



NATURAL RESOURCES DEFENSE COUNCIL

April 6, 2012

Joanna Jensen  
State Water Resources Control Board  
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P.O. Box 100  
Sacramento, CA 95814  
Sent via email to: [jjensen@waterboards.ca.gov](mailto:jjensen@waterboards.ca.gov)

**RE: Comments on Scope of Proposed Amendments, Regarding Desalination Facilities and Brine Disposal, to the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Enclosed Bays and Estuaries of California.**

Dear Ms. Jensen:

On behalf of the Natural Resources Defense Council (NRDC), and our 250,000 California members and activists, we offer the following comments on the scope of the substitute environmental document (SED) for the amendment to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the Water Quality Control Plan for Enclosed Bays and Estuaries of California (Enclosed Bays and Estuaries Plan) regarding intakes and discharges from desalination facilities and the disposal of brine.

The State Water Resources Control Board (State Board) effort to create a statewide policy on desalination is very timely and important. Planning for, siting, regulation and oversight of desalination plants is an emerging coastal management issue of significant concern. The negative environmental impacts of coastal desalination plants are potentially severe, especially when co-located with coastal power plants utilizing open ocean intakes that entrain and impinge vast numbers of fish and larvae. Brine disposal and greenhouse gas emissions present additional environmental impacts that require careful assessment. In some situations, the environmental impacts of desalination plants may be unacceptable and desalination should not be pursued. NRDC does not oppose all applications of desalination technology, but this expensive and potentially damaging tool should be evaluated in the context of available and cost effective alternative water supply tools, including conservation and water use efficiency, water recycling, urban stormwater capture and improved groundwater management. We believe that these tools will frequently prove to be preferable. Nevertheless, NRDC supports the development of a statewide desalination policy -- based on the best scientific information available -- that provides a framework against which individual projects will be considered.

In development of this statewide policy, we respectfully urge the State Board to thoroughly analyze all issues related to the potential negative environmental impacts associated with desalination intakes and brine disposal. We also encourage State Board staff to coordinate closely with other state agencies --including the California Coastal Commission, Ocean Protection Council (OPC), State Lands Commission, State Resources Agency, and Department of Water Resources -- to ensure that

the proposed amendments do not undermine or delay implementation of the other efforts to protect marine life and more effectively manage valuable coastal and ocean resources.

Additionally, we believe that it would be useful to establish uniform statewide criteria for evaluating the purpose and need statements of CEQA documents for proposed seawater desalination plants. Particularly for projects intended for public water supply, a plant may serve any or all of the following functions: standby or emergency capacity; year-round supply; peak season supply; or peak day supply. This functional distribution should be made clear in public submittals, along with the current or projected capacity and supply in each of these categories that will be augmented or displaced in the service area of the project. Environmental impacts may turn on the relative proportions of these functions. And because each of these components has a different set of costs and benefits attached to it, the plant's cost allocation mechanism, the cost recovery mechanism, the intended beneficiaries, and the beneficiaries' relative financial obligations should also be clearly identified. Just as state regulators would not approve construction of an electric generating plant without knowing whether the plant was a peaking plant or a baseload plant, so should the operational characteristics and the distribution of financial responsibility for new desalination projects be made available for public assessment.

With regard to the scope of the SED, we specifically ask that the State Board:

- Ensure coordination and consideration of the multiple agencies and regulatory frameworks relevant to desalination in preparation of this guidance.
  - Analyze the energy demand, indirect greenhouse gas emissions, and cumulative marine ecosystem impacts of seawater desalination.
  - Require desalination facilities that intend to co-locate with once-through cooled power plants to perform a full and independent environmental review, and ensure that co-location does not undermine, delay or substitute for the implementation of the State Water Board's Once-Through Cooling policy.
  - Require desalination projects to be sited based on the application of the best geospatial data to avoid conflicts with important ecological areas and other ocean and coastal uses.
  - Include a discussion of both numeric and narrative water quality objectives for salinity.
  - Ensure that water supply alternatives to desalination projects are fully evaluated, to determine the most cost-effective, energy effective and environmentally preferable solution.
- 1. To ensure efficient, effective oversight of desalination, it is essential that the State Board coordinate with relevant agencies and regulatory processes and support comprehensive prioritization of water supply options.**

Multiple state agencies, including the California Coastal Commission and the Ocean Protection Council, are dedicating attention to examination of desalination issues. The Ocean Protection Council has identified as one of its priority goals to: “[e]nsure that existing and emerging uses of California’s coast and ocean are planned and managed in a manner that balances their social and economic benefits with the long-term protection and sustainability of the state’s marine and coastal resources.” Desalination is explicitly named as one of the three emerging uses that will be the focus of this holistic management-improvement approach.<sup>1</sup>

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<sup>1</sup> California Ocean Protection Council Five Year Strategic Plan, 2012-2017, [http://www.opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20120217/OPC\\_StrategicPlan\\_2011%207%20February\\_MASTER\\_clean.pdf](http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20120217/OPC_StrategicPlan_2011%207%20February_MASTER_clean.pdf)

California's Ocean Protection Council and state agency partners have made significant investments in marine and coastal geospatial data collection, including seafloor maps, shoreline maps, and ecological and socio-economic data to support improved management of marine resources and human industrial activity. The State Board should work closely with the Ocean Protection Council and other relevant state agencies in development of this policy to ensure that any proposed desalination projects are sited based on application of the best available scientific and geospatial information and to avoid conflicts with important ecological areas and other ocean and coastal uses.

As part of this interagency coordination process, we recommend the development of a comprehensive prioritization of water supply options, with instruction that water management plans first pursue and exhaust all supply options that have fewer negative environmental impacts, less energy demand and indirect greenhouse gas emission before considering seawater desalination. The State Board and relevant agencies' guidance should be consistent with a directive to water districts to pursue water conservation and water use efficiency to the maximum extent practicable, before desalination. For most water districts, the least expensive and most environmentally beneficial water supply alternative continues to be water efficiency and conservation. In many cases, water recycling presents a cost-effective, multiple-benefit water supply alternative that will be preferable to desalination.

Finally, interagency coordination is essential to ensure that regulatory reviews occur in an ordered fashion that minimizes duplication of efforts, and proceeds from most comprehensive review first, to narrow review last. For example, by allowing OPC to first provide a statewide geospatial assessment of areas most likely to be suitable for desalination, followed by the broad CEQA review performed by the Coastal Commission, then ending with narrow permitting review by the State Board and SLC, agencies could improve the efficiency and effectiveness of their review. Such coordination is beneficial to the health of our coastal and marine resources, to existing users of these resources, and to project proponents.

**2. To comply with CEQA, the SED must include an analysis of the energy demand, indirect greenhouse gas emissions, and cumulative marine impacts of marine desalination.**

The California Environmental Quality Act (CEQA) requires that an agency evaluate the cumulative environmental impacts when the incremental impacts are considerable.<sup>2</sup> To comply with CEQA, the SED should include a robust analysis of the cumulative impacts of seawater desalination, including energy demand, indirect greenhouse gas emissions, and the intake systems and brine disposal.

Seawater desalination is one of most energy intensive water supply options available.<sup>3</sup> Studies indicate that extensive development of seawater desalination could lead to "greater dependence on fossil fuels, an increase in greenhouse gas emissions, and a worsening of climate change."<sup>4</sup>

California's current water management system is extremely energy-intensive, accounting for nearly 20% of the state's cumulative energy demand.<sup>5</sup> In its 2008 Climate Change Scoping Plan document,

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<sup>2</sup> 14 CAL. RES. CODE § 15130(a).

<sup>3</sup> See CAL. DEP'T OF WATER RES., WATER DESALINATION FINDINGS AND RECOMMENDATIONS 4 (2003), available at [http://www.water.ca.gov/desalination/pud\\_pdf/Findings-Recommendations.pdf](http://www.water.ca.gov/desalination/pud_pdf/Findings-Recommendations.pdf); see also BARRY NELSON, ET AL., NATURAL RES. DEF. COUNCIL, IN HOT WATER: WATER MANAGEMENT STRATEGIES TO WEATHER THE EFFECTS OF GLOBAL WARMING 19, 35 (2007), available at <http://www.nrdc.org/globalwarming/hotwater/contents.asp>.

<sup>4</sup> COOLEY ET AL., *supra* note **Error! Bookmark not defined.**, at 7.

the California Air Resources Board noted that one way for the state to achieve GHG emissions reductions is by replacing existing water supply and treatment processes with more energy efficient alternatives.<sup>6</sup> Indeed, to effectively reduce GHG emissions, the state should seek water supply and treatment process that are energy efficient, not more energy intensive, than those currently in place. For this reason it is critical that the SED effectively analyze the energy demand and the direct and indirect GHG emissions from desalination plants.

Desalination plants using open seawater intakes pose the same serious threat to marine ecosystems as once-through cooled power plants. As the State Water Board has acknowledged in its Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Policy),<sup>7</sup> open seawater intakes can kill and injure large organisms such as fish, marine mammals, and turtles when they become trapped against a facility's intake screen (impingement), and can kill ecologically important organisms, such as plankton and larvae when they are drawn through the intake screens (entrainment). The State Board determined that open ocean intakes from coastal power plants cause, "over the course of the year, billions of eggs and larvae [to be] effectively removed from coastal waters, while millions of adult fish are lost due to impingement."<sup>8</sup>

For these reasons, the cumulative impacts of impingement and entrainment from desalination facilities must be considered in the context of the many threats to our marine ecosystem such as reductions in marine fish populations, water quality degradation, and ocean acidification.

### **3. A statewide desalination and brine disposal policy should not undermine or delay implementation of the Once-Through Cooling Policy.**

NRDC is particularly concerned about desalination plants that plan to co-locate or use the same open-ocean intake technology as coastal power plants. The majority of the proposed desalination plants in California plan to use open seawater intakes to withdraw water, and many of these propose to co-locate with existing power plants in order to share the intake pipes.<sup>9</sup> The State Board determined that the intake systems of once-through cooled power plants are a "considerable and chronic stressor to the State's coastal ecosystems by reducing important fisheries and contributing to the overall degradation of the State's marine and estuarine environment."<sup>10</sup> If desalination facilities are allowed to co-locate and use the seawater intake systems of the OTC plants, they will perpetuate the very harms the State Board worked so hard to protect against through the OTC Policy. Allowing the proposed desalination plants to co-locate with power plants that use once-through cooling may prolong the existence of these old, inefficient, GHG-emitting power plants; an additional use of the ocean water in no way reduces the impacts of impingement and entrainment from open water intake.

The SED should provide clear guidance that any desalination facilities that co-locate with once-through cooled power plants must be required to perform a full and independent environmental

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<sup>5</sup> See CAL. ENERGY COMM'N, INTEGRATED ENERGY POLICY REPORT 139 (2005), available at <http://www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF>.

<sup>6</sup> See CAL. AIR RES. BD., CLIMATE CHANGE SCOPING PLAN APPENDICES, VOLUME I C-134 (2008), available at [http://www.arb.ca.gov/cc/scopingplan/document/appendices\\_volume1.pdf](http://www.arb.ca.gov/cc/scopingplan/document/appendices_volume1.pdf).

<sup>7</sup> See STATE WATER RES. CONTROL BD. & CAL. ENVTL. PROT. AGENCY, WATER QUALITY CONTROL POLICY ON THE USE OF COASTAL AND ESTUARINE WATERS FOR POWER PLANT COOLING FINAL SUBSTITUTE ENVIRONMENTAL DOCUMENT 1 (2010), available at [http://www.swrcb.ca.gov/water\\_issues/programs/ocean/cwa316/docs/cwa316may2010/sed\\_final.pdf](http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/docs/cwa316may2010/sed_final.pdf). [Hereinafter "OTC Policy"].

<sup>8</sup> *Id.* at 1.

<sup>9</sup> See HEATHER COOLEY, PETER H. GLEICK, AND GARY WOLFF, DESALINATION WITH A GRAIN OF SALT, A CALIFORNIA PERSPECTIVE 31 (2006) available at [www.pacinst.org/reports/desalination/desalination\\_report.pdf](http://www.pacinst.org/reports/desalination/desalination_report.pdf);

<sup>10</sup> OTC Policy, *supra* n. 9 at 1.

review process under CEQA, the Clean Water Act, and other relevant laws. The SED should specifically make clear that desalination facilities must be consistent with Clean Water Act section 316(b) and California Water Code section 13142.5(b). No exemptions should be allowed for co-located facilities to avoid impingement and entrainment controls.

**4. A statewide desalination and brine disposal policy should require that that desalination projects be sited based on application of the best geospatial data to avoid conflicts with important ecological areas and other ocean and coastal uses.**

As discussed above, desalination has the potential for significant negative environmental impacts and that, in many cases, may not be the best choice to meet California's water needs. Especially where co-located with coastal power plants utilizing open ocean intakes that entrain and impinge vast numbers of fish and larvae, the negative environmental impacts of coastal desalination plants are severe. Brine disposal and greenhouse gas emissions present additional environmental impacts.

Due to the numerous negative environmental impacts, desalination has the potential to undermine other state efforts to protect marine life, including the new marine protected areas created through the implementation of the Marine Life Protection Act as well as the State Board's OTC Policy.

To protect important marine ecosystems, it is critical that desalination intakes and outfalls are sited carefully by applying the best geospatial data available including data collected and organized by the Ocean Protection Council. Requiring that desalination facilities use the best geospatial data available in designating a site location will also help to ensure compliance with California Water Code section 13145(b), which requires that desalination facilities be designed and sited to "minimize the intake and mortality of all marine life."<sup>11</sup>

**5. The SED should evaluate both numeric and narrative water quality objectives for salinity.**

The informational document on the proposed amendments to the Ocean Plan and the Enclosed Bays and Estuaries plan states that the SED will include "a narrative water quality objective for salinity to ensure that brine discharges from desalination facilities and other sources do not cause adverse impacts."<sup>12</sup> There is no discussion of numeric standards in the informational document.

Numeric standards are superior to narrative standards in most instances because they provide a clear way to measure enforcement and ensure compliance of water quality objectives. We recommend that numeric water quality standards also be considered for the desalination policy, and to the extent that the State Board chooses to institute narrative standards for salinity instead of numeric standards, we ask that the SED include a detailed rationale for this choice.

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NRDC supports the consideration of non-traditional water supply alternatives, but all projects, including desalination, must be considered and evaluated light of the best scientific data and with full

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<sup>11</sup> CAL. WATER CODE § 13142.5(b).

<sup>12</sup> CAL. STATE WATER RES. CONTROL BD., INFORMATIONAL DOCUMENT DESALINATION FACILITIES AND BRINE DISPOSAL 1 (March 2012) available at [www.waterboards.ca.gov/water\\_issues/programs/ocean/desalination/docs/ScopingDesalMarch2012.pdf](http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/ScopingDesalMarch2012.pdf)

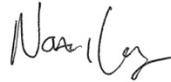
and complete environmental review. We support the development of a statewide desalination policy that provides a framework against which individual projects may be evaluated and look forward to working with you.

Thank you for your consideration of our comments.

Sincerely,



Leila Monroe  
Attorney, Ocean Initiative



Noah Long  
Attorney, Energy Program

Cc: Charlie Hoppin, Chair, State Water Resources Control Board  
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