



Draft Seawater Desalination Siting and Streamlining Report to Expedite Permitting

California Seawater Desalination Interagency Group

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Executive Summary

[California's Water Supply Strategy: Adapting to a Hotter, Drier Future](#) (Water Supply Strategy) updates state priorities to address current and anticipated water supply shortages due to long-term drought and the accelerating impacts of climate change. It outlines approaches to enhance water supply resilience by increasing storage capacity, improving conservation and efficiency, and identifying opportunities to access new water sources through recycled water production, stormwater capture, and desalination. These goals are a part of a larger effort under the [Water Resilience Portfolio](#), which serves as California's roadmap for building water resilience through goals and actions to maintain and diversify water supplies statewide, protect and enhance natural ecosystems, build connections, and address California's interlinked water and climate challenges to prepare for the future.

The Water Supply Strategy outlines specific implementation steps to expand the use of brackish water desalination, improve the permitting process for seawater desalination, and provide better guidance to owners or operators proposing to develop new or expanded seawater desalination facilities (hereafter, project proponents). This document addresses the following Water Supply Strategy implementation action relating to seawater desalination projects:

“The State will help streamline and expedite permitting to provide better clarity and certainty to further desalination projects. To this end, by June 30, 2023, the State Water Board, Coastal Commission, Department of Water Resources and other State entities (e.g., State Lands Commission) will develop criteria for siting of desalination facilities along the coast and recommend new standards to facilitate approval.”

To implement this action, State Water Board staff convened a working group comprised of representatives from all partner agencies listed in the [Seawater Desalination Interagency Memorandum of Agreement](#) (MOA), which include: the State Water Resources Control Board (State Water Board), the California Coastal Commission (Coastal Commission), the California State Lands Commission (State Lands), the California Department of Fish and Wildlife (Fish and Wildlife), Monterey Bay National Marine Sanctuary (MBNMS), the National Marine Fisheries Service's (NMFS) West Coast Region, and the six coastal regional water quality control boards (regional water boards), which include the North Coast Regional Water Quality Control Board, the San Francisco Bay Regional Water Quality Control Board, the Central Coast Regional Water Quality Control Board, the Los Angeles Regional Water Quality Control Board, the Santa Ana Regional Water Quality Control Board, and the San Diego Regional Water Quality Control Board, with additional representation from: California Ocean Protection Council, California Natural Resources Agency, California Department of Water Resources, and California State Coastal Conservancy (hereafter, “Desalination Interagency Group” when referring collectively to entities consulted throughout this

siting criteria scoping process, and “Agency or Agencies” when referring generally to one or more of these entities).

The Desalination Interagency Group considered implementation of applicable local, state, and federal requirements (Desalination Requirements). The Desalination Requirements include relevant sections of the California Coastal Act and Local Coastal Programs, the California Environmental Quality Act (CEQA), State Lands Commission lease requirements, special considerations for projects taking place within National Marine Sanctuaries, the federal and California Endangered Species Acts, and the desalination requirements in the Water Quality Control Plan for Ocean Waters of California ([Ocean Plan](#)). Based on the Desalination Interagency Group’s years of experience engaging with planning and permitting projects, the Desalination Interagency Group identified criteria for siting seawater desalination facilities to facilitate approval under the existing Desalination Requirements, as well as recommendations for potential changes to the requirements to further streamline permitting.

One key conclusion is that projects can be permitted relatively quickly when project proponents propose new or expanded seawater desalination facilities at locations where they can use the preferred technologies identified in the Ocean Plan, conduct community outreach, perform appropriate analyses, and provide mitigation. Projects that use the preferred technologies in the Ocean Plan have more modest environmental impacts, require fewer environmental studies, require less mitigation, take less time for regulatory review, and are more likely to receive permit approvals. Projects also are permitted relatively more promptly where the project proponent minimizes environmental impacts where they cannot be avoided, provides the outreach and analyses required to inform decisions (e.g., environmental assessments, consultation with California Native American Tribes (Tribes), environmental justice analyses, and community engagement), increases benefits to historically underserved communities, and replaces all forms of marine life or habitat that are lost due to the construction and operation of a desalination facility through fully compensatory mitigation.

Seawater desalination can be a vital supply option for some California communities to build local water resilience. In many cases, however, it is the most energy-intensive and environmentally damaging option when compared to other alternative water supplies (Szinai et al 2021, Cooley and Phurisamban 2016). Seawater desalination should therefore be considered where economically and environmentally appropriate in concert with alternatives such as conservation and efficiency measures, repairs or improvements to conveyance infrastructure, reuse of wastewater through recycling, capture and treatment of stormwater, brackish water desalination, and traditional methods for utilizing surface water and groundwater supplies. This is consistent with the Water Resilience Portfolio goals and actions to maintain and diversify water supplies statewide while reducing the energy footprint and greenhouse gas emissions from the state’s water sector.

This document outlines relevant requirements and considerations that are intended to help guide the location of future seawater desalination projects where they are cost effective and environmentally appropriate, as well as encouraging compliance and streamlining Agency review.

Agencies strive to engage collaboratively with Tribes and interested parties, including affected underserved communities, to solicit input on potential regulatory changes for seawater desalination project planning or permit review. It will require time, effort, and funding to carry out some of these recommendations. The pace of implementation will depend upon the feasibility and availability of resources and competing priorities.

Recommendations

The recommendations for streamlining identified in this document are the result of the Desalination Interagency Group's coordinated review of historical permitting experiences. The sections following these recommendations provide additional context on specific regulatory considerations, supporting information, and scientific justifications for their identification as key criteria for streamlining. Where possible, they also provide recommendations for new or improved standards to facilitate approval of projects.

Recommendations for project proponents

Streamlined Track: To streamline project review, the Desalination Interagency Group recommends the following criteria for all proposed new or expanded seawater desalination facilities:

- *Concurrent Review* – Submit applications to the applicable regional water board, the Coastal Commission, State Lands Commission, and the CEQA responsible agencies at the same time, whenever possible, so they may concurrently and collaboratively review project materials consistent with the Seawater Desalination Interagency MOA. Request and schedule pre-application, multi-agency meetings, when possible, to discuss proposed projects and identify information needs.
- *Integrated Water Resource Management and Identified Need* – Size projects appropriately to meet anticipated water needs after accounting for all reasonable alternatives through an Integrated Water Resource Management approach.
- *Environmental Justice* – Demonstrate that the project avoids, minimizes, and mitigates any environmental justice issues such as water affordability, water quality, and other impacts to communities with disproportionate burden of environmental pollution and health hazards. Initiate community engagement in the early planning stages and continue engagement throughout project development.
- *Tribal Consultation* – Initiate consultation and engagement with Tribes in the early planning stages to ensure the project does not impact tribal cultural resources, sacred lands, or burial sites, and continuously engage throughout project development.

- *Hydrogeologic Siting* – Use subsurface intake designs that exclusively withdraw seawater or improve seawater intrusion conditions.
- *Coastal Hazards* – Plan projects with consideration of reasonably foreseeable coastal hazards including those that will result from climate change, sea level rise, geologic, or seismic hazards.
- *Minimize Intake and Mortality of All Forms of Marine Life* – Site and size projects such that the construction and operation of intake and discharge infrastructure minimize intake and mortality of all forms of marine life and avoid impacts to sensitive habitats or species.
- *Energy Efficiency* - Use technologies that maximize energy efficiency and minimize climate impacts and pollution burdens for sensitive populations.
- *Mitigation* - Secure fully compensatory mitigation for any construction, intake, and discharge-related mortality, such that the mitigation will be constructed and will meet performance metrics by the time the facility starts operating.

Standard Track: Proposed seawater desalination facilities that do not adhere to all the criteria in the streamlined track above are not eligible for streamlined permitting due to the number and types of environmental analyses and corresponding reviews needed to ensure compliance with the Desalination Requirements.

Recommendations for Agency action

The Desalination Interagency Group recommends the following Agency actions to streamline review of proposed new or expanded seawater desalination facilities.

- State Water Board:
 - Develop proposed amendments to the seawater desalination requirements in the Ocean Plan to implement recommendations in this Report.
 - Update the Seawater Desalination Interagency MOA to add the Department of Water Resources, California Ocean Protection Council, and the California Coastal Conservancy; and describe the coordination of joint review of CEQA documents and application materials with regional water boards, State Water Board, Coastal Commission, State Lands Commission, and Fish and Wildlife.
- Department of Water Resources:
 - Update its Guidebook for 2025 Urban Water Management Plans to include discussion of how the information included in the Urban Water Management Plans may be used to demonstrate need for future or proposed water supply projects, including seawater desalination.
 - Provide support and water supply planning expertise to the applicable regional water board, State Lands Commission, and Coastal Commission in reviewing the identified need for a proposed seawater desalination project (i.e., amount of water needed, when the project will be needed, and under what circumstances).

- Coastal Commission – take the lead to identify siting hazards (e.g., sea level rise) for proposed new or expanded seawater desalination facilities.
- Fish and Wildlife – evaluate artificial reef efficacy and develop a statewide scientifically based artificial reef plan to provide direction on siting and managing artificial reefs. This plan is needed, in part, for projects to fulfill mitigation obligations, including for seawater desalination facilities.
- Ocean Protection Council - develop a Statewide Marine Restoration and Mitigation Policy to provide direction and guidance on a range of mitigation approaches in the marine environment.
- State Lands Commission, State Water Board, regional water boards, Coastal Commission, and Fish and Wildlife – coordinate to provide direction to project proponents seeking streamlined permitting when developing CEQA documents so they may also fulfill requirements under the Ocean Plan and Coastal Act.

Regulatory Setting

Agency Roles in Planning and Permitting Seawater Desalination Facilities

Agencies have several respective environmental, permitting or leasing obligations related to seawater desalination facilities. Siting criteria identified in this document are primarily derived from the Ocean Plan provisions because the Ocean Plan provisions include the most comprehensive requirements that apply specifically to seawater desalination facilities. [Water Code section 13142.5\(b\)](#) and the Ocean Plan require seawater desalination facilities to use the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life. The State Water Board adopted the Ocean Plan provisions and issues drinking water permits for desalinated product water. The six coastal regional water boards implement the Ocean Plan provisions by issuing [Water Code section 13142.5\(b\)](#) determinations and [National Pollutant Discharge Elimination System \(NPDES\)](#) permits for new or expanded seawater desalination facilities. More information on the Water Boards' authorities and governing regulations for seawater desalination can be found in the 2015 Final Staff Report Including the Substitute Environmental Documentation ([Staff Report](#)) for the Ocean Plan provisions.

The Coastal Commission regulates desalination within the state's coastal zone through its coastal development permit and federal consistency process under all applicable provisions of the [Coastal Act](#), and through certification of [Local Coastal Programs](#) implemented by local jurisdictions.

The California State Lands Commission issues leases for areas where new desalination facilities overlap public lands owned by the state, including ungranted "sovereign" tide and submerged lands pursuant to Public Resources Code sections [6216](#) and [6301](#).

The National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries issues special permits and/or authorizations for discharge to or

disturbance of the seafloor within a National Marine Sanctuary pursuant to the [National Marine Sanctuaries Act](#). NOAA's NMFS West Coast Region, under direction of the Secretary of Commerce, provides conservation recommendations for actions conducted in California that would adversely affect any Essential Fish Habitat identified under the [Magnuson-Stevens Fishery Conservation and Management Act](#). Consultations under the federal Endangered Species Act may be required if the project may affect a listed species or designated critical habitat under the jurisdiction of NOAA NMFS and the project is authorized, funded, or carried out, in whole or in part, by a Federal agency. This can include issuance of a permit (e.g., U.S. Army Corps of Engineers permit) or through funding programs, such as a State Revolving Fund loan (funding provided at least partially by the U.S. Environmental Protection Agency).

The California Department of Fish and Wildlife issues [Incidental Take Permits](#) pursuant to Fish and Game Code section [2081\(b\)](#) if impacts to California Endangered Species Act (CESA) listed species are anticipated; and Lake and Streambed Alteration (LSA) Agreements pursuant to Fish and Game Code section 1602 if an activity may alter a river, stream, or lake in any way.

In addition to the Agencies' independent statutory responsibilities, public agencies carrying out or approving permits for proposed desalination projects must comply with [CEQA](#) by evaluating a proposed project's potential environmental impacts pursuant to Public Resources Code section 21000 et seq. The lead agency for purposes of CEQA is generally the state or local agency that has the principal responsibility for carrying out or approving the desalination project. If the desalination project will be carried out by a private entity, the lead agency generally is the state or local agency that will act first on the project.

Seawater Desalination Interagency Memorandum of Agreement

The Agencies' separate authorities and shared responsibilities relating to protection of California's coastal and ocean resources collectively ensure that seawater desalination facilities are planned responsibly consistent with public values and policies and minimize impacts to the marine and coastal environment. The Seawater Desalination Interagency MOA outlines a process for MOA signatory agencies to coordinate and collaboratively review documents and materials submitted as part of seawater desalination project applications. The MOA signatory agencies' coordination begins as soon as an Agency receives draft or final documents regarding proposed new desalination projects or proposed expansions of existing projects, at which time all MOA signatory agencies are notified and interagency communications commence. Through this process, MOA signatory agencies collaboratively establish the sequence for conducting the permit or leasing decision-making and any associated environmental review for each individual project, including determining the CEQA lead agency, and communicate this process to project proponents. To reduce redundancy and allow applicants to prepare information that will meet multiple agencies' needs, the Agencies coordinate their information requests to project applicants.

Agency Engagement and Coordination When Planning and Permitting Seawater Desalination Facilities

To streamline permitting, the MOA signatory agencies committed to identifying and communicating expectations for concurrent agency review consistent with the MOA. Permit applications include consideration of specific elements such as site, design, technology, and mitigation alternatives that are addressed under multiple permits, but whose requirements may differ in scope or extent based on the unique charge of each agency and its applicable requirements. Project proponents have historically submitted permit applications to only one agency at a time. If an agency has not received a permit application for the proposed facility, that agency may not have access to staff resources to review materials concurrently with partner agencies. When Agencies review these materials sequentially rather than concurrently, project proponents may be required to re-analyze project elements that have been approved earlier in the process by other agencies. For example, the specific siting alternative considerations that take place in the CEQA scoping process may not necessarily fulfill requirements under the Ocean Plan or the Coastal Act, requiring project proponents to reconsider siting alternatives after the CEQA process is complete, and potentially revise and recirculate CEQA documentation to reflect any new changes. Pre-application coordination with Agencies may help ensure that project proponents are aware of all applicable Desalination Requirements at project inception and give Agencies the time they need to identify and communicate timing and process recommendations to applicants.

Project proponents seeking a land lease from State Lands, an NPDES Permit from a Regional Water Board, a Coastal Development Permit from the Coastal Commission, and CEQA document preparation from the CEQA Lead Agency should engage with all Agencies early in the planning process and submit applications to as many Agencies as possible for concurrent review. The benefits of this approach are three-fold:

1. Concurrent agency review significantly cuts the overall time required for project review and permitting.
2. Agency staff can implement the interagency MOA and collaboratively rely on agency-specific expertise to analyze proposed elements more effectively.
3. Applicants will be more aware of Agency expectations and may only need to conduct assessments once, which can contribute to overall project cost and time savings.

To further streamline permitting, Agencies will review and consider revisions to the MOA to identify additional opportunities for coordination and will engage with the owner-operator community to identify potential improvements to procedures for concurrent project review. Agencies will also work to develop recommendations for a CEQA alternatives analysis that will be more likely to fulfill requirements under relevant Ocean Plan and Coastal Act provisions. Project proponents who submit applications for

concurrent review and conduct early engagement with Agencies are more likely to experience a streamlined permitting process.

Promoting Integrated Water Resource Management and Streamlining the Identified Need Analysis for Seawater Desalination Facilities

The Water Supply Strategy and the Water Resilience Portfolio emphasize advanced planning, thoughtful investments, collaboration, and [integrated water resource management](#) to match the pace of climate change and to support long-term water supply resilience and ecosystem health. The State Water Board's [Resolution No. 2017-0012, Comprehensive Response to Climate Change](#) and commitment to [the Human Right to Water](#) require the robust integration of greenhouse gas mitigation, ecosystem protection and access to safe and affordable water into all Water Board programs and policies. Within the integrated water resources management framework, Agencies recommend maximizing the use of environmentally and economically sustainable multi-benefit water supplies, such as conservation, water reuse, and stormwater capture to the extent feasible, before identifying a need for desalinated seawater.

The integrated water resource management process allows resource managers, Agencies, and project proponents to ensure that a proposed project aligns with regional water supply strategies and is appropriately sized for the identified need for desalinated water in the context of conservation and water supply options available to the community.

The regional water board must analyze whether a proposed project utilizes the best available site, design, technology, and mitigation measures feasible to minimize intake and mortality of all forms of marine life. Therefore, the regional water board must consider whether the project is sized to meet the identified need for desalinated water, as the identified need helps to inform the design, intake technology and siting determination.

A project proponent's request for a Water Code 13142.5(b) determination must include sufficient information for the regional water board to conduct the analysis required by the Ocean Plan. Projects that have undergone an integrated water resources management process have been able to provide sufficient information for the regional water board to make a Water Code 13142.5(b) determination and have experienced a faster permitting process. Projects not supported by an integrated water resources management process have experienced a more challenging permit review process and more permitting delays due to the lack of water supply planning documentation to evaluate the project's identified need for desalinated water.

Project proponents seeking a streamlined permitting path should engage in integrated water resources management planning and demonstrate that the applicable municipality, water agency, or other water supply entity has maximized

the use of all available conservation measures and water supply options to the extent feasible and that the project is sized for the identified need for desalinated water.

This may be accomplished by preparing a Water Supply and Demand Assessment that evaluates water conservation measures (e.g., efficiency measures in agricultural and urban lands), availability or planned use of all water supply sources including alternative sources such as stormwater capture and recycled water, and the projected gap after considering availability of all supplies and factoring in drought risk and reliability. Potential water supply infrastructure improvements to prevent leaks and evaporative losses, and to store water during wet years should also be considered. In addition, the Water Supply and Demand Assessment should demonstrate that the project is cost-effective and supports affordable water rates and access to safe drinking water.

A project proponent seeking a streamlined path should take a proactive approach and submit the Water Supply and Demand Assessment to the Agencies early in the permitting and CEQA processes. The Agencies, including the Department of Water Resources, will review the Water Supply and Demand Assessment to ensure that sufficient information is prepared to support decisions during each agency's permitting process. This coordinated and concurrent review process will reduce permitting timelines by reducing the need for multiple iterations of information submittals and review. Engagement in water supply planning informs the evaluation of the need for desalinated water in a project's service area and facilitates CEQA review by clarifying the project's purpose and need. Understanding the need for desalinated water provides the basis for the scale of the project and is fundamental to analyzing project alternatives, potential environmental impacts, and mitigation measures.

A future amendment to the Ocean Plan could provide additional guidance on the information needed to evaluate the need for desalinated water. In addition, existing water supply planning efforts could be strengthened by including updates to the Department of Water Resources' Guidebook for Urban Water Management Plans before the next publication (for the 2025 UWMPs), to provide guidance on incorporating desalination considerations within assessments of water needs, water demands, and future water supply reliability.

Environmental Justice

Agencies consider water affordability and environmental justice¹ when permitting seawater desalination projects to ensure that state actions lead to more equitable

¹ Generally, in California state government, environmental justice means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. ([Gov. Code, § 65040.12, subd. \(e\).](#)) Definitions for environmental justice may vary slightly by regulation and policy.

outcomes for communities of concern². The Coastal Act, the Coastal Commission's [2019 Environmental Justice Policy](#), the State Lands Commission's [2018 Environmental Justice Policy](#), the State Water Board's [2021 Racial Equity Resolution](#) and [2023 Racial Equity Plan](#), and Water Code sections [189.7](#) and [13149.2](#) require Agencies to consider potentially significant environmental impacts to communities already burdened with pollution when reviewing and permitting new projects. The Water Boards also consider the [Human Right to Water](#) to ensure that planning and permitting decisions uphold the right of every Californian to safe, clean, and affordable water. These laws, regulations and policies promote meaningful community involvement³ and a direct role in decision-making processes for projects that could otherwise disproportionately impact underserved communities.

For seawater desalination projects, Agencies review environmental justice impacts to evaluate and address the equitable distribution of project benefits and burdens (CCC Environmental Justice Policy 2019) to beneficial uses, proximity of environmental impacts to communities of concern, employment opportunities, water affordability and access, coastal access, long-term impacts on a community's coastal resilience, and community engagement and outreach. Project proponents who have not adequately addressed environmental justice concerns, or who have not provided sufficient information to Agencies or impacted communities to evaluate environmental justice impacts, have experienced longer permit review periods or had their permit applications recommended for rejection. These projects are also more likely to face public opposition, which can further impede permitting.

For these reasons, **project proponents seeking a streamlined permitting path should address potential project impacts to communities of concern through meaningful community involvement, culturally appropriate engagement, and shared decision-making processes. This process may look different for each community based on their needs and priorities, but best practices include:**

- Conducting early and meaningful community outreach and engagement efforts before, during, and after implementation of the project.
- Treating the community with respect and partnering with trusted community groups to ensure local expertise.

² The term "communities of concern" is used to refer to low-income communities as defined by [AB 1550](#) (Health & Saf. Code, § 39713, subd. (d)(2)) or at two times the federal poverty level, communities of color, [Disadvantaged Communities as defined by the California EPA](#), and other populations with higher exposure and/or sensitivity to adverse project impacts due to historical marginalization, discriminatory land use practices, and/or less capacity to mitigate adverse impacts.

³ In an environmental justice context, meaningful involvement means: people have the opportunity to participate in decisions about activities that may affect their environment or health; the public's contribution can influence the regulatory agency's decision; community concerns will be considered in the decision making process; and decision makers will seek out and facilitate the involvement of those potentially affected. (U.S. EPA 2023)

- Holding informational meetings at trusted locations in the affected communities at times convenient for working families and providing children’s activities and food.
- Announcing meetings at least 10 business day in advance and provide additional ways for working individuals to attend or provide feedback (i.e., in-person, virtual, by phone, in writing).
- Working to ensure that the project is desired by and provides community benefits to impacted communities by consulting with the community on their needs.
- Identifying environmental justice concerns from impacted communities, incorporating this feedback into design modifications, siting considerations, and operation of the project, and continuing to engage with impacted communities to ensure that these concerns were avoided, minimized, or mitigated.
- Providing informational materials which are accessible, easily understood, and translated into culturally relevant languages and providing interpretation services at events.

A future amendment to the Ocean Plan could provide direction to desalination project proponents on the application of existing policies and regulatory requirements relating to equity and environmental justice, including siting projects with proactive community engagement through an open and transparent public process, utilizing federal and state analytical tools to identify communities of concern, and identifying local environmental justice concerns at the onset of the permitting process.

Tribal Consultation

California’s entire coastal zone was originally Indigenous territory, and the coastline continues to hold cultural significance to Tribes. For this reason, project proponents must ensure that they are meeting requirements for tribal consultation⁴ and protection of tribal cultural resources⁵ if they intend to pursue a streamlined permitting path.

⁴ Tribal consultation is a meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties’ cultural values and, where feasible, seeking agreement. Consultation between government agencies and Tribes shall be conducted in a way that is mutually respectful of each party’s sovereignty. Consultation shall also recognize a tribe’s potential needs for confidentiality with respect to places that have traditional tribal cultural significance. (Water Boards’ Tribal Policy.)

⁵ Defined in Public Resources Code section 21074, subdivision (a) as either: (1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a Tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources; or (2) a resource determined by the CEQA lead agency, in their discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of section 5024.1 of the Public Resources Code, taking into account the significance of the resource to the Tribe. A cultural landscape that meets the above criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. A historical resource described in Public Resources Code section 21084.1, a unique archaeological resource as defined in subdivision (g) of section 21083.2, or a “nonunique archaeological resource” as defined in subdivision (h) of section 21083.2 may also be a tribal cultural resource if it conforms with the above criteria.

In recent years, the State of California has made efforts to improve protections for tribal cultural resources, strengthen government-to-government relations, and promote collaborative communication between Tribes and public agencies. In 2011, Governor Brown signed [Executive Order B-10-11](#), which established the policy that every state agency shall encourage communication and consultation with Tribes. In 2014, the State enacted [AB 52](#), which requires public agencies to consult with Tribes during the CEQA process. As a result of these directives, several Agencies have adopted tribal consultation policies, and tribal consultation and cultural resource protection has been incorporated into planning and permitting processes.

During the CEQA review for proposed seawater desalination projects, Agencies are required to conduct tribal consultation ([Pub. Resources Code, §21080.3.1](#)). Based on the consultations and Tribal input, Agencies will evaluate whether proposed projects cause a potential significant impact to a tribal cultural resource and, if so, whether feasible alternatives or mitigation measures avoid or lessen the impact ([Pub. Resources Code, §§21074, 21080.3.2, 21082.3](#)).

Agencies encourage project proponents to be proactive in this process and by researching the tribal and cultural history of their proposed project areas and communicating with Tribes regarding the project in the early stages of their project planning. This information is made publicly available from the [California Native American Heritage Commission's Sacred Lands File](#) per Public Resources Code section 5097.96 and the [California Historical Resources Information System](#) administered by the California Office of Historic Preservation. In the past, Agencies have asked project proponents to hire Cultural Resource Specialists⁶ and Native Monitors⁷ to ensure that cultural resources are protected during construction of the project.

Project proponents are encouraged to begin conducting consultation early in the CEQA process to allow Tribes, CEQA lead and responsible agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources and reduce the potential for delay and conflict in the environmental review process. Even in cases where there is Tribal support for a project, **project proponents have responsibility to adhere to all applicable tribal consultation requirements.** Furthermore, project proponents seeking a streamlined permitting path should:

- Identify Tribes who may be impacted by proposed facilities.

⁶ The Cultural Resource Specialist must meet the minimum qualifications of the U.S. Secretary of Interior Guidelines (NPS 1983). (See CCC Staff Report Th7a & 8a 2022.)

⁷ Native Monitors have included one monitor from each Tribal entity with documented ancestral ties to the area and that expresses an interest in monitoring, appointed consistent with the standards of the Native American Heritage Commission and the Native American most likely descendent (MLD) when State Law mandates identification of an MLD. (See CCC Staff Report Th7a & 8a 2022.)

- Conduct early outreach and consultation with interested Tribes.
- Work with Tribal governments and representatives to identify cultural resources.
- Avoid project areas that risk causing a substantial adverse change in the significance of a tribal cultural resource.
- Design their facilities to avoid impacts to any identified cultural resources.
- Maintain collaborative communication with Tribal governments and representatives and ensure Tribes have a role in decision-making throughout the planning and permitting process.
- Implement monitoring and mitigation measures for identified cultural resources during construction and apply these measures to any cultural resources found during project construction.

Any amendments to the Ocean Plan will require outreach and engagement with Tribes during the rulemaking process for the proposed amendment to the Ocean Plan. A future amendment to the Ocean Plan could provide direction to desalination project proponents on the application of existing policies and regulatory requirements relating to Tribes.

Hydrogeologic Siting

New or expanded seawater desalination projects must design, construct, and operate facility intakes to minimize impacts to marine life and the environment. The Ocean Plan requires the use of subsurface intakes that withdraw seawater from beneath the seafloor, unless a regional water board determines they are not feasible. Operation of screened surface water intakes, which pull water directly from the open ocean through screens, results in significant intake and mortality of marine life over the operational lifetime of a facility, even when sited and designed to avoid sensitive habitats (e.g., Marine Protected Area, State Water Quality Protection Areas) and species.

Subsurface intakes are the best method for minimizing intake and mortality of all forms of marine life. Projects proposing facilities with subsurface intakes require significantly fewer environmental studies and mitigation requirements, which results in significantly reduced time for Agencies to review applications and issue permits. Additionally, facilities with subsurface intakes result in total lifetime cost savings over those with surface intakes due to having higher quality feedwater requiring less treatment and lower operational costs (Missimer et al. 2013).

A project proponent must first prepare information for the regional water board to review when evaluating subsurface intake feasibility. If the regional water board determines subsurface intakes are infeasible, the project proponent must then conduct studies to propose the best available site, design, and technology feasible for the construction and operation of a screened surface intake, such as an alternative sites analysis, marine life mortality report, and marine life mitigation plan. This significantly increases the number

of required analyses, time required for Agencies' review and consequently, permitting timelines.

A project proponent seeking a streamlined permitting path should select a site where subsurface intakes are feasible, design the subsurface intakes to minimize freshwater withdrawal from adjacent coastal aquifers to the extent feasible, and utilize water conveyance as needed.

Subsurface intakes require locations with favorable geological conditions, and a project proponent must conduct site-specific assessments of geologic and hydrogeologic conditions to determine a facility's intake design, size, and flow capacity. In addition, the Ocean Plan states that the regional water board must consider several factors in determining feasibility of subsurface intakes, including but not limited to geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats, energy use for the entire facility, project life cycle cost, and design constraints. Site and facility-specific analyses are required to evaluate the feasibility of a subsurface intake at all possible site locations and the availability of data readily available may vary.

To assist in assessing the state of the data, the State Water Board convened a Science Advisory Panel (Subsurface Intake Panel) in Spring 2023 to recommend an analytical approach to evaluate the feasibility of subsurface intakes for proposed seawater desalination projects, compile specific data sources that meet criteria, and provide potential methodologies for ranking alternate sites for suitability. The Subsurface Intake Panel consists of experts in the fields of hydrogeology, geology, economics, marine coastal ecology/oceanography, sustainable water resource planning, and general contracting for desalination. The Subsurface Intake Panel will develop a report with a recommended approach for conducting subsurface intake feasibility assessments by January 2024. The State Water Board may use the report to inform a future proposed amendment to the Ocean Plan desalination provisions to clarify criteria for studies necessary to support an evaluation of subsurface intake feasibility.

Geologic, Seismic, and Coastal Hazards

California's coastal communities experience geologic (e.g., coastal erosion, landslides), seismic (e.g., earthquakes, tsunamis), and coastal hazards (e.g., flooding, storm surges) (collectively Hazards). Climate change and sea level rise will exacerbate the frequency and effects of these Hazards. The Water Resilience Portfolio and Water Supply Strategy highlight the importance of planning to ensure the longevity of water supply infrastructure. A project proponent must consider these Hazards when siting the facility and identify adaptation options across the anticipated operational lifetime of the facility to ensure Agencies can issue permits for the facility and to increase resilience of the water supply to climate change.

The Coastal Commission, State Lands Commission, and regional water boards each require consideration of various Hazards when issuing their respective permits. The Coastal Development Permit may also include coastal protection requirements consistent with Local Coastal Programs, such as demonstrating a project will neither create nor contribute to erosion or geologic instability ([Coastal Act section 30253](#)) and ensuring projects avoid or mitigate adverse impacts of sea level rise ([Coastal Act section 30270](#)). Additionally, CEQA requires applicants to identify geologic and hydrologic hazards within proposed projects. However, the Hazards analyses required by CEQA and each Agency are slightly different. There is an opportunity to compile the siting criteria as it relates to Hazards and coordinate these analyses to streamline the review for CEQA and permitting seawater desalination facilities.

A project proponent seeking a streamlined permitting path should identify sites for a seawater desalination facility that minimize risks associated with Hazards and identify any necessary long-term actions so that there are no high risks to desalination facilities and their supporting infrastructure from climate change stressors. This will require analyses of climate change, sea level rise, erosion, geologic instability, flooding and storm surges, landslides, earthquakes, tsunamis, wave impacts, changes in sediment supply and movement, and additional Hazards and impacts of such hazards on nearby communities as locally required.

The U.S. Environmental Protection Agency has developed guidance for [Creating Resilient Water Utilities](#) for water utilities to conduct a risk-based climate change vulnerability assessment and to identify water supply infrastructure stressors. There are also several studies, models, guidance documents, and policies that Agency staff utilize to inform permitting recommendations. The list below contains a compilation of these resources to aid in permit streamlining for future projects. These resources are updated periodically. Project proponents must ensure the most recent version is used when submitting CEQA documentation and relevant permit applications:

- Ocean Protection Council (OPC):
 - [\(2017\) Rising Seas in California: An Update on Sea Level Rise Science report](#)
 - (2018) *State of California: [Sea Level Rise Guidance](#)** document.
 - (2020) [Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action](#) document.
- California Coastal Commission (CCC):
 - (2018) [Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Plans](#)* document.
 - (2021) [Critical Infrastructure at Risk: Sea level Rise Planning Guidance for California's Coastal Zone](#) public review draft.
- United States Geological Survey (USGS):
 - [Coastal Storm Modeling System \("CoSMoS"\)](#)
 - [Seismic Hazard Zone Maps](#)

- [American Society of Civil Engineers Tsunami Design Geodatabase](#)

Identifying Hazards early in the development of a proposed project is critical to project success and will aid in streamlined permitting. A future update to the Ocean Plan could include additional direction on conducting a Hazards analysis when siting a facility to ensure appropriate consideration of Hazards to promote long-term water supply resilience in line with the Water Supply Strategy and Water Resilience Portfolio.

Minimizing Intake and Mortality of All Forms of Marine Life

As discussed above, some of the best ways to minimize intake and mortality of all forms of marine life are to first consider alternative water supplies (e.g., recycled water, stormwater capture and use), whether there is an identified need for seawater desalination, and to use subsurface intakes to streamline the permitting process. If proposing to use subsurface intakes, a project proponent must still use the best available site, design, and technology feasible to minimize marine life mortality associated with brine discharges from seawater desalination facilities in accordance with Water Code section 13142.5(b) and ensure that the discharge meets the receiving water limitation for salinity in Chapter III.M.3 of the Ocean Plan.

A project proponent should site the facility where subsurface intakes are feasible and use existing discharge infrastructure that is compliant with current water quality laws and regulations to avoid construction-related mortality. If existing discharge infrastructure is unavailable, a project proponent should analyze a range of feasible alternative sites to minimize intake and mortality of all forms of marine life, including the consideration of conveyance options. This section highlights considerations that would lead to streamlined permitting under the current regulatory framework as well as measures to minimize construction-, intake-, and discharge-related mortality of marine life.

Facility Infrastructure Siting

The Ocean Plan requires project proponents to site facility infrastructure in a location that avoids impacts to sensitive habitats and species and prohibits brine discharges to and surface water intakes from Marine Protected Areas (MPA) or State Water Quality Protection Areas (SWQPA).

Project proponents should analyze potential design configurations, including size, layout, and anticipated operations of a facility as well as intake, discharge, and other facility infrastructure to avoid impacts to sensitive habitats and species. Project siting and design must account for direct and indirect impacts to all forms of marine life that result from facility construction and operation.

A project proponent seeking a streamlined permitting path must ensure all facility infrastructure, including intake and discharge structures, are not located within

an MPA or SWQPA. Discharges must also be sited at a sufficient distance from an MPA or SWQPA to prevent exceedances of natural background salinity within protected boundaries.

Brine Discharges

The Desalination Requirements include specific criteria related to brine discharges, including the requirement to minimize any incidental take of endangered, threatened, or candidate species during the construction and operation of a desalination facility. Brine must be thoroughly and rapidly mixed with receiving waters to minimize impacts to marine life from elevated salinity. **A project proponent seeking a streamlined permitting path should identify if treated wastewater that would otherwise be discharged to the ocean is available to dilute and commingle with brine such that the resulting plume is positively or neutrally buoyant and passively mixes with receiving water, thus preventing salinity- and shearing-related mortality.**

The Water Supply Strategy and the [State Water Board's Water Quality Control Policy for Recycled Water](#) establish statewide goals to increase the use of recycled water from wastewater directly discharged to the ocean. In addition, water use efficiency standards and statewide conservation measures will continue to drive declining wastewater volumes statewide. Declining wastewater volumes may result in insufficient dilutant available to achieve a positively or neutrally buoyant plume if brine is commingled with treated wastewater. **Therefore, projects that anticipate a negatively buoyant plume or intend to construct a new outfall may still be able to streamline permitting by incorporating the use of multiport diffusers.** A project proponent will need to model a range of reasonably foreseeable discharge scenarios, including when recycled water is maximized and when wastewater is not available to commingle with brine, to demonstrate that discharge-related impacts have been minimized.

Multiport diffusers are required if commingled brine is not available because they are the next best available technology to rapidly mix and dilute the hypersaline brine in receiving waters and prevent significant impacts to benthic communities. However, they result in salinity- and shearing-related mortality as organisms within a certain distance of the discharge will simultaneously be exposed to shearing stresses⁸ and toxic water conditions due to high salinity concentrations and/or other chemical constituents in the discharge. Commingled discharges that result in positively or neutrally buoyant plumes are anticipated to take the least time to permit, but given that these conditions are difficult to achieve, Agencies will also consider multiport diffuser designs for streamlined permitting. Modeling and additional studies may be needed to estimate shearing-related mortality from brine discharge systems, along with the need for additional monitoring to measure brine discharges and ensure compliance with Ocean Plan Chapter III.M.3

⁸ Shearing stresses occur when high velocity discharges create turbulent eddies that can result in lethal pressure differentials for marine microorganisms and larvae.

receiving water limitations. A project proponent seeking a streamlined permitting path should thoroughly evaluate and consider sites to minimize intake and mortality of all forms of marine life.

If multiport diffusers are proposed, a project proponent should consult the recommendations from *Brine Diffusers and Shear Mortality* (Roberts 2018) to design multiport diffusers to maximize dilution, minimize the size of the brine mixing zone, minimize the suspension of benthic sediments, and minimize mortality of all forms of marine life. A project proponent should also conduct a larval study to calculate an Empirical Transport Model/Area of Production Foregone using a minimum of 12 months of data and develop a Marine Life Mortality Report as outlined in the Ocean Plan to inform mitigation planning.

A future amendment to the Ocean Plan could further streamline the Water Code 13142.5(b) determination by requiring project proponents to first analyze a range of feasible alternatives to inform a regional water board's determination of best available site feasible to minimize intake and mortality of all forms of marine life. Under Chapter III.M.2.a.(2) of the Ocean Plan:

“The regional water board shall first analyze separately as independent considerations a range of feasible alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to minimize intake and mortality of all forms of marine life. Then, the regional water board shall consider all four factors collectively and determine the best combination of feasible alternatives to minimize intake and mortality of all forms of marine life.”

Implementing this section of the Ocean Plan has been challenging because project proponents typically have an ideal site in mind when they approach Agencies. Analyzing a range of feasible alternative sites in combination with design, technology, and mitigation factors may overshadow siting considerations, ultimately complicating the comparison of siting alternatives and extending the time required for project review. To streamline the process, the State Water Board could consider amending this provision in the Ocean Plan so that the regional water board would use information provided by the applicant to first determine a site where subsurface intakes are feasible and/or a reasonable range of sites if subsurface intakes are not feasible. Once the site is determined, Agencies and project applicants would then consider the best available design, technology, and mitigation feasible to minimize intake and mortality of all forms of marine life.

Energy Use

Electricity use by seawater desalination facilities is generally much greater than the electricity needed to provide other sources of water. Unless energy is obtained from renewable sources, a desalination facility can contribute significantly to California's

greenhouse gas emissions, and can exacerbate climate change and its associated impacts ([CCC Staff Report Th10a 2022](#)). Coastal Act section 30253(4) requires new developments to minimize energy consumption to reduce impacts to coastal resources caused by greenhouse gas emissions. Successful desalination projects have demonstrated a commitment to minimizing energy consumption through the development of an emissions reduction plan that identifies selected energy sources, energy reduction measures, and offsets or credits that will result in fully “net carbon neutral” facility operations (CCC Th10a 2022). **A project proponent seeking a streamlined permitting pathway should aim to be fully “net carbon neutral”, minimize on-site energy use, maximize onsite renewable energy generation activities, and optimize energy efficiency as new technologies and renewable sources become available.**

To align with the Water Supply Strategy and Water Resilience Portfolio objectives of preparing California for a hotter, drier future, proposed desalination facilities should also seek energy sources that minimize stress to the energy grid during times of drought. The State Water Board could consider future amendments to the Ocean Plan that would align the desalination provisions with the Coastal Act requirements regarding energy consumption and [Resolution No. 2017-0012, Comprehensive Response to Climate Change](#).

Mitigation

The Ocean Plan includes specific requirements for mitigation, which is defined for the purposes of Chapter III.M.2.e. as the replacement of all forms of marine life or habitat that is lost due to the construction and operation of a desalination facility after minimizing intake and mortality of all forms of marine life through best available site, design, and technology. Chapter III.M.2.e.(3)(b)i requires that:

“Mitigation shall be accomplished through expansion, restoration or creation of one or more of the following: kelp beds, estuaries, coastal wetlands, natural reefs, MPAs, or other projects approved by the regional water board that will mitigate for intake and mortality of all forms of marine life associated with [the construction and operation of] the facility.”

Additionally, it is important to site the mitigation project so that the production area from the mitigation project overlaps the source water body, which is the spatial area containing the organisms at risk of intake entrainment. This way, the mitigation project replaces the organisms that were lost at a desalination facility but is not so close as to impact mitigation efficacy.

Fish and Game Code Section 6420 et seq. established the California Artificial Reef Program under the administration of the California Department of Fish and Wildlife. The California Artificial Reef Program was initially funded in the 1985-86 Budget but has been unfunded and inert since 2001. Given the lack of an existing program and the

numerous disparate proposals for artificial reefs, the California Department of Fish and Wildlife has identified the need to evaluate existing artificial reefs and develop a science-based artificial reef plan to guide the placement and management of new artificial reefs in state waters. Currently, the California Department of Fish and Wildlife does not support the placement of any new artificial reefs, including reefs designed as mitigation, until existing reefs have been evaluated, a science-based management plan is developed, and funding is in place to support an artificial reef program. Until this is in place, mitigation options are limited to kelp beds, estuaries, coastal wetlands, MPAs or other projects approved by the regional water board that will mitigate for intake and mortality of all forms of marine life associated with the construction and operation of the facility.

Consequently, mitigation opportunities may be limited or unavailable for seawater desalination facilities in some areas. In areas where mitigation opportunities are limited, there may be multiple parties interested in securing the project. Therefore, **project proponents seeking a streamlined permit should demonstrate that they have secured the rights to mitigate any proposed sites, and should:**

- Site and design projects so that minimized impacts are to habitats for which mitigation is available both in type and proximity to the facility,
- Identify mitigation options early in project scoping and secure mitigation as soon as feasible, and
- Time the mitigation project such that it will meet performance metrics when the facility becomes operational.

The Water Supply Strategy commits the Agencies to identify potential available mitigation sites by June 30, 2024, to facilitate the expedited approval of seawater desalination facilities. Additionally, the Agencies identified the need to provide additional direction for planning and implementing mitigation projects for seawater desalination facilities to streamline mitigation and consequently permitting. As such, the State Water Board could consider amendments to the Ocean Plan to include definitions for “restoration”, “creation”, and “enhancement”.

Conclusion and Next Steps

The Desalination Interagency Group reviewed processes for assessing proposed new or expanded seawater desalination facilities under existing Desalination Requirements, examined past outcomes to analyze what’s working and what’s not working, and considered improvements to the permitting process to facilitate approval of projects. Agencies are committed to streamlining the planning and permitting process for seawater desalination facilities, and have identified the following opportunities for state action to achieve this goal in the Water Supply Strategy within the existing Desalination Requirements:

- Conduct joint and concurrent review of project materials consistent with the Desalination Interagency MOA, where possible, to enable faster and more effective Agency permitting.
- Conduct coordinated outreach to environmental justice communities, when feasible, to reduce overlapping requests.
- Identify improvements to state direction and engagement on an enhanced approach to the CEQA process, to assist project proponents in conducting more comprehensive project planning that is more likely to fulfill subsequently reviewed requirements under the Ocean Plan and Coastal Act.
- Develop additional resources to assist project proponents in assessing subsurface intake feasibility.
- Identify available mitigation sites, and
- Conduct meaningful community engagement to elevate historically marginalized voices in the permitting process to ensure that projects are desired by affected communities and implemented in a manner that promotes environmental justice.

However, it will require time, effort, and funding to carry out some of these actions. The pace of implementation will depend upon the feasibility and availability of resources and competing priorities.

To streamline Agency review, seawater desalination project proponents are encouraged to make all possible efforts to adhere to recommendations included in this document. This document has no regulatory force and effect, and solely serves to identify potential streamlining pathways and actions consistent with the Desalination Requirements. To that end, Agencies have identified the following ways in which applicants can increase the likelihood that their project will be reviewed and approved expeditiously:

- Request pre-application meetings with Agencies to discuss proposed projects, which will allow Agencies to identify particular information needs, key issue areas, etc., in advance of application submittals. Schedule multi-agency pre-application meetings whenever feasible,
- Submit applications for concurrent review by Agencies when feasible,
- Ensure that an identified need for seawater desalination is clearly demonstrated through an integrated water resources management approach,
- Conduct early, meaningful, and culturally appropriate engagement with underserved communities that may be impacted by the project,
- Clearly demonstrate that environmental justice impacts are avoided, minimized, or mitigated,
- Conduct meaningful tribal engagement early and throughout project development and implementation,
- Thoughtfully plan and site facilities for resilience to hazards,
- Use subsurface intake designs, and conveyance as necessary,

- Aim to be fully “net carbon neutral,” minimize on-site energy use, maximize on-site renewable energy generation activities, and establish plans to optimize energy efficiency as new technologies and renewable sources become available,
- Minimize intake and mortality of all forms of marine life from construction and operation of intakes and discharges, and
- Demonstrate that mitigation will be fully compensatory.

Agencies additionally identified ways in which the Desalination Requirements could be updated to streamline the process and better facilitate project approval, including but not limited to the following:

- Considering amendments to the Ocean Plan to
 - Provide guidance on the information needed to prepare a Water Supply and Demand Assessment,
 - Provide guidance on the application of existing policies and regulatory requirements relating to environmental justice, including siting projects with proactive community engagement and locally scoped environmental justice in mind at the onset of the permitting process,
 - Articulate criteria for studies necessary to demonstrate subsurface intake feasibility,
 - Specify a sequential order for assessing site, design, technology, and mitigation under the Water Code section 13142.5(b) determination process,
 - Establish definitions for terms such as “restoration”, “creation”, and “enhancement” to improve clarity around mitigation planning expectations,
 - Align the desalination provisions with the Coastal Act requirements regarding energy consumption and Resolution No. 2017-0012, Comprehensive Response to Climate Change, and
 - Align the desalination provisions with the human right to water and all applicable racial equity resolutions.
- Incorporating new language into the Desalination Interagency MOA to clearly define roles and responsibilities for joint/concurrent Agency review,
- Revising the process for determining the identified need for seawater desalination projects to use an improved integrated regional water management approach, including updates to the Department of Water Resources’ Guidebook for Urban Water Management Plans before the next publication (for the 2025 UWMPs),
- Providing additional direction on conducting a hazards analysis when siting a facility to ensure appropriate consideration of hazards to promote long-term water supply resilience in line with the Water Supply Strategy and Water Resilience Portfolio,

- Evaluating artificial reef efficacy and developing a statewide scientifically based artificial reef plan, and
- Developing a Statewide Marine Restoration and Mitigation Policy to provide direction and guidance on a range of mitigation approaches in the marine environment.

The Desalination Interagency Group's next steps include coordinated efforts to address the remaining implementation actions identified in the Water Supply Strategy, including the identification of available mitigation opportunities and the consideration of amendments to the Ocean Plan. The opportunities for streamlining the permitting process identified in this document are the result of coordinated review of past experiences by the regulatory community, but they do not reflect priorities that may be identified through a formalized public engagement process. Agencies will engage with all interested parties and Tribes through any process that could result in changes to regulation for seawater desalination project planning or permit review.

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