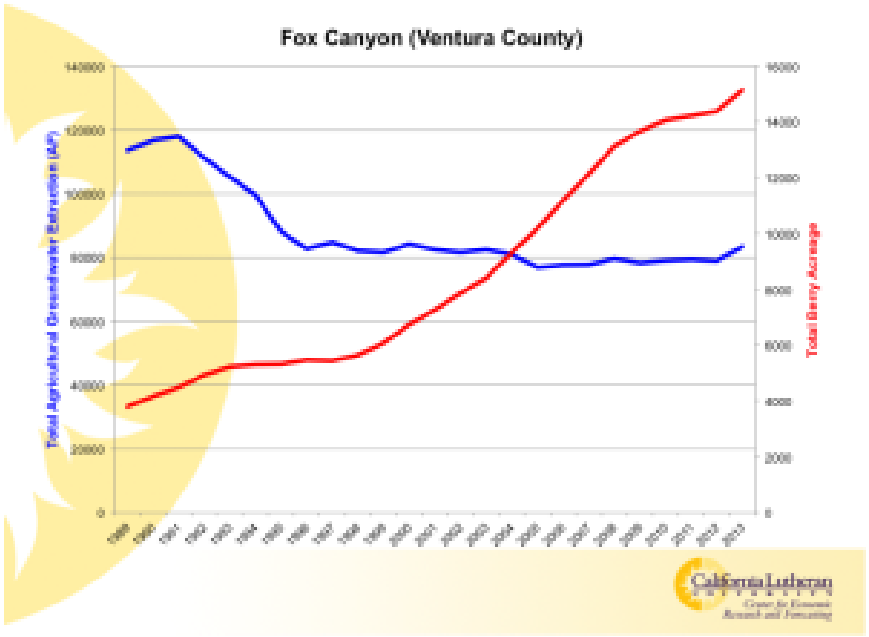
Matthew Fienup
September 24, 2015

This article was previously published on Fox and Hounds on Sept. 2, 2015

As California weathers its fourth straight year of extreme drought, policy makers and their cheerleaders continue to scapegoat California's agricultural industry. Writing in the *Sacramento Bee*, economist Christopher Thornberg, for example, refers to the industry as "feckless" and advocates using eminent domain to seize farmers' water. In truth, the agricultural industry has made ground-breaking efficiency gains in the past twenty years.

Consider this: In the late 1980s, following the last big drought, total groundwater extraction by farmers within Fox Canyon, a robust agricultural region in Ventura County, declined sharply and then settled in to a five-year average of approximately 80,000 acre feet per year. That level of extraction has now been stable for over 20 years. During that same 20-year period, production of notoriously water-hungry strawberries has increased 145 percent. Production of raspberries has increased an astonishing 425 percent. Ventura County farmers are doing vastly more with the same amount of water. This pattern holds true statewide. The total value of agricultural output in California increased from $16.3 billion in 1998 to $22.3 billion in 2010, without any increase in total agricultural water use. Rather than a story of fecklessness, this is a story of fabulous innovation; one that producers in other industries can look to for inspiration.



Source: **Fox Canyon Groundwater Management Agency** (www.fcgma.org)

California farmers have made these efficiency gains in part because they have experienced government-imposed water rationing for more than two decades. The Central Valley Project Improvement Act of 1992 marked the start of an era of policy making which set aside 76 percent of water flowing into the San Francisco Bay Delta, immediately curtailing over 800,000 acre feet of irrigation water. On top of those losses, between 1993 and 2006, all years in which precipitation fell within historical norms, farmers in the Central Valley received only 75 percent of their contractual allocations from the US Bureau of Reclamation. Urban use, which policy makers routinely privilege over agricultural use, received 94 percent. Between 2009 and 2012, farmers received only 38 percent of their contracted allocations, while urban users received 70 percent. And since 2012, farms have received an average of 15 percent, with cities getting 55 percent. These cuts to agricultural water have forced farmers to innovate.

Efficiency gains like those enjoyed in Ventura County and the Central Valley have not been universal. As Thornberg notes, farmers still grow rice in northern parts of the state and alfalfa in some of California's deserts. But this is not evidence of farmers' fecklessness. Rather, it is the only rational economic choice that California law affords them. Farmers have to use their water on their own property or lose access to it in future years. This is the economic equivalent of forcing them to grow hay in the desert. These farmers might prefer to sell their water, while temporarily leaving their land fallow, but California law prohibits this. Seizing farmers' water, as Thornberg advocates, may provide relief to cities; however, allowing alfalfa and rice farmers to sell their water to the cities would be far more economically efficient. It might even free up water to support California's environmental goals.

What about the role that water plays in achieving environmental goals? Countless commenters, including Thornberg, have pointed out that agriculture makes up just 2 percent of California's economy but uses 80 percent of its 'consumable' water. This claim is deeply misleading. In fact, farmers consume just 41 percent of the state's total water. Water use in California is actually divided into three critical categories: urban use, agricultural use, and environmental use. Fully 48 percent of the state's water is allocated to environmental uses, which include mandated stream flows that serve the State's endangered species and sensitive habitats. Environmental water use often requires curtailment of agricultural water use and substantial releases of water from California reservoirs.

Any attempt to solve California's chronic water shortages must balance the demand for water in each of these three categories . This means looking at all water— including that which is now designated for environmental use—and then allowing water users, buying and selling specific allocations of water in a water market, to decide the uses they value most highly. Water

markets in Oregon, Colorado, and Nebraska are doing just this with considerable success. There are even successful, if isolated, examples to look to in California.
Perhaps the finest example of water markets that function in this way are those used in Australia. Trading within water markets equipped that country to endure the 15-year long Millennium Drought which lasted from 1995-2009. Water markets protected cities from the most severe restrictions, supported agriculture, and provided for environmental needs.

The case is instructive because not long ago Australia's water laws looked a lot like California's. Australia gradually introduced the leasing of water allocations during the 1980s. Its biggest departure from a California-style system occurred in 1994, when the country unbundled water rights and land ownership. Australia further liberalized markets by allowing trading across basins and across state lines beginning in 2004. And then it engaged in something truly radical: a government buy-back program purchased allocations of water from farmers totaling more than 800,000 acre feet (an ironic amount if you think back to 1992 in California), in order to secure water for the country's environmental needs. Australia treats the environment as a public good, and taxpayers collectively bear the burden of preservation.

The results of these fundamental changes in water law are undeniable. In an end of drought survey, 90 percent of Australian farmers reported that water trading supports the viability of their businesses. According to the Australian National Water Commission, trading increased Australia's GDP by $220 million in 2008/09. Given the $1.84 billion and 10,100 jobs lost in California's agricultural industry in 2015 as a result of the water shortage, the economic returns from water trading can not arrive soon enough.

Allowing markets to allocate water has one other profound benefit. Under market allocation, as water becomes scarcer, remaining allocations become more and more valuable, increasing the economic returns to conservation. Applied in California, this will drive innovation of the sort that the state's "feckless" agricultural industry has been practicing for years. Imagine industries across the economic spectrum doing more with less water. It will also bring alternative forms of supply on line, such as waste water re-use and brackish water desalination. Currently, the effective price of water is simply too low in most jurisdictions for groups to invest in these forms of new supply on a scale that will make a difference.

So what is holding us back? The 2014 Sustainable Groundwater Management Act, known as SGMA, has finally arrived. Under the authority of dozens of SGMA-mandated Groundwater Sustainability Agencies (GSAs), profound change is coming to the way that water is managed. The question is, what kind of change will California get? California has the opportunity to move towards a decentralized, market allocation of water which creates economic value for all water

users. SGMA explicitly authorizes allocation of this kind. But there is significant risk that policy makers will miss the opportunity, instead reinforcing the worst parts of existing law. The continued scapegoating of California's agricultural industry makes the latter more likely.

If a move to water markets is too big a lift for California policy makers and the local GSAs, there is always eminent domain. I recommend that we start by seizing economists' water.