



Water Policy and Climate Policy

The impacts of global warming on water supplies have been well documented. These include decreased snowfall and shortages of water in the summer, coupled with an increase in demand for irrigation due to greater evaporation from plants and soil. More frequent and intense storms with rising sea levels will threaten low-lying inland and coastal areas.

Most people are aware that global warming will affect water resources. But it is less well understood that water use also contributes to global warming. Water treatment and delivery systems are major energy users. Thus, inefficient water uses lead to increases in energy demand, causing more global warming pollution. These issues were discussed in a recent E2 EcoSalon featuring William Reilly, former U.S. EPA Administrator and Founding Partner of Aqua International Partners, and Barry Nelson and Ronnie Cohen of NRDC's Western Water Project. (Information for this article was taken from the speakers' comments.) In this article we explore the linkage between water policy and climate policy, and demonstrate that the two issues are as linked as "peanut butter and jelly."



William Reilly, former administrator of the U.S. EPA and Founding Partner of Aqua International Partners, speaks to E2 members and guests at an EcoSalon in San Francisco.

Water Systems - The Big Energy Consumer

In their 2005 report¹ the California Energy Commission estimated that 19 percent of California's electricity use and over 30 percent of natural gas use goes toward water. As NRDC's *Energy Down the Drain*² report explains, energy is used at five stages of water processing: (1) extraction and conveyance, (2) treatment, (3) local distribution, (4) end use such as heating and circulation, and (5) treatment of wastewater.

California's water use is uniquely energy-intensive because most of the water supply is in the northern part of the state, while most of the population is in the southern regions - requiring water to be lifted 2,000 feet over the Tehachapi Mountains as it is conveyed in huge State Water Project (SWP) canals and pipes to Southern California. The SWP is the single largest energy user in the state.

¹ 2005 Integrated Energy Policy Report. California Energy Commission report. 2005 November 21. Available online at <http://www.energy.ca.gov/2005_energypolicy/index.html>.

² Energy Down the Drain: The Hidden Costs of California's Water Supply. NRDC report. 2004 August. Available online at <<http://www.nrdc.org/water/conservation/edrain/contents.asp>>.

Despite the staggering amounts of energy that we use to move water, we use even more energy on site - to heat for showers, circulate in cooling towers, or pressurize for irrigation. For example, an inefficient showerhead can use up to 2,800 kilowatt hours per year - almost as much energy as it takes to pump the annual water supply for two southern California homes over the Tehachapi Mountains.

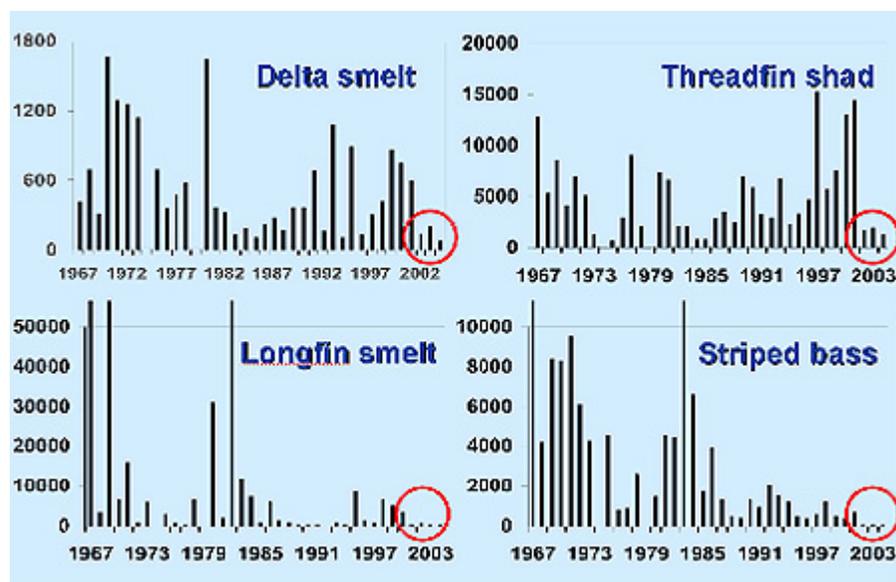
The NRDC report includes a case study of water supply alternatives for San Diego County. The analysis shows that pursuing conservation and efficiency to provide additional water supplies would save enough energy to meet the annual energy needs of 118,000 households - 25 percent of San Diego's population.

Water Wars - Who the Users Are

California's developed water use is divided among three categories:

- Agriculture - 75 percent
- Urban use (both residential and industrial) - 25 percent
- Environmental uses

We don't list a percentage for the environmental uses, but observe that the health of rivers and wetlands is an important water "use." For example, state law prohibits dam operators from diverting so much water from rivers as to impair the health of fish populations. Water taken from the San Joaquin River and from the San Joaquin-Sacramento Delta has caused significant ecological damage. The San Joaquin River has been dried up for a stretch of 60 miles due to diversions at Friant Dam³ for over 50 years.



Excess water pumping from the Delta has recently contributed to a crash in fish populations (see figure). While Delta water management will be the subject of ongoing debate this year⁴, with suggestions ranging from reduced water pumping to construction of a canal to bypass the area altogether, news from the San Joaquin River is much more

³ Environmental Entrepreneurs. "San Joaquin River Gets a New Lease on Life." 2006 August. Available online at <<http://www.e2.org/ext/jsp/controller?docId=11213§ion=SanJoaquinRiverSettl#SanJoaquinRiverSettlement>>.

⁴ Martin, Glen "Bold ideas for the Delta." *San Francisco Chronicle*. 2007 February 8.

encouraging. Thanks to a settlement negotiated by NRDC, the river will be restored (see NRDC factsheet⁵).

Comparative Costs

Recently, Governor Schwarzenegger and some members of the legislature have proposed building two new dams to increase California's water supply. This proposal would cost California taxpayers \$2 billion. These dams provide an interesting cost comparison for various water strategies. The proposed dam projects are far more expensive than the alternatives. The per-acre-foot cost of water from these proposed dams is not known, as required studies have not been completed. However, in 1994, the Bureau of Reclamation found that raising Friant Dam (an alternative similar to the proposed dam at Temperance Flat) would produce water costing \$2,920 per acre-foot. This is twice the cost of desalinated seawater and approximately 100 times the price farmers pay for water on the East Side of the San Joaquin Valley. Alternative water sources can be far cheaper. An analysis performed for the joint state-federal CALFED Bay-Delta Program⁶ found that prices for water from other sources start at:

- Agricultural water conservation - \$100 per acre-foot
- Voluntary water sales by farmers - \$150 per acre-foot
- Urban water conservation - \$300 per acre-foot
- Water reclamation - \$500 per acre-foot

No water users are currently willing to pay the real price of water from the proposed new dams, or to provide the billions of dollars to build either facility. They have refused to commit their ratepayer funds to these projects until they are convinced of the benefits they would receive. On the other hand, water users are eager to help fund water conservation, water reclamation and groundwater storage. The California legislature should be as careful with taxpayer funds as water users are with their electricity ratepayer funds.

Issues and Opportunities Facing California

California has made significant improvements in electricity use by establishing a state policy to require that efficient use of electricity be given a higher priority than new generation. California energy utilities make the same profit by eliminating a kilowatt of electricity demand as they would by adding a new kilowatt of generation capacity. California has two reasons to create this same policy for water utilities: (1) it is the least expensive way to supply water, and (2) it will significantly reduce global warming pollution by avoiding the energy needed to move and process the water. A "least cost" approach to water supplies would provide similar economic and environmental benefits - helping to restore our rivers and reduce the emissions that cause global warming.

Turning off the tap is like turning off the lights. It's time to starting thinking about water and energy like peanut butter and jelly.

⁵ San Joaquin River Restoration Settlement Act (H.R. 24 and S. 27: January 2007). NRDC factsheet. 2007 January. Available online at <http://www.nrdc.org/legislation/factsheets/leg_07010101A.pdf>.

⁶ Economic Evaluation of Water Management Alternatives - Screening Analysis and Scenario Development. CALFED Bay-Delta Program report. 1999 October. Available online at <<http://www.calwater.ca.gov/content/Documents/library/Calfed.pdf>>.

For further reading on water issues, please see the following:

- “William K. Reilly,” Q&A profile, *San Francisco Chronicle* (<http://www.e2.org/ext/jsp/controller?docId=12342>)
- “Water Sector Rides a Wave of Strong Demand,” *The Wall Street Journal*, April 15, 2005 (<http://www.e2.org/ext/jsp/controller?docId=12343>)
- “Clean Water is a Right,” *Economist*, November 9, 2006 (<http://www.e2.org/ext/jsp/controller?docId=12348>)
- “A Modest Proposal,” *Economist*, October 26, 2006 (<http://www.e2.org/ext/jsp/controller?docId=12347>)
- “Energy Down the Drain,” *NRDC report*, August 2004 (<http://www.nrdc.org/water/conservation/edrain/contents.asp>)
- “Senators Feinstein and Boxer Introduce Historic Legislation to Implement Settlement to Restore the San Joaquin River,” *press release from office of Senator Feinstein*, December 6, 2006 (<http://www.e2.org/ext/jsp/controller?docId=12344>)
- “Accord Reached on Diverting Water from Farms to Restore San Joaquin River,” *The New York Times*, September 14, 2006 (<http://www.e2.org/ext/jsp/controller?docId=12345>)