



● **Board of Directors**  
***Water Planning and Stewardship Committee***

October 13, 2009 Board Meeting

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9-2

**Subject**

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Report on Carlsbad Seawater Desalination Project with San Diego County Water Authority and its local retail agencies

**Description**

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This letter provides an update on the status of the proposed Carlsbad Seawater Desalination Project as described in [Attachment 1](#). Staff has been negotiating terms for entering into a Seawater Desalination Program (SDP) agreement with San Diego County Water Authority (SDCWA) and nine of its retail agencies to provide financial incentives for product water from the Carlsbad Seawater Desalination Project. Those draft terms are summarized in [Attachment 2](#). The proposed project would produce and deliver up to 56,000 acre-feet per year (AFY) of desalinated seawater for potable purposes, and thereby displace a demand for imported supplies and help achieve Metropolitan's 2004 Integrated Resources Plan Update seawater desalination target of 150,000 AFY.

Background

In July 2005, the Board authorized staff to enter into a SDP agreement with SDCWA for a 56,000 AFY project conditional on staff returning to the Board with environmental documentation for consideration when complete. This project was one of five seawater desalination projects amounting to 142,000 acre-feet authorized by the Board for inclusion in the SDP with uniform terms. Metropolitan executed agreements with uniform terms for three other projects. The authorized SDP agreement with SDCWA has not yet been executed principally because project water delivery arrangements with purchasing local retail agencies were not finalized until recently.

Poseidon Resources LLC (Poseidon), a Delaware limited liability company, intends to procure contractors to build and operate the project. Poseidon develops and finances water infrastructure projects, primarily seawater desalination and wastewater reclamation projects. Poseidon's projects are implemented through public-private partnerships that link private financing with construction and operation. Besides the proposed Carlsbad project, Poseidon has been involved in the development of seawater desalination in Tampa Bay, Florida, which is currently operated by Tampa Bay Water and is planning to develop a seawater desalination project in Huntington Beach, California. In contrast to typical investor-owned utilities, Poseidon's operation will not be regulated by the California Public Utilities Commission. Project operation will be regulated by a number of other California agencies including the Department of Public Health and the Regional Water Quality Control Board.

Current status

Poseidon would own and operate the proposed project that includes a treatment plant and transmission pipelines. Under separate agreements between Poseidon and SDCWA's local retail agencies, Poseidon would sell water from the project to nine retail agencies: Carlsbad Municipal Water District, Santa Fe Irrigation District, Valley Center Municipal Water District, Vallecitos Water District, Rincon del Diablo Municipal Water District, Olivenhain Municipal Water District, Sweetwater Authority, City of Oceanside, and Rainbow Municipal Water District. Water would be delivered to these agencies via project transmission pipelines or through SDCWA's distribution system as blended or exchanged supplies.

The city of Carlsbad, which is the lead agency under CEQA guidelines, certified the project's environmental documentation in 2006. While Poseidon has obtained the State and Federal approvals needed for the project, they must satisfy several conditions before the final Coastal Commission permit and State Lands Commission lease are issued for construction. Poseidon is in the process of satisfying these conditions. Approvals from the State Lands

Commission and Regional Water Quality Control Board are currently subject to pending litigation and administrative appeals by environmental groups concerned about impacts to marine life and greenhouse gas emissions. These environmental issues were assessed by state regulatory agencies and addressed in requirements for mitigation and other project conditions in the project's permits and leases. Poseidon is planning to start construction in 2010 with project operation commencing in 2012.

### Proposed agreement

The Board previously authorized staff to enter into a SDP agreement with SDCWA, subject to completion of environmental documentation. Staff intends to return to the Board to adopt a CEQA determination and seek authorization to add SDCWA's retail water agencies as signatories to the agreement. The proposed agreement for the Carlsbad project would initially be executed by 11 parties comprised of Metropolitan, SDCWA, and nine retail water agencies within its service area. SDCWA would be responsible for coordinating with the local retail agencies, providing project cost and water delivery data to Metropolitan, and distributing program incentives to the retail agencies. SDCWA and the nine local retail agencies have approved the draft agreement terms in concept and the parties, including Metropolitan, continue to refine detailed contract language.

Because the project would be owned by a private entity without a direct contractual relationship to Metropolitan, certain requirements of the SDP would apply to Poseidon through its water purchase agreements with the local retail agencies. The Agreement would make Metropolitan's incentive obligation contingent upon existence and enforcement of several critical terms in these water purchase agreements. As outlined in [Attachment 2](#), such terms include requirements for cost-accounting methodologies, disclosure, record-keeping, auditing, and access to intellectual property. Project costs incurred by Poseidon and local retail agencies would be subject to audit by Metropolitan. Carlsbad Municipal Water District would serve as the clearinghouse agency for obtaining financial cost data from Poseidon and submit documentation through the SDCWA to Metropolitan for the purposes of agreement administration.

Under the agreement, Metropolitan's incentive payments would equal the difference between the project's unit cost and Metropolitan's full service treated water rate identified in the Administrative Code up to a maximum of \$250 per acre-foot of delivered project water. Incentive credits are provided to the SDCWA monthly and must be passed on to the nine local retail agencies participating in the project.

The agreement describes eligible cost components and procedures for reporting project costs and project water deliveries. Staff will monitor costs and deliveries on a monthly basis and reconcile with project accounting records at least annually.

### **Policy**

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

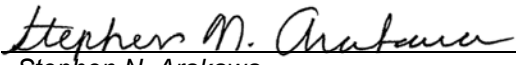
By Minute Item 45115, dated December 10, 2002, the Board authorized finalizing contracts terms and principles for Seawater Desalination Program agreements.

By Minute Item 46303, dated July 12, 2005, the Board authorized entering into a Seawater Desalination Program agreement with San Diego County Water Authority.

**Fiscal Impact**

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The maximum annual contribution by Metropolitan would be up to \$14 million for the production and delivery of up to 56,000 acre-feet of desalinated seawater from the Carlsbad project. Metropolitan's total contribution would be up to \$350 million for about 1.4 million acre-feet of water produced over 25 years. Annual incentives would be funded from Metropolitan's water stewardship fund and would be included in Metropolitan's future budget.

  
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Stephen N. Arakawa  
Manager, Water Resource Management

10/7/2009  
Date

  
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Jeffrey Nightlinger  
General Manager

10/7/2009  
Date

**Attachment 1 – Project Description**

**Attachment 2 – Proposed Agreement Terms**

BLA #6650

## PROJECT DESCRIPTION

### Carlsbad Seawater Desalination Project

#### Overview

Poseidon Resources LLC (Poseidon), a Delaware limited liability company, plans to construct and operate capital facilities collectively known as the Carlsbad Seawater Desalination Project (Project). The Project will treat about 56,000 acre-feet per year (AFY) of seawater to potable standards and sell that water to San Diego County Water Authority's (SDCWA) local retail agencies (LRAs) for beneficial use within SDCWA's and Metropolitan's service area. The desalination facility will be located adjacent to the existing Encina Power Station (Power Station), immediately south of the Agua Hedionda Lagoon within the City of Carlsbad in northern San Diego County. Poseidon has entered into a Ground Lease and Easement Agreement with the Cabrillo Power I LLC (a subsidiary of NRG Energy Inc.), the owner of the Power Station, for a parcel of about 5.7 acres for the construction and operation of the treatment plant.

#### Project Facilities

The Project consists of a seawater desalination treatment plant and transmission pipelines designed to deliver 56,000 AFY of treated water to LRAs. The desalination process includes pretreatment, reverse osmosis desalination, and disinfection and product water stabilization. The Project will use the existing Power Station's cooling water discharge outfall for its seawater intake and disposal of brine generated by the treatment process pursuant to a permit issued by the San Diego Regional Water Quality Control Board. If the Power Station converts to alternative cooling mechanisms as planned in the future or is offline, the project would use the existing Power Station intake structure for seawater supply and would be entirely responsible for mitigating impacts related to its use. Figure 1 shows the location of treatment plant and intake and outfall structures.

Project transmission pipelines would deliver water from the seawater desalination plant to the cities of Carlsbad, Vista, Oceanside, and San Marcos and connect to SDCWA's and Vallecitos Water District's potable water distribution systems. A second Project pipeline would be constructed to supply water to Carlsbad Municipal Water District's Santa Fe Reservoir. Other LRAs will receive Project water through SDCWA's distribution system as blended or exchanged supplies. Figure 2 shows the project transmission pipelines location.

#### Mitigation

As part of the permits approved by the California Coastal Commission and Regional Water Quality Control Board, Poseidon will restore about 55 acres of land that would be dedicated to wetlands to offset the marine life impacts from project operation. Further, the California Coastal Commission approval requires Poseidon to take measures to mitigate net greenhouse gas emissions.

#### Source of Water and Brine Discharge

Seawater from the Pacific Ocean would be the sole source of water for the Project. The Power Station's intake is located in Agua Hedionda Lagoon, a semi-confined estuary. Seawater flows through the lagoon to the Power Station intake.

The existing Power Station draws up to 695,000 AFY of cooling water from the Agua Hedionda Lagoon, which is a dredged embayment specifically developed and managed to support the Power Station. Seawater from the Pacific Ocean enters the Lagoon through an open channel at the Lagoon's northern boundary. Heated cooling water from the Power Station is discharged into an open channel at the Lagoon's southern boundary and flows into the surf zone of the Pacific Ocean.

Two operating scenarios regarding intake and discharge are contemplated for the proposed desalination plant:

- Scenario One: Under this scenario, the Power Station would continue operating with its existing once-through cooling system. At full capacity, the desalination plant would initially process about 112,000 AFY, of which 56,000 would be low-salt-content potable water and 56,000 AFY would be concentrated brine that would be discharged for disposal into the ocean. Heated seawater discharged from the Power Station would be the source of water to the desalination plant. Concentrated brine from the desalination plant would be blended with the Power Station’s discharge water in the southerly open channel flowing into the surf zone of the Pacific Ocean.
- Scenario Two: Under this scenario, the desalination plant would operate at the same production levels, but the Power Station would either have gone out of production or would have converted to an alternative, non-seawater source of cooling. The desalination plant would draw about 112,000 AFY of water directly from Agua Hedionda Lagoon for production of 56,000 AFY of potable water and discharge brine to the southerly open channel. To meet water quality requirements for discharge, the Project would have to pump an additional 228,000 AFY of seawater to “blend down” the brine before discharging into the Pacific Ocean.

Project Users

Poseidon has entered into separate contracts with the LRAs listed below for the purchase of the Project water:

<b>List of LRAs and Contract Information with Poseidon</b>		
<b>Public Water Agency</b>	<b>Contract Amount (AFY)</b>	<b>Contract Execution Date</b>
Carlsbad Municipal Water District	16,000 – 25,100	September 2004
Valley Center Municipal Water District	7,500	December 2005
Rincon del Diablo Municipal Water District	4,000	March 2006
Sweetwater Authority	2,400	January 2007
Rainbow Municipal Water District	7,500	July 2007
Vallecitos Water District	7,500	September 2007
Santa Fe Irrigation District	2,000	September 2007
Olivenhain Municipal Water District *	up to 5,000	October 2007
City of Oceanside *	up to 5,000	December 2007
Total	56,000	

\* These public water agencies have agreed to receive variable amounts of water from the Project depending on the amount of Project water used by Carlsbad Municipal Water District.





Figure 1 – Seawater Desalination Treatment Plant Location



Figure 2 – Distribution System Map

## Proposed Agreement Terms

### Background

In 2005, the Board authorized staff to enter into Seawater Desalination Program (SDP) agreements with five member agencies for the development of seawater desalination within their respective service areas. In collaboration with the member agencies, Metropolitan developed uniform agreement terms and has entered into agreements with three agencies. A SDP agreement with San Diego County Water Authority (SDCWA) for the Carlsbad Seawater Desalination Project (Project) has not yet been executed principally because project water delivery arrangements and other project development issues were not finalized or resolved until recently.

AGENCY	Proposed Yield (AFY)	Status
LADWP	28,000	
Long Beach	10,000	(Agreement executed)
MWDOC	28,000	(Agreement executed)
SDCWA	56,000	
WBMWD	20,000	(Agreement executed)
Total	142,000	

### Uniform Terms

SDP uniform agreement terms include the following:

- Agreement term of 25 years after project begins operation with termination no later than 2040;
- Sliding scale incentives up to \$250 per acre-foot, calculated annually based on actual project unit costs above Metropolitan’s full service treated water rate identified in the Administrative Code;
- Pay for performance – financial incentives paid for project water that reduce SDCWA’s demand on Metropolitan’s imported water supplies and generates a regional benefit;
- Performance deadlines for project construction and operation that would allow Metropolitan to maintain, adjust, or withdraw its financial commitment; and
- Intellectual property developed during the course of this project would be available to all member agencies at no additional cost.

### Carlsbad’s agreement terms

Because the project would be owned by a private entity without a direct contractual relationship to Metropolitan, certain requirements of the SDP would apply to Poseidon through its water purchase agreements with the local retail agencies. The Agreement would make Metropolitan’s incentive obligation contingent upon existence and enforcement of several critical terms in these water purchase agreements. Such terms require, disclosure of project costs, record-keeping, auditing, and access to intellectual property. Carlsbad Municipal Water District (Carlsbad) would function as the clearinghouse for obtaining cost data from Poseidon. SDCWA would be responsible for providing such cost and water delivery information to Metropolitan and for distributing incentives to the retail agencies.

Metropolitan would require, as a condition to its payment of the incentives, that the local retail agencies' agreements with Poseidon contain specific terms necessary to ensure the project meets the requirements of the SDP. These terms include:

- Application of Metropolitan's methodologies for calculating project unit cost, including annualized capital component, operation and maintenance, financing, and deferred cost.
- Maintenance of appropriate accounting records of all incurred costs. Carlsbad MWD would be responsible for obtaining Poseidon's cost data and furnishing information to Metropolitan and SDCWA.
- As a necessary term in Carlsbad's water purchase agreement with Poseidon, Poseidon would be required to provide access to Metropolitan upon 30 days notice to all project records, books, or other documents.
- SDCWA and each local retail agency would be required to maintain project records for a period of five years, and the Carlsbad-Poseidon water purchase agreement likewise would require Poseidon to retain all relevant project records for five years.
- Poseidon would provide Metropolitan and the member agencies a fully-paid non-exclusive license without time limit to use at no additional cost any intellectual property resulting from or developed in the course of development, design, construction, or operation of the Project.
- Proposed agreement would include provisions to define financing terms and interest rates secured by Poseidon that could be included as project capital costs.