

**California Ocean Science Trust****WORKPLAN****Once Through Cooling Mitigation Scientific Guidance****Background**

California's Once-Through Cooling Policy (Policy) was adopted by the State Water Resources Control Board (SWRCB) in 2010 and amended in 2011, 2013, and 2016<sup>1</sup>. The Policy establishes technology-based standards to implement federal Clean Water Act section 316(b) and reduce the harmful effects associated with cooling water intake structures on marine and estuarine life. The Policy requires power plants that are not in compliance by October 2015 to either perform or pay for mitigation activities to account for the negative impacts between October 2015 and the date of the plants' full compliance with the Policy (interim mitigation). Section 3(e) of the Policy states, "It is the preference of the State Water Board that funding is provided to the California Coastal Conservancy, working with the California Ocean Protection Council (OPC), for mitigation projects directed toward increases in marine life associated with the State's Marine Protected Areas in the geographic region of the facility."

A "mitigation project" under the OTC Policy is defined as a project: "to restore marine life lost through impingement mortality and entrainment. Restoration of marine life may include projects to restore and/or enhance coastal marine or estuarine habitat, and may also include protection of marine life in existing marine habitat, for example through the funding of implementation and/or management of Marine Protected Areas." As OPC considers how to design a funding program to disburse OTC funds they seek the scientific guidance of the OPC Science Advisory Team (OPC-SAT) to scientifically define the spatial extent of OTC impacts and to help understand which common open coast mitigation strategies are supported by scientific evidence to likely achieve the goal of increasing marine life as defined in the Policy.

**Introduction**

In order to offset the negative impacts of OTC on coastal environments, California's MPAs must be ecologically functioning as a network, which requires effective MPA management. An effective MPA network could fully or partially mitigate for the population and habitat losses caused by OTC impacts. Research supported by OTC fees will be necessary in order to establish and quantify the ecological benefits of the MPA network. An understanding of the scale and scope of the benefits provided by the MPA network to mitigate OTC impacts is needed.

Although the specifics of the scope for the OPC SAT working group will be defined as a part of Task 1, there are two main areas of scientific guidance that are currently needed by OPC:

1. Per the OTC policy mitigation funds must be spent on projects that are within the "geographic region of the facility." However, the policy does not define what the geographical range is. The OPC-SAT seeks a discrete definition of "geographic region" specific to the different types and locations of intakes of the ten power plants that are part of the program. Based on our understanding of currents, ecosystems, populations connectivity, larvae mobility, intake type, intake location, etc. what is the area of impact for each of the power plants?
2. The OTC policy also states that mitigation funding should be spent on projects that lead to "increases in marine life associated with the State's Marine Protected Areas." The OPC-SAT will provide guidance on whether or not mitigation projects can or how they link to the functionality of an MPA.

Taking an ecological first principles approach, the OPC-SAT will provide guidance through the use of case studies to explore the efficacy of different approaches to mitigation and linkages to the MPA network. Although the working group will refine the ecological principles they wish to address, the conceptual framework selected for analyses, and the appropriate case studies, we provide the following examples using the proposed ecological principles for ecosystems in marine management from Foley et al. 2010. Presenting this strawman is not intended to limit future discussions about alternative frameworks but provides a basis for initial scoping and process design to launch this project.

a. Maintain or restore native diversity-

*Is kelp restoration a viable option at a scale that will be impactful to the long term trajectory of important commercial and recreational and other marine species? What is the scientific logic (ecological first principles argument) that connects kelp restoration with the impacts of OTC? Is removing or adding individuals to populations a viable option to restore native diversity at a scale that will offset the affects of OTC?*

b. Maintain or restore habitat diversity and heterogeneity-

*Do artificial reefs increase nearshore marine life populations in California? What is the scientific logic that connects artificial reef installation with the impacts of OTC?*

c. Maintain or restore populations of key species-

*What types of project will allow us to understand how and to what extent the existing MPA network may mitigate for the reproductive impacts at the community and population level for important marine species?*

d. Maintain or restore connectivity, or the exchange of individuals, nutrients, and material between habitats and populations-

*Does restoration in areas upstream from MPAs have a direct effect on increasing nearshore marine populations?*

## **Activities and Deliverables**

### **Task 1: Project and process planning & coordination**

- Ocean Science Trust will solicit recommendations for experts from the OPC-SAT, as well as from Ocean Science Trust's and the Ocean Protection Council's professional networks. OPC, OST and the Working Group Chairs will select group members to best encompass the required expertise. An honorarium will be provided to working group participants.
- OST will convene and coordinate with OPC to collaboratively execute this project. We anticipate meetings every 2-3 weeks during the course of the project, in a combination of in-person and remote meetings.
- During the course of the project OST will serve as project managers to facilitate effective and efficient collaboration.

- Ocean Science Trust will develop necessary collateral materials, including a webpage for the working group on Ocean Science Trust’s website, social media and blog posts (e.g., OceanSpaces.org), assemble a key contacts list, and work with the Ocean Protection Council to disseminate materials to appropriate audiences.

*Deliverables: OPC-SAT working group scope, process, and timeline finalized and ready to be shared publicly (January 2018)*

**Task 2: Convene OPC-SAT working group**

- Once the working group is assembled, Ocean Science Trust will host a series of remote calls/webinars, as needed, and an in-person workshop to be held in early 2017. Call/webinar and workshop attendees will include working group members, OPC MPA staff and natural resource managers, as appropriate.
- In advance of any meetings, participants will be provided with an agenda that outlines the goals of the meeting, identifies supplementary materials, and maps out how time will be spent. Experts will be asked to familiarize themselves any informational materials, and in some cases, conduct advance work to bring to the group (e.g., prepare presentations).
- During the course of the project OST will coordinate with the OPC-SAT Executive Committee to appraise them on progress of the working group and to facilitate full OPC-SAT review of working group products prior to release.

*Deliverables: Establishment of an OPC-SAT working group (January 2018) & executed contracts and honorarium with the working group members (June 2018)*

**Task 3: Develop and deliver scientific guidance report**

- OST will serve as editor and lead the working group members in contributing to developing a final report that will provide the OPC with guidance that can inform next steps for their OTC funding program.
- Although this may change during the scoping process, the process we are initially proposing is to work remotely with the working group to craft an annotated outline of a draft report. The in person workshop would serve as a time to flesh out sections of the report, discuss points of diversion of scientific opinion, or hear from researchers about specific data sets or projects.
- Prior to finalization, the working group product will go through a full OPC-SAT concurrently with OPC approval process.
- Ocean Science Trust will provide a draft preview to OPC before the document is publicly released. The details of the release will be decided upon by OPC and OST.

*Deliverables: Final OPC-SAT working group scientific guidance document (May 2018)*

**Timeline**

	O	N	D	J	F	M	A	M	J
<b>Task 1: Project and process planning &amp; coordination</b>									
<i>Scope development</i>									
<i>Solicit OPC-SAT working group members</i>									
<i>Project Management &amp; Coordination with OPC</i>									
<i>Project web page development</i>									
<b>Task 2: Convene OPC-SAT working group</b>									

<i>Convene kick-off meeting(s)</i>									
<i>In person workshop (anticipated month listed, but may change depending on scope)</i>									
<i>On-going communication and remote meetings</i>									
<i>Execute honorarium payments for working group</i>									
<b>Task 3: Develop and deliver scientific guidance report</b>									
<i>Develop annotated draft report outline</i>									
<i>Develop draft report with working group</i>									
<i>Draft report submitted to OPC-SAT for review</i>									
<i>Final report submitted to OPC</i>									