

BIG PIVOTS

Energy and water transitions in Colorado and beyond

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The need for hard thinking about the Colorado River

by Allen Best

Much has been said about a “new normal” in the Colorado River Basin. The phrase describes reduced flows in the 21st century as compared to those during much of the 20th century.

Authors of a new study contemplate something beyond, what they call a “new abnormal.”

The future, they say, might be far dryer than water managers have been planning for. This needs to change.

In the white paper, Kevin Wheeler and 11 others affiliated with the Utah State University-based [Center for Colorado River Studies](#) argue for the need for “wide-ranging and innovative thinking about how to sustainably manage the water supply, while simultaneously encouraging the negotiators of new agreements to consider their effects on ecosystems.”

Basin might become far drier than what managers have been planning for

In the 133-page report, they identified a wide variety of alternative management ideas, not simple tweaks but “significant modifications or entirely new approaches.” Some may consider these proposed approaches radical, they say, but the situation of the Colorado River Basin demands more than small, incremental changes.

“If the Millennium Drought, which has now persisted for more than two decades, has become the ‘new normal,’ or if the progressive decline of runoff resulting from climate change becomes even more apparent, major structural changes to water management in the basin will be urgently required,” the authors say in an executive summary.

They say they hope their research triggers further thinking and proposals.

Colorado will have to make do with what it has. This is despite projected population growth during the next three decades that will expand the current 5.8 million population by 3 million residents by mid-century. Think of another Aurora, Colorado Springs, and Pueblo every 10 years.

The era of massive new diversions from Colorado’s Western Slope ended decades ago. Relatively small—the key word is relatively—new diversions are planned: two in Grand County, where both Denver Water

and Northern Colorado Water Conservancy District have projects using existing infrastructure. Aurora also wants to divert additional water from Eagle County.

Big, new diversions, such as from the Yampa River near Craig, face difficult and likely prohibitive economics, with the need to cross two mountain ranges to deliver water to the northern Front Range. Too, with warming very probably decreasing flows over coming decades, there's uncertainty whether water will be available with any reliability, given Colorado's commitments under compacts governing the Colorado River.

Between 85 and 90 percent of the Colorado River originates in snowmelt, mostly from Colorado but also Wyoming. A century ago there was plenty for the taking by all these states as well as the three lower-basin states, Arizona, Nevada, and California. Many, however, could see ahead to a time when there would not be plenty for all.

The Colorado River Compact drawn up by representatives of the seven states in 1922 assumed plentiful supplies of that time. The river delivered 17.7 million acre-feet from 1906 to 1930 at Lees Ferry, at the top of the Grand Canyon, the dividing point between the upper and lower basins. They accordingly allotted 7.5 million acre-feet to Colorado and its neighboring headwater states and 7.5 million acre-feet to California and its neighbors, leaving water left over for delivery to Mexico.

At times, the river has delivered well enough. Keeping in mind that 90% of the flows come from the upper basin, the Lees Ferry gauging station recorded an average annual natural flow of 14.8 million acre-feet between 1906 and 2018.

The drought since 2000 has bent down the numbers. From 2000 to 2018, the average estimated flows have been 12.4 million acre-feet. This is the Millennium Drought.

It could get worse—and it has been worse in the past. Tree rings indicate flows of 11.8 million acre-feet for the last quarter century of the 1500s. That's natural.

Now come unnatural conditions, the influences of the greenhouse gas emissions that have been accumulating in the atmosphere. Climate change will make some places wetter, and some places drier. In the Colorado River Basin the evidence points strongly toward drier in the basin altogether.

Colorado State University's Brad Udall and others have already documented a drying underway, the increased evaporation and transpiration caused by rising temperatures. Udall's research has found roughly half of the Millennium Drought can be attributed to those rising temperatures. He calls it a "hot drought."

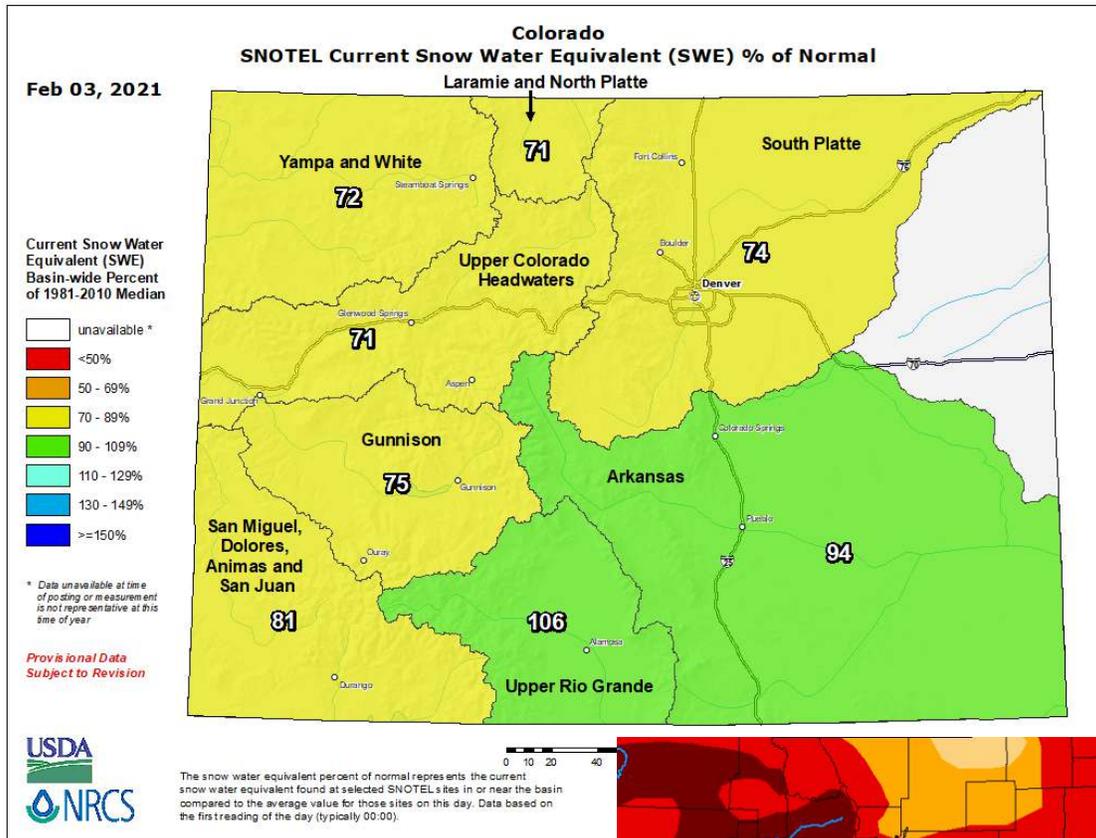
As for future warming, the authors of the report used temperature projections from two pathways identified by the International Panel on Climate Change. They analyzed reductions of flows ranging from 3% to 10% for each degree Celsius of warming.

Where does all this take the 40 million of us who live in the Colorado River Basin or depend in part on imported water from the basin? The latter includes the nearly 5 million people along Colorado's urbanized Front Range corridor and the nearly 24 million people of southern California.

"Probable climate change conditions" will cause flow declines of 6.5% for each degree of warming, the study says. With less water available, less must be used.

"Aggressive commitments to water conservation by both the Upper and Lower Basins will become critical in the next 25 years" to avoid drawing down the reservoirs in the basin, most notably Mead and Powell, below 15 million acre-feet.

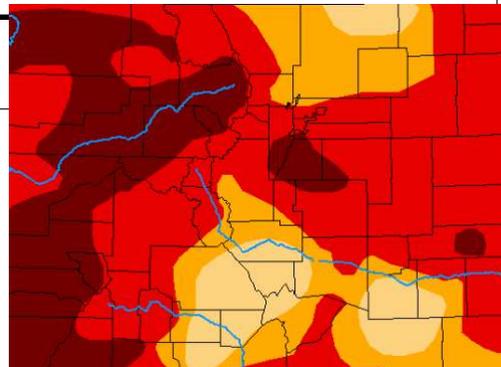
Colorado and other upper-basin states should not try to use more water beyond 4 million acre-feet, despite the compact



apportionment of 7.5 million acre-feet. They aren't. Total consumptive use flattened out beginning in 1988. As for lower-basin states, they need to reduce demand to 6 million acre-feet. They've cinched their belt down to 7.5 million acre-feet in the 21st century and, in the last 5 years reduced it further to an average 6.9 million acre-feet.

John Fleck, the author of one book about the Colorado River and the co-author of a second book and former water reporter for the Albuquerque Journal, wrote in his [blog on inkstain.net](https://www.inkstain.net) that the report clearly calls for water managers to commit publicly to deeper reductions in water use.

He also credits the level of details in the report, "a credible incorporation of the best climate science into the current Colorado River Basin policy framework, with an analysis done using CRSS, the modeling tool the management community uses to think about the Colorado River. This report, in other words, is written by a team deeply fluent in the language of Colorado River management."



The report was posted on the same day that I spoke with a resident in Colorado's Summit County, who said that in 30 years she had never seen it so dry during mid-winter.

As of mid-January, the U.S. Bureau of Reclamation projected 5.72 million acre-feet flow into Lake Powell. That's 53% of average.

This comes after a subpar runoff in 2020 followed by a hot and dry summer, with massive wildfires from August to November, and now a winter that is, like the children of Lake Wobegone, above average—for warmth, that is.

See Fleck's blog [here](https://www.inkstain.net).
The executive summary [here](https://www.inkstain.net).
And the full report [here](https://www.inkstain.net).

With a grin and a wink, Adam Palmer had missions in life far beyond himself



“...my heart went out to lonely sounds in the misty springtime night of wild sweet America in her powers, the wetness on the wire fence bugled me to belief, I stood on sandpiles with an open soul, I not only accept loss forever, I am made of loss—I am made of Cody, too.”

— Jack Kerouac
Visions of Cody

by Auden Schendler

Adam Palmer is sitting next to you on a chairlift. You are lost in thought. But you feel eyes. You turn, and there’s that smirk, the penetrating stare, waiting for you to respond to the wisecrack that was so dry you already missed it.

“I just can’t stop thinking of his smiling face,” my wife, Ellen, said.

It wasn’t quite a smile, though. It was the sly grin.

Along with two companions, Adam died Feb. 1 in an avalanche near Silverton in Colorado’s San Juan Mountains.

Adam was the Norse God Loki of Eagle County, the Coyote of the climate movement and of our community. He was a trickster, an Odysseus, a delighted warrior, highly dangerous to the status quo, whether that status quo was the serious thread of your conversation or the global order. If he had been born in China or Russia, I can tell you where he would live: in jail. Instead, in America, he was a town councilman, utility board member, a family man and leader on climate solutions for the country.

His chosen work was serious indeed, incredibly discouraging labor because it is so hard, and yet Adam performed it with energy and joy because he saw in it a hopeful future for the world. It wasn’t his community Adam cared about so much as everyone.

He achieved what the physician and anti-poverty activist Paul Farmer described as an almost unmanageable task, which was the ability to love a stranger's child as your own. To love your community as your family.

Yes, he struggled and succeeded mightily for his wife, Kalie, and his daughters, Montana and Savannah, but he did it just as much for you. His friend Jason Blevins summed up the Palmer worldview: "He would haul a cabinet-style speaker down to the surf wave in Eagle he fought so hard to build ... blasting his punk tunes, he would set up lights on towers and we would surf all night long, drinking beer and shredding ... (well, *he* was shredding ... most everyone else, except for the pre-teens and Adam, were crashing.)"

For such a jokester and a funny guy, Adam was insistently mission-driven.

"The two most important days in your life," he quoted from Mark Twain, "are the day you are born, and the day you find out why." But you'd be forgiven if you weren't quite sure which was Adam's why: the mission, or the joke. Making them almost equal was the core of his resilience and his empathy. Tacked onto an email on the social cost of carbon and clean energy percentages, he'd add a picture of himself in a new 'Energy Smart' trucker hat, or his "badass Freddy Mercury" moustache he was admiring while poring over some code document.

A memory I recalled to him often was not a happy one, but because of that it defined who he was. He is sitting with his head bent in his hands, in despair over a plate of huevos, 15 or so years ago at Breakfast in America in El Jebel with Randy Udall and me. He had just been disqualified from running for the board of our utility, Holy Cross Energy, because his petition

signatures had been invalidated. It was a nadir for us: It felt like we would never win this fight, would never turn the ship of this coal-based utility, would never make progress on climate change and clean energy. Randy and I were there to give him succor and counsel. Over a decade later, Adam had become an essential element in what led to Holy Cross's complete transformation and commitment to 100% renewables.

But it's hard for me to know if I was his mentor or he was mine. I never knew someone to so persistently care about the success of others, to so joyously celebrate and foster their progress, even as he himself excelled.

When I wrote a book, my Eagle County party was at his house, he insisted. When I had a new idea, he brought me over to speak. And then in-between it was Adam who kept our friendship going: "Amigo, (this was how all his emails began) we had an email thread going around soil carbon

sequestration and they were suggesting a Zoom meeting which I said blows and meetings on the slope are much more productive. It looks like Friday, Feb. 26th works for us, can you join us hiking the bowl?"

This active connection is why so many of you loved him so much, but it is also the rare trait of a good and great friend: he'd as much as say, as Paul Verlaine wrote to poet Rimbaud: "Come, dear, great soul. We await you. We desire you."

Adam was massively talented, but his talent was beyond himself, a talent for the world. He was a music prodigy (I think he actually *was* a prodigy as a kid.) Our friend John Gitchell first learned about his skills when Adam played keyboard at John's

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grandmother's nursing home some 25 years ago. He biked across America, but spent summer weekends building single-track in his neighborhood. He was known as a dreamer and a doer, as one fan wrote to the newspaper.

He was a physical animal, but unlike some of the vapid people we know in the Colorado backcountry, who are just out for the stoke, Adam's badassery was laced with a potent drug: kindness and an outward focus.

Jason Blevins again: "he would always break trail when skinning ... he was oblivious to gear ... wore his bike helmet skiing, a jacket from the 90s. He was indefatigable ... literally could not be worn down he fought hard for his community... every time you saw him you were stoked ... Every. Time."

His talents were also imbued with humility and self-awareness: "We just got the baby bike trailer thingy hooked up and took Montana out for a ride. It was awesome until I rode by a big store window and saw our reflection. I suddenly realized I had become the dad-with-the-munchkin-in-the-trailer-with-reflectors-who-cruises-on-the-bikepath guy."

Adam liked to quote his dad. "As my dad, who spent some quality time on the front of a Patrol Boat in the Mekong Delta says, always be ready for an ambush."

We got ambushed by Adam's death. As we age, especially if we are involved in a difficult, maybe impossible battle greater than ourselves—which, well, we all are—it is hard to escape the creeping and desolate

feeling that the world takes the best, and leaves the rest of us to muddle along, lonelier, slightly crippled. I have to remember Adam's relentless faith in us, his urging and encouragement and certainty in our eventual success.

Some years ago, Adam was playing with his band at Bonfire Brewing, wearing a big floppy Mad Hatter top hat, singing and moving from keyboard to guitar, five o'clock stubble glistening with sweat, accepting beers and joyously reveling for hours and hours, the king of the room, Robin Hood of his merry band, the groom at the wedding, the center of the world.

And yet, if you looked his way, he'd grin and wink.

Maybe I will leave him there.

Auden Schendler, of Basalt, is the senior vice president of sustainability at the Aspen Skiing Co. and author of "Getting Green Done: Hard Truths from the Front Lines of the Sustainability Revolution."

Colorado Solar & Storage Association gladly supports Colorado-based energy journalism and is pleased to underwrite this effort.

