

11-2-2011

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Navarro, Carlos. "Large Desalination Plant Proposed for Playas de Rosarito in Baja California." (2011).
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Large Desalination Plant Proposed for Playas de Rosarito in Baja California

By Carlos Navarro

A proposed water-desalination plant in Playas de Rosarito in Baja California state has drawn some opposition from environmental advocates in the US, but experts in Mexico and an official for a binational infrastructure-funding agency are open to the facility as long as the plant is environmentally sustainable.

The decision to move forward with the plant in Playas de Rosarito, just south of Tijuana, is based on a study commissioned by water agencies that supply water to the metropolitan areas of San Diego, Phoenix, Las Vegas, and Tijuana. The study conducted in 2010 found no significant technical or environmental flaws with the construction of the plant, which would produce about 50 million gallons of treated seawater per day for Tijuana, Rosarito, and several cities in the southwest US. Another study is underway that would include a cost estimate for the facility, which could begin operations in three to five years. The plant still needs approval from the Border Environmental Cooperation Commission (BECC) and Mexico's Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT).

The plant would be considered an alternative to the Colorado River, whose levels are frequently low because of persistent droughts in the western US. Under the plan, the Tijuana metropolitan area and the Rosarito resort would receive the initial allocations of water, and any excess would be sold to the US cities. Construction of the plant could also imply a deal between Mexico and the US regarding water rights on the Colorado River. Under a complicated formula established in a US-Mexico treaty signed in 1944, Mexico receives 1.5 million acre-feet of water from the Colorado River annually in exchange for releasing 350,000 acre feet of water from six tributaries to the Rio Grande. The fight for water rights has created a number of conflicts between the two countries during the past several decades (SourceMex, July 31, 2002, Sept. 1, 2004, and March 22, 2006).

Proposal still needs close environmental review

The US water agencies have offered to assist with the costs of the plan, although proponents have also submitted an initial application to obtain some financing from the North American Development Bank (NADBank), created via the North American Free Trade Agreement (NAFTA). Before the project can receive any funding from NADBank, BECC must conduct an exhaustive review of the application.

"The two agencies work hand in hand," said Mario Vázquez Valles, director of environmental program development at BECC. "The bank finances only those projects that are certified by BECC."

Critics in the US have suggested that the plant is being located in Mexico because US water agencies are trying to avoid stricter environmental challenges in the US. Some US environmental groups like the Surfrider Foundation have expressed opposition to desalination plants in the US and are wary about the proposed facility in Rosarito. The groups contend that these plants can kill marine life, use large amounts of electricity, and create disposal problems for the oversalinated liquid created in processing seawater.

Vázquez said, however, that BECC would ensure that the project undergoes strict environmental scrutiny before any approval is granted. "BECC certification means that the impact on the environment, public health, and sustainability will all be considered," Vázquez said in an interview with the Latin America Data Base (LADB) at the XVIII Border Energy Forum in El Paso, Texas, in late October.

Vázquez also pointed out that any project on Mexican soil would have to comply with strict environmental-protection provisions in Mexico's Ley General del Equilibrio Ecológico y Protección al Ambiente ((LGEEPA). The legislation approved in 1988 has been used to challenge other binational projects, including a liquefied natural gas (LNG) plant in Baja California in 2005 (SourceMex, May 18, 2005).

Vázquez said the proponents of the project would have to provide answers to several environmental concerns—including disposal of residual water—before the plant is approved. "They have to look at currents and subsurface currents and identify a stream that travels to the open sea," said the BECC official. "They have to avoid any currents that move in a northerly direction or in the direction of the beaches."

The BECC official said the agency is working closely with the San Diego County Water Authority to ensure that the project follows the appropriate norms. "They are one of the potential users [of the desalinated water]," said Vázquez. The proposed plant in Playas de Rosarito would be the largest of its kind in the Baja California-California border region, and BECC is proceeding with caution to ensure that concerns are addressed. "A project like this cannot be developed with haste," said Vázquez. The BECC official agreed, however, that such a facility could be in operation in three to five years if all environmental norms are satisfied.

Access to cheap electricity a key

Vázquez pointed out that Playas de Rosarito might be the only viable location for a desalination facility because such plants tend to use a large amount of electricity. The plant would be located next to a combined cycle power plant in Rosarito, which went into operation in October 2010. The facility, which has an installed capacity of 272 megawatts, is in the Presidente Juárez

thermoelectric complex. "The great advantage of putting this desalination plant in Rosarito is that it has a reliable supply of inexpensive energy," said Vázquez.

Other experts agreed that Rosarito, with its energy-efficient geothermal and combined cycle plants, was the only option for project proponents to locate a desalination plant. Arturo Pedraza Martínez, program coordinator at the Alianza para el Ahorro de Energía, said desalination plants consume on average about 6 kilowatts per hour for every meter of water processed. This compares with the average residential and industrial consumption of 0.9 kW/hour in Mexico.

"The biggest problem with desalination plants is the large amount of energy used," Pedraza Martínez told LADB. "But if they have a source that produces excess energy, I don't see it as a bad idea to develop the plant."

While the proposed facility at Rosarito would be the largest project of its kind, desalination plants are common in coastal communities in Baja California, Baja California Sur, and Sonora. The largest such facility was inaugurated in 2007 near the resort community of Cabo San Lucas (SourceMex, May 9, 2007), but other plants have been constructed or proposed for the metropolitan areas of Hermosillo and Ensenada. Baja California officials said the proposed El Salitral plant in Ensenada is expected to begin operations in 2013, serving about 96,000 residents.

But some projects have met with local opposition because of the high costs of operating a desalination plant. For example, the Unión de Usuarios (UUH) in Hermosillo pushed for authorities to abandon a plan to construct a desalination plant in that Pacific Coast city because of the potential for high operation costs from extensive electricity use. These costs would be passed on to consumers. The UUH said construction and operation of an aqueduct to bring water to the city would cost much less than a desalination plant.

For now, state officials have put the project on hiatus. Roberto Romero López, a high-level official in Sonora, said officials consulted with experts in Israel, Spain, and the US and were told that construction and operation costs remain high. "The problem is the high cost of operation, which would hurt consumers," Romero said in July."

A recent trend has been for hotels and resorts to construct small desalination plants, which operate an energy-saving filtration technique known as reverse osmosis. But even this process has slightly increased the amount of energy that hotels and resorts buy from the Comisión Federal de Electricidad (CFE).

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