

Wave Energy for Desalination to be Tested on South Padre Island

By Joseph W. "Bill" Norris, P.E.

Even though the cost of building a seawater desalination plant has decreased through the years, the energy needed to operate the high-pressure pumps that push the water through the reverse osmosis membranes remains a major component of operating costs. Energy prices can greatly affect the long-term economics of seawater desalination, which is why some engineers are turning to renewable energy sources like the sun, wind, and the water itself.

Wave-powered energy is the new frontier of renewable energy technology, and we're proud to be part of it. Beginning in September, NRS will begin working with Seanergy, a wave energy technology developer based in Austin, to pilot its wave energy technology at the Laguna



Madre Water District's (LMWD) former seawater desalination pilot facility.

The Seanergy technology uses a buoy and the vertical motion of the waves to pump pressurized water on shore. The pressurized stream can then be used to drive a turbine or supply water directly to a treatment system. The first phase of this pilot study will test a scale model of the unit and measure its ability to capture wave energy off the southern Texas Gulf Coast. This pilot study will use the previously-permitted seawater pilot intake structure that's approximately 1,500 feet offshore.

After the first phase of piloting ends, Seanergy will present the data collected and preliminary extrapolations of the potential energy available from a full-scale facility to the LMWD

board as it considers the construction of a proposed 1 MGD facility. Developers envision the full-scale deployment of a wave energy system might help solve two typical challenges in seawater desalination - offsetting the power required for desalination processes while simultaneously pumping the raw source water that needs to be treated.

The ability of seawater desalination to provide sustainable, long-term solutions to water scarcity depends on the evolution of a number of cutting-edge technologies like wave power. Pilot testing wave energy devices will ultimately help drive down costs and ensure the technology is capable of standing up to the turbulent, salty environment of coastal waters. There's an enormous amount of power, approximately 2 terawatts (one trillion watts) in the oceans that line our shores. It's the ultimate energy-water nexus.

PRINCIPAL'S CORNER

New Chairman of Senate Natural Resources No Stranger to Water Issues

STATE SENATOR TROY FRASER (R-HORSESHOE BAY) IS THE NEW CHAIRMAN OF THE SENATE NATURAL RESOURCES (SNR) COMMITTEE, REPLACING FORMER CHAIRMAN KIP AVERITT WHO RESIGNED. SEN. FRASER SERVED AS CHAIRMAN OF THE SENATE BUSINESS AND COMMERCE COMMITTEE FOR THE PREVIOUS 10 YEARS. HIS DISTRICT INCLUDES 21 CENTRAL TEXAS COUNTIES, INCLUDING A FEW THAT CONTAIN SECTIONS OF THE COLORADO RIVER AND THE HIGHLAND LAKES SYSTEM NORTHWEST OF AUSTIN.

SNR typically handles the flow of legislation that focuses on water resources, air quality, oil and gas, agriculture, and parks and wildlife. In addition, Sen. Fraser has been asked by Lt. Governor David Dewhurst to develop a State Energy Plan based on his extensive knowledge of the oil, natural gas, alternative fuels, and electric generation and transmission industries.

During his first hearing as chairman of SNR, Sen. Fraser told committee members and the assembled crowd that he will need everyone's help to develop the State Energy Plan, and "water is obviously part of this."

Sen. Fraser graciously answered the following questions for *Texas Water News* readers.

Q: What do you think is the most pressing water issue in the state?

A: The population of our state is expected to almost double in 50 years. That growth is expected to increase the demand for water to 12.6 million acre feet, up 27% from 2000. That is why I believe the most pressing water issue facing the state is to find a way to pay for



A: We all know that one important feature that encourages economic growth is an adequate and reliable source of water. If a community does not have that source of water, it is hard to have population growth, much less economic growth. Another feature benefiting the economic growth of a region is a

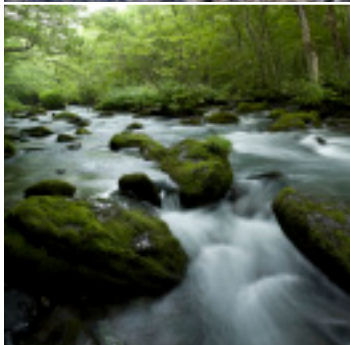
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implementing the State Water Plan. We must keep up with this population growth and the resulting demand for water.

Our bottom-up approach to water planning has been an excellent exercise in determining our water needs. However, all that planning will go to waste if we don't start working on it now.

If we fail to implement the plan, by 2060 the state's economic loss is expected to be \$98.4 billion. We clearly must do something. Not only will our population suffer with water shortages, but the economic impact will be tremendous.

Q: As the former chairman of Business and Commerce, you're obviously very familiar with the fact that it takes water to make power and power to make water. How can we, as a state, ensure there are plenty of both for our economic growth?



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reliable, clean and inexpensive energy supply.

Interestingly, we need water to make energy and energy to make water. However, to support one resource, we don't have to reject the other. As policymakers, we just need to consider how to balance the two.

We are working on that balancing act by developing new water resources through the State Water Plan. Additionally, we have diversified our energy portfolio by adding renewable generation such as wind and solar to the mix.

However, that is just the first step. We will be looking for other solutions to impact both our water resources and our energy supply. Options include finding new technologies that don't require water to make energy, increased re-use of water, and desalination. Additionally, we need to look for solutions that can empower both commercial and residential users to use less of both resources.

Texans are resourceful. We don't wait for someone to fix our problems. In the case of water and energy, we have started working on solutions to maintain an adequate supply to sustain and grow our economy.

Q: The two most important state agencies for water, TCEQ and TWDB, are undergoing Sunset Advisory Commission reviews this interim. What do you anticipate happening with these agencies?

A: We obviously need to maintain the core functions that both agencies currently perform and I expect both agencies will be continued. However, since the Sunset Commission staff recommendations have not been issued and the commission has not met to hear testimony on these two agencies, I will wait to comment on policy issues.

Sen. Craig Estes (R-Wichita Falls) congratulated Sen. Fraser on getting the job "all of us wanted." He said, "We've seen your tenacity, and sometimes your ferocity. We're ready to go to work. We have some huge issues to tackle, and we're behind you all the way."

RGV Holds Breath For Final Months of Hurricane Season



FLOODWAYS IN THE RIO GRANDE VALLEY THAT ARE OFTEN USED TO GROW CROPS ARE STILL COVERED WITH FLOOD WATERS FROM HURRICANE ALEX THAT MADE LANDFALL IN MEXICO IN LATE JUNE. AERIAL PHOTO BY BRAD SWINNEA.

The Rio Grande Valley (RGV) is still feeling the effects of Hurricane Alex and a tropical storm that inundated the region and northern Mexico with 10-20 inches of rain in late June and early July. After a disaster declaration from the president, people living in eight counties along the border are now eligible for financial assistance from the Federal Emergency Management Agency (FEMA).

Flood releases from Mexican reservoirs continue to cause concern as they fill reservoirs along the Rio Grande. Lake Falcon, the bi-national reservoir just upstream from Rio Grande City, reached a record elevation of 309.3 feet on July 17. The previous record of 308.1 feet was set in 1958. At one point in July, the International Boundary and Water Commission (IBWC) was releasing water from Falcon Dam at a rate of 60,000 cubic feet per second.

The U.S. side of the Rio Grande has a massive

system of levees and floodways to control flooding, but rarely are the floodwaters so high for so long. Six weeks after the storms, the north floodway that runs through Willacy County to the Gulf of Mexico still looked like a massive river.

In early August, the Texas Commission on Environmental Quality's Rio Grande Watermaster, Erasmo "Moe" Yarrito Jr., told the Rio Grande Regional Water Authority that six reservoirs in Mexico that contribute to the Falcon-Amistad reservoir system or the Rio Grande were above 100% capacity, and six more were at 80% or higher. The reservoir levels have since decreased, but Yarrito said, "If we get another large rain event, we could possibly see the Rio Grande at or near flood stage again and the IBWC might have to operate the floodway system again."

Farmers have been the hardest hit by the flood waters. Hidalgo County's AgriLife Extension

Agent Brad Cowan told the *Brownsville Herald*, "Several thousand acres of sorghum, corn and cotton have already been lost along the river and in the large, fertile floodways." Grain sorghum crops that weren't damaged are being harvested early to avoid potential damage caused by another rain event, and the Texas Department of Public Safety has raised weight limits for trucks that are hurrying to move the crop to grain elevators on higher ground. Cowan said, "One more rain event and this crop could be ruined. We're on the edge of disaster."

Counties further inland, such as Garza, Lynn, and Terry, also experienced heavy rainfall that damaged crops, homes and businesses.

Fire departments in the RGV also report a high number of water rescues caused by people trying to cross the higher-than-usual Rio Grande. After they receive medical attention, they're taken into custody by the U.S. Border Patrol.

Salas to Lead Befesa Agua's U.S. Market Efforts

José Salas Orta, the former Area Manager of Operations of the Portuguese alternative energy company EDP, is the new Chief Executive Officer of Befesa Agua's United States offices. Based in Austin, Texas, Mr. Salas will manage Befesa Agua's business interests in the United States, NRS Consulting Engineers and Befesa WaterBuild. Mr. Salas is very familiar with the state, having married a Texas native. "My family and I have visited Texas often in the past 10 years," said Mr. Salas. "We look forward to being part of the Austin community while working with the principals of NRS and Befesa WaterBuild to grow business opportunities for Befesa."



TWDB Wins Award for Texas Desal Project

The WaterReuse Association, a national non-profit organization based in Virginia, has chosen the Texas Water Development Board (TWDB) as the winner of the "2010 WaterReuse Project of the Year - Desalination Facility."

According to the association, TWDB "has demonstrated continued dedication to the water reuse and desalination community... and we gratefully acknowledge the contributions (it) has made."



TEXAS DESAL PROJECT

TWDB was nominated because of a research grant it awarded to the Brownsville Public Utilities Board (BPUB) and the Laguna Madre Water District (LMWD). The grant allowed them to develop the "Texas Desal Project," which was an effort to proactively explore possible state and federal permitting requirements for seawater desalination facilities before they are designed by engineers.

The Texas Desal Project created a stakeholder group that spent two days on South Padre Island learning more about desalination, environmental factors unique to the Texas Gulf Coast, and the permitting requirements of other states. The stakeholders participated in roundtable discussions and some visited the sites of pilot desalination projects in the area. An online discussion forum was set up and agency representatives submitted planning aid memorandums.

Because of the Texas Desal Project, both BPUB and LWMD have a clearer picture of the steps they need to take to build full-scale seawater desalination plants.

The award presentation will be made on September 13 in Washington, D.C.

WATER CONFERENCE CALENDAR

The fall is a great time to think about water policy issues, conservation initiatives, and the technology that can help conserve water. The following are some key events coming up in the next few months.

DATES	HOST	TYPE	PLACE
Sept. 12-15	WaterReuse Association	25th Annual Symposium	Washington, D.C.
Sept. 16 & 17	Continuing Legal Education (CLE) International	20th Annual Water Law Conference	Austin, TX
Sept. 19-24	International Water Association	World Water Congress & Exhibition	Montreal, Quebec
Sept. 24	Texas Commission on Environmental Quality	Valley Environmental Summit	Harlingen, TX
Sept. 27-29	South Central Membrane Association	Annual Conference and Membership Meeting	South Padre Island, TX
Oct. 2-6	Water Environment Federation	83rd Annual Exhibition and Conference (WEFTEC)	New Orleans, LA
Oct. 6-8	Southern Nevada Water Authority	WaterSmart Innovations Conference and Expo	Las Vegas, NV
Oct. 11 & 12	Texas Water Development Board	Texas Innovative Water 2010	San Antonio, TX
Oct 13-15	Texas Water Conservation Association	Fall Meeting	San Antonio, TX
Oct. 18-20	Design-Build Institute of America	Annual Conference & Expo	Las Vegas, NV
Oct. 20-21	Texas Water Development Board and Harlingen Irrigation District	Texas Irrigation Expo	Mercedes, TX
Oct. 26-29	Texas Municipal League	Annual Conference & Exhibition	Corpus Christi, TX
Nov. 3 & 4	Global Water Intelligence	American Water Summit	Washington, D.C.
Nov. 10-12	National Water Resources Association	Annual Conference	San Diego, CA
Dec. 7-9	American Membrane Technology Association and South Central Membrane Association	Technology Transfer Workshop	El Paso, TX