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Abstract:
Water management in California has always been politically charged and fraught with controversy. In the summer of 2009, the last year of a three-year drought, a specific type of "water crisis" emerged in political rhetoric, in which constructing new dams and lifting protections for endangered fish species could solve California's water problems. This piece critically examines these claims by presenting a brief background on how water is used and managed in California, highlighting the disconnect between the cost to deliver water and the price users pay, and explaining misconceptions that led endangered species protections to be attacked. California needs to take a proactive stance in water management by examining how water is currently allocated, reforming our water rights system, and dealing with difficult water issues before they reach a "crisis" level.

California Water and the Rhetoric of Crisis

By Josh Pollak

Abstract

Water management in California has always been politically charged and fraught with controversy. In the summer of 2009, the last year of a three-year drought, a specific type of "water crisis" emerged in political rhetoric, in which constructing new dams and lifting protections for endangered fish species could solve California's water problems. This piece critically examines these claims by presenting a brief background on how water is used and managed in California, highlighting the disconnect between the cost to deliver water and the price users pay, and explaining misconceptions that led endangered species protections to be attacked. California needs to take a proactive stance in water management by examining how water is currently allocated, reforming our water rights system, and dealing with difficult water issues before they reach a "crisis" level.

Keywords: Water crisis; California water; water management; water infrastructure; water allocation

"California's water system is in a crisis."

-Association of California Water Agencies (ACWA)

"Our water crisis underscores the urgent need to update California's water infrastructure so we are able to capture excess rain in wet years and have the necessary reserves in dry years like this one."

-California Governor Arnold Schwarzenegger, February 2009

"The San Joaquin Valley continues to face a water crisis in which our water supplies have become inadequate to meet expanding needs . . . I have long advocated that state and federal leaders address the disparity between California's current water infrastructure yield and future water demand. To that end, I continue to seek approval for new surface water storage, as well as improvements to the water conveyance system in our home state. "

-US Congressman Devin Nunes, Republican of California

The term "crisis" is a powerful rhetorical tool. It can dramatize a debate, command media attention, and shift the focus from larger issues to more

convenient scapegoats. "Water crisis" can have multiple meanings: from a lack of water infrastructure in the developing world, to water quality issues, to the potential impacts of global climate change. California has more than its share of water woes—from poorly maintained levees and ecological challenges in the Sacramento-San Joaquin Delta, the hub of the state water delivery system, to the impacts of climate change on the Sierra Nevada snowpack, to increased water demands with population growth in urban areas. In the summer of 2009, the last year of a three-year drought, a specific kind of "water crisis" emerged, one that was useful political rhetoric but eschewed larger issues of how water is managed in California. The "water crisis" as defined by Governor Arnold Schwarzenegger and Congressmen Devin Nunes and Tom McClintock, and other political and media figures, was a problem that could be solved by building new dams and lifting restrictions on pumping for the Central Valley Project that were set to protect endangered fish species. In this opinion piece, I critically examine these two central claims—that dams are a good solution for water shortages and that restrictions on water allocated to the Central Valley Project were mostly caused by protective measures for endangered species—and conclude that both are supported by politically beneficial rhetoric that obscures an open conversation about how California manages its water resources.

How Is Water Used and Managed in California?

Before advocating for specific solutions, policy makers and voters have a responsibility to understand how water is used and managed in California. California is marked by both temporal and spatial mismatches in supply and demand. California has a Mediterranean climate with wet winters and a seasonal drought in the summer. There is a temporal mismatch between supply and demand, with most of the supply from rain and snow in the winter and most of the demand in the summer. There is also a spatial mismatch between supply and demand. As a rule of thumb, about three-fourths of the supply is north of Sacramento while three-fourths of the demand is south of Sacramento (Carle 2004). In order to deal with the spatial and temporal mismatch between supply and demand, state, federal, and local governments have constructed complex water capture and conveyance projects that are capable of storing 40.7 MAF1 of water (DWR 2009) and transporting water over 500 miles from Shasta Dam near Redding south through the Central Valley and over the Tehachapi Range to Los Angeles County.

1. MAF=million acre-feet. An acre-foot is the volume of one acre of surface area with a depth of one foot. One acre-foot is about the amount of water used by a family of 4 over a one year period.

Many intertwined factors explain how water is allocated in California, including historic water rights, water law, and federal and state funding of large water storage and conveyance projects. The value of goods produced, however, does not play a major role in how water is allocated since agriculture uses most of the water in the state but contributes a relatively small amount to the state's GDP. In 2000, an "average" water year in terms of precipitation, 8.9 MAF of water was used for urban uses and 34.2 MAF was used for agriculture (DWR 2009). Agriculture uses about 80 percent of the water used for direct human consumption in an "average" year. Most western states and arid regions with irrigated agriculture have a similarly high percentage of agricultural water use. California is unique, however, due to its highly productive agricultural sector - it boasts 8 of the top 10 most agriculturally productive counties in the country (USDA 2009)." The direct value of crop and animal production was $22.3 billion dollars in 2007 (BEA 2009). This is, however, only 1.2% of the state's $1.8 trillion gross domestic product. Other sectors that rely on water supply, real estate and construction, for example, account for higher proportions of the state's GDP—15% and 4% respectively (BEA 2009). Agriculture as a sector does produce many benefits that are difficult if not impossible to quantify, including providing the backbone of a rural lifestyle and an economy, a local food source, valuable habitat, carbon dioxide sequestration, and the prevention of urban sprawl.

California has significant room to improve its water resource management by changing how water rights are managed. California uses a mixture of riparian and appropriative rights to allocate surface water,[2] which creates complex legal problems regarding the ownership of water. In almost all rivers in the state, water rights exceed the total water availability (Freeman 2009). California's Legislative Analyst's Office (LAO), a nonpartisan office that provides fiscal and policy advice to the state legislature, wrote a report in 2009 that proposed significant changes to statewide water management. The LAO proposed reforming water rights to address the over-allocation of surface water and suggested that the legislature comprehensively define the reasonable and beneficial use of water (Freeman 2009).

In addition to addressing surface water rights allocation, there is significant room for improvement in California's groundwater management. California's dependence on groundwater is evident in the fact that it accounts for up to 60 percent of the state's supplies in drought years (McCarthy 2000). However, most of California's groundwater is unregulated and California has no comprehensive groundwater management plan (McCarthy 2000). The cumulative uncoordinated decisions of individual pumpers led to 60 MAF of water pumped from the San Joaquin Basin from 1961 to 2005 (Faunt 2009), enough to supply the City of Los Angeles for

2. Water from rivers and lakes.

over 100 years (DWP 2009). The natural storage capacity of the San Joaquin Basin alone is 570 MAF (Carle 2004), 14 times the capacity of all the states' reservoirs combined. The sheer magnitude of this natural storage is too large to ignore and too important not to regulate. In 2009, as part of a larger bill to address water issues in the state, the legislature passed SBX7-6, which requires agencies to report groundwater levels to the state. While this is an important step, there is still no state control of groundwater pumping rates nor sufficient knowledge of how much groundwater users are pumping. Improving California's lax groundwater management can create huge benefits for the state, including reducing the need for surface storage and improving the reliability of local water supply.

The Cost of New Storage and Paying for Old Storage

Before advocating for new dams as a solution to a water crisis, it is essential to understand that dams are extremely expensive and have a history of not being paid for by those who benefit from them. The cost of building new surface storage (dams) has increased substantially over time. Comparing the Friant Dam on the San Joaquin River and the proposed Temperance Flat Dam illustrates this trend. Friant Dam, on the San Joaquin River, was constructed in 1936 as part of the Central Valley Project at a cost of approximately $415 per acre-foot of storage in 2008 dollars.[3] The Temperance Flat Dam site, further up in the watershed on the San Joaquin, is one of several new dam sites under consideration by the Bureau of Reclamation. In October 2009, the Bureau of Reclamation released a long-awaited feasibility study for the Temperance Flat Dam that placed its construction cost at $3.36 billion dollars for 1,200,000 acre-feet of storage (USBR 2008). The Bureau's report was criticized on a number of grounds, including over-optimistic estimates of the sale price of the water (Zetland 2009), the lack of a value assigned to ecosystem losses, and the flooding of dozens of sacred Native American sites (Gleick 2009). Even assuming that the Bureau's cost-benefit study is accurate, and that there would be no litigation that would raise the cost of the project, the proposed Temperance Flat Dam would still cost $2,800 per acre-foot of storage, nearly *7 times the cost* of storage per acre-foot of Friant Dam.

The Bureau of Reclamation charges artificially low prices for water from the Central Valley Project (CVP), one of the federal government's largest water infrastructure projects in terms of water deliveries and spatial extent, and has struggled to recover the CVP's construction cost. The low prices charged by the Bureau lead irrigators to push the Bureau to develop reservoirs and aqueducts that would not otherwise

3. The construction cost of Friant Dam was $14 million in 1936 dollars for 520,528 acre-feet of storage. Using the Consumer Price Index, the project cost $217 million in 2008 dollars, which works out to be $415 per acre-foot of storage.

be developed if irrigators had to bear the costs of the projects in their water rates. A central operating principle of water utility associations is that users and service charges should fully support the utilities' capital and operating costs (GAO 2002). The CVP allocates about 5.6 MAF to agriculture, urban and industrial uses. The 5 MAF allocated to agriculture is enough to irrigate about 3 million acres of farmland, or about one-third of the farmland in California (USBR 2009a). The Bureau's total capital cost to construct the CVP since 1937 (not including inflation) was about $3.4 billion (GAO 1994). As of 1999, approximately 7% of the irrigation share of capital costs has been repaid (USBR 2009b). The average price paid for irrigation water from the CVP is $17 per acre-foot. Including just operation and maintenance costs would raise the price to $40 per acre-foot. If the capital costs of the original construction with interests and the project operation and maintenance costs were all included, as they are with the State Water Project, the water used for irrigation would cost approximately $300 per acre-foot (Baumann et al. 1998).[4]

Before supporting any expensive surface water storage projects, Californians need to ask a number of questions. Is the project financially viable? Who will benefit from the project? Who will pay for the project? What are the social and environmental impacts of the project? Are they included in the cost of the project?

A Smelt Caused Crisis?

In addition to the argument that dams are a solution for a water crisis, the other central narrative of the rhetoric of water crisis used by Congressmen Nunes and McClintock and others was that pumping restrictions on the Federal Central Valley Project to protect the endangered Delta smelt were responsible for fallowed fields and high unemployment levels in the Central Valley. The Sacramento-San Joaquin Delta is the largest estuary on the West Coast of the United States, and home to 22 fish species, 164 bird species, and 53 other wildlife species (Coastal Commission 2010). The Sacramento-San Joaquin Delta is also the hub of the State Water Project and the Central Valley Project. Due in part to extensive habitat alteration changes in the naturally fluctuating salinity, the impacts of water projects, and water quality issues, a number of fish species that use the Delta are threatened, including the Chinook salmon and the Delta smelt. In 2007, U.S. District Judge Oliver Wanger, in compliance with the Federal Endangered Species Act, set pumping restrictions to prevent the smelt in the Sacramento-San Joaquin Delta from being drawn into pumps and killed.

4. Urban users tend to pay more for water than agricultural users since they receive water on demand that is treated to much higher quality standards. For more on this issue, see Hanemann (2006) in references.

While these pumping restrictions did impact water deliveries, most of the reduction in water deliveries came from being in the final summer of a three-year drought. On September 17, 2009, the Central Valley garnered national news attention when Sean Hannity of Fox News and a film crew broadcast a piece called "The Valley Hope Forgot: California Farmers at Obama's Mercy" live from a dusty field in Fresno County in the San Joaquin Valley. Hannity claimed that pumping restrictions showed that "farmers come second and Delta smelt come first." In reality, the pumping restrictions accounted for only about one-quarter of the water delivery shortages in 2009, while the other three-quarters were the result of a lack of precipitation (Barkoff 2009).

An August 2009 report by the Business Forecasting Center of the University of the Pacific disproved the oft-repeated claim that the pumping restrictions were also responsible for high unemployment rates in the Central Valley. The study found that while water shortages cost the San Joaquin an estimated 6,000 jobs and $170 million in employee compensation, the collapse of the construction industry from the foreclosure and housing crisis cost the valley far more - 47,000 jobs and $1.8 billion in lost employee compensation. Environmental regulations were responsible for a 0.1 percent increase in Valley unemployment and the drought was responsible for a 0.2 percent increase in unemployment (Michael *et al* 2009).

Moving Past the Rhetoric of Water Crisis

Placing blame for job losses and reductions in water deliveries on the protection of an endangered fish species is not only misleading, it is a distraction from a larger debate about how to best manage a scarce resource. Using the recent three year drought as a political tool to push for new dams and a relaxation of endangered species requirements belies both the environmental harm of these projects as well as the underlying causes of job losses and water delivery shortages. Before pursuing water infrastructure projects that are ecologically damaging, expensive, and benefit specific interest groups, policy makers have a responsibility to improve California's water management. We need to examine how water is currently allocated, reform our water rights system in line with the LAO's recommendations, and improve groundwater management. Despite the identified need for water rights reform and improved water management, it remains to be seen whether the legislature will take a more proactive stance in water management or whether water issues will be dealt with only when they reach the level of a "crisis."

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