

What can be done about a water shortage?

May 20 2015, by Andrew Careaga



Drought damage on the Fresno Harlen Ranch in Fresno, California, in 2014.
Credit: USDA photo by Cynthia Mendoza

The water crisis in the western United States – most notably in California and Washington – may be the most severe and most publicized, but other threats to the nation's water supply loom, says Dr. Joel Burken, professor of civil and environmental engineering at Missouri University of Science and Technology.

"Most changes in the water cycle cause considerable impacts," says Burken, who recently served on a National Science Foundation panel to investigate what is called "the [water-energy-food nexus](#)." That NSF panel published a [guide \(PDF\)](#) for further research efforts.

"We have settled in places and undertaken industrial and agricultural activities largely based on water availability," Burken says. "When that availability changes, we must adapt. If the change is rather rapid, we

often face a crisis."

Noting that parts of Texas are in a prolonged drought, community leaders and individuals there are of necessity "changing the way they view water, including water reuse."

Those [water reuse](#) methods involve converting wastewater to drinking water, Burken says. Already, two Texas communities – Big Spring and Wichita Falls – are using "toilet to tap" recycling processes that have been approved by the state, Burken adds.

What can be done to prevent a [water crisis](#) in other parts of the country? Shortages may be inevitable due to current water allocation policies. But Burken offers three suggestions to governmental and policy leaders, business leaders, and educators:

- Promote [water conservation](#). While individual homeowners and municipalities can be more efficient in their [water usage](#), those conservation methods "are just the proverbial drop in the bucket," Burken says. Large-scale water usage by large farms and factories is of greater concern, and industry and agricultural leaders need to look at more conservative approaches to water usage. "For starters, we need to look at agricultural practices and industrial water use to be more efficient," Burken says.
- Educate ourselves about [water resources](#). "As a society, we need to learn more about water resources," Burken says. Part of that education involves knowing what tools do and don't exist. "We really do not have a good tool for assessing the quantity and quality of our waters," Burken says. "We also need to understand the economics of water, and value our waters appropriately. The cost of water usage is heavily subsidized in some cases, such as for large-scale industrial usage, and not for others."
- Develop new policies. "Our [water](#) allocation laws are old, archaic

and hard to deal with in a political sense," Burken says. "Many waters are either over-allocated, inaccurately allocated or both." For example, the Republican River in the Central Plains and the Colorado River in the West both "are considerably overdrawn, inaccurately assessed, and depleted to great welfare and ecological impacts," Burken says.

Provided by Missouri University of Science and Technology

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