

## DEEP DIVE

## Road to 100: How Western water rights and local billionaires complicated Aspen's renewables path

Controversy over hydropower in the Mountain West politicized the city's 100% renewables goal, bringing in a wave of opposition.

By Catherine Morehouse Published Dec. 10, 2019

This is the last of a four part series based on Utility Dive visits to cities that produce more renewable power than they consume. All four installments can be found here.

SPEN, COLORADO — There's an argument to be made that Aspen is the original 100% renewable city.

The town of just over 7,000 permanent residents is now famous for its ski slopes flocked every winter by celebrities and millionaires. But it started as a mining town that in 1885 became the first city west of the Mississippi to electrify its homes, businesses and streets, and two years later its underground silver mines, with hydroelectric power.

"Aspen led the way in the use of electricity ... For years, it was the best-lighted town in the United States," read a 1907 article in the Electrical Review, an electrical engineering periodical. In the 20th century, the city and its power demands began to evolve. Some hydro facilities were decommissioned, and though the resource remained a significant portion of the city's power supply, others, including cheap coal, joined the city's generation mix.

Then, in 2005, Aspen snapped back toward renewables with a new vision to reduce the city's carbon footprint.

"One bullet in that plan was to pursue 100% renewable" power, Steve Skadron, former Aspen mayor, told Utility Dive.

"I spent a lot of time driving that policy. And then when I was elected mayor, we had like the last chunk to do," he said. "It's kind of easy to get from, 50% renewable to 75% or 80%, but getting that last 20%, that's what's really challenging."

Though the last fifth of Aspen's clean energy was in sight and could even be supplied locally, its path back to 100% renewables became complicated by politics around power and the environment, as well as the influence of local wealthy billionaires.

## Aspen's path (back?) to 100

In the 1960s, Aspen began to move away from hydropower as its needs changed. But after the Jimmy Carter Administration and a push for diversifying energy resources in the late 1970s, "Aspen began to retake control of its power generation and local leadership said, 'Let's go back to local, municipal sources,'" said Skadron.

That laid the infrastructure for much of the city's renewable power still operating in the 2000s. Around 2011, city council staff came to Aspen's city council with a plan to take advantage of more of the city's historic infrastructure on the nearby Castle Creek to generate more hydropower.

The plan was met with a lawsuit filed by several local billionaires, including Bill Koch, claiming the city didn't have the right to divert water from those streams for electric power and that doing so could be an ecological disaster. Koch Industries and the Koch Foundation did not respond to Utility Dive's requests for comment.

Suddenly the city was in the middle of an environmental question that has long plagued hydropower: What's more valuable, carbonfree power or maintaining the natural ecology of a stream?

"We had the world's leading environmentalists ... saying, 'Renewable is important,' versus scientists saying 'You're going to ruin the river,'" said Skadron.

Though the Department of Energy defines hydropower as renewable, the resource has historically faced environmental opposition for its perceived impacts to waterways and aquatic life. Some states have restrictions on what hydrofacilities count as renewable power, and environmental groups remain skeptical about the facilities' carbon reduction benefits. In the dry West, water rights make the battle even more fraught.

"Here in the West, you'll find that water rights and the power are really interconnected," Aspen Utilities Resource Manager Margaret Medelin told Utility Dive. It's "a very kind of archaic, complicated system of who can use water when and how much."

Ultimately, the city put the Castle Creek plan on hold, settling with the local landowners to select a "mutually agreed upon consultant" to study the process more carefully. Meanwhile, Aspen still had a 100% renewables goal to meet. City officials called in the National Renewable Energy Laboratory (NREL), which through a number of stakeholder processes helped the city develop a plan to get the rest of its renewable energy through wind and biogas certificates further east through the Municipal Energy Agency of Nebraska (MEAN). But the power provider was not keen on 100% renewable energy production at the time because the economics weren't quite there yet.

That's when what Skadron calls the "political will" kicked in. He brought the question back to the city, which voted to accept higher rates in order to pay for MEAN's investment in renewable power, guaranteeing the energy agency a profit. The city would be able to claim they were 100% renewable through those certificates combined with their hydro assets.

"You set the vision, you stick to it, you dedicate resources," Skadron said of the city's successful execution. "It's easy to talk about it ... but it's fierce and you gotta to stick to it."

## Aspen's power mix today

Though the last portion of the city's 100% renewable power came from a combination of willing ratepayers and out-of-state negotiations, the city would not be where it is today without the kickstart of those local power sources, said city officials.

"Having that really old right to use the water to make power to light the streets of Aspen has really not only protected our power supply, but also our water supply," said Medelin.

"Do it now," is Skadron's message to other cities looking to clean up their power mix, with "early investment in generation assets. Own them." Today, Aspen gets around 53% of its power mix from wind, 46% from hydropower and around 1.5% from a combination of solar dispersed around the city and a landfill gas plant in Des Moines, Iowa. The city consumes around 75,000 MWh annually, with peak load hitting in January, around tourism time.

The city gets its hydropower from four different sources. The largest amount -24% — has been supplying the city since 1983 and comes from the Ruedi dam on the Frying Pan River 40 miles from Aspen.



The Ruedi dam supplies the majority of Aspen's hydropower. | Credit: <u>Bureau</u> of <u>Reclamation</u>

8% comes from long-term energy allotments from the Western Area Power Administration, a federal agency under the Department of Energy that transmits electricity from 57 hydropower plants across the West. Around 12% is based on a 2014 agreement with the Ridgway dam, from which Aspen purchases energy from October to May.



Aspen has been buying power from the Ridgway dam eight months out of the year since 2014. | Credit: <u>Wikipedia</u>

Finally, Aspen consumes 3% of its power from the Maroon Creek micro-hydro facility, which has been operating since 1983. Supervisors of the facility are especially careful of its operations because of the controversy surrounding water diversion in the city, particularly after Castle Creek.

The municipal utility monitors the facility daily and takes a number of steps to ensure the creek is healthy, including fully shutting the system down to stop diverting water if the water levels are too low, based on federal licensing requirements.

"It's planned" for the city to give up a certain amount of hydropower at some points in the year, Rob Covington, raw water supervisor at the Maroon Creek hydro facility, told Utility Dive. "We would rather weigh towards the health of the Creek than make hydroelectric power. ... The first thing we do to conserve water is shut off the hydro electric plant."



The Maroon Creek hydro facility was producing about 200 kW on this day in November, largely due to recent snow combined with a 50 degree weekend. | Credit: Catherine Morehouse, Utility Dive



Solar panels retrofitted on the facility that controls the dam's operations offset additional power needed to work the facility. | Credit: Catherine Morehouse, Utility Dive

The facility was rebuilt in 1983 in the same spot as one of the city's original hydro facilities from the 1880s, Covington said. The majority of the plant's water relies on snow pack, so spring is the most lucrative time for that plant, and others in the region.

The local power is cheap, in part because the system is gravitybased, rather than requiring more electricity to pump the water in, said Covington.

Skadron acknowedges the initial buy-in had to come from a city that is wealthier than most, which also allows the city to pursue other expensive projects aimed at reducing carbon emissions, including electrifying their transit system.

"The 100% renewables is just a part of" what a city can do to reduce its greenhouse gas emissions, said Skadron. And Aspen has made significant strides there as well, though those efforts come with their own challenges.



Aspen is working to transition its bus fleet toward electric batteries instead of gas. | Credit: Catherine Morehouse, Utility Dive

Aspen boasts the largest rural mass transit system in the country and is working toward electric buses — though at a steep price of around \$1 million each. And although community value and support is what gave the city the financial and political opportunity to push for 100% renewables, the next stages of decarbonization may prove trickier, in part because they involve a more substantive lifestyle shift.

In Aspen, that means people who moved to the city for its natural beauty and environmental values, still want to hold on to their SUVs.

"So many people are moving here and ... this is the big challenge, bringing with them a set of values that often contradict a set of values that brought them here in the first place," said Skadron.