

- **Board of Directors**  
***Desalination and Reclamation Committee***

August 16, 2005 Board Meeting

---

**9-3**

---

**Subject**

Review of Options for Metropolitan's Role in Seawater Desalination

---

**Description**

The Desalination and Reclamation Committee is reviewing Metropolitan's role in developing seawater desalination to meet the objectives of the approved Integrated Resources Plan (IRP) Update, dated July 2004. As part of the review, staff has summarized three options for Metropolitan to work with member agencies and outside interests to determine the viability of developing and implementing seawater desalination over the next 25 years. The outcome of these options will help to assess the efficiency and cost-effectiveness of seawater desalination, and to adjust Metropolitan's objectives for conservation, imported water supplies and local resources, accordingly.

These three options for Metropolitan's role in seawater desalination are discussed in terms of their benefits, risks, critical activities, and cost. The options are consistent with existing policy principles for seawater desalination, and can be pursued individually or in combination to advance strategic initiatives and objectives. With board input and direction, staff can proceed with the implementation of these options.

**Background**

In February 2001, the Board adopted Policy Principles to guide Metropolitan's efforts in brackish water and seawater desalination ([Attachment 1](#)). Under those Principles, the Board authorized the Seawater Desalination Program in August 2001. Program goals included providing financial incentives on a competitive basis and performance provisions to sustain production. In October 2001, the Board authorized the development of the Seawater Desalination Research Program, which established an approach to provide funding for member agency research projects. Subsequently, five member agencies received funding commitments from Metropolitan.

These Policy Principles and program objectives have been reaffirmed in the IRP Update in July 2004. The IRP Update recommends a supply buffer to ensure water supply reliability, meet water quality requirements, and mitigate against implementation risks. Metropolitan and the member agencies are planning up to 500,000 acre-feet of supply buffer in addition to the conservation and resources targets of 2025. The partial or full implementation of the supply buffer is dependent on the progress in developing resources projects, including seawater desalination. At its July 12, 2005 meeting, the Board approved the incentive contracts with the proposed combined yield of 142,000 AFY by 2015.

Additional seawater desalination supplies could be developed beyond this 2015 target if potential programs prove to be viable and cost-effective. In January 2005, the Desalination and Reclamation Committee directed staff to evaluate Metropolitan's role in seawater desalination as a means of identifying additional desalination opportunities. Since that time, staff has consulted with the member agencies to identify different options for Metropolitan's role. In June, staff presented information and analyses to the Board for three major policy areas including incentive contracts, development of a regional project by Metropolitan and development of seawater desalination projects as partnerships with other agencies.

### **Options for Metropolitan's Seawater Desalination Program**

**Attachment 2** is an issue paper that provides an expanded discussion of the three options mentioned above. For each option, benefits, risks, and costs are discussed in regional and local context, and critical activities highlighted for board review and discussion. The options are consistent with existing policy principles for seawater desalination and the option of incentive contracts can be pursued individually or in combination with any of the other options to advance strategic initiatives and objectives. Each option provides the means to further develop Metropolitan's water resource strategy and address resource needs beyond the current Integrated Water Resources Plan horizon for 2025.

Common to these three options remain the activities under the Policy Principles related to asset management, legislative activities and research.

The Desalination and Reclamation Committee has requested that staff evaluate different approaches for the proceeds from Ormond Beach to support the development of seawater desalination. The distribution of approximately \$11 million in proceeds from Metropolitan's sale of its Ormond Beach property would be driven by the options (identified in **Attachment 2**) selected by the Board. For example, if the Board selects to only pursue the option of incentive contracts, staff would develop for board action a plan to distribute a portion of the Ormond Beach proceeds to fund activities related to the five member agency-sponsored seawater desalination projects. If the Board were to combine the incentive contract option with either of the additional options listed in **Attachment 2**, the Ormond Beach proceeds would be used to fund Metropolitan's activities under the additional options.

With board direction and input, staff would develop an implementation plan for these seawater desalination options for board consideration by October 2005. The implementation plan would establish a recommended path for development of seawater desalination, providing critical board decision points and development milestones. For October 2005, staff would also establish the resource needs to be met by the implementation plan.

### **Policy**

---

By Minute Item 44356, dated Feb. 13, 2001, the Board adopted updated policy principles for brackish water and seawater desalination.

By Minute Item 44578, dated Aug. 20, 2001 the Board approved the Seawater Desalination Program and administrative guidelines.

By Minute Item 45115, dated Dec. 10, 2002, the Board authorized finalizing contract terms and principles for Seawater Desalination Program agreements.

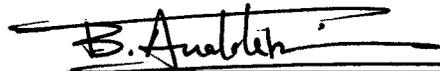
By Minute Item 45828, dated July 12, 2004, the Board adopted the Integrated Water Resources Plan Update.

### **Fiscal Impact**

---

**Status Quo.** Under the current Seawater Desalination Program, Metropolitan would execute the incentive contracts and provide up to \$887.5 million in incentive payments over the life of those contracts. Under separate board action, a portion of the approximately \$11 million in proceeds from the sale of Metropolitan's Ormond Beach property could be distributed for activities related to the five member agency-sponsored seawater desalination projects.

**Revised Approach.** Under a revised approach combining two or all three options discussed, Metropolitan would execute the incentive contracts and provide up to \$887.5 million in incentive payments over the life of those contracts. Adding either Metropolitan development of a regional project or development through partnerships could commit Metropolitan to a significantly larger investment not currently reflected in Metropolitan's long-range rate forecasts. The proceeds from the sale of Metropolitan's Ormond Beach property could be reserved to fund Metropolitan's activities under the options.

	7/21/2005
<hr/>	<i>Date</i>
<i>B. Anatole Falagan</i>	
<i>for Stephen N. Arakawa</i>	
<i>Manager, Water Resource Management</i>	
	7/21/2005
<hr/>	<i>Date</i>
<i>Dennis B. Underwood</i>	
<i>CEO/General Manager</i>	

**Attachment 1 – Metropolitan's Policy Principles for Brackish Water and Seawater Desalination  
Adopted February 13, 2001**

**Attachment 2 – Issue Paper Policy Options for Metropolitan's Role in Seawater Desalination**

BLA #3786

**Metropolitan Water District of Southern California**  
**Policy Principles for Brackish Water and Seawater Desalination**  
**Adopted February 13, 2001**

Whereas Metropolitan and its member agencies have a responsibility to provide adequate, reliable, high quality water supplies to meet the current and projected water demands in Southern California; and

Whereas the population and the corresponding demand for water in Southern California are both expected to increase by about 50 percent over the next 20 years; and

Whereas Southern California's economy is dependent on a reliable, high quality water supply and that the economy is expected to continue to grow further increasing the demand for additional water supplies over the next 20 years; and

Whereas Southern California currently relies on imported water for about half its drinking water supply; and

Whereas Southern California is increasingly having to look toward alternative water supplies rather than the additional development of its current imported supplies; and

Whereas Southern California is an arid region whose natural, high quality, reliable sources of fresh water are limited; and

Whereas Southern California borders the Pacific Ocean;

Therefore, Metropolitan, in its search for reliable, cost-effective, high quality water acquired through environmentally sensitive means, shall coordinate with the member agencies the development of brackish water and seawater desalination (desalination) consistent with the following policy principles.

1. In its IRP analysis, Metropolitan shall consider development of full-scale desalination on an incremental basis, in advance of the projected need for desalination, for the purpose of developing regional expertise in this resource rather than anticipating the initial development of multiple full-scale desalination projects concurrently.
2. Metropolitan will seek to develop financial plans for desalination that combine federal, state, Metropolitan and other regional and local funding, and ensure that benefits including water quality and reliability are commensurate with investments from those sources.  
  
Metropolitan may partner with public and private entities for the development of desalination. Metropolitan will seek these partnerships through competitive processes to help further lower the costs for this resource.
3. Metropolitan may pursue activities critical to the development of desalination, such as land or other property acquisition, that may be necessary in advance of the planning horizons established for the resource.
4. Metropolitan will lead in the development of legislative strategies that, in coordination with the member agencies, build consensus amongst federal, state, and local policy makers to secure decisions favorable to the development of desalination for the region. These strategies will address:
  - a) Funding in the form of grants and/or loans from various sources.
  - b) Legislation that facilitates the components of the development process for desalination, such as financing, permitting, constructing and operating.
  - c) Informing and educating various constituencies on the critical role that desalination plays for the region's future.
5. Metropolitan will promote desalination research and innovation through partnerships that competitively fund projects that provide benefits to the development of desalination for the region.

## Issue Paper Policy Options for Metropolitan's Role in Seawater Desalination

Desalination and Reclamation Committee  
July 26, 2005

### Introduction

Since January 2005, the Desalination and Reclamation Committee and staff have reviewed the Seawater Desalination Program and consulted with member agencies to identify roles Metropolitan could play to achieve IRP targets, including development of a regional project. This review has included discussion of three policy options:

- Incentive contracts
- Development of a regional project by Metropolitan
- Development through partnerships

Common to these three options are the current approaches to asset management, legislative strategies and research. Each of these policy options conforms to the Policy Principles established by the Board in 2001. No revision to the Policy Principles is necessary to undertake any of these options. Each option provides the means to further develop Metropolitan's water resource strategy and address resource needs beyond the current Integrated Resources Plan horizon of 2025. Below is a discussion of each of these policy options, with a discussion of the benefits and risks associated with each, as well as critical activities related to the implementation of these options. Table 1 provides an abbreviated summary of the options.

### Incentive Contracts

Under this option, the development of seawater desalination would be pursued through the current incentive contracts with member agencies. These contracts have been structured much like other local resources contracts between Metropolitan and member agencies. These incentive contracts are premised upon paying for performance for a set period of time; for seawater desalination, the payments are up to \$250 per acre-foot for 25 years. Today, these agreements are for member agency projects for a total of 142,000 acre-feet, within the IRP goal of 150,000 acre-feet by 2025.

Development through incentive contracts offers the regional benefit of providing a core supply of 150,000 acre-feet per year. The incentive offered is reflective of this benefit, and includes benefits obtained by deferral of Metropolitan infrastructure. Additionally, these projects provide local benefits that include a reliable water supply source within a member agency service area. These seawater desalination projects would provide lower salinity water for the local distribution system, in some cases providing localized water quality improvement through blending.

There are risks associated with this option. If a project does not come to fruition and does not develop its contracted yield, a regional risk is the failure to achieve IRP targets goals to meet future demands. A balance to this risk is the IRP buffer supply, which allows for substitution of resources when one resource fails to reach IRP targets.

Another additional regional risk is an accelerated need for additional infrastructure to deliver Metropolitan supplies when a local project does not materialize. Metropolitan has balanced against this risk in its System Overview Study by conducting sensitivity analyses to determine the range in timing of major infrastructure projects due to various factors affecting demands for Metropolitan supplies.

There are local risks, too. One is the risk to a member agency of incurring a significant resource cost. Additionally, design and construction of a seawater desalination plant is a complex undertaking, with significant project development risks. Member agencies are responding to these two risks in several manners. To mitigate for high resource costs, member agencies are engaged in securing access to electrical energy prices below current market rates. Additionally, member agencies have sought flexibility in their incentive contracts with Metropolitan, so their project implementation can adjust to challenges to milestones without losing Metropolitan's contractual commitment.

Under this option, the critical activities are focused on the execution of the incentive contracts with each of the agencies.

### **Metropolitan Development of Regional Project**

Under this option, Metropolitan would study, design, build and operate a seawater desalination plant, using a capital project approach to developing the resource. Initial activities would be focused on feasibility level analyses to determine site, size, optimized operations and system integration requirements. It is likely that Metropolitan would implement this project through the support of local communities and a member agency.

Regional and local benefits would remain the same as discussed under the option of incentive contracts. However, the resource risk and project risk would shift to Metropolitan. To mitigate for this risk, Metropolitan could adopt many of the strategies currently developed by the member agencies. Metropolitan would be investigating opportunities to reduce the costs of energy, as well as researching processes that could lower overall energy consumption for the project. Metropolitan would also engage in legislative strategies to seek supplemental sources of funding for one or more project components.

Local risks would be minimized under this option.

Critical activities under this option would be to first formulate for board consideration an implementation plan that takes into account the various project phases all the way through plant start up and production. The implementation plan would establish an overall project schedule, including an initial program estimate, with milestones established for the major feasibility, design, and construction activities. Each of these milestones would represent a major decision point for the Board to consider proceeding with the project.

### **Partnerships**

Under this option, Metropolitan would use partnerships to develop seawater desalination. Partnerships could take many forms – either completely public, private, or a combination of both. In each instance the nature of the partnership would be to offer an alternative project development vehicle for Metropolitan to consider. In order to facilitate consideration of various partnerships, a competitive selection process would be necessary to ensure the highest value for Metropolitan's investment.

The benefits of this option are similar to those obtained by Metropolitan development of a regional project. The goal of seeking partnerships would be to match benefits and buffer or share risks in the development of a seawater desalination plant. A major risk under this option occurs if the partnership fails to complete the project. Another risk could occur if the supply is not accepted for either local or regional distribution, stranding the supply. Development of a proper contract structure is critical to mitigate for both of these situations.

Critical activities under this option would include the development of a detailed implementation plan that offers a three-step competitive process consisting of the following components:

- A Request for Qualifications and Request for Proposal process, which would be open to interested private and public entities, would identify and evaluate opportunities for Metropolitan to secure desalinated seawater supplies. The result of this process would be a short list of selected projects that could be recommended to the Board to initiate negotiations on draft agreement terms.
- With board approval, staff would commence negotiations with short-listed proponents and meet to clarify technical and financial characteristics and complete assessments and analyses. Projects that reached successful negotiations based on their ability to meet program objectives would be recommended to the Board to approve agreement terms and commence detailed project development.
- With board approval, Metropolitan and project proponents would execute a final agreement and commence project activities such as environmental review, design and permitting, construction and operations.

### **Conclusions**

The three options discussed above offer a variety of regional and local benefits, and distribute differently the risks associated with development of a complex resource such as seawater desalination. The options are not mutually exclusive – they can be combined to join benefits and manage risks as needed to achieve water resource goals. Each of the options is consistent with the board-adopted Policy Principles for Brackish Water and Seawater Desalination.

**Table 1 – Summary of Metropolitan Roles for Seawater Desalination**

	<b>Incentive Contracts</b>	<b>Metropolitan development of regional project</b>	<b>Metropolitan development through partnerships</b>
<b>Description</b>	Development pursued through the incentive contracts with the member agencies.	Metropolitan would develop a regional project, undertaking the study, design, construction and operation as a capital project.	Metropolitan would use partnerships to develop a regional project. Partnerships could take many forms – public, private or combination.
<b>Benefits</b>	<ul style="list-style-type: none"> <li>▪ Core supply of 150,000 AFY</li> <li>▪ Deferral of infrastructure, tied to incentive</li> <li>▪ Local, reliable water source</li> <li>▪ Localized water quality benefit</li> </ul>	<ul style="list-style-type: none"> <li>▪ Core supply of 150,000 AFY, plus additional project supply</li> <li>▪ Deferral of infrastructure</li> <li>▪ Local, reliable water source</li> <li>▪ Localized water quality benefit</li> </ul>	<ul style="list-style-type: none"> <li>▪ Core supply of 150,000 AFY, plus additional project supply</li> <li>▪ Deferral of infrastructure</li> <li>▪ Local, reliable water source</li> <li>▪ Localized water quality benefit</li> <li>▪ Match benefits to partners and share risks in development.</li> </ul>
<b>Risks</b>	<ul style="list-style-type: none"> <li>▪ Regional – if project fails, IRP target not met. IRP buffer supply would address this risk.</li> <li>▪ Regional – infrastructure need if project fails. Addressed in System Overview Study sensitivity analyses.</li> <li>▪ Local – significant resource cost. Seek to lower energy costs.</li> <li>▪ Local – significant project risk. Seek flexible contract structure.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regional – if project fails, future IRP target not met. IRP buffer supply would address this risk.</li> <li>▪ Regional – infrastructure need if project fails. Addressed in System Overview Study sensitivity analyses.</li> <li>▪ Regional – significant resource cost. Seek to lower energy costs.</li> <li>▪ Regional – significant project risk. Develop implementation plan with appropriate decision points and milestones</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regional – if project fails, future IRP target not met. IRP buffer supply would address this risk.</li> <li>▪ Regional – infrastructure need if project fails. Addressed in System Overview Study sensitivity analyses.</li> <li>▪ Regional – significant resource cost. Seek to lower energy costs.</li> <li>▪ Regional – significant project risk. Develop implementation plan with appropriate decision points and milestones</li> </ul>
<b>Critical Activities</b>	<ul style="list-style-type: none"> <li>▪ Execute and implement the incentive contracts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Formulate implementation plan for project development, including project phases from feasibility to start-up and operation.</li> <li>▪ Implementation plan would establish schedule, project estimate, and critical milestones.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Formulate three step competitive process:                             <ul style="list-style-type: none"> <li>○ RFQ/RFP</li> <li>○ Negotiations</li> <li>○ Implementation</li> </ul> </li> </ul>
<b>Cost</b>	<ul style="list-style-type: none"> <li>▪ Regional costs are limited to incentives</li> <li>▪ Local costs depend on project expenditures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Region bears cost of project</li> <li>▪ Local agency pays cost through Metropolitan rate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Regional share with partner</li> <li>▪ Local agency pays cost through Metropolitan rate</li> </ul>