or less. Given that the average capacity utilization rate of each coastal steam plants is less than 20%, this provision could provide a significant loophole for virtually all of the coastal plants.<sup>83</sup> Calculating capacity utilization rate at the unit, rather than plant level would also more closely correlate with actual generational flow, which we urge the State Board to use as the basis for determining calculation baseline (further explained below). Thus, **the final policy should be revised to require capacity utilization rate to be calculated at the unit, not plant, level.**

**B. "90-95% Reduction from What?" The Calculation Baseline Must Be Set to Ensure that Required Reductions Are Actually Achieved.**

As described in detail above, and as documented in years of U.S. EPA, CEC, and other agency records, the persistent use of OTC at coastal power plants clearly has contributed to the loss of biodiversity and the documented population decline of many marine species over the past 50 years. The draft state policy on once-through cooling appropriately improves upon the federal regulations by requiring facilities to implement reductions in impacts at the upper ends of the performance standards in the federal rule. The approach for calculating these reductions in impacts is critically important to whether these reductions are actually achieved in the environment. In other words, **the baseline from which the 90-95% reductions in impacts is calculated – the "calculation baseline" – must be set to actually achieve reductions, rather than mask inactivity by the regulated community.**<sup>84</sup>

However, the discussion of how exactly the calculation baseline should be determined and reductions measured remains vague in the draft policy. Without explicit direction, there is significant risk that the calculation baseline will not be determined in a consistent manner for each facility in the state and great potential for confusion among Regional Boards, facilities, and the public surrounding this issue. More significant than inter-state inconsistency, however, is the real risk that use of varying assumptions in such calculations will result in little to no real reductions in impacts. We urge the State Board to provide detailed direction regarding the determination of

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<sup>83</sup> Letter from CEC to SLC (April 12, 2006), p.3. MW capacity for each coastal plant category in 2004 (steam, nuclear, combined-cycle, combustion turbine) is calculated from data provided in table on p. 3. Total MW for all four plant categories is calculated at 20,650 MW.

<sup>84</sup> The baseline is also significant in that para. 2.d. of the draft policy ties the baseline to the requirement to reduce intake flow when energy is not being produced. Specifically, the draft policy states that entrainment must be minimized when electrical energy will not be produced for two or more consecutive days, by reducing the intake flow to "ten percent of the baseline flow rate." The more the policy allows the baseline flow to be set over the amount actually needed to produce electricity, the less likely it will be that this necessary shut-down measure will be implemented. [CA State Water Resources Control Board, "Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations (June 13, 2006)," Appendix I, p.2. Available at: [http://www.swrcb.ca.gov/npdes/docs/cwa316b/316b\\_scoping.pdf](http://www.swrcb.ca.gov/npdes/docs/cwa316b/316b_scoping.pdf) Accessed 9.1.06].

calculation baseline in the revised policy, one that ensures that the reductions in impacts are actually achieved. Our recommendations of how to provide this direction are further delineated below.

***1. The relationship between generational and actual flow should be explored and if differences exist, the calculation baseline should be determined using generational flow rather than actual flow***

We support State Board staff's effort to improve on the federal rule by requiring that facilities use flow other than the permitted maximum flow to determine calculation baseline. Although intuitively the actual flow, which is the proposed basis for the calculation baseline in the draft policy, appears to reflect the flow required for a facility to operate, **in many cases the actual flow is significantly greater than the flow required to generate electricity** (*i.e.*, the "generational flow"). For example, generating Units 1 & 2 at El Segundo Generating Station ceased producing electricity in 2002; however the mean annual flow at Intake 001 (which draws in cooling water for Units 1 & 2) continued at or above the level prior to 2002. Industry has argued these high flow levels – which, at El Segundo range from 50 to over 200 million gallons per day - are needed to control biofouling for maintenance of pipes.<sup>85</sup> However, the regulated community has provided no support for such an assertion. Indeed, numerous other options either exist or are in active development to address fouling that are far more environmentally sound than running the pumps almost continuously, with no regard for whether the plant is generating electricity.<sup>86</sup> Thus, **we urge the State Board to identify the true volume of water actually needed at each facility before making any decisions to base entrainment and impingement reductions on actual flow.**

Moreover, if the baseline for reductions is calculated using actual flow, then depending on how long it takes the policy to be adopted, facilities may be able to elevate their flow levels beyond the necessary amount for generation to augment the baseline. This would make it easier for generators to comply with performance standards without actually making real reductions (similar to problems with early efforts to reduce residential water use in the face of droughts – those over-using water when the baseline was set were "rewarded" while conservers punished). Accordingly, we also urge the State Board to consider how to set a **fair and meaningful time frame** for determining the calculation baseline.

We understand that researching this issue as needed will require cooperation among the State Board, Regional Boards, and CEC. However, CEC staff representatives at the State Water Board's July workshop affirmed that determining the relationship between actual and generational flow will provide valuable information for the State Board's policy development and implementation process. The CEC staff also offered their assistance in researching this relationship. We encourage the State Board staff to work with CEC staff to develop a process for determining the calculation baseline that will best implement the goal of 90-95% reduction in impacts. At a minimum, **we urge the State Board to revise the draft policy to require that the calculation baseline be determined according to generational flow.** We also encourage the State Board to explore the use of deterrents, such as a negative credit that lowers the baseline, to ensure that facilities do not seek creative compliance avoidance strategies.

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<sup>85</sup> El Segundo Generating Station Report flow data 1996-2004 (El Segundo Power, LLC), available at [http://www.swrcb.ca.gov/rwqcb4/html/permits/316b\\_Issues.html](http://www.swrcb.ca.gov/rwqcb4/html/permits/316b_Issues.html). Accessed 8.1.06.

<sup>86</sup> See, e.g., [http://www.onr.navy.mil/sci\\_tech/3t/transition/tech\\_tran/stories/adv\\_fouling/](http://www.onr.navy.mil/sci_tech/3t/transition/tech_tran/stories/adv_fouling/) Accessed 9.12.06; see also <http://www.epri.com/portfolio/product.aspx?id=1160> . Accessed 9.12.06.

## ***2. Reference sites should be used in determining the calculation baseline to reflect the true impacts power plants have on marine and coastal resources***

In our February letter to the State Board regarding OTC policy development (see Attachment A), we raised the concern that allowing facilities to establish a calculation baseline derived solely from historic levels of intake, entrainment, and impingement, as well as potentially depleted source waters surrounding the facility, will generate biased results that produce no meaningful environmental improvement. To reconcile this problem, we recommended that the policy require facilities to be responsible for past entrainment and impingement damages at their sites by using reference sites to assist in determining the calculation baseline. Although the staff has considered these comments in the draft policy by giving discretion to the Expert Review Panel to determine whether or not reference sites are appropriate, the draft policy fails to commit to the use of reference sites in determining the calculation baseline.

The scientific community broadly accepts the use of reference sites in study design to determine the extent of environmental impacts. These studies typically use a control, or reference site, to provide the data necessary to make comparisons between an impacted and unimpacted site and quantify the ecosystem effects of an environmental stressor.<sup>87</sup> In addition to academic studies, reference sites have historically been used in management to determine the extent of industrial impacts on marine and coastal resources. For example, both Hyperion Treatment Plant's and the Joint Water Pollution Control Plant's permits have historically and continue to require monitoring both within their zone of initial impact and at reference stations to determine the impacts of discharging primary sewage to benthic infaunal, demersal fish, and macroinvertebrate community composition and species abundance.<sup>88</sup>

Taking a reference approach to determining the calculation baseline would help account for the years of degradation that has occurred in waters adjacent to power plant facilities. This approach is consistent with sections 13142.5(c) and (d) of the Porter-Cologne Act, which raise concerns about the coastal region's ecological balance. The reference studies we recommend align with the "independent baseline studies" foreseen by the Legislature, which to date have been largely ignored. Additionally, community composition and population structure have likely changed since the establishment of coastal power plants decades ago. This reference approach will help provide current data at a site that is undisturbed by OTC for which to compare the ecological structure of marine life at coastal power plant facilities.

We uphold the recommendations outlined in our February letter and strongly urge the state to take a sound scientific approach by incorporating the use of reference sites to determine the calculation baseline. This approach will avoid the possible confounding effects from potentially depleted source waters caused by historic impingement and entrainment at each facility. For example, the facilities on Alamitos Bay - Haynes and Alamitos Generating Stations - are located in close proximity to one another, and both impact the same small body of water. Based on circulation

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<sup>87</sup> Schroeter *et al.*, "Detecting the Ecological Effects of Environmental Impacts: A Case Study of Kelp Forest Invertebrates," *Ecological Applications*, Vol. 3, No. 2., May 1993; Osenberg *et al.*, "Detection of Environmental Impacts: Natural Variability, Effect Size, and Power Analysis," *Ecological Applications*, Vol. 4, No. 1, Feb 1994.

<sup>88</sup> Thompson, SCCWRP, "Hyperion Monitoring Report"

[http://www.lacity.org/SAN/EMD/products/\\_pdf/SMB\\_Reports/2001\\_02/Chapter1.pdf](http://www.lacity.org/SAN/EMD/products/_pdf/SMB_Reports/2001_02/Chapter1.pdf). Accessed 9.10.06

and volumetric relationships, the combined OTC systems of these two power plants consume all of the water in Alamitos Bay every five days, and have done so for decades.<sup>89</sup> It is very likely that organisms living in Alamitos Bay have been severely depleted by the operation of these two power plants. It is imperative that a reference approach be used in situations like Alamitos Bay to determine the true baseline for facilities.

In this reference approach, we recommend the State Board convene an independent technical working group (through the Expert Review Panel or otherwise) to collaboratively select a series of reference sites that represent habitats characteristic of each facility, but are not impacted by cooling water intake systems. Monitoring should be conducted at both reference sites and power plants. The team should be charged with developing and implementing a monitoring plan to characterize the composition, abundance and diversity of marine life that are entrained or impinged at each power plant and compare the data to monitoring conducted at reference sites.

Although this approach does not provide baseline data from before establishment of coastal power plants, it does provide data from sites that have not suffered decades of damage from entrainment and impingement. Thus, taking a reference approach indirectly addresses these ongoing impacts because samples are not limited to a potentially depleted source water area (as they are in the currently outlined Proposal for Information Collection report and Comprehensive Demonstration Studies). Such a process is essential if the state foresees continued use of once-through cooling.

### **C. There Must be Limits Governing Determination of “Feasibility”**

Porter-Cologne section 13142.5(b) requires application of the best available technology “feasible” to “minimize the intake and mortality of all forms of marine life.” It is important to note that the interpretation and application of this state law cannot be less stringent than federal law, which calls for the “best technology available for minimizing adverse environmental impact.”

However, **the draft policy defines “feasible” in a way that almost eviscerates the BAT standard in the Clean Water Act.** Specifically, the draft policy defines “feasible” as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.”<sup>90</sup> This definition is vague to the point of being unimplementable, allocating practically unbridled discretion to the Regional Board staff responsible for implementing the policy. For example, the draft policy arguably would allow a plant operator simply to demonstrate (to no particular identified standard) that no combination of operational and structural controls can feasibly achieve the 90% entrainment standard, at which point the operator would become eligible to use restoration measures to meet the standard (further discussion is provided below on the significant limitations of restoration or mitigation to address the impacts of OTC). Just examining, for example, economics: how is staff to know when economic factors make a project infeasible? Is it when the cost of a certain measure decreases annual profits by a certain proportion? When that cost exceeds the cost of air pollutant reduction technology?

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<sup>89</sup> Tenera Environmental and MBC Applied Environmental Science, “Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan,” (September 28, 2005) p. 2.

<sup>90</sup> CA State Water Resources Control Board, “Scoping Document: Proposed Statewide Policy on Clean Water Act Section 316(b) Regulations (June 13, 2006),” Appendix I, p.4. Available at: [http://www.swrcb.ca.gov/npdes/docs/cwa316b/316b\\_scoping.pdf](http://www.swrcb.ca.gov/npdes/docs/cwa316b/316b_scoping.pdf) Accessed 9.1.06. (“Scoping Document”).



When that cost makes financing impossible? When that cost cannot be passed on to ratepayers? When that cost exceeds the cost of fuel for operating the plant? These questions do not even address how the other factors are to be measured, much less compared to the economic factor. Indeed, the questions left open by this definition could fill pages of this comment letter.

Because of how it is presently defined, the interpretations of “feasible” by Regional Board staff are likely to be extremely divergent. Implementation of the policy will result in a hodgepodge of compliance measures determined mainly by the persuasiveness of industry representatives at the regional level, rather than by consistent and fair application of the performance standards across the state. Such inconsistency is all the more nonsensical in the contemporary market, where merchant generators compete against one another to sell electricity on the open market.

But most importantly, the definition transports the policy dangerously away from the requirement in both state and federal law that plants adopt the “best available technology.” **The practical effect of the current “feasible” definition is essentially to provide a wide-open, site-specific compliance loophole.** This clearly is inconsistent with the draft policy’s express prohibition of the site-specific options.<sup>91</sup> It is also inconsistent with established policy in the State of New York, which “will not consider a ‘site-specific’ alternative BTA determination.”<sup>92</sup>

**A better definition of “feasible” would follow the generally-accepted definition of “capable of being done or carried out.”**<sup>93</sup> This is the definition being applied in New York State, which defines “feasible” as “‘capable of being done’ with respect to the physical characteristics of the facility site but does not involve consideration of cost.”<sup>94</sup> Application of this accepted definition of “feasible” allows Regional Board staff to apply objective technical knowledge and focus on technological infeasibility. Moreover, since application of the term could have large consequences for statewide consistency, the state policy could vest the Expert Review Panel with review and approval of feasibility determinations that are in question. The State Board would be on solid legal footing with these changes, because applicable law certainly does not require the State Board to carve such large loopholes into the state policy.

Futhermore, **if economic factors remain in the policy (a position with which we strongly disagree), consideration of economic data must be comprehensive and transparent.** The policy must place the burden on the permit applicant, who alone holds all the economic data for a facility, to spell out, among other things, how the cost of the purportedly infeasible technology was calculated; over what time period the plant would have financed the technology; and how this cost relates to investments in other pollution-reduction technologies (including, for example, the use of selective catalytic reduction), other plant costs including fuel and capital expenditures, gross revenues, etc. All data must be presented for public review, and Regional Board staff must explain thoroughly and transparently how the conclusion on infeasibility was derived.<sup>95</sup>

These protections are essential in light of expected actions based on past experience in this area. For example, the Stanford Environmental Law Clinic’s experience with Moss Landing was

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<sup>91</sup> *Id.* Appendix I, p.3

<sup>92</sup> *Id.* Appendix II, “Memorandum from Lynette Stark, NY Department of Environmental Conservation to Benjamin Grumbles U.S. EPA”, (Jan. 24, 2005). p.4.

<sup>93</sup> Merriam-Webster OnLine, <http://www.m-w.com/dictionary/feasible>.

<sup>94</sup> Scoping Document, *supra* note 90, Appendix II at p.4.

<sup>95</sup> Requiring this type of cost information is also consistent with the New York policy. *See id.*

that the company's own estimates of the cost of OTC relative to other forms of cooling changed by \$20 million over four years, to serve the company's changing goals.<sup>96</sup> In addition, when determining the amount of money to put in a "restoration fund," the company valued the land in the restoration plan around the plant at \$18,000 per acre, when all estimates in the record showed such land to be worth between \$60K and \$260K per acre. Had the company simply valued the land appropriately and contributed proper funding, OTC plus the restoration plan would have been more expensive than alternative technologies, which should have been adopted based on a complete and accurate economic analysis.<sup>97</sup> Finally, the company said that the total commercial value of the marine life that its OTC system would kill was \$2,900 over 30 years. The Moss Landing Plant alone cycles 1.224 billion gallons per day at maximum permitted capacity. This represents over a quarter of the volume of the adjacent Elkhorn Slough (a National Estuarine Research Reserve) and Moss Landing Harbor, cycled through the plant each and every day.<sup>98</sup> It is extremely unlikely that the value of coastal, estuarine, and marine life and habitats affected by the Moss Landing plant amounts to less than \$100 a year, or the current market value of seven pounds of wild-caught salmon.

In addition, if economic factors remain in the policy, generators should not be allowed to use the potential for co-located desalination at their facilities to evade compliance with impingement and entrainment reductions through the "feasibility loophole." In other words, generators may argue that the potential loss of product water from the co-located desalination facility should be a factor in the cost of transitioning to the best technology available. Several coastal generators considering proposals for co-located desalination facilities have been on notice that these facilities need to be analyzed as "stand alone" plants, in part because of the pending state regulation of OTC.<sup>99</sup> Given clear notice, both the desalination projects as well as the co-located generators should not be allowed to prematurely create circumstances that undermine state policy.

Similarly, generators may assert that they do not have sufficient space to upgrade to alternative technologies because they anticipate building a co-located desalination facility at their site. However, as previously stated, steam plants with space available for a large-scale desalination plant generally have space for a wet cooling tower retrofit.<sup>100</sup> Furthermore, arguments of infeasibility based on the potential future of co-located desalination at a site should be discredited; the policy should apply only to the structural configuration of existing facilities at the date of approval for the final policy. Lastly, it should be noted that viable alternatives such as beach well intakes allow development of desalination facilities without connection to OTC facilities.

In contrast to these arguments, which selectively apply the rules of economics to bolster the status quo, the economics of alternative cooling technologies make sense for California. Look no further than the prosperity of inland power plants, for which using OTC is simply not an option. In sum, economics should not be considered in the definition of "feasible," but if they are, a

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<sup>96</sup> Testimony of Ben Rottenborn, Stanford Law School Environmental Law Clinic, before the State Water Resources Control Board (Dec. 7, 2005, Oakland, CA).

<sup>97</sup> *Id.*

<sup>98</sup> Available at <http://www.energy.ca.gov/sitingcases/mosslanding/documents/index.html>. Accessed 9.1.06.

<sup>99</sup> May 26, 2005 California Coastal Commission letter to the City of Huntington Beach regarding the Draft Recirculated Environmental Impact Report No. 00-02 – Proposed Poseidon Corporation Desalination Facility SCH#2001052092 [http://www.ci.huntington-beach.ca.us/files/users/planning/state\\_agencies.pdf](http://www.ci.huntington-beach.ca.us/files/users/planning/state_agencies.pdf)

<sup>100</sup> CEC Huntington Beach Project Description, *supra* note 54.

comprehensive, publicly-heard review of all the economic data is absolutely essential to thoughtful, careful decision-making.

Finally, the State Board should make it immediately clear to affected generators that there will be no allowance for “feasibility” factors that are created by coastal generators between now and the time of implementation of this policy. To do otherwise would create incentives for the affected generators to prematurely undermine the intent of reducing entrainment and impingement.

#### **D. Credits Should Be Allowed Only to Reward Decisions Intended to Reduce Impacts**

The draft policy on once-through cooling loosely allows facilities to receive credit towards achieving performance standards for past efforts to reduce impingement and entrainment. However, it fails to clearly expound which measures would be appropriately considered impingement and entrainment reduction strategies, and how the appropriate credits would be determined. Identifying a consistent and justifiable approach to assigning credits would be an arduous task for staff. Thus, **we urge the State Board to eliminate the opportunity for facilities to receive credits from the policy.** Removing the credit provision from the policy would considerably streamline its application and implementation.

**If the State chooses to move forward with this element of the policy, credits should only be allowed in cases where operational and/or structural controls were implemented for the primary (i.e. not incidental) purpose of reducing environmental impacts.** Credits should not be given for designs that were not originally intended for environmental protection. Furthermore, power plants should bear the burden of proof in demonstrating the motive behind each measure to be considered for credit. In the absence of clear and convincing proof, the State Board should presume that such measures and controls have been implemented exclusively or primarily for business or other non-environmental purposes, and facilities should not be awarded credits.

The federal regulations (which, as noted, are being challenged as inconsistent with the Clean Water Act) allow for a variety of credits towards impingement and entrainment reductions that are not likely to be consistent with state law or facts, or even the current version of the draft policy. For example, the federal rule allows facilities to receive credit towards the performance standards for intake pipes located within the water column, because it characterizes the calculation baseline relative to impingement and entrainment that would occur at the sea surface. This type of credit should not be allowed in the state policy. Most facilities along the coast of California have submerged intake pipes. There is no evidence that this structural design was originally intended to reduce entrainment. Instead, plants were most likely designed in this fashion solely for practical purposes. *I.e.*, if intake pipes were placed along the surface, they would impede boat traffic, suffer potential damage from storms and wave action, have functionality restricted by tidal fluxes, etc. Although submerged intakes may have less impact on the planktonic community than surface intakes, there is substantial evidence that even with submerged intakes, OTC has significant adverse environmental impacts.<sup>101</sup> Instead of contemplating various sleight-of-hand scenarios like plants moving their intakes from the water column to the surface in order to avoid mandatory reductions, the intention and application of a new state policy must be to promote real reductions in environmental impact.

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<sup>101</sup> CEC Staff Report, *supra* note 1; Michael Foster (September 26, 2005) Presentation at State Water Board 316(b) Laguna Beach workshop.

As currently outlined in the draft policy, the language addressing the assignment of credits for already-implemented impingement and entrainment reductions is vague and potentially misleading. We urge the State Board to strengthen the policy by eliminating the opportunity for facilities to receive credits, which would be a difficult and time-consuming exercise that would take up staff time better suited to implementing reductions. At a minimum, however, the policy should clarify in what cases, and how credits will be allotted, and ensure that credits are allowed only for past actions clearly, demonstrably and specifically taken to protect the environment. The State cannot weaken the law by adopting a policy that allows credits for actions not demonstrably and specifically intended to reduce OTC's environmental impacts.

#### **E. The Policy Must Include Seasonal Protections for Larval Organisms to Effectively Meet Entrainment Reductions**

As previously stated, it is the intent of both state and federal law to protect marine and coastal species from impacts associated with entrainment and impingement. However, as currently written, the draft policy would allow for continued high levels of entrainment because it fails to provide detailed guidance for how entrainment reductions should be calculated. Although the policy proposes using flow as a proxy for entrainment, it does not specify whether these flow reductions should be calculated on a daily, monthly, annually, or some other basis. Without such specification, it is likely that policy implementation will not be consistent throughout the state. For example, facilities that choose to calculate flow reductions on an annual basis may not provide necessary protection to critical fish eggs, larvae and plankton in some areas of California.

In southern California, peak larval abundance coincides directly with peak energy needs in the state – during the summer. Because of the ambiguity of the proposed policy, facilities may choose to calculate flow reductions on an annual basis. In doing so, facilities might reduce their intake flow (shutting down the pumps or reducing them to the minimum intake necessary) during the winter, and continue using high flow rates in the summer. While such a practice could technically meet the flow reduction standard as written, it would not reduce the entrainment impacts in southern California. The relative abundance of fish larvae and eggs is so great during the summer in southern California that if operations were restricted to only the summer months, it would still account for the majority of year-long entrainment impacts.<sup>102</sup> Thus, it is imperative that the policy include protections for seasonally abundant organisms to truly achieve the intended entrainment and impingement reductions. **We recommend that impingement and entrainment reductions be calculated on a monthly basis, rather than leaving these calculations unspecified, in order to ensure real reductions in entrainment impacts.**

#### **F. Existing Facilities that Repower or Retool Must be Classified as “New” Facilities**

**State Board staff should amend the proposed definition of “new power plant” to include all existing facilities that repower and retool.** A “new power plant” must comply with

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<sup>102</sup> AES Huntington Beach L.L.C. Generating Station Entrainment And Impingement Study Final Report (April 2005) Prepared by MBC Applied Environmental and Tenera Environmental, see section 4.4.3 *Entrainment Results*; Ichthyoplankton and station data for California Cooperative Oceanic Fisheries Investigations survey cruises, CalCOFI website: <http://swfsc.nmfs.noaa.gov/FRD/CalCOFI/On-LineDataSystem/documentation.htm#data>.

the federal Phase I rule mandating performance equivalent to closed-cycle wet cooling towers or better. The proposed definition of “new power plant” in the draft policy currently reads:

a) Any power plant that is issued an NPDES permit and which commenced construction after January 17, 2002, or b) any power plant that was in operation prior to January 17, 2002 but, as of the effective date of this Policy, has undergone or will undergo a major modification, such that its electrical production capacity will increase and its intake flow rate will increase.<sup>103</sup>

The scoping document states that the definition was intended to “capture as a new power plant modifications to the plant that fall short of construction of a greenfield or stand-alone facility as long as the modifications increase both the plant’s electrical production capacity and the design capacity of the existing intake structure.”<sup>104</sup>

As currently worded, it could be argued that the definition of “new power plant” does not apply to plants going through repowering (a process in which the generation units are replaced) or retooling (applying to lesser modifications including replacing burners), because such changes might not be “major modifications” under the definition. These modifications might not increase electrical production capacity (repowering upgrades combustion facilities to state-of-the-art technology but does not always increase production capacity) and/or flow rates. However, it is obvious that repowering and retooling are major modifications in any sense of the term. Both require an elaborate proceeding at the CEC. Retooling and especially repowering involve the expenditure of up to hundreds of millions of dollars and significant disruption to plant generation and site logistics—the very same kind of expenditures and site disruption occurring during development of a greenfield facility. The implicit justification for a different policy governing new versus non-new facilities is the assumption that retrofit costs are higher than newly-built costs; importantly, however, the State Board has cited no evidence to buttress this assumption. Moreover, simple common sense prompts the question: how are costs different where there is nothing on the land after an old facility is razed and removed (as is sometime the case in repowering) and where there is nothing on the land to start with (as in greenfield development)? In addition, the disruption and investment associated with repowering and retooling make that an ideal time to implement changes in cooling systems needed to prevent impacts to the beneficial uses of impacted waters.

Thus, staff should revise the definition of “new power plant” to clearly capture repowering and retooling facilities, as there is no rational basis for why these facilities should be upgrading to state-of-the-art generation and air pollutant-reducing technology without also upgrading their antiquated cooling systems. Moreover, such an approach would be consistent with the CEC staff recommendation from its June 2005 report on once-through cooling, which recommends disallowing the use of OTC for any repower or replacement project unless there is no other viable alternative. In that report, the CEC staff suggested a policy whereby the CEC would “approve once-through cooling by power plants it licenses, or for licenses it amends related to cooling system modifications, only where alternative water supply sources or alternative cooling technologies are shown to be both environmentally undesirable and economically unsound.”<sup>105</sup>

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<sup>103</sup> Scoping Document, *supra* note 90, Appendix I, p. 4.

<sup>104</sup> *Id.* at p. 20.

<sup>105</sup> CEC Staff Report, *supra* note 1, p.4.

## G. The Policy Should Provide a Well-Defined and Expedient Compliance Deadline

At present the draft policy does not provide an ultimate deadline by which power plants must be in compliance with entrainment and impingement reductions. Instead, the draft policy directs the Regional Boards to implement the policy when a permit for an existing plant is first reissued (after the effective date of the policy) or when the permit is reopened, whichever occurs first. This implementation strategy fails to account for frequent administrative delays in reissuing permits by some Regional Boards. For example, the most recent reissuance of the Potrero's NPDES permit was delayed for more than 10 years.<sup>106</sup> Due to these delays, **a circumscribed deadline is necessary to ensure that this policy is robust and enforceable.**

In determining this deadline, the State Board should consider the timeline for compliance under the federal rule. Under the Phase II schedule, Comprehensive Demonstration Studies examining impingement and entrainment at each facility will be finished at the latest in January 2008. Thus, actions towards compliance at the state level should reasonably begin by no later than mid-2008. Accordingly, **we urge the State Board to require implementation within the first permit cycle immediately following the effective date of the final policy, or when the permit is reopened, or no later than five years after adoption of the policy, whichever occurs first.**

### III. RESTORATION AND MITIGATION ARE NOT EFFECTIVE SUBSTITUTES FOR PREVENTING IMPACTS

#### A. Compliance Alternatives that Rely on Restoration And Mitigation Should Not Be Included in the State Policy, as the Use of Restoration Cannot Achieve the Goals of the Clean Water Act and Porter-Cologne

The draft policy allows restoration to be used when the facility operator proves that operational and structural controls cannot "feasibly" (see above discussion regarding "feasible") be used to achieve the required 90% reduction in entrainment. In such cases, the draft policy states that the facility may use restoration to achieve the required 90% reduction in entrainment (of course, the policy requires that a minimum of 60% reduction in impacts be achieved in any event, a position that we strongly support).

Compliance alternatives that rely on restoration (or, for the same reasons, mitigation) should not be included in the state policy, which instead should require the 90-95% reductions be achieved through prevention, as encouraged by the OPC and SLC. The plaintiffs in both the Phase I and Phase II federal lawsuits (including California Coastkeeper Alliance and Surfrider) have consistently argued that restoration is not allowed under the language of CWA section 316(b). This argument was successful in the Phase I case regarding new power plants.<sup>107</sup> Among other things, the court in that case said that **restoration measures are "plainly inconsistent with the statute's text and Congress's intent in passing the 1972 amendments."**<sup>108</sup> The court added that:

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<sup>106</sup> New permit issued May 10, 2006 retrievable at <http://www.waterboards.ca.gov/sanfranciscobay/Agenda/05-10-06/mirantfinalorder.pdf>.

<sup>107</sup> *Riverkeeper*, *supra* note 30, 358 F.3d at 189-191.

<sup>108</sup> *Id.*, at 189 (emphasis added).

[restoration measures,] however beneficial to the environment, have nothing to do with the location, the design, the construction, or the capacity of cooling water intake structures, because they are unrelated to the structures themselves. Restoration measures correct for the adverse environmental impacts of impingement and entrainment; they do not minimize those impacts in the first place.<sup>109</sup>

**The court concluded that “we find that the EPA exceeded its authority by allowing compliance with section 316(b) through restoration methods, and we remand that aspect of the Rule.”**<sup>110</sup> A decision in the Phase II case is likely in the next year.

As the United States Court of Appeals for the Second Circuit held in reviewing EPA’s national cooling water intake structure regulations, section 316(b) of the CWA requires facilities to minimize, i.e. prevent, environmental impacts, rather than attempt to make up for them after they occur. It is for this reason that the New York policy does not consider restoration as an appropriate or acceptable best technology available, stating that restoration is inconsistent with Clean Water Act section 316(b) because “such measures merely attempt to correct for the adverse environmental impacts of impingement and entrainment; they do not minimize those impacts in the first instance.”<sup>111</sup> California should follow suit.<sup>112</sup> Additionally, California Water Code section 13142.5 mandates that all new or expanded power plants (and industrial installations) use the best available site, design, technology, and mitigation measures feasible *to minimize the intake and mortality of all forms of marine life*. For the same reasons as restoration, mitigation cannot be viewed as a substitute for preventing impacts from occurring in the first instance, most importantly because the “best technology available” is capable of exceeding the high-end of the entrainment and impingement performance ranges.

Thus, we urge the State Board to eliminate restoration as a compliance alternative under the draft policy, just as New York State has done. However, if the state policy does include a restoration component, it should be considered the exception, not the rule, and should be only the minimum amount necessary to achieve the required 90% reduction in entrainment impacts. In particular, the policy should more carefully define the hierarchy of restoration measures and exactly when a plant might derogate from the top-level priority of in-kind, on-site restoration to lower priorities (which should be severely discouraged). We further recommend the State Board assign the Expert Review Panel to assess and approve any limited situations where restoration may be acceptable to achieve the 90% reduction goal, and validate acceptable restoration actions that can be taken to comply with the policy.

Additionally, the scoping document for the draft policy states that the State Board will require the “habitat production foregone” methodology to be used when assessing entrainment losses to apply towards restoration.<sup>113</sup> This methodology places all entrainment losses in the same context – acres of damages done. However, the habitat production forgone method was not

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<sup>109</sup> *Id.*

<sup>110</sup> *Id.* at 191.

<sup>111</sup> Scoping Document, *supra* note 90, Appendix II at p. 6 (emphasis added); *see also Riverkeeper*, 358 F.3d at 189-192.

<sup>112</sup> It should be noted that the Second Circuit’s decision in *Riverkeeper* is binding nationwide. The decision confirms that restoration measures are not authorized under section 316(b) for new facilities. The question of whether restoration measures are authorized under section 316(b) for existing facilities is presently under review by the Second Circuit in *Riverkeeper, Inc. v. EPA*, 04-6692-ag(L), which was transferred to the Second Circuit by the Ninth Circuit.

<sup>113</sup> Scoping Document, *supra* note 90, p.18.

originally developed for restoration purposes, and consequently no mitigation ratio was built into the development of this model. Thus, solely using habitat production foregone to determine restoration needs would only achieve a mitigation ratio of 1:1, which is not sufficient and is rarely if ever used in practice in other restoration situations. If the State Board continues to include restoration in its policy, a mitigation of 3:1 to 5:1 or greater should be required to account for the high level of uncertainty surrounding whether or not restoration actually mitigates for any of the environmental damages caused by OTC. This approach would be consistent with other restoration requirements, as the Coastal Conservancy and other agencies have historically required mitigation ratios of 3:1 and higher for habitat loss.

### **B. A Rigorous Analysis of All Feasible Technological and Cooling Alternatives, Including Use of Treated Wastewater as Coolant, Should Be Conducted at Each Facility**

In the past, restoration and mitigation options (or worse, minimal one-time “payments” in lieu of actual restoration or mitigation) have been quickly turned to, with little to no analysis of alternatives that would actually prevent the impacts that such restoration and mitigation ostensibly would address. A far more rigorous analysis of alternatives to once-through cooling technology should be conducted at each site to ensure that beneficial uses are best protected. While the scoping document cites the availability of less damaging, alternative cooling technologies to once-through systems,<sup>114</sup> the policy should go further to ensure the mandates in the Clean Water Act and Porter-Cologne are achieved. It should specify that, in permitting proceedings, applicants must analyze and report on the potential for adoption of alternative cooling technologies at their facilities. In turn, Regional Board staff should consider these reports and state the basis for adopting or rejecting any given technology. In making these determinations, Regional Board staff could consider the results of a forthcoming report from the OPC concerning the potential of such alternative cooling technologies at each site. This requirement would improve consistency of State Board decisions with the resolutions passed by the SLC and OPC earlier this year, inform the feasibility demonstration that facilities must make to gain approval for restoration measures (if such a provision is included in the final policy), and bolster the Regional Board staff’s interpretation of Cal. Water Code 13142.5 and implementation of Clean Water Act section 316(b). As with our suggestion regarding feasibility determinations, we also recommend that the Expert Review Panel review staff determinations concerning adoption of alternative cooling technologies, to ensure consistency with state and federal law across the state.

Similarly, the draft policy only requires plants to “consider” the use of “treated wastewater” for plants that are “in close proximity” to POTWs.<sup>115</sup> State law and policy strongly encourages the use of recycled water (*see, e.g.*, Cal. Water Code sec. 13142.5(e); State Board “Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling” (1975)<sup>116</sup>; “Recycled Water Task Force Final Report” (June 2003)<sup>117</sup>). Accordingly, **the State Board’s policy should impose a presumption that where the use of treated/recycled wastewater is technically feasible, a facility must demonstrate with clear and convincing evidence why an alternative source of water is superior.**

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<sup>114</sup> *Id.* at p.27

<sup>115</sup> *Id.* at Appendix I, p. 3.

<sup>116</sup> This policy states clearly that “[i]t is the Board’s position that from a water quantity and quality standpoint the source of power plant cooling water should come” first from “wastewater being discharged to the ocean” over all other sources of water.” This policy should be reflected clearly in the Board’s 316(b) policy.

<sup>117</sup> Available at: <http://www.owue.water.ca.gov/recycle/docs/TaskForceReport.htm>. Accessed 9.1.06.



#### IV. NUCLEAR SAFETY QUESTIONS SHOULD BE ADDRESSED TO NUCLEAR REGULATORY COMMISSION

The nuclear plants account for well over half of the once-through cooling water flow currently used in the state. It is noteworthy that while the California nuclear power plants utilize once-through cooling with significant impacts on the marine environment, other nuclear plants around the country use closed-cycle cooling effectively and safely.

Despite using the majority of once-through cooling water in the state, the draft policy gives the nuclear facilities a virtually blanket exemption from complying with the impingement and entrainment standards. If the owner or operator simply “demonstrates that implementation of operational and/or technological measures for the reduction of impingement and entrainment will conflict with safety requirements instituted by the Nuclear Regulatory Commission,” then according to the current draft policy they are exempt from the operational or structural controls.<sup>118</sup> Because neither “demonstration” nor “conflict with safety requirements” are defined in the draft policy, this provision would allow for almost any statement by an owner or operator of a nuclear facility to opt out of the policy on the allegation that there was a “safety conflict.” Given the overall contribution of the nuclear facilities to the damages associated with once-through cooling, if they were exempt from compliance, the proposed policy would provide significantly less environmental protection for our marine environment.

Safety is obviously important. However, the people of the state and the state’s resources would be better protected if resolution of any safety questions raised by the owner or operator were left to the Nuclear Regulatory Commission (“NRC”), which is charged with the oversight of such matters. The NRC has shown that it will properly interject if it sees a potential safety issue. For example, the NRC became closely involved immediately in the recent discovery of a radioactive leak from the San Onofre Nuclear Generating Station that had reached local groundwater.<sup>119</sup> NRC officials said “they were concerned because the contamination was found in a place ‘it should not be’.”<sup>120</sup>

The draft policy should be rewritten to put the responsibility for resolving safety issues back on the NRC, not on the power plants, who might benefit from any “demonstration” of a claimed “safety conflict.”

It is also important to note that the **EPA thoroughly examined the issue of retrofitting nuclear power plants in its CWA 316(b) Phase II Technical Development Document (TDD)**, and at no time did the EPA identify retrofits at nuclear plants as infeasible due to safety issues. The two issues raised in the TDD that distinguish nuclear plants from fossil fuel boiler plants are the potential sensitivity of nuclear plants to excavation in the vicinity of the reactors, and an increased safety margin in the upgrading of surface condensers at nuclear plants.<sup>121</sup> The EPA addresses these possible safety issues appropriately by adding a cost premium for excavation and surface condenser upgrades at nuclear plants.

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<sup>118</sup> Scoping Document, *supra* note 90, Appendix I, p. 2, para. 2.c.

<sup>119</sup> *See, e.g., “Radioactive Leak Reaches Nuclear Plant’s Groundwater” supra* note 26.

<sup>120</sup> *Id.*

<sup>121</sup> EPA 316(b) Phase II TDD Ch.4, *supra* note 53 pp. 2.31, 2.35.

Conversions at nuclear plants have been shown to be feasible and safe for some time. The Palisades Nuclear Generating in Plant in Michigan, for example, successfully and safely carried out a conversion from once-through cooling to closed cycle cooling in 1974.<sup>122</sup> Additionally, the owner (Entergy, Inc.) of the 2,000 MW Indian Point nuclear power plant on the Hudson River in New York carried out an extensive wet tower retrofit design assessment as a component of the plant's NPDES permit renewal process in 2003. The wet tower evaluated, a 500-foot diameter round tower in hilly terrain, required extensive blasting and excavation of granite near the operational reactors. One element of the retrofit analysis conducted by Entergy was determination of the effect of the blasting on the reliable operation of the reactors.<sup>123</sup> The result of the study was that the extensive blasting presented no safety concerns if conducted as planned and would have no impact on the operational reliability of the reactors. It is unlikely that such significant disturbances would be necessary at either SONGS or Diablo Canyon due to the coastal sedimentary geology of these two sites. Even if such disturbances were necessary, the Entergy study would indicate that such disturbances in the vicinity of a nuclear power plant can be done in a safe fashion, and in no way represents an automatic technical or safety impediment to a wet tower retrofit at a nuclear power plant. **The NRC, which has expertise in safety issues raised and resolved around the country, is the most appropriate arbiter of potential safety concerns,** more so than a local plant facing regulation under section 316(b). Coordination can be undertaken with the Expert Review Panel and the State Water Board to ensure full public vetting of such issues.

## V. THE POLICY MUST INCLUDE NEEDED DETAILS TO ENSURE CONSISTENT IMPLEMENTATION

### A. The Plants Required to Conduct Cumulative Impact Studies Should be Explicitly Identified

We support the requirement in the draft policy that power plants with overlapping intake water source areas conduct a cumulative ecological study analyzing their collective impacts, even when the closely-sited plants fall under the jurisdiction of different Regional Water Boards. Although we support this provision, however, we are concerned that the phrase “overlapping intake water source areas” is too vague. The draft policy does not clearly establish how facilities should determine whether or not they have “overlapping intake water source areas.” To clarify this section of the policy, we recommend the State Board or Expert Review Panel specify which facilities are required to conduct a cumulative impact study. For example, facilities on the same enclosed bay (such as Alamitos and Haynes Generating Stations on Alamitos Bay) and those closely located along the coast (for example, the three power plants in Santa Monica Bay) should be defined as having overlapping intake water source areas. Given that there are only 21 coastal power plants in California, this should be a relatively simple task that will streamline implementation by circumventing potential arguments raised by various facilities to the State Board as to whether or not a cumulative impact study is required at their power plants.

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<sup>122</sup> *Id.* at p. 3.

<sup>123</sup> Calvin Konya, PhD, *Indian Point Blasting Feasibility Study*, prepared for Enercon Services (consultant to Entergy), May 22, 2003, Appendix 6A to June 2003 Enercon report “*Economic and Environmental Impacts Associated with Conversion of Indian Point Units 2 and 3 to a Closed-Loop Condenser Cooling Water Configuration.*”

## **B. The Monitoring Provisions Must Be Further Specified to Ensure Consistent Implementation and to Characterize Compliance Accurately**

The draft policy outlines impingement and entrainment monitoring provisions to be completed as part of permitting following adoption of the policy. This monitoring is essential for policy implementation, as its results will be used to determine compliance. Thus, it is imperative that this monitoring generates results that accurately reflect impingement and entrainment at each facility. It is also vital that monitoring be consistent for all power plants, so that impacts of entrainment and impingement can be examined on a statewide basis.

As currently written, the monitoring provisions within the draft policy are too open-ended and need more detail. For example, prior to permit issuance or renewal, the draft policy requires a year-long impingement and entrainment characterization study, but no sampling frequency is determined. We recommend that both impingement and entrainment sampling be conducted at least once monthly, to account for changing facility and ocean conditions. Furthermore, after the permit is effective, the draft policy requires “periodic” impingement sampling; however the term “periodic” is not defined. This and other indistinct terms should be explicitly characterized to streamline implementation and ensure that the policy is interpreted consistently across all facilities. The draft policy also states that the need for new impingement studies must be evaluated at the end of a permit period, but does not define who will conduct this evaluation. We recommend that an entity separate from the power plants or their hired consultants determine the level of future impingement studies that are necessary, and suggest that the State Board, in consultation with the Expert Panel, take on this role.

The proposed monitoring provisions also discuss the need for ongoing entrainment studies and state that entrainment studies shall be performed “unless the permittee demonstrates that prior studies accurately reflect current impacts.” It is unreasonable and unrealistic for the permittee to determine accurately whether or not past studies accurately reflect current conditions. The ocean is a dynamic system, and entrainment should be continually monitored to ensure that progress towards policy compliance is made and once met, compliance continues. Furthermore, as reflected in the recent CEC report, many of the past entrainment studies are no longer valid because they are outdated and/or inconsistent sampling techniques were employed.<sup>124</sup> Power plants should not be allowed to use these studies to gauge whether or not they are meeting current entrainment reductions. The current language in the draft policy provides a potential loophole for power plants to neglect entrainment sampling, and should be revised. Unless structural changes (*e.g.* dry cooling) are made that assure unequivocally that entrainment standards are met, ongoing entrainment studies are necessary to evaluate compliance at each facility. These studies also should continually monitor entrainment during the peak annual period of larval density, to test the efficacy of the structural or operational compliance strategies implemented to achieve needed entrainment reductions.

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<sup>124</sup> CEC Staff Report, *supra* note 1; *see e.g.* pages 3, 14, and 71. For example: “The review showed that because of problems with study designs and analyses, and lack of current information, the accuracy of the described impacts of over half of these plants (13) is unknown” (p.3); and “ To evaluate that argument, Energy Commission staff carefully reviewed [the Scattergood study] and found it had ‘a number of serious scientific problems,’ particularly with sampling methods, and concluded most concentration estimates for larval fish used in the Scattergood analysis are highly unreliable” (p.71).

## VI. CONCLUSION

The time is ripe for the state to embrace a policy on once-through cooling that reflects Californians' demand for providing the utmost protection for our valuable marine and coastal resources, and for investing in a sustainable, environmentally sound future energy supply. California has consistently set high standards for the protection of the state's world-renowned coastal and marine resources, through the Marine Life Protection Act, the California Ocean Protection Act, and the Marine Life Management Act, among others. The State Water Board's policy on once-through cooling should be consistent with these laws, and with similar state laws and policies that commit California to a sustainable energy path. We urge the State Water Board to adopt and implement a state policy on once-through cooling that charts a course for California's future, consistent with the Clean Water Act and Porter-Cologne.

Thank you for your consideration of our comments.

Sincerely,

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Yakout Mansour, President and CEO, California ISO  
Dominic Gregorio, Division of Water Quality, State Water Resources Control Board  
Tom Luster, Environmental Specialist, California Coastal Commission

#### Attachments

- A. Coalition Letter to the SWRCB dated February 23, 2006
- B. Fact Sheet on Energy and OTC
- C. CEC Expected and Disclosed Energy Facility Projects
- D. CEC Power Plant Fact Sheet August 9, 2006

# ATTACHMENT A

February 23, 2006 Coalition Letter to  
the State Water Resources Control Board

February 23, 2006

Ms. Tam Doduc, Chair  
Members of the Board  
State Water Resources Control Board  
1001 I Street  
Sacramento, CA 95814

**Re: State Policy Governing Once-Through Cooling at Coastal Power Plants**

**VIA EMAIL:** [commentletters@waterboards.ca.gov](mailto:commentletters@waterboards.ca.gov)

Dear Chair Doduc and Members:

The undersigned groups respectfully submit the following comments regarding the development of a statewide policy on once-through cooling.

First of all, we thank the State Water Resources Control Board (“State Board”) for its attention to this issue, and for providing the opportunity for public participation at workshops in Laguna Beach and Oakland. We also appreciate the State Board’s continuing coordination with the California Ocean Protection Council in the development of a once-through cooling policy. We also support the efforts of other state agencies addressing once-through cooling. Many of us attended the State Lands Commission (SLC) hearing on February 9<sup>th</sup> to support their initiative opposing once-through cooling. We will send the State Board a copy of our separate comments to the SLC regarding this topic.

Through a statewide policy, the State Board, together with other agencies, can fulfill the Legislature’s recognition that “the preservation of the state’s ocean resources depends on healthy, productive, and resilient ocean ecosystems,” and that “the governance of ocean resources should be guided by principles of sustainability, ecosystem health, precaution, recognition of the interconnectedness between land and ocean, decisions informed by good science and improved understanding of coastal and ocean ecosystems, and public participation in decision-making.”<sup>1</sup> We look forward to playing a constructive role in developing a policy that is appropriately protective of the state’s invaluable coastal resources.

We strongly support the implementation of a consistent statewide policy and appreciate the State Board staff recommendations regarding this policy. We attended both the September 26<sup>th</sup> and December 7<sup>th</sup> workshops on this issue. This letter highlights our perspective on the draft recommendations for a statewide policy on once-through cooling presented by Regional Board staff at the December 7<sup>th</sup> workshop. We also take up elements of the pending policy that were not addressed by staff at either workshop.

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<sup>1</sup> Pub. Resources Code, section 35505(c).

Based on the information presented at these workshops, we have the following main points regarding a statewide policy on once-through cooling:

- Compliance alternatives that rely on restoration and mitigation should not be included;
- The cost exceptions presented in the federal rule as site-specific determinations of best technology available should not be included;
- A scientific and consistent approach should be used to determine the calculation baseline, which provides the basis from which impingement and entrainment reductions are evaluated;
- A rigorous analysis of all feasible technological and cooling alternatives should be conducted at each facility;
- Power plants going through repowering should be treated as “new facilities” and
- The Regional Boards should evaluate impacts on marine mammals, sea turtles, and other larger organisms, in addition to fish and invertebrates.

### **Response to State Board Staff Draft Recommendations for a Statewide Policy**

Following the preliminary State Board discussion at the Oakland workshop on December 7, 2005, we have recommendations about what to include in the state policy for Phase II facilities. Above all, we believe that restoration/mitigation and the site-specific compliance alternatives that allow for economically based exceptions (both elements permitted in the federal rule) should not be included in this policy.<sup>2</sup>

First, we strongly support the following staff recommendations for a statewide policy presented at the Oakland workshop:

- Utilize standardized data collection methods;
- Use actual flow, rather than the permitted maximum to determine the calculation baseline. Most power plants use a lower volume of seawater than permitted for normal operations; we support basing impingement and entrainment reductions on the actual flow used by each facility;
- Set targets at the upper end of the federal performance standards (95% reduction for impingement, and 90% for entrainment);
- Discourage cooling water use when power is not generated; and
- Require a cumulative impact evaluation for areas where power plants are in close proximity, such as Santa Monica Bay.

In addition to supporting these recommendations, we have further suggestions for improvement. In continuing to develop the statewide policy, it is imperative that the State Board recall Water Code section 13142.5, which mandates that the “best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.” This Water Code section echoes numerous other state authorities enacted to protect, enhance, and restore the State’s coastal resources. The following list summarizes our main points:

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<sup>2</sup> As has been noted in both workshops, the viability of restoration and the site-specific compliance alternatives (as provided in the federal Phase II rule) is pending litigation in the Second Circuit Court of Appeals.



- Calculation baseline: While we agree that calculation baseline should be based on actual rather than permitted flow levels, the term “actual flow” needs to be more clearly defined. Further recommendations regarding the calculation baseline are discussed below.
- Performance Standards: We support using the upper end of the performance standards as reduction targets, but there must be clear and enforceable deadlines set in order to meet these targets.
- Mitigation/Restoration: Although we appreciate the State Board staff’s effort to specify types of mitigation that are acceptable (*e.g.* in-kind mitigation), we do not believe that mitigation/restoration should be considered as an option for a compliance alternative. Restoration does not mitigate directly for the impacts of once-through cooling, and it has been consistent practice in the past to vastly under-fund mitigation in comparison with the ecological costs of once-through cooling impacts. Mitigation and/or restoration should be permitted in this policy only with respect to ensuring that 100% of the impacts associated with once-through cooling are mitigated; that is, mitigation would be allowed only for the difference between the upper end of the performance standards (95% for impingement and 90% for entrainment) and 100% of the damage.
- Thermal Plan: Although we support placing this policy in an enforceable document, we are concerned that amending the Thermal Plan may be a slow process. This policy is of high importance and needs to be implemented soon to provide guidance for the Regional Boards and industry. We encourage the State Board to proceed expeditiously with the policy and Thermal Plan amendment process, and to ensure that all permits issued include such policy requirements whether or not the Thermal Plan process is complete.

## **The State Policy Should Address the Potential Loopholes Afforded By the Federal Rule to Protect Water Quality and Marine Resources**

While we applaud many of the recommendations made by staff at the December workshop held in Oakland (summarized on slide 9 of the staff Presentation), all of staff’s good intentions could be meaningless unless the State closes off potential loopholes in the federal rule. If these loopholes remain, the time and resources spent by the State Board and other agencies on this issue *will likely result in little to no environmental benefit*. Loopholes exist in the form of site-specific determinations, the range of feasible options that must be considered, and the “new facility” definition currently allowed by the Phase II rule.<sup>3</sup>

### ***1. Site-Specific BTA Determinations: The “Cost Exceptions”***

Despite attempting to promote a national standard, the Phase II regulations allow for site-specific determinations of best technology available (“BTA”).<sup>4</sup> If either (1) the costs of compliance with

<sup>3</sup> Again, as stated above, the site-specific alternatives are currently subject to federal litigation in the Second Circuit. The same litigation also challenges the scope of the Phase I and Phase II rules as it relates to which facilities fall under each rule.

<sup>4</sup> 69 Fed. Reg. 41597-98; 40 C.F.R. Part 125.

the performance standards and/or restoration requirements would be significantly greater than the costs considered by the EPA Administrator for a similar facility (cost-cost exception), or (2) the costs of compliance with the performance standards and/or restoration requirements would be significantly greater than the benefits from compliance, the plant can request a site-specific BTA determination. In either case, the State Board must ensure that these requirements achieve an efficacy “as close as practicable to the performance standards and/or restoration requirements.” However, for the reasons stated below, the undersigned environmental groups oppose both avenues for site-specific determinations.

The site-specific determinations raise a number of questions that will be nearly impossible to answer accurately and consistently. What are “significantly greater” costs? Are these greater costs offset by other advantages the plant possesses due to location or other attribute? How should environmental benefits be monetized? Are non-market and non-use values fully and accurately depicted? Should plants situated near commercial fisheries be favored or disfavored against plants in other locations? How do the Regional Boards know when proposed measures operate as close as practicable to the performance standards? These are just a few of the challenges awaiting Regional Board staff. Moreover, preliminary indications from the Proposals for Information Collection (PICs)<sup>5</sup> suggest that plant operators will frequently pursue site-specific determinations, not rarely as EPA apparently anticipated.<sup>6</sup>

Compounding these larger questions are uncertainties inherent in the calculation of compliance costs and environmental benefits. These uncertainties are likely to favor the plant operators at the expense of the coastal environment.

#### Calculation of Compliance Costs

Calculations of compliance costs are a critical basis for determining plant eligibility for the more lenient site-specific standards. However, calculation of these costs is notoriously difficult; the technical development documents supporting the Phase II rule attest to EPA’s own difficulties in this area. Under both cost exceptions as currently stated, plant operators have an incentive to overstate such costs because they are hard for regulators to verify and the lure of more lenient standards means higher profits. Complicating matters, because neither the State Board nor Regional Boards routinely evaluate the operations of electricity generators, the Boards are not currently prepared to rigorously evaluate the cost figures to be provided by the power plants.

One common sense requirement of these cost analyses is to evaluate compliance costs in the context of plant operations. For example, if a given technology costing \$20 million will satisfy the desired performance standards, how significant is this cost when compared to the annual or expected lifetime operating costs? How significant is the cost compared to other regulatory costs imposed on the plant to meet other regulations? Can the cost be financed over the lifetime of the plant? It appears that Regional Board staffs have historically not requested contextual data. And

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<sup>5</sup> 40 C.F.R. §125.95(b)(1) [The PICs are blueprints for impingement and entrainment studies which are required by the Phase II rule when plants elect not to reduce their flow commensurate with closed-cycle recirculating cooling systems.]

<sup>6</sup> 69 Fed. Reg. 41590. [“In most cases, EPA believes that these performance standards can be met using design and construction technologies or operational measures.”]

when environmental groups have requested these data directly from plants, plants have raised confidentiality concerns. However, when the allocation of public resources is in question, it is not sufficient to evaluate cost without reference to context, nor is it acceptable that necessary data are shielded from agency review.

If the State Board is to rely on a policy that depends on assertions of compliance cost, the Board should retain an independent panel of experts that is qualified to review such data in appropriate context. Data from the presentation by agency consultant John Maulbetsch at the Oakland workshop could be a good starting point for this panel's inquiry. In his presentation, Mr. Maulbetsch showed that fuel costs are by far the largest cost of production at combined cycle plants, and that capital costs, of which the cooling system is only one component, appear to range around 11 to 16 percent.<sup>7,8</sup> The independent panel could review these variables and other relevant ones in determining the true significance of compliance costs.

### Calculation of Environmental Benefits

Just as plant operators have an incentive to shield or overstate data on compliance costs, operators also have an incentive to understate the benefits of compliance with the Phase II performance standards under the second cost exception. Because the precise calculation of environmental benefits is challenging and subject to debate, plants will likely stop after calculating only the most immediate and transparent benefits. In doing so, plants will ignore or avoid the quantification of non-use and non-market benefits. Calculation of these benefits pushes the frontiers of environmental economics; indeed, EPA itself could not quantify the non-use benefits to be afforded by the national rule.<sup>9</sup> Given this reality, rather than encouraging a simplistic and inaccurate approach to benefits calculation, the State Board should reject any alternative that relies on it.

The latest example in the monetization of environmental benefits comes from a study concerning the Huntington Beach Generating Station. This study, published in 2005, focused only on the impacts of the plant to commercially valuable fish species. In doing so, the study ignored certain use and non-use categories. The study concluded that the power plant reduced environmental benefits by \$317-\$2887 annually, which is likely to be a gross underestimation.<sup>10</sup>

As can be seen at Huntington Beach, the cost-benefit exception would give plants an incentive to dramatically understate environmental benefits. In so doing, the exception essentially shifts the burden to the State Board to prove that other environmental benefits really do exist. This concept would turn environmental regulation on its head, asking government to prove harm before industry can be regulated. Clean Water Act section 316,<sup>11</sup> the statute on which the Phase II regulation is in principle based, takes a different approach, commanding simply that steps are

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<sup>7</sup> Fuel costs may be even higher at traditional steam plants, where more fuel is necessary for a given output of electricity.

<sup>8</sup> Maulbetsch Presentation at Oakland Workshop, December 7, 2005, Slides 28-29.

<sup>9</sup> EPA, Final Rule Economic and Benefits Analysis, Chapter D-1: comparison of Costs and Benefits, <http://www.epa.gov/waterscience/316b/econbenefits/final.htm>.

<sup>10</sup> AES Huntington Beach L.L.C. Generating Station Entrainment And Impingement Study Final Report, April 2005.

<sup>11</sup> 33 U.S.C. §1316(b).

taken to minimize environmental impact from once-through cooling systems. The State Board should do the same.

### California's Deregulated Energy Market

Finally, because California now has a deregulated energy market, the State Board's once-through cooling policy will affect not only coastal plants but *all* plants selling energy on this open market. In the free market, plants of all types compete to sell electricity to the public. At the same time, plants are subject to individual review when first built or when repowering. Because of water supply and other concerns, inland plants have been forced over time to operate with cooling systems that use small amounts of water. These plants have demonstrated that the use of such technologies is feasible even in the warmest areas of the State. In this context, prolonging the lifespan of the ageing fleet of once-through cooling systems, whether through site-specific exceptions or otherwise, amounts to an undeserved subsidy to coastal plants using the public's coastal resources to pay for it. Because sanctioning site-specific determinations will exacerbate and extend inequalities in the energy market, the State Board should further avoid them as a matter of public policy.

#### ***2. The State Policy Should Require Rigorous Analysis of All Feasible Technological and Cooling Measures***

Although plants are still submitting the PICs required by the Phase II rule, those submitted to date suggest that plants are not evaluating all "feasible" measures. In past permit proceedings, the determination of what is "feasible" and what is "infeasible" appears to have resided with the plant operators, with little oversight from the Regional Boards. These assertions of technological or economic infeasibility have at times rested on a paragraph or less of support.

On this issue, the New York State policy takes a better approach. New York requires evaluation of *all* feasible alternatives, where feasibility is defined as "'capable of being done' with respect to the physical characteristics of the facility site but does not involve consideration of cost." Furthermore, New York requires that the power plant "explore the feasibility of closed-cycle cooling at each existing facility." Then, as part of a later technological review, New York considers the cost of each alternative.<sup>12</sup>

New York's feasibility policy is a good one. What has happened in California is that claims of infeasibility have rarely been aired before the Regional Board and contested by all stakeholders. Without a broad view of feasibility at the outset, the consideration of alternatives is artificially narrowed, and State and Regional Board staff and members are not able to choose meaningfully among alternatives. One example of this has been the limited analysis of the use of recycled water for cooling at coastal plants, despite efforts in the water supply and wastewater treatment communities to reclaim water. This approach neither furthers the goals of sound science nor the mission of the State and Regional Boards. It also hinders public participation.

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<sup>12</sup> Letter to Benjamin Grumbles from New York State Department of Environmental Conservation, January 24, 2005, p. 4.

### ***3. The State Policy Should Classify Plants As New Facilities When Old Generation Structures are Razed or New Discharge Permits are Required***

Under the current federal regulatory structure, the Phase I rule governs *new* power plants, while the Phase II rule controls *existing* power plants. While the contours of this distinction are presently the subject of litigation, the current federal policy focuses solely on changes to the capacity of a plant's cooling water intake structure in dividing new plants from existing plants. Thus, an entire power plant can be razed and built from new, but so long as the design capacity of the cooling structure is not increased, the plant will fall under the more lenient rules for existing plants.<sup>13</sup> In California, the same plant might be subject to *new* waste discharge requirements while perversely falling under the *old* intake requirements.

State policy can and should distinguish between existing and new plants more rationally. Under the federal rules, existing plants receive more lenient treatment because *retrofitting* a facility with an alternative cooling technology is thought to be significantly more costly than when building a new facility from the ground up. However, when plants "repower," a process in which generally all of the plant's structures are replaced except for the intakes, these higher retrofit costs do not exist. Thus, in cases of repowering, the reasons for more leniently treating "existing" facilities are no longer valid. Power plants that go through repowering should comply with either the federal rules for new facilities or more stringent state rules.

### **The State Policy Should Take a Scientific and Consistent Approach to Determine the Calculation Baseline**

To date, much of the discussion concerning once-through cooling has involved simply trying to understand the federal Phase II rule. However, in fashioning a policy for California, the State Board, together with other agencies with responsibilities for the health of our ocean and coast, must ask: to what conditions shall our coastal waters be restored? Congress and the Legislature have already provided some answers. The Clean Water Act famously commands that waters be restored to fishable and swimmable conditions. The Porter-Cologne Act calls for activities affecting water quality to be regulated to attain the highest water quality reasonable and that measures be taken to minimize the intake and mortality of all forms of marine life. Similarly, the Coastal Act insists that uses of the marine environment be conducted in a manner that sustains biological productivity and maintains healthy populations of all marine species adequate for long-term commercial, recreational, scientific, and educational purposes. Most recently, similar goals were embraced in the California Ocean Protection Act.

Because the federal rule seeks only to impose a performance standard, without reference to existing or future environmental conditions, it is critical that the State Board develop a policy that will help achieve the goals our elected representatives have long pursued.

We especially urge the State Board to establish a method for determining the calculation baseline (the basis on which impingement and entrainment reductions are evaluated) using sound science,

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<sup>13</sup> 69 Fed. Reg. 41578-79.

involving reference sites, and to promote consistency for all coastal power plants in California. A clear approach for determining the calculation baseline is paramount to the state policy because it is the level from which all impingement and entrainment reductions are evaluated. We applaud the State Board for proposing to base the calculation baseline on actual rather than maximum permitted flows. However, we are concerned that allowing facilities to establish a calculation baseline derived solely from historic levels of intake, entrainment, and impingement, as well as potentially depleted source waters surrounding the facility, will produce biased results that result in no meaningful environmental improvement.

The decrease of biodiversity in the world's oceans and declining populations of commercially and non-commercially important marine species are well documented.<sup>14</sup> Recreational fish landings in the Southern California Bight have decreased from an annual mean of 4.25 million fish in 1963 to 2.5 million fish in 1998.<sup>15</sup> Many marine populations, including certain species of rockfish and abalone, are at strikingly low levels, and some species which were common decades ago are now rare off the coast of California. Historic impingement studies (1978-1979) at Harbor Generating Station document the take of pacific pompano, a species which is almost never seen today in the coastal waters of Southern California.<sup>16</sup>

The persistent use of once-through cooling at coastal power plants arguably contributes to the loss of biodiversity and the evident population decline of many marine species over the past 50 years. Thus, a balanced and scientific approach is needed for determining the calculation baseline. The historic data taken by power plant facilities is rarely comprehensive, and should not be the single basis for evaluation of impingement and entrainment reductions. Furthermore, determining the calculation baseline solely on present data does not account for the decades of destruction imparted by coastal power plants and other anthropogenic impacts on marine life. Taking a reference approach to determining the calculation baseline would help account for the years of slow degradation that have occurred in waters adjacent to power plant facilities, and it would be consistent with section 13142.5(d) of the Porter-Cologne Act (requiring such baseline studies), which to date has been largely ignored. Additionally, population sizes and species compositions have likely changed since the establishment of coastal power plants. This reference approach will help provide current data at a site that is undisturbed by once-through cooling for which to compare the density of marine life at coastal power plant facilities.

We recommend the State Board to convene an independent technical working group to determine the calculation baseline for all generating facilities in California. This group should be charged with collaboratively selecting a series of reference sites that represent habitats characteristic of each facility. In addition, we recommend that the team develop a monitoring plan to characterize the density of marine life at each reference site. Using the same methods and sampling regime as these reference surveys, the density of marine life should be determined in the source water at each power plant. Additionally, impingement and entrainment studies should be conducted at the

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<sup>14</sup> Myers and Worm, Rapid worldwide depletion of predatory fish communities, *Nature*, vol. 423, May, 2003; Hutchings and Reynolds, Marine Fish Population Collapses: Consequences for Recovery and Extinction Risk, *BioScience*, vol. 54, no. 4, April, 2004.

<sup>15</sup> Dotson and Charter, Trends in the Southern California Sport Fishery, CalCOFI Rep., Vol. 44, 2003, p.94.

<sup>16</sup> Tenera Environmental and MBC *Applied Environmental Sciences*, Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, October 2005, p.5.

intake pipes of each power plant. Based on the density of entrainable marine life in the source water and the reference site, a simple ratio can be used to determine the multiplier between these sites. This multiplier can be used to evaluate the entrainment reduction required for each facility. Similar methods can be used to determine the appropriate impingement reductions. We also recommend that the baseline is revisited every few years to monitor its effectiveness.

We understand that this proposal will require significant resources; however, it is essential if the state foresees any continuation of the use of once-through cooling technology, which is extremely damaging to the coastal and marine environment. This approach provides an unbiased approach to managing problems associated with potentially depleted source waters surrounding power plants due to decades of impingement and entrainment.

## **The State Policy Should Require Data Collection on All Natural Resource Impacts**

Neither Clean Water Act section 316(b) nor Porter-Cologne section 13142.5 make any distinction as to type or size of marine organism impacted by once-through cooled facilities. Nevertheless, Regional Boards do not appear to have gathered data on the impacts of these facilities on larger, non-fish species, such as marine mammals and sea turtles. Despite long-standing mandates in the Endangered Species Act, Marine Mammal Protection Act, and other authorities, the National Oceanic and Atmospheric Administration has also failed to routinely collect data of the impact of these power plants on larger organisms. However, voluntary reporting and information from marine mammal rescue efforts illustrate that it is not unusual for sea lions, harbor seals, and some sea turtles to be “taken” by these facilities.<sup>17</sup> We urge the state policy to require evaluation of these types of impacts in the permitting process.

## **Conclusion**

Thank you for the opportunity to provide our comments regarding the development of a California state policy on once-through cooling. As described in detail above, we encourage the State Board to exclude both the restoration and site-specific compliance alternatives from the impending state policy. We also urge the State Board to take a scientific approach in determining the calculation baseline for each power plant that involves the use of reference sites. A state policy on once-through cooling will affect coastal resources for decades into the future. With this policy, the State Board has the opportunity to either protect our marine and coastal environment, or subject it to continued harm. Thus we urge the State Board to take vigilant approach that upholds California’s legacy of coastal protection by adopting a protective policy regarding Phase II facilities to safeguard our valuable marine resources. Please contact us if you have any questions regarding our comments.

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<sup>17</sup> See, e.g., 67 Fed. Reg. 61 (Jan. 2, 2002), “Small Takes of Marine Mammals Incidental to Specified Activities; Taking of Marine Mammals Incidental to Power Plant Operations,” <http://www.epa.gov/fedrgstr/EPA-IMPACT/2002/January/Day-02/i32238.htm> (Letter of Authorization granted pursuant to Marine Mammal Protection Act to take certain number of harbor seals, gray seals, harp seals, and hooded seals from in power plant operations).

Respectfully,

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# ATTACHMENT B

## Fact Sheet on Energy & OTC

## ONCE-THROUGH COOLING & ENERGY

### ***1. How Critical Are the Coastal OTC Plants to the State's Energy Supply?***

**The steam plants have low usage rates.** Combined, the 21 coastal plants using OTC in California have a capacity of approximately 21,000 MW.<sup>i</sup> Of this capacity a total of approximately 14,000 MW is from natural gas-fired steam plants.<sup>ii</sup> These steam plants are old and inefficient and have low usage rates as a result, averaging less than 20 percent in 2004.<sup>iii</sup> The power production from the coastal steam plants accounted for less than 10% of California's power demand in 2004.<sup>iv</sup>

**The two nuclear plants are used more extensively.** In contrast, two nuclear plants (Diablo Canyon and San Onofre) with a combined capacity of approximately 4,250 MW, operated at nearly 80 percent capacity in 2004.<sup>v</sup> These two nuclear plants accounted for well over half the once-through cooling water utilized by the state's combined population of coastal nuclear and steam boiler plants in 2004.

### ***2. Aren't the Coastal Steam Plants Needed in the Summer When Power Demand Is Highest?***

**This power can be generated by steam plants or modern replacement plants.** There is nothing unique about the steam plants. As the CEC notes in its April 12, 2006 letter to the SLC, "*Over time, it is anticipated that many of the steam boilers will be replaced with more efficient generating technologies.*"

### ***3. Does California Have a Commitment to Modernizing the Coastal Steam Plants?***

**Yes.** Modernization of coastal steam plants with high efficiency, gas turbine combined-cycle plants is a stated goal of California's Energy Action Plan and recent California energy legislation, and better supports California's progress toward reducing greenhouse gases.<sup>vi</sup> Most steam plants are 30 to 50 years old and at or beyond their expected service life.<sup>vii</sup> An OTC ban by 2020 or earlier would simply reinforce an existing state commitment to phase-out coastal steam plants.

### ***4. Will Eliminating OTC Add to the Cost of New Coastal Plants?***

**Not significantly.** The cooling system is a small part of the overall cost of a new power plant. There is very little difference in the cost of a new combined-cycle plant whether it incorporates OTC, closed-cycle wet cooling, or dry cooling.<sup>viii</sup>

### ***5. Will the New Coastal Plants Increase or Decrease Air Emissions?***

**The new plants will decrease air emissions.** Air emissions from gas turbine plants using closed-cycle wet or dry cooling will be lower than air emissions from steam plants using OTC, due to the much higher efficiency of combined-cycle in baseload operation.<sup>ix,x</sup>

### ***6. Will Retrofitting to Wet Towers Jeopardize the Reliability of the State's Electrical Grid?***

**No.** Both nuclear and steam plants have been cost-effectively and efficiently retrofit to closed-cycle wet cooling in the United States.<sup>xi</sup> Retrofits more costly and complex than a wet tower retrofit are already planned for California's two nuclear plants.<sup>xii</sup>

### ***7. Is Space Available at the Coastal Plants for Cooling Towers?***

**Yes.** For example, any steam plant with space available for a large desalination plant generally has adequate space for a wet cooling tower retrofit.<sup>xiii</sup> Many coastal steam plants are considering the co-location of desalination plants. A review of aerial photographs of San Onofre and Diablo Canyon nuclear plants indicates there should be adequate space at both facilities for wet towers.<sup>xiv</sup>

### ***8. Will the Retrofits Cause a Drop in Plant Efficiency and/or an Increase in Air Emissions?***

**No.** The overall energy penalty of a nuclear plant wet cooling tower retrofit is approximately 1.5%, not 10% as cited by SCE in its March 20, 2006 letter to SLC.<sup>xv</sup> The air emissions that SCE attributes to this energy penalty are

## ONCE-THROUGH COOLING & ENERGY

overstated by a factor of 7 in the same letter. The energy penalty for a steam plant wet tower retrofit is less than that at a nuclear plant, at approximately 1%.

### ***9. How Much Would Air Emissions Increase if the Two Nuclear Plants Are Retrofitted to Wet Towers?***

**A very small and insignificant amount.** About 1.5%, or 30 MW, of the output of each nuclear plants' 2,100 MW capacity would be dedicated to the wet towers, primarily to meet wet tower pumping and fan energy requirements. If this 30 MW is generated by a combined-cycle plant, the annual NO<sub>x</sub> and PM<sub>10</sub> emissions from this 30 MW would be a maximum of 9 tons/year (0.05 tons/day) and 5 tons/year (0.03 tons/day), respectively.<sup>xvi,xvii,xviii</sup>

### ***10. How Much Will It Cost to Retrofit the Coastal OTC Plants?***

**Relatively little, as only a few plants are likely to be affected.** CCEEB claims in its March 24, 2006 letter to the SLC that the capital cost to retrofit all existing facilities, approximately 20,700 MW of capacity, ranges from \$2.0 billion for wet cooling to \$2.5 billion for dry cooling. This is not a credible scenario. In reality only the two nuclear plants and a few of the steam units that have recently been upgraded are likely to still be operational in 2020. It is probable that all other steam plants will have converted to combined-cycle using closed-cycle wet or dry cooling technology (which have only minimal additional costs if done during conversion as noted above), or been retired by that time.

### ***11. How Will the Cost of the Retrofits Affect the Cost to Generate Power?***

**The overall cost of power production from coastal plants will decline over time as more fuel-efficient combined-cycle plants displace steam plants and OTC technology is replaced at those converted plants. At those few plants that are not converted, the cost of power production related to an OTC retrofit will increase 3 to 4%.**<sup>xix</sup>

### ***12. What Will Be the Source of Water for the Cooling Towers?***

**Recycled water is preferred for use in the wet towers.** However, seawater is a viable option and is used in cooling towers at numerous large nuclear and steam plants in the United States. Use of seawater in closed-cycle cooling towers at either San Onofre or Diablo Canyon would reduce seawater usage by 95 percent or more.<sup>xx</sup> Seawater may also be used to augment recycled water supplies if these supplies are not sufficient.

### ***13. Will the Cooling Towers Emit Visible Plumes?***

**Not necessarily.** Wet towers can be equipped with plume abatement technology to minimize or eliminate vapor plumes. This is now standard practice in California for power plant cooling towers in urban areas. See Figures 1 and 2.

### ***14. Will the Cooling Towers Emit Particulates?***

**Yes, some particulate (salt drift) emissions would be generated by the cooling tower.** Advanced "drift" eliminators are incorporated into cooling towers to minimize this water droplet carryover. Cooling towers using recycled water account for only a small amount of overall power plant PM<sub>10</sub> emissions.<sup>xxi</sup> An industry survey of operators of seawater cooling towers notes these operators have not reported any problems associated with salt drift at their facilities.<sup>xxii</sup>

### ***15. How Are Other States and Regions Addressing OTC Plants?***

**Other states and regions are aggressively pursuing wet tower retrofits.** EPA Region 1 (New England) has required the retrofit of a 1,600 MW coal plant (Brayton Point Station, Massachusetts) to wet towers.<sup>xxiii</sup> New York Department of Environmental Conservation (NYDEC) has recommended that the 2,000 MW Indian Point nuclear plant be retrofitted to wet towers. NYDEC determined that a wet tower cost impact of less than 6 percent of revenue was not an unreasonable financial burden on the owner.<sup>xxiv</sup>

## ENDNOTES

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<sup>i</sup> CEC comment letter to SLC dated April 12, 2006, p. 3. MW capacity for each coastal plant category in 2004 (steam, nuclear, combined-cycle, combustion turbine) is calculated from data provided in table on p. 3. Total MW for all four plant categories is calculated at 20,650 MW.

<sup>ii</sup> Ibid.

<sup>iii</sup> Ibid.

<sup>iv</sup> Ibid.

<sup>v</sup> Ibid.

<sup>vi</sup> AB 1576 (2005) - authorizes utilities to enter into long-term contracts for the electricity generated from the replacement or repowering of older, less-efficient electric generating facilities.

<sup>vii</sup> CEC report, *Aging Natural Gas Power Plants in California*, July 2003, Table 1.

<sup>viii</sup> John Maulbetsch presentation on cost of cooling technologies to the State Water Resources Control Board on behalf of California Energy Commission, December 7, 2005.

<sup>ix</sup> Utility boiler NO<sub>x</sub> limit is generally 0.15 lb/MW-hr in California coastal air districts. NO<sub>x</sub> limit is 0.10 lb/MW-hr in Ventura County.

<sup>x</sup> EPA AP-42, Table 1.4-2 Emission Factors for Natural Gas Combustion – External Combustion (utility steam boilers), 1998, p. 1.4-6. Particulate emission factor is 7.6 lb/10<sup>6</sup> cubic feet of natural gas. Average heat rate of coastal boilers is approximately 10,000 Btu/kw-hr (see footnote 7). Each cubic foot of natural gas has a heating value of approximately 1,000 Btu. Therefore the emission factor for coastal boilers is 0.076 lb/MW-hr.

<sup>xi</sup> Retrofitting to a wet tower is fundamentally simple - the OTC pipes going to and from the ocean are rerouted to a cooling tower. At facilities that have been retrofit, the hook-up of the new cooling system has generally been carried-out without requiring an extended unscheduled outage. The cost to retrofit 800 MW Palisades Nuclear (MI) to wet towers was \$68/kW (1999 dollars). The cost to retrofit 750 MW Pittsburg Unit 7 (CA) was \$46/kW (1999 dollars) [ref: EPA 316(b) Phase II Technical Development Document, Chapter 4].

<sup>xii</sup> 2,100 MW Diablo Canyon was recently authorized by the CPUC to replacing aging steam generators at a cost of \$700 million [ref: California Energy Circuit, *CPUC Approves \$706 million for Diablo Canyon*, February 25, 2005, p. 1]. A steam turbine replacement project authorized by the CPUC for 2,100 MW San Onofre is estimated to cost \$680 million [ref: CPUC San Onofre Steam Generator Replacement Proceeding, Decision 05-12-040 December 15, 2005] These steam generator retrofits will cost in the range of \$320/kw to \$330/kw, much higher than the probable cost to retrofit these plants to wet towers.

<sup>xiii</sup> For example, a 50 million gallon a day desalination plant is under evaluation for an 11-acre site at the AES Huntington Beach steam plant [ref: City of Huntington Beach, *Seawater Desalination Project at Huntington Beach - Draft Recirculated EIR*, May 2005, p. 3-1]. Units 3 and 4 steam units at Huntington Beach, a total of 450 MW, were recently repowered [ref: CEC, Huntington Beach project description, <http://www.energy.ca.gov/sitingcases/huntingtonbeach/index.html>]. Less than 2 acres of land would be needed for inline wet towers for Units 3 and 4.

<sup>xiv</sup> For example, San Onofre has two reactors and sits on a 257 acre site [ref: Utilities Service Alliance, San Onofre webpage: <http://www.usainc.org/sanonofre.asp>]. The cooling tower for each 1,100 MW reactor would require from 2 to 6 acres of land, depending on whether an inline or round cooling tower is used. Inline wet cooling towers can provide 500 to 600 MW of steam plant cooling per acre (210 feet by 210 feet area) [ref: B. Powers, direct and rebuttal testimony, Danskammer Power Station draft permit proceeding – SPDES NY-0006262, October 2005 and December 2005]. Testimony describes design basis for retrofit plume-abated tower measuring 50 feet by 300 feet for 235 MW of steam plant capacity. Only 2 to 4% of the San Onofre site would be needed for the towers.

## ENDNOTES

<sup>xv</sup> EPA 316(b) Phase II Technical Development Document, Chapter 5, Sections 5.6.1 through 5.6.3, p. 5-34. The measured annual efficiency penalty at 346 MW Jeffries Station is 0.16%. The cooling tower pump and fan energy demand for steam plants is estimated by EPA at 0.73%. Total energy penalty for Jeffries Stations would be approximately 0.9%. EPA also estimates the overall energy penalty for Catawba and McGuire nuclear plants at 1.7%, and for the Palisades nuclear plant at 1.8%. The generic annual efficiency penalty calculated by EPA (Table 5-10) for nuclear plants operating at 100% load is 0.4%. The generic nuclear plant cooling tower pump and fan energy demand is estimated by EPA (Table 5-16) at 0.9%. The total generic energy penalty for nuclear plants operating at 100% load is estimated by EPA at 1.3%. EPA shows a mean annual nuclear plant energy penalty of 1.7% in Table 5-1. However, when nuclear plants are operational they generally operate at 100% load.

<sup>xvi</sup> CARB, Guidance for the Permitting of Electric Generation Technologies, Stationary Source Division, July 2002, p. 9 (NO<sub>x</sub> emission factor = 0.07 lb/M-hr combined-cycle plants)

<sup>xvii</sup> San Diego County Air Pollution Control District (APCD), Otay Mesa Power Project (air-cooled), Authority To Construct 973881, 18 lb/hr particulate without duct firing (510 MW output), equals ~ 0.04 lb/MW-hr.

<sup>xviii</sup> San Onofre is located in San Diego County. The NO<sub>x</sub> and PM<sub>10</sub> emissions offset thresholds defined by San Diego County APCD Rule 20.1 – New Source Review General Provisions, are 50 tons/year for NO<sub>x</sub> and 100 tpy for PM<sub>10</sub>. Diablo Canyon is located in San Luis Obispo County. The NO<sub>x</sub> and PM<sub>10</sub> emissions offset thresholds defined by San Luis Obispo APCD Rule 204 - Requirements, where Diablo Canyon is located, are 25 tons/year for NO<sub>x</sub> and 25 tpy for PM<sub>10</sub>.

<sup>xix</sup> A large capital investment like a wet tower retrofit would be amortized over 20 to 30 years. CCEEB estimates the cost to retrofit 20,700 MW of coastal power plant capacity with wet towers at \$2 billion, or \$100 million per 1,000 MW of capacity. Assuming 30 years and 7% interest, the payment per year on the \$100 million capital cost would be \$8 million per year. A baseload power plant, meaning one that operates most of the time at a fairly high load like 1,000 MW Encina (Carlsbad) prior to deregulation, would generally have a usage rate of 70% or more. This means the plant averages 70% of its power production potential over the entire year. Total kw-hr produced by 1,000 MW Encina per year at 70% usage rate is: 1,000 MW x 1,000 kw/MW x 8,760 hours/yr x 0.70 = 6,132,000,000 kw-hr per year. Therefore, the annual cost to pay for cooling system is: \$8,000,000 ÷ 6,132,000,000 kw-hr = \$0.0013/kw-hr (0.13 cents per kw-hr) The average wholesale power price in Southern California (SP-15) in 2005 was approximately \$70/MW-hr (\$0.07/kw-hr) [ref: Energy News Data – Western Price Survey, 2005 weekly archives: <http://www.newsdata.com/wps/archives.html>]. Therefore the cost of the cooling system would add ~2% to the cost of power production at baseload plants that are retrofit. For low usage power plants (20%) the retrofit would add ~6% to the cost of power production. The energy penalty imposed by the retrofit would be the same for high or low usage plants and would add another 1 to 2% to the cost of power production (see footnote 15).

<sup>xx</sup> Dr. Shahriar Eftekhazadeh – Bechtel, *Feasibility of Seawater Cooling Towers for Large-Scale Petrochemical Development*, Cooling Technology Institute Journal, Summer 2003, Vol. 24 No. 2, pp. 50-64. Operators of seawater cooling towers have not reported any problems associated with salt drift at their facilities. Site inspections of two long-time saltwater cooling tower installations did not exhibit any visible signs of salts fallout.

<sup>xxi</sup> U.S. DOE, Final EIS - Imperial-Mexicali 230 kV Transmission Lines, December 2005. Table G-1, Power Plant Emissions, p. G-4.

<sup>xxii</sup> Dr. Shahriar Eftekhazadeh – Bechtel, *Feasibility of Seawater Cooling Towers for Large-Scale Petrochemical Development*, Cooling Technology Institute Journal, Summer 2003, Vol. 24 No. 2, pp. 50-64. Operators of seawater cooling towers have not reported any problems associated with salt drift at their facilities. Site inspections of two long-time saltwater cooling tower installations did not exhibit any visible signs of salts fallout.

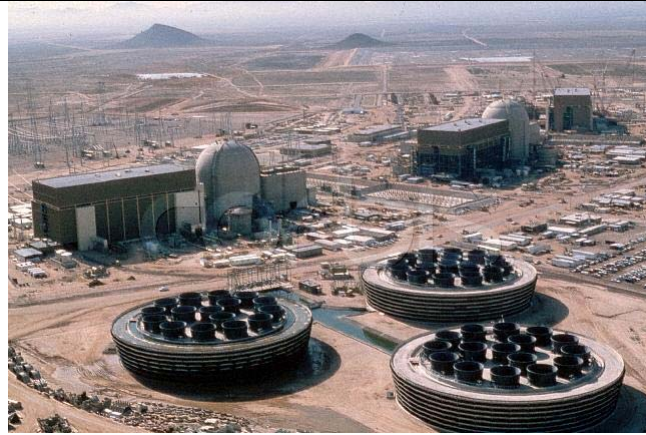
<sup>xxiii</sup> EPA Region 1, MA0003654 - Brayton Point Station Final NPDES Document, July 22, 2002, Chapter 7, p. 7-128.  
<http://www.epa.gov/boston/braytonpoint/>

<sup>xxiv</sup> New York Department of Environmental Conservation, *Fact Sheet - New York State Pollutant Discharge Elimination System (SPDES) Draft Permit Renewal With Modification*, Indian Point Electric Generating Station, Buchanan, NY - November 2003.

Figure 1. Retrofit Cooling Tower Options for California Nuclear Power Plants



500 ft. diameter, 160 ft. tall plume-abated round wet tower, GKN2 1,300 MW nuclear reactor (Germany), 1 billion gal/day cooling water flow. Left photo – plume abatement off. Right photo – plume abatement on.  
Source: BALCKE GmbH



Conventional round towers, Palo Verde Nuclear (AZ)



Conventional linear towers, Prairie Island Nuclear (MN)



2,000 MW Diablo Canyon - possible wet tower sites



2,000 MW San Onofre - possible wet tower sites

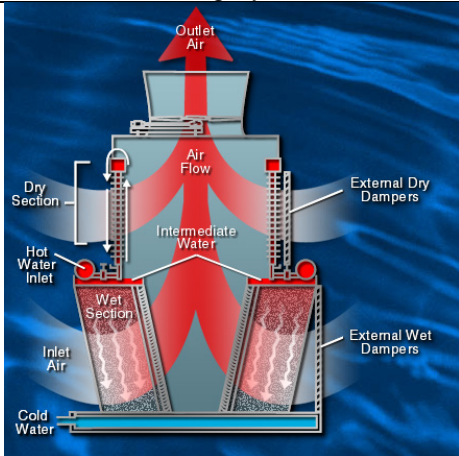
Figure 2. Back-to-Back Inline Wet Towers and Inline Plume-Abated Towers



36-cell, space saving back-to-back inline conventional cooling tower.  
From: GEA Power Cooling Systems website



Retrofit 40-cell back-to-back inline conventional cooling tower, coal-fired Plant Yates (GA) – 40 cells is adequate size for up to 1,100 MW nuclear reactor.



Schematic of plume-abated cooling tower – dry (radiator) section above, conventional wet below.  
Source: P. Lindahl – Marley presentation, Dry Cooling Symposium, May 2002.



Effect of plume abatement function – Plume abatement off, left two cells. Plume abatement 100% on, adjacent two cells.  
Source: P. Lindahl – Marley presentation, May 2002.



Operational plume-abated tower, ~60 ft. tall – Selkirk 2 Cogen, 330 MW (NY)  
Source: P. Lindahl – Marley presentation, May 2002.



Operational plume-abated tower, ~50 ft. tall – Chicago O'Hare Airport  
Source: P. Lindahl – Marley presentation, May 2002.

# ATTACHMENT C

CEC Expected and Disclosed Energy Facility Projects in Review



## California Energy Commission Energy Facility Status

### Expected and Disclosed Projects as of 8/9/2006\*

Projects in Review									
	(Arranged By Estimated Decision Date)	Docket Number	Process	Capacity (MW)	Project Type	Location	Date Filed	Estimated Decision Date	Estimated On-Line Date
1	Pastoria Phase 2 Expansion Project - simple cycle addition - Calpine	05-AFC-1	12-mo. AFC	160	Expansion	Kern Co.	4/29/2005	8/06	unknown
2	SF Reliability Project - City of SF	04-AFC-1	12-mo. AFC	145	Brown Field	San Francisco	3/18/2004	8/06	3/08
3	Los Esteros 2 Combined Cycle - Calpine**	03-AFC-2	12-mo. AFC	140	Brown Field	Santa Clara Co.	12/30/2003	8/06	unknown
4	Blythe I Transmission Line - Blythe Energy, LLC	99-AFC-8C	Amendment	230 kV	Transmission Line	Riverside Co.	10/12/2004	9/06	unknown
5	Niland Peakers - Imperial Irrigation District**	06-SPPE-1	SPPE	93	Green Field	Imperial Co.	3/13/2006	10/06	5/08
6	El Centro Unit 3 Repower - Imperial Irrigation District{7}	06-SPPE-2	SPPE	85	Brown Field	Imperial Co.	5/19/2006	12/06	5/09
7	Walnut Creek Energy Park - Edison Mission Energy**	05-AFC-2	12-mo. AFC	500	Green Field	Los Angeles Co.	11/22/2005	1/07	8/08
8	Bottle Rock Geothermal - U.S. Renewables Group	79-AFC-4C	Amendment	20	Repower	Lake Co.	8/4/2006	2/07	unknown
9	Sun Valley Energy Project (simple cycle/peaker) - Edison Mission Energy**	05-AFC-3	12-mo. AFC	500	Green Field	Riverside Co.	12/1/2005	2/07	8/08
10	Avenal Combined Cycle - National Power	01-AFC-20	12-mo. AFC	600	Green Field	Kings Co.	10/9/2001	7/07	unknown
11	Highgrove Grand Terrace Peaker - AES**	06-AFC-2	6/12-mo. AFC	300	Expansion	San Bernardino	5/25/2006	8/07	9/08
12	South Bay Combined Cycle - L.S. Power	04-AFC-3	12-month AFC	620	Replacement	San Diego Co.	6/30/2006	9/07	5/10
13	Vernon Power Plant Combined Cycle - City of Vernon	06-AFC-4	12-mo. AFC	943	Brown Field	Los Angeles Co.	6/30/2006	?	?
14	EIF Firebaugh Panoche - Energy Investors Fund	06-AFC-5	12-mo. AFC	400	Green Field	Fresno Co.	8/2/2006	9/07	8/09
	<b>UNDER REVIEW TOTAL (MW)</b>			<b>4506</b>					
	<b>TOTAL PLANNED FOR PEAKING CAPACITY (MW)</b>			<b>2238</b>					

\*Information gathered from: [http://www.energy.ca.gov/sitingcases/all\\_projects.html](http://www.energy.ca.gov/sitingcases/all_projects.html)

\*\*Yellow highlighting indicates projects that are planned for peaking capacity.

# ATTACHMENT D

CEC Power Plant Fact Sheet August 9, 2006

# California Energy Commission Media Office POWER PLANT FACT SHEET

Updated: 8/9/06

(Reflects Riverside Energy Center - Unit 2 on line 7/26/06, EIF Panoche filed 8/2/06,  
and Bottle Rock re-power filed 8/4/06)

Since 1998 when deregulation occurred, the Energy Commission has approved (or given Small Power Plant Exemptions to) 54 power plants totaling \*22,906 megawatts (MW). Thirty-six of these plants are in operation, producing 12,910 MW. Seven projects came on-line in California in 2005, adding 3,112 MW; and five plants came on line in 2006 adding 1,487 MW to the grid. Thirteen projects remain in active review in the Energy Commission power plant licensing process, representing 4,506 MW.

\* 893 MW of total is from projects that will not be built because the applicant either withdrew the license after approval or license expired.

<b>Energy Commission Approved Projects (1998-2006)</b>		
Projects Approved and On-line	36	12,910 MW
Projects Approved and Under Construction	2	960 MW
Projects Approved and Available for Construction	10*	7,643 MW
Projects Approved but then Cancelled by Applicants or Whose Licenses Expired	6	1,393 MW
<b>Total Projects Approved Post-Restructuring</b>	<b>54</b>	<b>22,906 MW</b>
<p>* The ten projects have placed their construction on hold. The total megawatts of projects approved and available for construction includes 51 MW Unit 2 of Valero Cogeneration.</p>		

Total of Projects in Active Review	14*	4,506 MW
Project Applications Submitted Since October 2003	14*+	4,689 MW
Projects Suspended or Terminated in 2006 While In Review: Potrero Unit 7 [540 MW] suspended application was terminated by Commission 3/1/06. City of Vernon [610 MW] filed 3/2/06 and withdrawn 4/6/06.	2	1,150 MW
<p>*Includes one transmission line project. + Includes City of Vernon filed 3/2/06 and withdrawn 4/6/06. Filing does not include 20 MW Bottle Rock re-powering amendment.</p>		

<b>Power Plants Approved by Year</b>		
2006	None yet	MW
2005	2 facilities	680 MW
2004	8 facilities	4,575 MW+
2003	8 facilities	3,770 MW
2002	4 facilities	1,045 MW
2001	23 facilities	6,270 MW (includes 265 MW amendment)
2000	6 facilities	4,347 MW
1999	3 facilities	2,219 MW
<b>Total 1999-2006</b>	<b>54 facilities</b>	<b>22,906 MW</b>
MW On-line or Under Construction		13,870 MW*
<p>+ <b>Includes</b> 1,200 MW for Morro Bay (2 units mothballed).  * <b>Excludes</b> 1,393 MW unused licenses (see chart on right) and 7,643 MW approved and construction on hold.</p>		

<b>Power Plants On-Line by Year</b>		
2006	5 facilities	1,487 MW*
2005	7 facilities	3,112 MW*
2004	0 facilities	0 MW
2003	7.5 Facilities	3,668 MW*
2002	7 Facilities	2,729 MW*
2001	9.5 Facilities	1,914 MW*
1999 & 2000	0 Facilities	0 MW
2001-2006	36 Facilities	12,910 MW
<p>* Note: Some units split date they come on line. We generally use the earliest date project first unit is on line in the totals for each year. See below for years.</p> <p>2006: Riverside (Unit 1 on line 6/1/06, Unit 2 on line 7/26/06)  2005: Mountainview (Unit 3 on line 12/9/05, Unit 4 on line 1/19/06, total MW added to 2005)  2003: Sunrise Combined Cycle (265 MW in 2003) is added separately from Sunrise Simple Cycle (320 MW in 2001) because was done as amendment, but is counted as one facility in 2001.  2002: Huntington Beach (Unit 3 on line 7/31/02, Unit 4 on line 8/7/03, total MW added to 2002.)</p>		

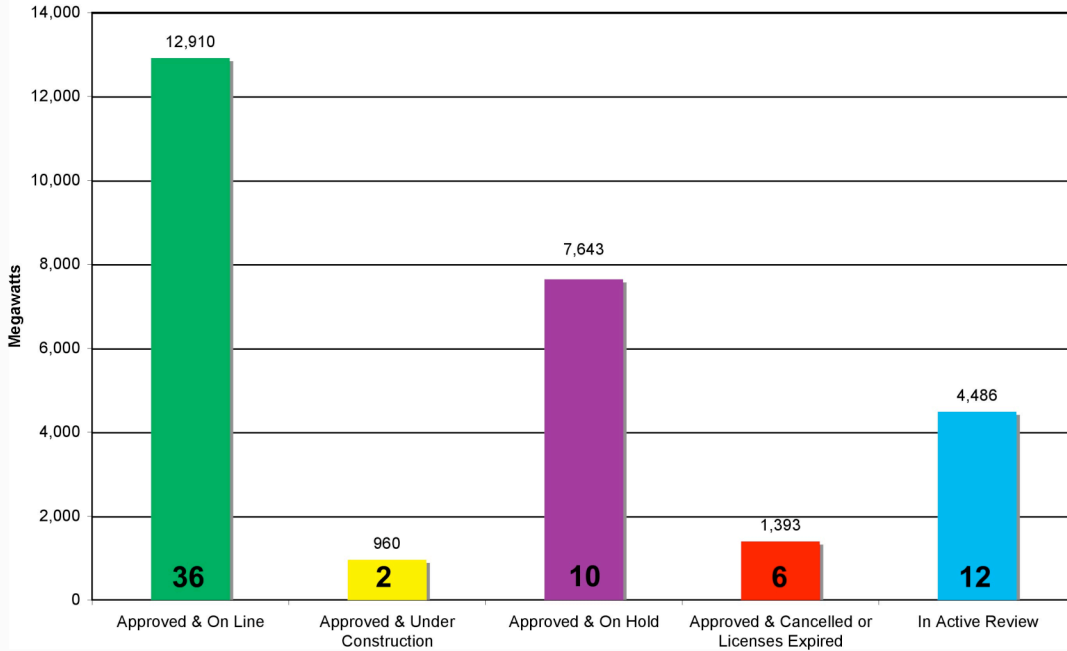
<b>Power Plants Retired by Year</b>		
2006	2 units	1,539 MW
2005	0 units	0 MW
2004	20 units	1,725 MW
2003	25 units	2,024 MW
2002	23 units	807 MW
2001	3 units	39 MW
2000	1 unit	0.7 MW
1999	2 units	56 MW
<b>Total 2001-2006</b>	<b>76 units</b>	<b>6,190.7 MW</b>

<b>Power Plants On-line Approved Outside CEC Jurisdiction Since 1999</b> <i>(as of 7/1/05, projects less than 50 MW)</i>	2,664 MW
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<b>Power Plants Mothballed</b>	
As of 6/2/2006	1,358 MW

<b>Unused Power Plant Licenses</b>	
3 facilities cancelled by applicants after CEC approval (Pegasus Energy, Ramco Chula Vista 2, Hanford Energy Park)	342 MW
1 license expired due to lack of site control (Golden Gate Phase 1, 00-AFC-5)	51 MW
1 license expired after no construction progress (Midway-Sunset, 99-AFC-9)	500 MW
1 license expired after no construction progress (Three Mountain, 99-AFC-2)	500 MW
<b>Total</b>	<b>1,393 MW</b>

### CALIFORNIA POWER PLANTS – 1998 TO PRESENT



### New California Power Plants On-Line and Old Plants Retired (1999 to 2006 by Year)

