

Water Desalination

Findings and Recommendations

October 2003



Gray Davis, Governor, State of California
Mary D. Nichols, Secretary for Resources, The Resources Agency
Michael J. Spear, Interim Director, Department of Water Resources

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October 9, 2003

Mr. E. Dotson Wilson
Chief Clerk of the Assembly
State Capitol, Room 3196
Sacramento, California 95814

Dear Mr. Wilson:

We are pleased to present you with the enclosed Department of Water Resources report, *Water Desalination - Findings and Recommendations* as called for by Assembly Bill 2717, (Chapter 957, Statutes of 2002). This law directed the Department not later than July 1, 2004, to report to the Legislature on potential opportunities and impediments for using seawater and brackish water desalination, and to examine what role, if any, the state should play in furthering the use of desalination technology. As specified in that legislation this report was prepared with significant input from a Water Desalination Task Force comprised of representatives from twenty-seven organizations.

The recommendations are not restricted to legislative actions or other statutory changes. Many can be implemented by State or local agencies without further legislative authorization or mandate. Several of the recommendations draw upon the experience of many agencies and experts, and provide advice and guidance that can be used by those interested in desalination to help facilitate their planning efforts.

The Department believes that the findings will help clarify some of the important issues regarding desalination, and that the recommendations will help to further its use and application, where appropriate, in the State.

If you have any questions about the Water Desalination Task Force or require additional information, please contact Charles Keene, DWR's Executive Officer for the Task Force at (818) 543-4620, or by e-mail at: chuckk@water.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael J. Spear".

Michael J. Spear
Interim Director

Enclosure

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Acknowledgements

The Department wishes to acknowledge and thank the Task Force members named in Appendix A and the following individuals for their help in formulating these Findings and Recommendations and for assisting the Department as part of the Task Force process:

- Marsha Prillwitz, Chief of the Office of Water Use Efficiency – California Department of Water Resources
- Fawzi Karajeh, Chief of the Water Recycling and Desalination Branch, Office of Water Use Efficiency -- California Department of Water Resources
- Brian Smith, Chief of the Resources Assessment Branch, San Joaquin District – California Department of Water Resources
- Fethi Benjemaa, Land and Water Use Analyst, Office of Water Use Efficiency – California Department of Water Resources
- Jennifer Wong, Engineer, Southern District – California Department of Water Resources
- Shahid Chaudhry, Engineer, State Energy Conservation and Development Commission

In addition, the Department wishes to acknowledge the contributions of the Bureau of Reclamation, who provided both technical and financial assistance to this effort.

Water Desalination

Findings and Recommendations

Introduction

In recent years, desalination has re-emerged as a viable water supply source in California. In the late 1980s, during a period of extended drought, several localities either considered or built desalination facilities along the California coast. But with the end of the drought, the high cost of desalinated water could not be justified for many of these localities and some closed their desalination facilities. By the late 1990s, however, desalination was receiving renewed interest as demands for water supply mounted and improvements in technology reduced the cost of desalination significantly.

In September 2002, AB 2717 (Hertzberg) was signed into law, directing the Department of Water Resources to convene a Desalination Task Force to “make recommendations related to potential opportunities for the use of seawater and brackish water desalination.” No later than July 1, 2004, the Department is to report to the legislature on potential opportunities for and impediments to the use of seawater and brackish water desalination in California, and what role, if any, the State should play in furthering the use of desalination technology. As specified in the legislation, the report was prepared with significant input from the Water Desalination Task Force comprised of representatives from twenty-seven organizations.

The potential for the increased use of desalination in California is significant. The opportunities are great for providing water supply from seawater and brackish water desalination as well as recovering contaminated groundwater. Although most estimate that desalination will contribute less than 10 percent of the total water supply needs in California, this still represents a significant portion of the State’s water supply portfolio.

Potentially, desalination can provide significant value and numerous benefits. These include:

- Providing additional water supply to meet existing and projected demands
- Replacing water lost from other sources and relieving drought conditions
- Enhancing water reliability and supplying high quality potable water
- Reducing groundwater overdraft and restoring use of polluted groundwater
- Replacing water that can be used for river and stream ecosystem restoration

Key Findings

The Department identified several key findings related to desalination that help provide the context for evaluating desalination. One of the primary findings is that economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs. Others include:

General

- 1. California's population is projected to increase by 600,000 per year, largely from natural increases (births minus deaths), which will impact demands for potable water supply.**
- 2. Some areas of the State have serious groundwater overdraft problems, adding pressure on existing water supplies to meet agricultural and urban demands.**
- 3. Every region of California has unmet environmental water needs (e.g., insufficient water availability to meet habitat needs).**
- 4. Desalination can provide a reliable supply during California's periodic droughts.**
- 5. Properly designed, maintained and operated desalination facilities can produce water of equal or higher quality than from alternative drinking water sources.**
- 6. Desalination is receiving increased attention as the cost of desalination decreases and the cost of many other water supplies continues to rise.**
- 7. Many communities and water districts are interested in developing desalination facilities as a local, reliable source of water to reduce their dependence on imported water and/or to meet existing or projected demand. Some communities see desalination as a way to reduce their diversions from rivers and streams, thus contributing to ecosystem restoration.**
- 8. Technologically, desalination is a proven, effective mechanism for providing a new source of water. A variety of desalination technologies have been applied in many locations throughout the world.**
- 9. Energy generation capacity would not be a constraint to implementation of currently proposed desalination projects. California's peak load demand is currently 52,000 MW; currently proposed desalination projects would require approximately 200 MW.**
- 10. Because energy is a major cost component of desalination, economic viability of seawater desalination, in some areas, is dependent on the availability of low-cost power.**

11. California is a leader in the development and manufacture of desalination membrane technology.

Brackish Groundwater Desalination

12. Brackish groundwater desalting is an effective means of treating impaired groundwater, providing a safe water supply and providing capacity for additional groundwater storage in areas with suitable hydrogeology.
13. The primary impediment to brackish groundwater desalting is the need for infrastructure that allows environmentally acceptable disposal of the concentrate discharge, which may contain constituents not found in seawater. Where these issues have been solved, brackish groundwater desalting facilities have been successfully permitted.
14. There are currently more than 40 brackish groundwater-desalting facilities in California that generate approximately 170,000 acre-feet per year (counting both reverse osmosis and ion exchange desalting).
15. An additional 30 to 35 brackish groundwater desalting facilities that could generate nearly 290,000 acre-feet per year are envisioned during the next decade.
16. Based on information from existing facilities, brackish water desalination uses on the order of 1,300 – 3,250 kWh of energy per acre-foot, dependent largely on the source water quality, plant capacity, and technology used.
17. The total cost for brackish water desalination, including the amortized costs for planning, designing, and constructing such a facility and the costs for operation (e.g., energy, chemicals, disposal etc) and distribution of product water will be based on site-specific conditions and currently range from \$130 to \$1,250 per acre-foot.

Seawater and Estuarine Desalination

18. Economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs.
19. While they vary on a site-specific level, potential impediments to seawater desalination include the environmental impacts associated with the feedwater intake and brine/concentrate disposal. As is the case with many other water management strategies, other potential issues include cost, siting and growth-inducement.
20. With proper design and location of outfalls, brine/concentrate disposal may not be a major impediment to desalination.
21. There are currently 16 permitted seawater desalination facilities that generate approximately 4,600 acre-feet per year of desalinated water in California.

- 22. An additional 19 seawater and estuarine desalination facilities that could generate about 240,000 acre-feet per year are currently being planned.**
- 23. Estuarine and seawater desalination currently use on the order of 3,260 to 4,900 kWh of energy per acre-foot, dependent on salinity and temperature of the source water.**
- 24. Seawater desalination is more energy intensive, per acre-foot, than brackish water desalination or water recycling. For energy comparison purposes, current desalination systems using reverse osmosis technology require about 30 percent more energy than existing interbasin supply systems currently delivering water to parts of Southern California. Efforts including those supported by the Bureau of Reclamation, U.S Desalination Coalition, and the National Water Research Institute are underway to increase the energy efficiency of desalination through improved membranes, dual pass processes, and additional energy recovery systems.**
- 25. The viability of seawater and estuarine desalination plants may depend on the price of electricity. Where a desalination plant could purchase electricity through non-retail agreements with power generators or marketers the cost of desalinated water should be lower than with utility-supplied power, which is in the range of 8 to 11 cents (retail) per kWh for municipal and investor owned utilities. Direct access agreements do not require that the desalination plant connect electrically to one power plant.**
- 26. Where a desalination plant may purchase power directly from a co-generator, it would not be subject to rate regulation, reducing the cost of electricity. The desalination plant and the host co-generating facility must meet a number of requirements specified in the State Public Utilities Code.**
- 27. The cost for new seawater and estuarine water desalination, including the amortized costs for planning, designing, and constructing such a facility, and the costs for operation (e.g., energy, chemicals, disposal etc), will range from \$700 per acre-foot (assuming wholesale energy costs of about 5 cents per kWh) to \$1,200 per acre-foot (assuming retail energy costs of about 11 cents per kWh). In addition, there are distribution costs of \$100 - \$300 per acre-foot.**
- 28. Many proposed seawater desalination facilities are currently planned to be co-located with existing coastal power plants, including several large facilities in Southern California.**
- 29. Advantages to co-locating desalination facilities with coastal power plants using once-through cooling may include: compatible land use, use of the existing infrastructure for feedwater intake and brine discharge, location security, use of the warmed power plant cooling water as the feedwater for the desalination facility, reduction of the power plant discharge thermal plume and the potential to purchase power from the host power plant at prices below retail rates.**

30. Co-locating a desalination facility with a coastal power plant may provide a justification for the continued use of once-through cooling technology. Once through cooling technology has well-documented environmental impacts, including impacts on marine organisms.
31. The appropriate State regulatory agencies have indicated that the siting of a new desalination facility, which utilizes any new or existing open water feedwater intakes, will require a current assessment of entrainment and impingement impacts as part of the environmental review and permitting process.
32. An advantage of blending a desalination plant's brine discharge within an existing wastewater discharge may be the reduction of the salinity of the brine discharge and an increase in the salinity of the wastewater discharge to more closely match that of the receiving water.
33. Various technologies exist that may avoid, reduce or minimize the impacts of feedwater intake.
 - a. Drawing feedwater from beach wells is one way to avoid the ecological impacts of entrainment and impingement associated with open water intakes; however, the capacity of each well is limited and is subject to local hydrogeologic conditions.
 - b. Low velocity intake systems, marine fish screens, sub-floor intakes and appropriate intake pipe design and location are methods that may reduce or minimize impacts of entrainment and impingement associated with open water intakes.

Planning and Permitting

34. Water, including ocean and estuarine water, is a public resource, subject to the public trust doctrine, and should be protected and managed for the public good.
35. The extent to which private companies are involved in the ownership and operation of proposed desalination plants varies widely, from completely private projects that may be regulated by the State Public Utilities Commission, to public-private partnerships, to projects that would be wholly owned, operated and controlled by public entities. The involvement of private companies in the ownership and/or operation of a desalination plant raises unique issues.
36. There are implications associated with the range of public-private possibilities for ownership and operation of desalination facilities. Local government has the responsibility to make the details of these arrangements available to the public.
37. Recently adopted international trade agreements and international trade agreements currently being negotiated may affect how federal, State and

local agencies adopt or apply regulations concerning activities of public agencies or private entities with multinational ties.

- 38. Desalination proposals are subject to existing regulatory and permitting processes to ensure environmental protection and public health.**
- 39. Environmental justice considerations include the siting of desalination facilities, determining who accrues the costs and benefits of desalination and who has the opportunity to use a higher quality (desalinated) water, and the possible impacts of replacing low-cost with high-cost water.**
- 40. Growth inducing impacts of any new water supply project, including desalination, must be evaluated on a case-by-case basis through existing environmental review and regulatory processes.**
- 41. Each desalination project involves different environmental characteristics, other water supply alternatives, proposed plant ownership/operation arrangements, demographics, economics, community values and planning guidelines.**

Major Recommendations

Based on the findings noted above, as well as other information considered by the Department, several recommendations have been advanced to guide the process of evaluating, permitting, funding, and implementing desalination projects. The overarching recommendation considered critical to the advancement of desalination is that desalination projects should be evaluated on a case-by-case basis. Because each facility is essentially unique, given local water supply and reliability needs, site-specific environmental conditions, project objectives, and proposed technology, case-by-case analyses are essential. The Department's other recommendations are:

General

- 1. Since each desalination project is unique and depends on project-specific conditions and considerations, each project should be evaluated on a case-by-case basis.**
- 2. Include desalination, where economically and environmentally appropriate, as an element of a balanced water supply portfolio, which also includes conservation and water recycling to the maximum extent practicable.**
- 3. Ensure equitable access to benefits from desalination projects and ensure desalination projects will not have disproportionate impacts particularly to low-income and/or ethnic communities.**
- 4. The State should create mechanisms that allow the environmental benefits associated with transitioning dependence on existing water sources to desalinated water to be realized.**
- 5. In conjunction with local governments, assess the availability of land and facilities for environmentally and economically acceptable seawater desalination.**
- 6. Results from monitoring at desalination projects should be reported widely for the broadest public benefits. Encourage opportunities to share information on operational data. Create a database and repository for storing and disseminating information.**
- 7. Create an Office of Desalination within the Department of Water Resources to advance the State's role in desalination.**

Energy and Environment

- 8. Ensure seawater desalination projects are designed and operated to avoid, reduce or minimize impingement, entrainment, brine discharge and other environmental impacts. Regulators, in consultation with the public, should seek coordinated mechanisms to mitigate unavoidable environmental impacts.**
- 9. Identify ways to improve water quality by mixing desalinated water with other water supplies.**
- 10. Where feasible and appropriate, utilize wastewater outfalls for blending/discharging desalination brine/concentrate.**
- 11. Compare reasonable estimates of benefits, costs and environmental impacts for desalination with those for other water supply alternatives realistically available to that area.**
- 12. Recognizing the importance of power costs to the costs of desalination, consider strategies that will allow project sponsors to access non-retail power rates.**
- 13. Clarify the applicability of non-retail energy pricing for desalination facilities.**
- 14. Study the energy intensity and rates currently paid for energy used to provide water from various sources including desalination.**
- 15. Study the potential for developing renewable energy systems in California, in conjunction with desalination implementation strategies.**
- 16. Identify ways that desalination can be used in a manner that enhances, or protects the environment, public access, public health, view sheds, fish and wildlife habitat and recreation/tourism.**

Planning and Permitting

- 17. To improve communication, cooperation, and consistency in permitting processes, encourage review processes for each desalination project to be coordinated among regulators and the public.**

18. Evaluate all new water supply strategies including desalination based upon adopted community General Plans, Urban Water Management Plans, Local Coastal Plans, and other approved plans that integrate regional planning, growth and water supply/demand projections. Environmental reviews should ensure that growth related impacts of desalination projects are properly evaluated.
19. Ensure adequate public involvement beginning early in the conception and development of desalination projects and continuing throughout planning, design and evaluation processes. Coordinate public notification, outreach and public involvement strategies.
20. If multiple desalination projects are proposed within a region, coordinate development and analysis of these projects, including their benefits and cumulative impacts.
21. For proposed desalination facilities co-locating with power plants, analyze the impacts of the desalination facility operations apart from the operations of the co-located facilities. This will identify the impacts of the desalination facility operations when there are reductions in cooling water quantities. This recommendation is not intended to dictate California Environmental Quality Act alternatives that must be evaluated.
22. When desalination projects propose environmental benefits, identify the assurances that those benefits will be realized.
23. Evaluate the effects of desalinated water on existing water supply distribution systems.
24. Each community should consider the appropriate role, if any, for private companies in a desalination project or proposal. Factors to consider include:
 - the desired extent of public access and public control;
 - the extent to which the public is willing to finance the capital costs of the project and bear the risks of project development;
 - the extent to which a proposed contract between a public and private entity would affect flexibility in operating the facility;
 - the relevant experience and capabilities of the public or private entity;
 - the impact of the various public-private configurations on ratepayers.

- 25. Private desalination projects, and private developers and plant operators, should be required to fully disclose the same information as a publicly owned and operated facility.**
- 26. To avoid potential international trade agreement violations, no legal standard or regulation should discriminate against an applicant based on ties to multi-national corporations.**
- 27. Investigate the ramifications of designating ocean and estuarine waters in proximity to desalination intakes as drinking water beneficial use.**

Funding

- 28. Provide funding for research and development projects (e.g., feedwater pretreatment, the value and limitations of beach wells for feedwater intake, other technologies to reduce entrainment and impingement impacts, strategies for brine/concentrate management, opportunities for energy efficiencies and application of alternative energy sources and combined energy and desalination technologies).**
- 29. In addition to other eligibility criteria, State funding should give high priority to those desalination projects that provide the greatest public benefits, such as: 1) serve areas implementing all conservation and recycling programs to the maximum extent practicable; 2) demonstrate long-term environmental benefits; 3) avoid or reduce environmental impacts to the extent possible; 4) reduce health risks by improving water quality; and 5) ensure equitable access to benefits from desalination projects and include feasible mitigation for any environmental justice impacts.**

Task Force Process

As directed by AB 2717, the Department of Water Resources convened a Water Desalination Task Force comprised of representative of twenty-seven organizations to advise it on the important issues and opportunities for use of desalination in California. Joining the Department as co-chairs of the Task Force were the State Water Resources Control Board, the State Energy Commission, the State Department of Health Services, and the California Coastal Commission. The Center for Collaborative Policy, a program of California State University, Sacramento, assisted with planning and facilitating the Task Force collaborative process.

The first phase of the Task Force process was the preparation of an assessment report, which highlighted the various perspectives on issues identified by the enabling legislation and prospective Task Force members. The first Task Force meeting was convened in May 2003, followed by four two-day meetings (June through September) to discuss the key issues and develop a list of findings and recommendations. Three public workshops were held in Carlsbad, Sausalito, and Monterey, which were also the site of field trips to view different types of existing or proposed desalination facilities. Additional features of Task Force meetings were the preparation of working papers and expert presentations to guide discussions at each meeting.

The work of the Task Force and the Department was ultimately conducted in a much shorter time frame and with significantly reduced funding than originally planned. While this prevented the Department from more fully evaluating the proposed findings and recommendations and identifying possible solutions or approaches to the more significant issues, broad support exists for the findings and recommendations identified.

Appendix A

Task Force Members and Affiliations

Jonas Minton, Chair

California Department of Water Resources

Pete Silva, Co-Chair

State Water Resources Control Board

Tom Luster, Co-Chair

California Coastal Commission

David Spath, Co-Chair

State Department of Health Services

John Sugar, Co-Chair

State Energy Resources Conservation and Development Commission

Robert C. Wilkinson

University of California, Santa Barbara

Tim Ramirez

The Resources Agency

Bill Steele

United States Bureau of Reclamation

Kathy Fletcher

California Environmental Protection Agency

Brad Damitz

Monterey Bay National Marine Sanctuary

Sergio Guillen

California Bay Delta Authority

Marco Gonzalez

Surfriders, San Diego Chapter

Roger Briggs

Regional Water Quality Control Board – Central Coast

Michael Stanley-Jones

Clean Water Resources Action & Clean Water Fund

Eric Larson

California Department of Fish and Game

Allen Stroh

Monterey County Health Department

Steve Shaffer

Department of Food and Agriculture

Kevin Wattier

Long Beach Water Department

Jeffry Blanchfield

Bay Conservation and Development Commission

Darryl Miller

Central Basin & West Basin MWD

Rich Atwater
Inland Empire Utilities Agency

Jared Huffman
Marin Municipal Water District

Steve Lamar
California Building Industry Association

David Furukawa
National Water Research Institute

Bob Yamada
American Membrane Technology Association

Debbie Cook
League of Cities-Huntington Beach

Richard Gordon
County Supervisor Association of
California

Appendix B

Summary of Task Force Meeting Schedule, Locations and Activities

- April 2003: Completion of Issues Assessment Report by the Center for Collaborative Policy (CSU-Sacramento)
- May 2003: First Task Force meeting in Sacramento to kick-off the collaborative process, identifying and clarifying the key issues to be addressed by the Task Force.
- June 2003: Second Task Force meeting in Carlsbad to address siting, feedwater and brine/concentrate discharge issues; included technical presentations by experts from Scripps Institute and University of California Santa Cruz; included a field trip to the San Diego Water Authority's pilot desalination project in Carlsbad; the first of three public workshops was held.
- July 2003: Third Task Force meeting in Sausalito to address energy, economics and technology issues; included technical presentations by experts from the University of California Santa Barbara and the California Energy Commission; included a field trip to the proposed site of the Marin County desalination facility located on San Francisco Bay; the second public workshop was held.
- Aug 2003: Fourth Task Force meeting in Monterey to address planning, permitting and public health issues; included field trips to the Monterey Aquarium desalination facility, the City of Marina beach well desalination facility and Elkhorn slough near the site of a desalination facility proposed at Moss Landing; the third public workshop was held.
- Sept 2003: Fifth Task Force meeting in Sacramento to revise and finalize findings and recommendations of the Task Force.

Appendix C

AB2717 - Enabling Legislation for the Water Desalination Task Force

Assembly Bill No. 2717

CHAPTER 957

An act to add Section 12949.6 to the Water Code, relating to water, and making an appropriation therefor.

[Approved by Governor September 26, 2002. Filed with Secretary of State September 27, 2002.]

I am signing Assembly Bill 2717, however, I am reducing the appropriation from the Renewable Resources Investment Fund to \$100,000.

This bill would require the Department of Water Resources to convene a Water Desalination task force to make recommendations related to potential opportunities for the use of seawater and brackish water desalination. The revenues from the Renewable Resources Investment Fund are below projections and the fund is expected to have a significant shortfall this year. At a time when the state is dealing with a \$24 billion shortfall, any available funds should be used for on-going environmental activities and programs now supported by the General Fund that would otherwise be reduced or eliminated.

Studying the potential opportunities and impediments for the use of water desalination is an important step toward helping the state meet its water needs. Therefore, I am directing the Department of Water Resources to explore funding partnerships with interested local and private entities to accomplish this goal.

GRAY DAVIS, Governor

LEGISLATIVE COUNSEL'S DIGEST

AB 2717, Hertzberg. Water: desalination: report.

(1) The Cobey-Porter Saline Water Conversion Law authorizes the Department of Water Resources, either independently or in cooperation with public or private entities to conduct a program of investigation, study, and evaluation in the field of saline water conversion, to provide assistance to persons or entities seeking to construct desalination facilities, and after submission of a written report and upon appropriation from the Legislature, to finance, construct, and operate saline water conversion facilities.

This bill would require the department, not later than July 1, 2004, to report to the Legislature, on potential opportunities and impediments for using seawater and brackish water desalination, and to examine what role, if any, the state should play in furthering the use of desalination technology. The bill would require the department to convene a Water Desalination Task Force, comprised of representatives from listed agencies and

interest groups, to advise the department in carrying out these duties and in making recommendations to the Legislature.

(2) Under existing law, the Bosco-Keene Renewable Resources Investment Fund is established for certain purposes. This bill would appropriate \$600,000 from the Bosco-Keene Renewable Resources Investment Fund to the department for the purpose of establishing the Water Desalination Task Force and preparing the report required by the bill.

Appropriation: yes.

The people of the State of California do enact as follows:

SECTION 1. The Legislature finds and declares as follows:

- (a) There is a clear public interest in ensuring that land and facilities are available for cost-effective seawater desalination.
- (b) Recent advances in technology could make seawater desalination a more attractive option for increasing available water supplies.
- (c) Additional information is necessary to assess the potential opportunities for seawater desalination in California.
- (d) The activities of a water desalination task force are consistent with those activities for which the moneys in the Bosco-Keene Renewable Resources Investment Fund may be used pursuant to Section 34000 of the Public Resources Code.

SEC. 2. Section 12949.6 is added to the Water Code, to read:

- 12949.6. (a) Not later than July 1, 2004, the Department of Water Resources shall report to the Legislature on potential opportunities for the use of seawater and brackish water desalination in California. The report shall evaluate impediments to the use of desalination technology and shall examine what role, if any, the state should play in furthering the use of desalination in California.
- (b) The department shall convene a task force, to be known as the Water Desalination Task Force, to advise the department in implementation of subdivision (a), including making recommendations to the Legislature regarding the following:
 - (1) The need for research, development and demonstration projects for more cost effective and technologically efficient desalination processes.
 - (2) The environmental impacts of brine disposal, energy use related to desalination, and large-scale ocean water desalination.
 - (3) An evaluation of the current regulatory framework of state and local rules, regulations, ordinances, and permits to identify the obstacles and methods to creating an efficient siting and permitting system.
 - (4) Determining a relationship between existing electricity generation facilities and potential desalination facilities, including an examination of issues related to the amounts of electricity required to maintain a desalination facility.

- (5) Ensuring desalinated water meets state water quality standards.
- (6) Impediments or constraints, other than water rights, to increasing the use of desalinated water both in coastal and inland regions.
- (7) The economic impact and potential impacts of the desalination industry on state revenues.
- (8) The role that the state should play in furthering the use of desalination technology in California.
- (9) An evaluation of a potential relationship between desalination technology and alternative energy sources, including photovoltaic energy and desalination.
- (c) (1) The task force shall be convened by the department and be comprised of one representative from each of the following agencies:
 - (A) The department.
 - (B) The California Coastal Commission.
 - (C) The State Energy Resources Conservation and Development Commission.
 - (D) The California Environmental Protection Agency.
 - (E) The State Department of Health Services.
 - (F) The Resources Agency.
 - (G) The State Water Resources Control Board.
 - (H) The CALFED Bay-Delta Program.
 - (I) The Department of Food and Agriculture.
 - (J) The University of California.
 - (K) The United States Department of Interior, if that agency wishes to participate.
- (2) The task force shall also include, as determined by the department, one representative from a recognized environmental advocacy group, one representative from a consumer advocacy group, one representative of local agency health officers, one representative of a municipal water supply agency, one representative of urban water wholesalers, one representative from a regional water control board, one representative from a groundwater management entity, one representative of water districts, one representative from a nonprofit association of public and private members created to further the use of desalinated water, one representative of land development, and one representative of industrial interests.
- (d) The sum of \$600,000 is hereby appropriated from the Bosco-Keene Renewable Resources Investment Fund to the department for the purpose of establishing the task force and preparing the report required in subdivision (a).

-O-