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New power-plant drain on rivers sparks debate

By Anton Caputo - Express-News

New power plants planned along the lower Colorado River could use the same water supply that was denied San Antonio for future growth.

The driving force is simple. Power shortages are forecast for Texas' future — shortages that power companies are rushing to meet with new plants.

But experts, environmental groups and others are beginning to question whether there is enough water available to serve the massive facilities.

The issue pits two fundamental resources critical to the fast-growing state against each other — water and power.

In an indirect way, it even puts San Antonio's two largest utilities in competition for water from the lower Colorado River, some 200 miles away.

“You can't get around the fact that both of these powerful agencies would like to be using the same water,” former Mayor Phil Hardberger said. “The big picture is it really shows the complexity when water gets scarce.”

CPS Energy and the San Antonio Water System are looking to the river to supply water for their biggest proposed projects.

CPS Energy already has secured rights to pull billions of gallons of water a year from the river to cool two new nuclear reactors it wants to build in Bay City. But SAWS seems to have failed in its attempt to pipe water from the same river to San Antonio to help quench the city's growing thirst.

Such competition for resources only will intensify as water becomes scarcer in Texas, says University of Texas researcher Carey King. It's one reason he's among the group calling for more scrutiny of the water demands of proposed power plants.

No sector in the state pulls as much water from its rivers and reservoirs as power plants.

Geological Survey.

The plants return most of the water to the rivers and reservoirs after they use it for cooling, but they still require a guaranteed flow of literally billions of gallons a year to maintain smooth operations.

Yet the state doesn't require power companies to prove there will be enough water to meet their needs, or analyze the impact on others who might depend on the water. Instead, they are left to secure water rights from the various agencies and entities that hold them, a process critics say is fraught with politics and sometimes has little to do with how much water will really be available in the future.

King thinks the time is critical for a change. The flip side, he said, could be that the state's power plants find themselves without enough water to operate, particularly in times of drought.

"The reason why it hasn't been planned for and the reason why you need to is that energy and water resources are becoming constrained at nearly the same time," said King, who specializes in energy research. "In Texas, the surface water allocation rights are virtually full."

Nukes' take

The lower Colorado River is a microcosm of an issue exploding statewide.

The South Texas Project, which supplies San Antonio with about a third of its energy, wants to build two more nuclear reactors and use the Colorado River water for cooling.

Two plants that want to burn coal and petroleum coke also have targeted the lower Colorado for billions of gallons of water a year.

Las Brisas, which wants to burn petroleum coke to produce power in Nueces County, is negotiating with Corpus Christi for water rights the city holds to the Colorado River. White Stallion Energy wants to build a plant at the Port of Bay City and has applied to the LCRA to pull as much as 30,000 acre-feet a year from the river.

Combined, the three projects want the rights to draw from the river each year more than half the water that's consumed by San Antonio.

San Antonio's own effort to divert water from the river recently was rejected after years and millions of dollars spent studying the plan because, according to the Lower Colorado River Authority, there isn't enough water in the river. That issue is heading to state mediation and, potentially, court.

San Antonio long has depended on the two nuclear power reactors already operating in Bay City as a reliable source of cheap energy. And at times, it can take nearly half the

river's flow to cool those reactors before being returned to the plant's cooling reservoirs.

With plans to open two more reactors by 2016, some worry whether there is enough water to cool the facility without drying out much of the region. Austin-based environmental engineer Lauren Ross is among them.

Worst-case scenario for the power plants, said Ross, is that there simply isn't enough fresh water for them to operate during drought. More common scenarios, though, involve the farmers and environment going dry in favor of power plants.

"Hydrologically, it doesn't matter that they have a legal contract for that water when we are in drought," said Ross, who is working with environmental groups fighting the nuclear expansion. "If they do withdraw that water, it is just flat out not available for other uses. We know that right now under current conditions we have insufficient flows into freshwater estuaries."

The amount of freshwater that reaches the estuaries is a growing concern in Texas because it is critical to keeping the ecosystem healthy. The estuaries support birds and wildlife and act as a nursery to much of the gulf's fish.

Officials with NRG Energy, which is partnering with CPS Energy to build the reactors, says the companies have been careful to avoid any potential problems that might occur from lack of water.

In 2006, they went to great pains with the LCRA to restate water rights they originally had negotiated in the 1970s.

The water is used to replace water that evaporates or leaks out of the South Texas Project's cooling reservoir.

They're allowed up to 55 percent of the river's flow above 300 cubic feet per second and a backup of 40,000 acre feet from other LCRA sources, primarily the Hill Country highland lakes. This means that during a drought, the operation of the four reactors could be contingent on water managers' ability to deliver billions of gallons of water from the highland lakes into the river.

It's not uncommon for the river to drop below that 300-cubic-feet-per-second threshold during drought. It has spent much of June under that level. Still, the LCRA never has had to send water down the river to keep the reactors running, said James Kowis, LCRA manager of water supply planning.

Meeting demand

That could change if the South Texas Project doubles in size.

Kowis said the LCRA is prepared to deliver the water even if there is a repeat of the

1950s drought, which is considered the worst in recorded history. If things get worse than that, the utility's drought management plan calls for everyone ratcheting down water use.

Still, Kowis said he's aware additional power companies are looking at the river as a potential source of water for new plants, and he readily admits that their massive thirst and less-than-transparent planning process makes power plants difficult for water planning.

"The trouble is that the power market is just that, it's a market. It's a competitive market and none of those companies are sharing information of where they are going to be putting their facilities," he said. "That makes it very difficult from a planning perspective."

A SAWS attorney thinks the power companies thirst for river water and the area's desire for jobs the power companies bring with them also may have stacked the deck against SAWS efforts to build a pipeline from the Colorado River to San Antonio.

LCRA officials say scientific studies simply show there isn't enough water in the river to serve its area and provide San Antonio with drinking water. But SAWS attorney Jim George openly speculates the recent announcement by White Stallion Energy that it wants to build a power plant at the Port of Bay City could have had something to do with the decision.

"Somebody came by and proposes this White Stallion plant and everybody fell off the trolley," said George, who expects to be in court-appointed mediation over the dispute later this summer.

Problems

There's nothing magic when it comes to the Colorado River's appeal to power plants. Much the same scenario is at play down the coast on the Guadalupe River, where two new nuclear reactors and a coal plant are proposed, and to the north on the Brazos River, where two more nuclear reactors are being pursued.

Power plants commonly are built near rivers because they need water. It's a must for most electricity generation, with a few exceptions like wind and some kinds of solar. Because water is being depleted in Texas, some plants are investigating dry-cooling technology, but experts say that can be a tricky task in Texas because of the hot weather.

A kilowatt-hour of power produced in Texas can require as much as 30 gallons of water, according to the Texas Water Development Board. The typical Texas home uses more than 1,100 kilowatt hours of electricity a month.

The plants don't consume anywhere near the amount of water they draw, but instead use it to cool their reactors and then generally return most of it to wherever it came from.

Still, the water has to be available for power plants to operate, and there typically are limits to how much used cooling water can be returned to a river or estuary at a given time to protect the environment from a massive influx of warm water.

This heavy dependence on water has led to some high-profile problems in recent years, several of which King outlined in a recent report authored by the University of Texas and the Environmental Defense Fund.

For instance, during the 2003 heat wave in France that killed 15,000 people, nuclear power plants in that country had to reduce their power output because low river levels limited cooling water. And the drought that gripped the Southeast in 2007 and 2008 reduced the availability of cooling water to the point that plants were within days of shutting down.

King, the UT researcher, is in Brussels presenting his work on the relationship between water and power to European scientists in preparation for a group of reports that will be unveiled at the United Nations Climate Change Conference in Denmark later this year.

Closer to home, the University of Texas and Environmental Defense Fund are producing a series of studies on the situation in Texas.

The partnership released its first study in April. Among the recommendations was that power plants be required to demonstrate water availability during the state planning process.

There was a legislative attempt to address the situation in the session that recently ended when Wichita Falls Rep. David Farabee filed a bill that would have required proposed power plants to submit “a study that demonstrates that a sufficient amount of water is available” before obtaining state permits.

The legislation died in committee.

But given the number of power plants being proposed across the state and the growing worry about Texas’ dwindling water supply, Environmental Defense Fund attorney Amy Hardberger, who’s working on the reports with King, thinks debate on the issue is just heating up.

Hardberger is the daughter of San Antonio’s former mayor.

“It’s not a water-rich region, and as the region becomes more populated, the issue becomes bigger and bigger,” she said.

Water for power

Power companies that want to build new plants are looking to the Lower Colorado River for the huge amount of water needed for cooling. This is a microcosm of what's happening around the state.



1 LAS BRISAS

The city of Corpus Christi is discussing building a 40-mile pipeline to provide 15,000 to 20,000 acre feet of water to the Las Brisas Energy Center.

2 SOUTH TEXAS PROJECT

The nuclear facility has rights to pull as much as 102,000 acre feet a year for its two working reactors and two proposed reactors.

3 WHITE STALLION ENERGY

The mammoth proposed coal and petroleum coke plant wants to pull up to 30,000 acre feet a year from the Lower Colorado.

Average flow of the Colorado River near Bay City over the past 60 years is about 1.5 million acre feet a year. It has peaked as high as 9.6 million acre feet and dropped as low as 333,247 acre feet.

By comparison, San Antonio used 208,000 acre feet of water last year.

Sources: Lower Colorado River Authority, San Antonio Water System, Public System

EXPRESS-NEWS GRAPHIC

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