

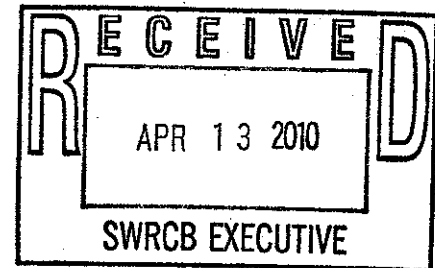


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April 13, 2010

Jeannine Townsend, Clerk to the Board  
State Water Resources Control Board  
1001 I Street, 24<sup>th</sup> Floor  
Sacramento, CA 95814

Re: Comment Letter – OTC Policy



Dear Ms. Townsend:

RRI Energy, Inc. (RRI) appreciates the opportunity to submit written comments on the draft State Water Resources Control Board's (SWRCB or Board) March 22, 2010 Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling OTC Policy (Draft OTC Policy or Draft Policy). As described in its September 30, 2009 comments, RRI's wholly-owned subsidiaries own and operate two electric generation facilities that will be subject to the regulations under consideration in the OTC Policy.<sup>1</sup>

RRI recognizes and appreciates the modifications and improvements to the Draft OTC Policy in certain areas, but remains concerned that absent additional changes the Draft Policy will not provide the majority of the OTC facilities a clear, feasible, cost-effective compliance path. Important issues that have not been addressed or resolved include: (1) the Draft Substitute Environmental Document (SED) fails to meet the requirements of CEQA, (2) the Best Technology Available (BTA) standard is not reasonably borne by OTC facilities; (3) disparate treatment for the existing re-powered combined cycle facilities and the nuclear facilities continues to exist; (4) some form of a wholly disproportionate test should exist for all facilities; and (5) the capacity value that many gas-fired units provide for integrating intermittent renewable resources into California's electric grid has been ignored. In addition to these primary concerns, RRI also believes that there is some ambiguity in the policy that should be removed, the most important of which is how to monitor Track 2 compliance. RRI will discuss all of these items in greater detail below.

<sup>1</sup> The comments and policy positions put forth in RRI's previously filed comments on September 30, 2009 and December 8, 2009 are incorporated by reference.

## The OTC Policy has improved in certain areas

RRI appreciates that Staff has made several improvements to the Draft OTC Policy. These improvements include changes to the BTA's Track 2 alternative that *may* now make it a potentially viable compliance alternative for *some* gas-fired OTC facilities; a stronger role for the Energy Agencies<sup>2</sup> relative to the OTC Policy's impact on electric grid reliability; and the changes made to the Statewide Advisory Committee on Cooling Water Intake Structures (SACCWIS) process. However, these improvements alone fail to produce a functional OTC policy, as they also inject some additional shortcomings into the policy.

The modifications made to the Track 2 compliance alternative *may* make it a viable compliance option for *some* of the gas-fired steam boiler OTC units.<sup>3</sup> Track 2 includes separate compliance alternatives for impingement and entrainment that must result in a 90% reduction in impingement and entrainment (I&E) of that required under Track 1 for facilities using operational changes and technological controls.<sup>4</sup> Track 1 compliance is at least a 93% reduction in design flow (gal/min) which means that Track 2 compliance monitoring must demonstrate a reduction to the 12 month baseline I&E of at least 83.7% (90% of 93%).<sup>5</sup> The SED provides that Track 2 compliance can be achieved through structural or operational controls determined through monitoring of I&E, with credit given for I&E reductions resulting from technologies that were implemented prior to the effective date of the policy (to the extent such measures are intended to reduce impingement and entrainment.)<sup>6</sup>

While these are generally helpful improvements to Track 2, RRI is concerned that the Draft Policy language itself does not clearly reflect the intent as expressed in the SED. First, it is clear that the Track 2 reductions are to be taken from design flow, as that is what Track 1 is measured against. Unfortunately, the Policy is not specific as to how baseline monitoring is to be reconciled with design flow reductions under Track 1, so that the accounting methodology is consistent. The monitoring language in Section 4(A)(1) and 4(B)(1) indicates that the baseline impingement and entrainment monitoring studies will be conducted over a 12-month period, so Sections 2(A)(2)(a)(2) and 2(A)(2)(b)(2) should make clear that the "comparable level" threshold is to be at least 90% of the *annual* reduction in I&E required under Track 1. This clarification will improve the likelihood of uniform implementation and will capture all I&E impacts. In addition, the monitoring language in both Sections 4(A)(1) and 4(B)(1) should specify that *the baseline for assessing I&E reductions and compliance is to be adjusted for the technology-based improvements implemented prior to the effective date of the policy as*

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<sup>2</sup> The California Independent System Operator (CAISO), the California Energy Commission (CEC) and the California Public Utility Commission (CPUC)

<sup>3</sup> Track 1 is essentially unchanged from the previous policy and is economically infeasible for most, if not all of the gas-fired steam boiler OTC units as has been discussed in RRI's previously filed comments.

<sup>4</sup> OTC Policy, Sections 2(A)(2)

<sup>5</sup> OTC Policy, Section 2(A)(1)

<sup>6</sup> SED page 64

referenced in Section 2(A)(2)(c). These minor modifications are necessary to remove ambiguities and to facilitate uniform interpretation and implementation of the Draft Policy. RRI is attaching a mark-up of the relevant Draft OTC Policy sections that show those changes. An additional attachment provides two examples that demonstrate the importance of the Draft OTC Policy changes. The first example shows why a longer monitoring time period is necessary to dampen monthly variations in marine life. The monthly flow verification required for facilities that plan to meet Track 2 requirements through flow reductions only (Section 2(A)(2)(b)(i) of the Draft OTC Policy) should not be presumed to apply to the monitoring requirements for Track 2 compliance in Sections 2(A)(2)(a)(ii) and 2(A)(2)(b)(ii). The second example demonstrates the baseline adjustment that is necessary to account for the existing technologies specifically designed to reduce I&E that were in place prior to the effective date of the OTC Policy.

An important change to the Draft OTC Policy is the more explicit recognition that the Energy Agencies, and in particular the CAISO, should have more responsibility for determining the final compliance dates since the retirement of a unit that cannot cost-effectively comply with the Draft OTC Policy will have an impact on electric grid reliability that must be fully evaluated before being implemented.<sup>7</sup> The Draft Policy appropriately places grid reliability decisions in the hands of the CAISO by allowing it to request a compliance date suspension for a facility that it determines is necessary to maintain the reliability of the electric system. Since it is the CAISO's responsibility to maintain electric grid reliability, RRI believes it should have final authority over electric grid reliability decisions. Unfortunately, the Draft OTC Policy stops short of giving that final authority to CAISO. The CEC's and/or the CPUC's disagreement with a CAISO recommendation to suspend a compliance date results in a Board hearing. If the request goes to hearing, the Board remains the final arbiter on the compliance date and can "override" the CAISO recommendation based on "compelling evidence." It is unclear what this standard means, and neither the policy nor the SED give an indication as to what "compelling evidence" must be used by the Board to override a CAISO recommendation to suspend compliance.

RRI also notes several improvements to the SACCWIS process. As noted in RRI's previous comments, if the policy did not threaten grid reliability by continuing to retain firm compliance dates in the OTC Policy, the SACCWIS process would not be necessary. Due to the critical nature of the OTC facilities to grid reliability and their capacity value and the ramping capability necessary for the integration of renewable resources into California's electric grid, it is imperative that the Board be fully aware of each OTC unit's reliability impact to the electric grid, both now and in the future. Requiring the SACCWIS to meet on an annual basis and the requirement for an annual grid reliability study from the CAISO will certainly provide a more timely look at the electric grid topography than that proposed in the previous policy.<sup>8</sup> However, RRI

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<sup>7</sup> RRI has pointed out in previous comments how the firm implementation schedule results in a threat to electric grid reliability.

<sup>8</sup> It should be noted that the Board has no authority over the CAISO to require the annual grid reliability study be performed and provided to the SACCWIS. We recommend that this deficiency be addressed in a Memorandum of Understanding between the SWRCB and CAISO.

believes a change to the OTC Policy will be subject to a host of legal and administrative requirements that could delay or thwart implementation of the date change the CAISO has determined to be necessary to ensure grid reliability. RRI again urges the Board to adopt a policy that does not require amendments every time the SACCWIS determines that a compliance date needs to change from the initial estimate.

Finally, RRI seeks clarification on Table 3, Estimated Annual Impingement, of the SED.<sup>9</sup> The total annual impingement estimates contained in Table 3 of the July 2009 SED for Ormond Beach and Mandalay are consistent with the 2006 monitoring data that RRI has for these plants. The impingement estimates in the March 22, 2009 SED are significantly higher, and cannot be verified by RRI. Therefore, RRI would like clarification regarding "recent studies" identified as the source for the estimates.<sup>10</sup>

### **OTC Policy issues that have not been addressed or resolved**

A number of important issues have not been addressed or resolved in the OTC Policy and/or the SED and these are discussed in detail below:

#### ***(1) CEQA Review***

RRI has previously commented on the July 2009 SED's failure to meet CEQA requirements and notes that those same inadequacies exist as no substantive changes were made to the environmental impacts analysis in the March 22, 2010 SED. The SED fails to provide a reasonable explanation as to why particular policy choices were made and it fails to properly analyze the environmental impacts of those policy choices.<sup>11</sup> Specific failures were discussed at length in RRI's September 30, 2009 comments. In particular, the basis for rejecting a low capacity factor exclusion was arbitrary and capricious and was not backed by reasoned analysis. The Draft OTC policy of the State of New York demonstrates how such an exclusion can be based. In addition, because the SED omits critical information, and because the Draft OTC Policy has been substantially changed, the SED should be revised and recirculated for public comment prior to the adoption of the OTC Policy.

#### ***(2) BTA is Not Feasible for All Facilities***

The OTC Policy continues to establish a BTA without consideration given to cost, which flies in the face of over 30 years of EPA guidance (that both federal and state courts have upheld). Application of a BTA standard "should not impose an *impractical and unbearable economic burden*" on the operation of any plant subject to Section 316(b).<sup>12</sup> A new addition to the OTC Policy indicates that the "costs of compliance, consistent with state and federal law" was considered in developing the policy.<sup>13</sup> Yet, the OTC Policy only affords consideration of cost to the nuclear facilities. No insight is

<sup>9</sup> SED page 34

<sup>10</sup> SED page 32

<sup>11</sup> RRI provided a lengthy discussion on the failures of the SED to comport with CEQA requirements in comments filed September 30, 2009 and that discussion will not be repeated here.

<sup>12</sup> *Voices of the Wetlands*, 137 Cal.App.4<sup>th</sup> 1268, 1350 (2009) (citing 41 Fed. Reg. at 17388. [EPA's initial 1976 regulations], emphasis added.

<sup>13</sup> OTC Policy, Section 1(G)

given as to how the staff considered the cost of compliance other than the "cost reasonably born by industry" rationale and faulty analysis that was previously provided in the SED. No additional analysis or discussion has been included in the March 22, 2009 SED and Appendix G has yet to be made available to parties. As discussed in RRI's previous comments, the SED's discussion of costs is based on a metric (cost per MWh) that is misleading and inappropriate for the gas-fired OTC units. These units do not just provide energy (MWh) to the electric grid, but capacity, flexibility, ramping, and other ancillary services, things that are more practical to measure in cost per MW.

Based on the Tetra Tech study, the SED shows the compliance costs as:<sup>14</sup>

Nuclear (4 units )	12.43 \$/MWh
Combined cycle (4 units)	2.72 \$/MWh
Fossil Steam (45 units)	14.48 \$/MWh

The SED compares these costs to a retail rate of almost 13 c/kWh and implies that it is reasonable to increase retail costs by almost 9%.<sup>15</sup> No definition of reasonableness is given. But retail costs have very little to do with the costs of the OTC power plants, most of which are not owned by electric utilities. The key issue for generating facilities is the net revenue available after fuel costs to cover operations and maintenance expense, capital additions, and a return of and on capital. RRI previously provided the cost to net revenues comparison shown below using Tetra Tech's own numbers for gross revenues, compliance costs, and fuel prices, and using official fuel burns from EIA.

Facility	Net Annual Revenue	Annual Cost of Compliance	Cost as % of Net Revenue
Nuclear Plants	\$4,303,028,414	\$442,700,000	10%
Combined Cycle Plants	\$236,414,062	\$20,700,000	9%
Fossil Steam Plants	\$175,423,833	\$146,300,000	83%

If 9% is a reasonable number per the retail rate analysis, then it would appear that the nuclear plants and combined cycle plants can reasonably bear the cost. Yet these are the very facilities that are given special treatment. The fossil steam plants have no special treatment and comprise the vast majority of the OTC units. Clearly, a compliance cost that amounts to 83% of net revenues after fuel costs for almost 90% of the OTC units covered by the Draft OTC Policy is unreasonable and cannot be borne.

Furthermore, the Board's own consultant, Tetra Tech, concluded that cooling towers cannot feasibly be installed at RRI's Ormond Beach facility.<sup>17</sup> The cost to benefit ratio for installation of cooling towers at our Mandalay facility is 500 to 1. Without

<sup>14</sup> SED page 64

<sup>15</sup> SED page 123

<sup>16</sup> RRI's September 30, 2009 Comments, Section X (D)(1)

<sup>17</sup> The Tetra Tech work commissioned by the Board shows that it is technically and logistically *infeasible* to install cooling towers at three of the OTC facilities, including Ormond Beach.

consideration given to the cost to comply, it is possible that these two facilities will be retired since cooling towers are infeasible and even with the changes made to Track 2, it remains unclear as to whether Track 2 compliance is achievable at either facility. As RRI demonstrated in its earlier comments, the same holds true for the vast majority of the other gas-fired plants.

The analysis performed to consider whether costs are reasonably borne by industry is superficial, arbitrary, and capricious. As an example of a policy that falls within the reasonable range of outcomes, the New York State Department of Environmental Conservation has recognized that cost should be considered when developing a policy to enact Section 316(b) of the CWA.<sup>18</sup> The recently released Draft NY Policy ("NY Policy") includes a cost/revenue determination and differs greatly from that of California's Draft OTC Policy in several other key aspects as shown in the table below. First, the NY Policy establishes closed-cycle cooling as BTA so long as it is technically feasible and the costs are not wholly disproportionate to benefits. Second, it recognizes that low capacity factor units have very little I&E impact when they are not operating and should therefore be exempt from the policy. Third, the NY Policy contains no specific compliance dates; the method of compliance and schedule are determined when the facility's permit is renewed or modified. Additional differences are shown in the table below.

### COMPARISON OF CA OTC POLICY WITH NY OTC POLICY

OTC ISSUE	CA POLICY	NY POLICY
BTA	Closed cycle cooling; technical feasibility not considered	Closed cycle cooling so long as it is technically feasible
Cost Consideration	No consideration of costs except for nuclear units	Cost must not be wholly disproportionate to benefits; Cost vs Revenue determination
Exemptions	No exemptions; applies to all 19 OTC facilities	Facilities with a capacity factor less than 15% over the previous 5 year period so long as reduction in operations results in the minimization of I&E
Compliance Dates	Specific compliance dates for every site	No compliance dates; method of compliance and schedule determined when the NPDES permit is renewed or modified
Calculation Baseline	Baseline I&E impacts established through monitoring, should be based on design flow, but no specifics in the policy	Baseline I&E based upon full load operation 24/7, 365 days per year

<sup>18</sup> [http://www.dec.ny.gov/docs/fish\\_marine\\_pdf/drbrapolicy1.pdf](http://www.dec.ny.gov/docs/fish_marine_pdf/drbrapolicy1.pdf)

Compliance Achievement	Allows each facility to demonstrate compliance but target reduction is the same for all sites except for existing repowered combined cycle units; basis is inability of Regional Water Boards to perform site-specific assessments	Determines BTA and compliance schedule on a case-by-case, site-specific basis; applies to more facilities than in California
Environmental Assessment	No CEQA analysis; a programmatic assessment	NY equivalent of CEQA conducted after the site-specific BTA determination to ensure construction and operation of the selected BTA does not have adverse impacts
Interim Measures	Technological, operational and mitigation interim requirements	No interim measures

The NY board has chosen to craft a policy that provides a reasonable opportunity for *all* of NY's OTC facilities to comply without creating a threat to electric grid reliability. As a result, there is no need to involve NY's energy agencies in compliance decisions through a complex, burdensome process such as the SACCWIS. NY's well-reasoned approach to developing an OTC policy should be considered by the SWRCB.

***(3) Disparate treatment for existing repowered combined cycle facilities and nuclear units***

Once again, the Draft OTC Policy has chosen to treat existing combined cycle units (CCUs) and nuclear facilities in a different manner than all of the other OTC facilities. Previous versions of the Draft Policy afforded these particular facilities less stringent requirements as a result of a wholly disproportionate cost test. The OTC Policy has now abandoned the wholly-disproportionate cost test (as it was deemed to be too burdensome for the Regional Water Boards to perform) and simply gives the existing combined-cycle units two lenient compliance options that are not available to any other facility.<sup>19</sup>

The first compliance option allows the existing combined cycle units to count prior reductions in I&E resulting from the differences in permitted intake flows as a result of the repowering. Since the permitted design flow for any facility is the maximum allowable design flow, the baseline for CCUs is clearly-defined for the entire plant. CCUs are able to take I&E reduction credits due to the repowering (even though repowering is not specifically intended to reduce I&E impacts) relative to this baseline.<sup>20</sup> In contrast, as discussed above, the Track 2 compliance alternative available to the steam units is ambiguous regarding how the baseline takes into account credit for previously installed technologies specifically designed to reduce I&E. Furthermore, CCUs are also

<sup>19</sup> SED page 93

<sup>20</sup> Repowering is not a technology designed to reduced I&E and has been previously discussed in RRI's September 30, 2009 comments.

allowed to count previously mandated mitigation requirements towards entrainment reductions. The second compliance option offered only to the CCUs deem the facility as a whole to be in compliance if the through-screen intake velocity is reduced to 0.5 ft/s and immediate and interim measures are met for the life of the combined cycle units.

The rationale for providing two compliance paths for CCUs that are less stringent than the uniform BTA imposed upon other facilities is that these units are generally very energy efficient, produce lower air emissions, are more efficient in water use and therefore have fewer OTC impacts relative to electricity generated, and represent relatively recent capital expenditures.<sup>21</sup> It is unclear how any of these rationales support a reasonable basis to treat CCUs differently as the goal of the Draft OTC Policy is to reduce I&E impacts and CCUs do not automatically have far lower I&E impacts than the gas-fired steam boilers after repowering. The shortcomings of these measures were discussed at length in RRI's previously filed comments and will not be repeated here.

The nuclear units are once again directed to fund special studies, after which site specific compliance alternatives can be given based on the cost of compliance, the ability to comply with Track 1 or Track 2 considering engineering constraints, space constraints, permitting constraints or public safety considerations and potential environmental impacts, including air impacts. The policy's rationale for nuclear-specific compliance alternatives is that these units contribute more than 4,600 MWs of baseload electricity, they do not admit greenhouse gases during energy generation and the Nuclear Regulatory Commission may extend their lives to 2045. The newly added Section 1(L) of the Draft OTC Policy indicates that energy generation facilities that do not emit greenhouse gases (GHG) will be critical to meeting the mandates of California's 2006 Global Warming Solutions Act. Section 1(L) goes on to state that unlike older era fossil-fueled plants, if the nuclear units undergo modernization as part of re-licensing or cooling structure upgrades, that modernization will not reduce GHG emissions, and in fact, extended downtime during modernization may result in short-term increases in greenhouse gases as other greenhouse gas emitting facilities provide makeup power. However, it is not only the short-term GHG emissions that should be considered. The SED correctly notes that the installation of cooling towers at the fossil-fueled plants will also result in a net increase in carbon dioxide emissions and estimates that if all facilities were to convert to wet cooling towers, the net increase in carbon dioxide emissions would be 14% on an ongoing basis.<sup>22</sup> If GHG is to be a justification for different treatment, then the SED must discuss the fact that the existence of certain gas-fired steam boiler facilities, such as RRI's units, allows for greater production of renewable energy from intermittent sources like solar and wind. Such renewables require flexible back-up capacity in order to meet system reliability, and California cannot meet its renewable targets without such capacity. RRI does not believe the potential environmental impacts of the Draft OTC Policy have been fully analyzed and GHG emissions should not be the basis for which nuclear units are afforded more lenient compliance alternatives.

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<sup>21</sup> SED page 93

<sup>22</sup> SED page 110



If the objective of the OTC Policy is to mitigate the impact of once-through cooling on California's coastal waters, as it should be, the disparate treatment afforded the combined-cycle and nuclear facilities makes no sense as they operate more hours in a year than the steam units. The simple fact is that there is a direct correlation between the volume of water used in a year by an OTC facility and the amount of impingement and entrainment that occurs in that year. If the steam units are not running, they are not impinging and entraining fish, eggs and larvae. RRI believes any plant should have the ability to demonstrate that its operation is not having an adverse environmental impact on the state's coastal waters, but there is no rational reason to impose more stringent standards on the units that cause the least impact, and provide more lenient standards for those that cause the most impact.

***(4) Some form of a Wholly Disproportionate test should exist for all facilities***

The previous policy only afforded a wholly disproportionate test to CCUs and nuclear facilities and RRI disagreed with the limitation to those facilities and recommended that the OTC Policy provide the opportunity for all facilities to demonstrate that the cost of compliance is significantly above and/or wholly disproportionate to the benefits of compliance consistent with federal precedent as upheld by the courts. The legal basis for this recommendation was discussed at length in RRI's September 30, 2009 comments. Rather than accept RRI's recommendation, the Draft OTC Policy has been revised to extend cost consideration to the nuclear units only. The SED reasons that a wholly disproportionate cost test will introduce a burden on the Regional Water Boards and has the inherent problem of trying to monetize the value of marine life.<sup>23</sup> However, there are other ways to consider cost than requiring the Regional Water Boards to assess the value of marine life based on the value of commercial or recreational fishery species that the SED claims comprise only 2% of the impinged and entrained organisms. The NY Policy discussed above gives presumptive weight to the value of environmental benefits and places the burden on the permit applicant to demonstrate that costs are unreasonable. In the NY Policy, the cost demonstration for existing facilities is an assessment of the proportional cost of the mitigation alternative compared to total revenues. The effectiveness of the mitigation technology is determined by the proportional change in the number of vulnerable organisms compared to the baseline I&E when the facility is operating a full flow and full capacity.<sup>24</sup> RRI submits that a similar approach should be considered by the Board as a way to reduce the burden on Regional Boards to make marine life assessments, yet consider the cost of compliance consistent with federal and state precedence.

***(5) The capacity value of the steam units and ramping capability required for integration of intermittent renewable resources is ignored***

The steam units at the Ormond Beach and Mandalay Generating Stations provide almost 2000 MW of Net Qualifying Capacity supporting electric resource adequacy in

<sup>23</sup> SED page 93

<sup>24</sup> CP-nn/Best Technology Available (BTA) for Cooling Water Intake Structures, New York Department of Environmental Conservation, March 4, 2010, Appendix A, pages 2-3.

California, and there is little other electric generating capacity in Ventura and Santa Barbara Counties. Further, as noted in RRI's previously filed comments, the CAISO has emphasized that existing thermal generation is required to integrate intermittent renewable resources into California's electric grid. In its 2007 report on integrating 20% renewable generation into the electric system, the CAISO stated that "the good news is that this study shows the feasibility of maintaining reliable electric service with the expected level of intermittent renewable resources associated with the current 20 percent Renewable Portfolio Standard (RPS), provided that existing generation remains available to provide back-up generation and essential reliability services."<sup>25</sup> The importance of existing steam generation needed for management of system reliability may become more important with a recent gubernatorial directive to increase California's RPS to 33% by 2020.<sup>26</sup> At the very least, the ramifications of such an increase in renewable capacity on electrical system needs should be evaluated prior to implementation of an OTC policy that may very well result in the shutdown of valuable capacity resources.

In conclusion, while RRI believes that some improvements have been made to the Draft OTC Policy, it remains concerned that the Draft OTC Policy fails to provide viable compliance alternatives for most, if not, all of the gas-fired steam boiler units. If these facilities have no means of compliance, the outcome will be for them to shut down. RRI is very concerned that the impacts on electric grid reliability of this outcome is not being fully recognized by SWRCB Staff, as a new addition to the economic analysis section of the SED quotes the Jones and Stokes' 2008 Report's conclusion that,

"given sufficient time to react, the electric industry could likely tolerate and compensate for mass OTC plant retirement at relatively minor costs to the ratepayer. The report concludes that under all but the most extreme scenarios, more than enough power plants are expected to be operating in 2015 to more than compensate for any or all OTC plant retirements, with a 28% reserve margin of supply over demand in the Western half of North America. The key will be ensuring the transmission system is capable of delivering power from those plants to the loads presently served by OTC plants. The Report's projected costs for these transmission upgrades range from about \$314 million up to \$1 billion, with a significant part of that occurring outside of California. Many transmission upgrades are already on the drawing board, as they are necessary for the continuing evolution of California's energy system and would occur even in the absence of the OTC policy requirements."<sup>27</sup>

RRI cautions the Board against crafting a policy that is based in part on a single study's conclusion that all of the OTC facilities can retire by 2015 with minimal cost to California consumers and minimal impact to the reliability of the electric grid. In contrast to the conclusion drawn by Jones and Stokes, the CAISO has estimated that the

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<sup>25</sup> "Integration of Renewable Resources: Transmission and operating issues and recommendations for integrating renewable resources on the California ISO-controlled Grid", CAISO, November 2007, page i.

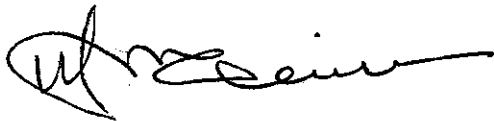
<sup>26</sup> Executive Order S-21-09 signed by Governor Arnold Schwarzenegger on September 15, 2009.

<sup>27</sup> SED page 124

cost of transmission upgrades for the L.A. Basin alone may be \$4.45 billion or more,<sup>28</sup> and SCE has estimated that replacing once through cooled capacity would likely take "decades."<sup>29</sup> Clearly, more flexibility is required before the Draft OTC Policy is adopted.

For all of the reasons discussed above, RRI urges the Board to further modify the Draft OTC Policy to address the issues raised in these comments before adoption. At a minimum, to avoid future interpretation and implementation issues, RRI requests the SWRCB remove the Track 2 monitoring ambiguity from the Draft OTC Policy as shown in the attached mark-up.

Sincerely,



Fred McGuire  
Vice President  
Engineering, Environmental & Safety

Attachments: RRI Mark-up of Draft OTC Policy  
Track 2 Annual Monitoring and Reference Annual Baseline Examples

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<sup>28</sup> See "Impacts on Electric System Reliability from Restrictions on Once-Through Cooling in California", page 21, available at <http://www.caiso.com/208b/208b8ac831b00.pdf>

<sup>29</sup> See comments by SCE Executive Vice President Pedro Pizarro at page 45 of the transcript for the CBC's July 28, 2009 workshop on once through cooling, available at: [http://www.energy.ca.gov/2009\\_energypolicy/documents/2009-07-28\\_workshop/2009-07-28\\_TRANSCRIPT.PDF](http://www.energy.ca.gov/2009_energypolicy/documents/2009-07-28_workshop/2009-07-28_TRANSCRIPT.PDF)

**RRI MARK-UP OF DRAFT OTC POLICY  
TO REMOVE TRACK 2 AMBIGUITY**

**EDITS ARE SHOWN IN RED WITH A DOUBLE UNDERLINE: RRI ADDITION**

**STATEWIDE WATER QUALITY CONTROL POLICY ON THE USE OF COASTAL  
AND ESTUARINE WATERS FOR POWER PLANT COOLING**

**2. Requirements for Existing Power Plants\***

**A. Compliance Alternatives.** An owner or operator of an *existing power plant\** must comply with either Track 1 or Track 2, below.

(1) Track 1. An owner or operator of an *existing power plant\** must reduce *intake flow rate\** at each unit, at a minimum, to a level commensurate with that which can be attained by a *closed-cycle wet cooling system\**. A minimum 93 percent reduction in *intake flow rate\** for each unit is required for Track 1 compliance, compared to the unit's design *intake flow rate\**. The through-screen intake velocity must not exceed 0.5 foot per second. The installation of closed cycle dry cooling systems meets the intent and minimum reduction requirements of this compliance alternative.

(2) Track 2. The owner or operator of an *existing power plant\** must reduce impingement mortality and entrainment of marine life for the facility, as a whole, to a comparable level to that which would be achieved under Track 1, using operational or structural controls, or both.

(a) Compliance for impingement mortality shall be determined either:

(1) For plants relying solely on reductions in velocity, by monthly verification of through-screen intake velocity at each plant intake, not to exceed 0.5 foot per second, or

(2) By monitoring required in Section 4.A, below. For measured reductions determined by monitoring, the owner or operator must reduce impingement mortality to a comparable level to that which would be achieved under Track 1. A "comparable level" is a level that achieves at least 90 percent of the annual reduction in impingement mortality required under Track 1.

(b) Compliance for entrainment shall be determined either:

(1) For plants relying solely on reductions in flow, by recording and reporting reductions in terms of monthly flow, in which case a minimum of 93% reduction in terms of design flow must be met, or

(2) For plants relying in whole or in part on other control technologies (e.g., including but not limited to screens or re-location of intake structures), by measured reductions in entrainment determined by monitoring required in Section 4.B, below. The owner or operator must

**RRI MARK-UP OF DRAFT OTC POLICY  
TO REMOVE TRACK 2 AMBIGUITY**

**EDITS ARE SHOWN IN RED WITH A DOUBLE UNDERLINE: RRI ADDITION**

reduce entrainment to a comparable level to that which would be achieved under Track 1. A "comparable level" is a level that achieves at least 90 percent of the annual reduction in entrainment required under Track 1. If screens are employed to reduce entrainment, compliance shall be determined based on ichthyoplankton, and on the crustacean phyllosoma and megalops larvae, and squid paralarvae fractions of meroplankton.

- (c) Technology-based improvements that are specifically designed to reduce impingement mortality and/or entrainment and were implemented prior to [the effective date of the Policy] may be counted towards meeting Track 2 requirements.

**4. Track 2 Monitoring Provisions**

**A. Impingement Impacts:** The following impingement studies are required to comply with Section 2(A)(2)(a)(2):

- (1) A baseline impingement study shall be performed, taking into account technology improvements recognized in 2(A)(2)(c), unless the discharger demonstrates, to the Regional Water Board's satisfaction, that prior studies accurately reflect current impacts. Baseline impingement shall be measured on-site and shall include sampling for all species impinged. The impingement study shall be designed to accurately characterize the species currently impinged and their seasonal abundance to the satisfaction of the Regional Water Board.

- (a) The study period shall be at least 12 consecutive months.
- (b) Impingement shall be measured during different seasons when the cooling system is in operation and over 24-hour sampling periods.
- (c) When applicable, impingement shall be sampled under differing representative operational conditions (e.g., differing levels of power production, heat treatments, etc.).
- (d) The study shall not result in any additional mortality above typical operating conditions.

- (2) After the Track 2 controls are implemented, to confirm the level of impingement controls, another impingement study, consistent with section 4.A(1)(a) to (d), above, shall be performed and reported to the Regional Water Board.

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- (3) The need for additional impingement studies shall be evaluated at the end of each permit period. Impingement studies shall be required when changing operational or environmental conditions indicate that new studies are needed, at the discretion of the Regional Water Board.

**B. Entrainment Impacts: The following entrainment studies are required to comply with Section 2(A)(2)(b)(2):**

- (1) A baseline entrainment study shall be performed taking into account technology improvements recognized in 2(A)2(c), unless the discharger demonstrates, to the Regional Water Board's satisfaction, that prior studies accurately reflect current impacts. Prior studies that may have used a mesh size of 333 or 335 microns for sampling are acceptable for compliance with the review and approval of the Regional Water Board. If the Regional Water Board determines that a new baseline entrainment study shall be performed to determine larval composition and abundance in the source water, representative of water that is being entrained, then samples must be collected using a mesh size no larger than 335 microns. Additional samples shall also be collected using a 200 micron mesh to provide a broader characterization of other meroplankton entrained. The source water shall be determined based on oceanographic conditions reasonably expected after Track 2 controls are implemented. Baseline entrainment sampling shall provide an unbiased estimate of larvae entrained at the intake prior to the implementation of Track 2 controls.

(a) Entrainment impacts shall be based on sampling for all *ichthyoplankton*\* and invertebrate *meroplankton*\* species. Individuals collected shall be identified to the lowest taxonomical level practicable. When practicable, genetic identification through molecular biological techniques may be used to assist in compliance with this requirement. Samples shall be preserved and archived such that genetic identification is possible at a later date.

(b) The study period shall be at least 12 consecutive months, and shall occur during different seasons, including periods of peak use when the cooling system is in operation (such as the summer months when energy is in high demand). Sampling shall be designed to account for variation in oceanographic conditions and larval abundance and behavior such that abundance estimates are reasonably accurate.

- (2) After the Track 2 controls are implemented, to confirm the level of entrainment controls, another entrainment study (with a study design to the Regional Water Board's satisfaction, with samples collected using a mesh size no larger than 335 microns, and with additional samples also collected using a 200 micron mesh) shall be performed and reported to the Regional Water Board.

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- (3) The need for additional entrainment studies shall be evaluated at the end of each permit period. Entrainment studies shall be required when changing operational or environmental conditions indicate that new studies are needed, at the discretion of the Regional Water Board.

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**Track 2 Annual Monitoring and Reference Annual Baseline Examples**  
(Numbers are for Illustrative Purposes Only)

The examples shown below are provided to demonstrate the importance of the changes RRI is recommending that the Board make to the Draft OTC Policy to clear up ambiguities between the policy language and the intent expressed in the SED. The first example will demonstrate the importance of inserting the word "annual" into the Track 2 Requirements, Sections 2(A)(2)(a)(2) and 2(A)(2)(b)(2) and the second example will show why the reference baseline against which Track 2 compliance is measured must include the technology-based I&E improvements implemented prior to the date of the policy (Track 2 Monitoring Provisions in Sections 4(A)(1) and 4(B)(1)) as discussed in RRI's comment letter.)

**Example 1: Track 2 Compliance Should be Done on an Annual Basis, Not a Monthly Basis**

The example shown below demonstrates why it is critical that the baseline period be annual instead of monthly. Assume that during the baseline monitoring the marine impact is 10 in Month 1 and 90 in Month 2 for a total of 100 based on a flow that is 25% of design flow in both months. The baseline must be adjusted to reflect the design flow to yield 40 and 360, for a total of 400.<sup>1</sup> Track 1 compliance (93% reduction) gives a compliance impact of 3 and 25 for Months 1 and 2, respectively. Track 2 compliance (90% of 93% reduction) would have impacts of no more than 6 and 59 for a total of 65.

	<b>Month 1</b>	<b>Month 2</b>	<b>Total</b>
Baseline impact at 25% flow	10	90	100
Baseline impact at design flow	40	360	400
Track 1 reduction (93% reduction)	37	335	372
Track 2 reduction (90% of 93%)	34	301	335
Maximum impact for Track 1 compliance	3	25	28
Maximum impact for Track 2 compliance <sup>1</sup>	6	59	65

<sup>1</sup> The adjusted reference baseline should also include the impacts of technologies previously installed for the specific purpose of reducing impingement and entrainment impacts prior to the effective date of the OTC Policy. For simplicity, this example does not include that adjustment, but its importance will be demonstrated in Example 2.



Now assume that this facility will meet Track 2 by implementing a technology that reduces actual impact by 50% and by reducing operations and flow by 50% from the baseline actual operations, but that the flow of organisms changed between months 1 and 2:

	Month 1	Month 2	Total
Pre-compliance impacts	80	20	100
Technology reduction	40	10	50
Flow reductions	20	5	25
Post-compliance impact	20	5	25

This achieves an impact that is lower than that required under Track 1 and under Track 2 as measured on annual basis. However, if Track 2 is interpreted to require compliance on a monthly basis, this facility would have not been compliant in Month 1 (marine impact of 20 compared to monthly maximum of 6). This example demonstrates that small changes in the time when marine organisms are present renders measuring Track 2 compliance on a monthly basis to be unreasonable – one can achieve reductions over the year that are greater than required by Track 1 and yet not meet a monthly Track 2 compliance requirement. Therefore, compliance under Track 2 needs to be measured on an annual basis.

**Example 2: Establishment of the Reference Annual Baseline for Track 2 Monitoring**

As discussed in RRI's comment letter, it is clear that the Track 2 reductions are to be taken from design flow, as that is what Track 1 is measured against. In addition, the Track 2 requirements allow the technologies designed to reduce impingement and entrainment impacts implemented prior to the effective date of the OTC Policy to be credited. Therefore, the equation to determine the Track 2 adjusted reference annual baseline should be as follows:

$$\text{Track 2 Compliance Reference Annual Baseline} = [\text{annual baseline impacts due to actual flow measured prior to the implementation of Track 2 technology and/or operational controls}] + [\text{annual design flow adjustment}] + [\text{adjustment for technologies previously installed to reduce I\&M impacts}]$$

The table below provides an example of this calculation and the importance of adjusting the baseline to account for the existing technologies. Assume that prior to implementation of Track 2 compliance technologies and/or operational controls, a facility's annual monitoring yields a marine impact over a 12-month period, when operating at 25% of annual design flow, of 1,000. The first adjustment made for design flow results in an annual reference baseline of 4,000. Now assume that the facility's deep

offshore intake has a velocity cap and the facility also has a fish return system in place prior to the effective date of the OTC Policy. These technologies combined yield an I&E reduction impact of 20%. This second adjustment yields a reference annual baseline for this facility of 5,000.

<b>Reference Annual Baseline Determination</b>	<b>Annual Marine Impact with Credit for Existing Technologies</b>	<b>Marine Impact w/o Credit for Existing Technologies</b>
Baseline impact at 25% of Design Flow	1,000	1,000
Baseline impact at design Flow	4,000	4,000
Baseline Adjustment for Existing Technology Improvements	5,000	0
Track 2 Reduction (90% of 93%)	4,185	3,348
Maximum impact for Track 2 compliance	815	652

As shown in the table above, this facility would have to reduce the marine impact on an annual basis to 815 to meet the Track 2 requirements if credit is given for the technologies that existed prior to the effective date of the OTC Policy. If the existing technology adjustment is not made, then a much more restrictive requirement results with Track 2 compliance now being 652. It is very important that the language addition RRI has suggested for Track 2 monitoring in Sections 4(A)(1) and 4(B)(1) be accepted by the Board to remove the baseline monitoring accounting ambiguity from the Draft OTC Policy so that the proper reference annual baseline is established for Track 2 compliance.