

Water Planning in Dry Times



New Water Plan Proposes Solutions

BY LAURIE MCLAUGHLIN

In the **absence** of major **new** **water** projects, the **state** will be **8.3 million** acre-feet **short** by **2060**.

One thing about native Texans — we tend to prize water even more than oil, because we know what it's like to *not* have it. We're familiar with the sting of dust in our eyes and deep cracks in our soil. And we've spent our lives greeting each other with "Hi, did you get any rain?"

While we can't always depend on our water supply, we *can* plan for its storage and use. That important task is the responsibility of the Texas Water Development Board (TWDB), which assists 16 regional water planning groups (RWPGs) across the state in developing plans to provide Texans with water in times of severe drought.

Every five years, TWDB meshes those plans together into the State Water Plan (SWP). The 2012 SWP was released in January 2012.

So what's the verdict on Texas' water future? The 2012 SWP didn't mince words: "In serious drought conditions, Texas does not and will not have enough water to meet the needs of its people, its businesses, and its agriculture enterprises."

Extended drought may force various portions of the economy to compete with one another for dwindling supplies. Oil and gas "fracking" operations use large amounts of water, for instance, while most electricity generation relies on water for cooling. Already, proposed coal-fired power plants near

Sweetwater in West Texas and Bay City, southwest of Houston, both have drawn considerable opposition from farmers and ranchers and nearby communities that fear their impact on their own water supplies.

TWDB estimates that a statewide drought as long and severe as the 1950s "drought of record" could cost Texas nearly \$12 billion in lost income, rising to nearly \$116 billion in 2060, the end of the board's 50-year planning horizon.

HOTTEST AND DRIEST

The 2012 SWP arrives at a critical time. Most Texans are all too aware that 2011 has been the state's hottest and driest year since record-keeping began. Through September 2011, the statewide average high temperature was 4.9 degrees above average, while the average *low* temperature was 2.8 degrees above average, according to the Office of the State Climatologist. And statewide average rainfall for the year is hovering at 40 percent of normal.

Texas experienced such a severe drought because it is experiencing several, simultaneous dry weather patterns. Two are long-term patterns

of a warm Atlantic Ocean and a relatively cool tropical Pacific. Climatologists call these patterns the North Atlantic Oscillation and the Pacific Decadal Oscillation. Both change fairly slowly and both tend to produce less rainfall than normal in Texas.

The other pattern is the now-familiar and shorter El Niño and La Niña cycle (also known as the "El Niño Southern Oscillation," or ENSO) in the southern tropics of the Pacific, which tends to drive rain-producing systems into the northern U.S. and away from Texas.

In late September 2010, the tropical Pacific waters cooled slightly, creating a La Niña pattern that shut down any rain systems headed for Texas. This La Niña weakened slightly in mid-2011 and has now re-strengthened. Forecasters cannot predict when the cycle will reverse, but do not see it happening until at least mid-2012.

The last time all three weather patterns lined up was in the 1950s and early 1960s — drought years for Texas.

PLAN FOR WATER

Painful memories of the 1950s drought, as well as drought years in the 1990s, prompted the 1997 Legislature to create Texas' current water planning process. The regional water planning groups meet to determine their region's water needs, potential water supply projects and their cost.

Each RWPG depends upon local volunteers representing many different interests to develop a regional plan. Every five years, the RWPGs revisit their plans, alter them as needed and send them to TWDB, which uses them to develop the state plan. The 2012 plan is TWDB's third such five-year plan.

"Our stated basis for planning is [that the SWP] is a water supply plan, [based on] getting supply to the

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cities,” says Dr. Dan Hardin, TWDB’s director of water resources planning.

RWPGs use TWDB models to determine how much surface and groundwater will be available during the next 50 years. The RWPGs also propose conservation and infrastructure projects to meet shortfalls, enhance water delivery and moderate consumption.

The 2012 SWP estimates that the Texas population will rise by 82 percent, to 46.3 million residents by 2060. TWDB expects Texas’ per-capita water consumption to fall from current levels, due in part to an increased emphasis on conservation. Even so, in the absence of major new water projects, the state will be 8.3 million acre-feet short of the amount needed in our homes, businesses and agricultural operations by 2060. That’s an amount equal to about half of today’s water supply.

According to Hardin, the proposed projects contained in the 2012 SWP would meet that shortfall, generating about 9 million acre-feet in additional water resources annually, although there would still be some unmet needs concerning irrigation and local infrastructure.

The total tab for the projects, an estimated \$53 billion (in 2008 dollars), is the main difference between the 2012 plan and the 2007 plan, which estimated their price at \$30.7 billion.

“Part of the increase is due to the fact that it’s five years later, and we’ve seen some general inflation in cost,” Dr. Hardin says. “For some building materials and some aspects of building, costs have risen even faster than overall inflation. And part of it is also due to some of the strategies recommended in the plan being more detailed and more thorough.”

CHANGED BEHAVIORS?

While we can’t control the weather, the water plan does contain a silver lining. The projections in the 2012 plan actually show per capita water

use declining in the next 50 years, a testimony to the state’s greater awareness of water issues and the improving effectiveness of conservation.

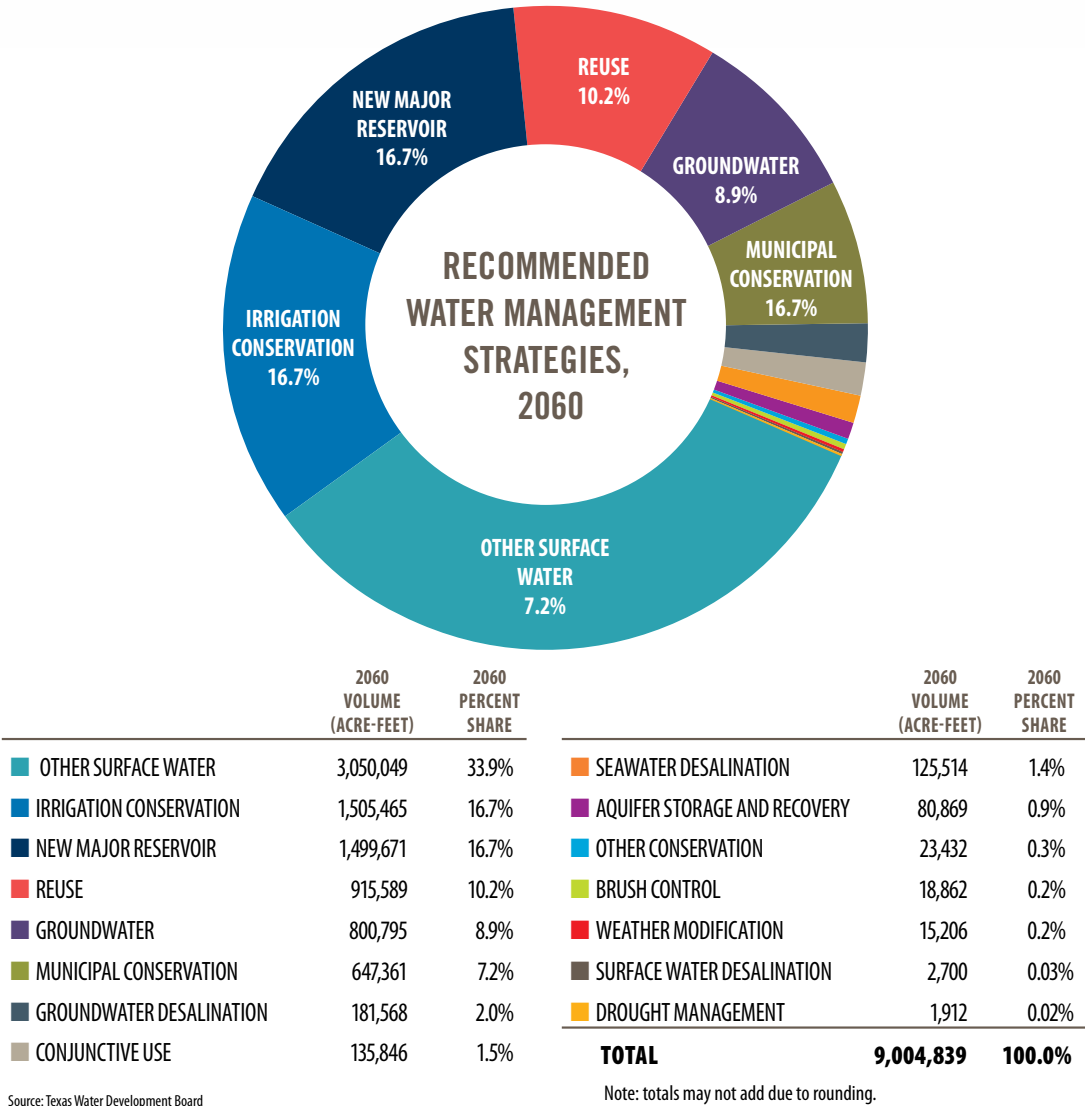
The plan calls for substantial investments in Texas’ water infrastructure, but the costs of *not* acting could be infinitely greater. **FN**

For a detailed look at the effects of drought, see our new report, *The Impact of the 2011 Drought and Beyond*, at <http://www.window.state.tx.us/specialrpt/drought>.

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MORE WATER, MORE MONEY

The Texas Water Development Board’s 2012 water plan proposes water projects, conservation measures and other steps that could provide the state with about 9 million acre-feet in additional water resources annually, at an estimated cost of \$53 billion.



Source: Texas Water Development Board

TEXAS WATER DEMANDS IN 2060

The Texas Water Development Board expects Texas' total water demands to increase by about 22 percent over the next 50 years. Municipal water systems and power generation will see the largest increases in demand; other sectors are expected to see the following changes in water needs:

"In **serious drought** conditions, **Texas** does **not** and **will not** have **enough water** to **meet** the **needs** of its **people**, its **businesses**, and its **agriculture** enterprises."

— 2012 Texas Water Plan

TEXAS WATER DEMANDS BY CATEGORY, 2010-2060 (AMOUNTS IN ACRE-FEET PER YEAR)

2010		PERCENTAGE INCREASE IN DEMAND 2010-2060	2060	
MUNICIPAL	PERCENT OF TOTAL 2010 DEMAND		PERCENT OF TOTAL 2060 DEMAND	MUNICIPAL
8,414,492	26.9%	73.5%	38.3%	8,414,492
MANUFACTURING				MANUFACTURING
2,882,524	9.6%	66.8%	13.1%	2,882,524
MINING				MINING
292,294	1.6%	-1.3%	1.3%	292,294
STEAM-ELECTRIC POWER GENERATED				STEAM-ELECTRIC POWER GENERATED
1,620,411	4.1%	121.0%	7.4%	1,620,411
LIVESTOCK				LIVESTOCK
371,923	1.8%	15.2%	1.7%	371,923
IRRIGATION				IRRIGATION
8,370,554	56.0%	-17.0%	38.1%	8,370,554
TOTALS	18,010,599	21.9%		21,595,219

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