

In Colorado's rivers, genetic research helps rainbow trout rebound

CPW's approach to fighting whirling disease could be a model for the future

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An angler brings in a rainbow trout this summer on the Animas River in Durango. In the 1990s, whirling disease devastated the rainbow population in Colorado. Now, Colorado Parks and Wildlife is restoring their numbers using genetic research. (Jerry McBride/Durango Herald file)

CPW's approach to fighting whirling disease could be a model for the future

In the 1990s, rainbow trout in Colorado died. A lot of them. Millions of them.

Whirling disease, an imported aquatic disease first discovered in Germany in 1893, left young trout swimming in circles. Nearly entire generations of

rainbow trout died with kinks in their tails, catastrophic deformities from a nearly invisible parasite.

The Colorado River in Grand County lost 98% of its wild rainbow trout population.

In other river systems, the devastation wasn't as bad, but the disease still took its toll.

The rainbow trout population in the Lower Gunnison River from Delta to Grand Junction, crashed from 2,000 adults per mile in the 1980s and early '90s to 300 per mile by 2000.

That density dipped to about 170 adults per mile in 2014, said Eric Gardunio, an area aquatic biologist with Colorado Parks and Wildlife in Montrose.

But since 2014, the rainbow trout population in the Gunnison has rebounded.

In 2019, 630 adult rainbows scattered every mile of the Lower Gunnison, a more than threefold increase thanks to CPW's decades-long effort to restore rainbow trout across the state.

CPW's endeavor to build back rainbow trout populations has been time consuming and costly. In 2018, CPW was spending \$3.8 million every year to stock rainbow trout across the state. For decades, CPW researchers have studied whirling disease and resistant trout to try to find a solution.

Yet, the continued success of CPW's whirling disease program has highlighted the importance of genetic research for conservation efforts across the state at a time when invasive species and climate change are an ever-increasing threat.

“Without incorporating those (genetic) resistance characteristics into rainbow trout, we probably would not be where we’re at in terms of recovering the rainbow trout populations across the state,” said Eric Fetherman, an aquatic research scientist and whirling disease expert with CPW.

Breeding for resistance

The story of how whirling disease made its way to Colorado’s rivers and ravaged rainbow trout before CPW’s genetic initiatives saved the day sounds like a fisherman’s tale.

Whirling disease, which targets young fish disrupting the development of their skeletal system, was brought to the U.S. by frozen fish products or brown trout imported from Europe, according to a 2002 paper by the American Fisheries Society.

Once it reached the U.S. in the 1950s, the disease began to spread. It was first detected at two public and two private trout hatcheries in Colorado in 1987 before making its way into all of the major river systems in the western half of the state.

As the disease fanned out and rainbow populations declined throughout the 1990s and 2000s, CPW began searching for solutions.

In 2002, CPW learned that German researcher Mansour El-Matbouli had discovered whirling disease resistance in a genetic strain of domesticated rainbow trout at the Hofer Trout Farm in Bavaria, Germany.

A rainbow trout collected on the Animas River during a Colorado Parks and Wildlife fish survey. A selective breeding program using domesticated trout from Germany and wild trout in Colorado has produced a rainbow trout strain resistant to whirling disease. (Jerry McBride/Durango Herald file)



Researchers at the University of California-Davis imported the fish to the U.S., and subsequent experiments confirmed the “Hofer” rainbow trout strain was resistant to whirling disease.

George Schisler, an aquatic wildlife researcher with CPW, imported the Hofer trout from California and another resistant strain of lake and reservoir rainbow trout from Harrison Lake in Montana to CPW’s Fish Research Hatchery near Fort Collins.

Researchers immediately began assessing them for their genetic potential and started breeding the Hofer trout with the wild Harrison Lake trout and CPW’s own wild Colorado River rainbow trout.

“What we started really incorporating into the hatchery system were these crosses of the Hofer and these wild-strain rainbow trout, hoping that we could create a fish that was retaining the resistance of the Hofer, but (that) also retains the characteristics of those wild fish so they could continue to survive well in Colorado’s waters,” Fetherman said.

Success on the Gunnison

As they studied the offspring, researchers found that the first generation of rainbow trout, with a Colorado River and a Hofer parent, were best suited for wild streams while retaining their resistance to whirling disease.

Around 2004, CPW started its selective breeding program and the agency began stocking the 50% Hofer/50% Colorado River rainbow trout to see how they would do in river systems.

The results were mediocre, and few of the fish survived to pass on their whirling-disease-resistant genes to the wild population. The problem was the domestic background of the Hofer strain.

"We were seeing them not surviving very well in the wild, not because of whirling disease, but they couldn't compete very well with brown trout," Gardunio said. "They just couldn't figure out how to live well out in the natural environment because they're such a domesticated strain."

In 2006, CPW began stocking the 50% Hofer/50% Colorado River rainbow trout in the east portal of the Gunnison River in Curecanti National Recreation Area. The east portal of the Gunnison was one of the few locations in the state where the impacts of whirling disease had been comparatively mild and researchers hoped the introduced fish would survive and reproduce better.



An angler fly-fishes on the Animas River last summer in Durango. Colorado Parks and Wildlife's efforts to breed whirling disease resistant rainbow trout could provide a blueprint for future challenges fish populations in Colorado may face. (Jerry McBride/Durango Herald file)

Stocking continued through 2013, and as Fetherman and other scientists collected genetic data, they realized the fish had spawned with the wild Gunnison River rainbow trout initially in the river.

"We did actually learn that those trout had spawned in that system, and those Hofer resistant characteristics had been incorporated into the genetics of those wild fish," Fetherman said. "They were just maintaining the resistance genes from the Hofer and then everything else was wild trout genetics."

Gardunio watched as the rainbow trout population in the east portal of the Gunnison began to rebound.

"When you put (the Gunnison River rainbow) in a river that's filled with other fish like brown trout, they can compete with those fish and be successful," he said. "They're really what we'd been looking for for a long time."

Gardunio and CPW immediately began collecting Gunnison River rainbow trout eggs to build a brood stock that the agency could raise in its hatchery and begin stocking in rivers hit hard by whirling disease.

Animas, San Juan rivers benefit

Since 2014 when the program began, CPW has collected about 100,000 eggs per year from 100 female trout in the east portal. From 2014 to 2019, CPW stocked 80,000 to 100,000 Gunnison River rainbows every year, primarily in the Gunnison and Arkansas rivers.

But now that the fish CPW initially brought in to create its brood stock are reaching reproductive maturity, those numbers have grown.

In 2020, CPW stocked 279,000 across the state. This year, the agency released almost 592,000.

In Southwest Colorado, CPW stocked about 58,000 Gunnison River rainbows in the Animas, San Juan and Piedra rivers, with the Animas receiving about 68,000 since efforts began in 2019.

The genetic ingenuity has paid off.

Jim White, a CPW aquatic biologist, said in a September news release that the rainbow trout in the Animas were the best CPW had seen for years after whirling disease and the 416 Fire, which killed 80% of the fish in the river.

“We’ve definitely been seeing some positive results,” Gardunio said. “We’re hopeful that will continue and that (the Gunnison River rainbow trout) can really help us as a state rebound from this whirling disease issue and get our wild rainbow populations back.”

“The goal is eventually to get back to where the rainbow trout are self-sustaining and we don’t have to be reliant on stocking anymore,” Fetherman said.

A model for the future

Fetherman, Gardunio and CPW’s genetic ingenuity may provide a blueprint for future efforts to conserve aquatic wildlife in Colorado.

Climate change and other diseases continue to pose a threat to trout populations in the state.

In 2015, a bacterial disease at CPW’s Glenwood Springs Hatchery wiped out the entire Hofer/Colorado River rainbow trout strain researchers had developed.

“Really over about a decade, which isn’t that much time, this population with a little help from us was able to develop that (disease) resistance,” Gardunio said.

“What’s amazing to me is how adaptive these fish are,” he said. “If it is the kind of impact that doesn’t kill everything, that selective process can happen relatively quickly and these populations can change to overcome hurdles.”

“The whirling disease issue taught us a lot about how we should be monitoring and watching for these things,” Fetherman said. “And so we’re trying to learn from past occurrences so that we can try to prevent anything like this from happening in the future.”

Electric highway to the Front Range from the heart of the Dust Bowl?

Story/photos by Allen Best Nov 18, 2021

Trucks roll through downtown Springfield and Lamar, in southeastern Colorado, day and night, ferrying goods on Highway 287 from the port at Houston to Denver and other interior locations.

Those same communities also want to be part of an electric highway, one that transmits power produced on the windy plains of southeastern Colorado to urban markets along the Front Range.

“The chance to fully participate in providing electricity needed and desired by the Front Range of Colorado seems like a once-in-a-generation opportunity,” say the commissioners of Baca, Prowers, and Las Animas counties in a letter submitted on Oct. 1 to the Colorado Public Utilities Commission.

The commissioners of the three counties cite long-term economic benefits “that can only be realized if transmission is available.” They say wind farms can provide a “stable generator of tax revenue coming from a source that requires almost no county services, once built and operational.” They call it a “dream come true.”

Filings submitted to the PUC suggest that the farm-based counties of southeastern Colorado will get their wish, if not immediately.

But it’s complicated—very, very complicated. And expensive.

Xcel Energy wants to spend \$2.2 billion to \$2.3 billion on new 345-kV transmission lines that will loop around eastern Colorado to connect to new generating sources, primarily wind but also some solar. Xcel calls it the Colorado Power Pathway. An extension would allow the wind of far-southeastern Colorado to be tapped.

Tied at the hip to this new transmission proposal is another plan by Xcel Energy to add massive amounts of new generation, primarily wind and solar in eastern Colorado, but some solar on the Western Slope (and conceivably in the San Luis Valley) and then also acquire existing natural gas plants. Xcel has not reported a cost estimate of this new generation, but a report to investors in early November assures them healthy returns.

The three PUC commissioners must decide in the next few months whether Xcel's plans are the best for the 3.3 million Coloradans who get electricity from the company. The PUC filing system on these two inter-related dockets already exceeds 2,000 separate documents.

This likely is the biggest PUC decision since 2004, when a different set of commissioners authorized construction of \$1 billion coal plant in Pueblo called Comanche 3.

The future of that plant—and past—are now being hotly debated. Comanche 3 was originally projected to operate until 2070. Xcel, the operator and majority owner, now wants to put it on the bench, a part-time performer, beginning in 2030 and close it by 2040. Others think it should be sent to the locker room by 2027. Still unclear is who will pay.

An important development in the discussion occurred on Nov. 9 when many of the major stakeholders—the Colorado Energy Office, Western Resource Advocates, Colorado Solar and Storage Association, Pueblo County and the staff of the PUC, among others—recommended approval of Xcel's transmission plans substantially as proposed.

Xcel, they said, “has met its burden of proof of demonstrating that the Pathway Project” is needed. The settling parties recommend conditional approval for the extension to the farms and ranches of far-southeastern Colorado.

Consumer groups have also delivered a recommendation, this one an alternative to Xcel's plan. This partial stipulation comes from consumers: the Colorado Office of the Utility Consumer Advocate, Climax Molybdenum Co., and Colorado Energy Consumers. It advises the PUC commissioners to allow Xcel to build just one segment of Xcel's 5 proposed segments at first, and with strong incentives to save, not spend, money. It calls for phasing of construction, including the extension to far-southeastern Colorado.

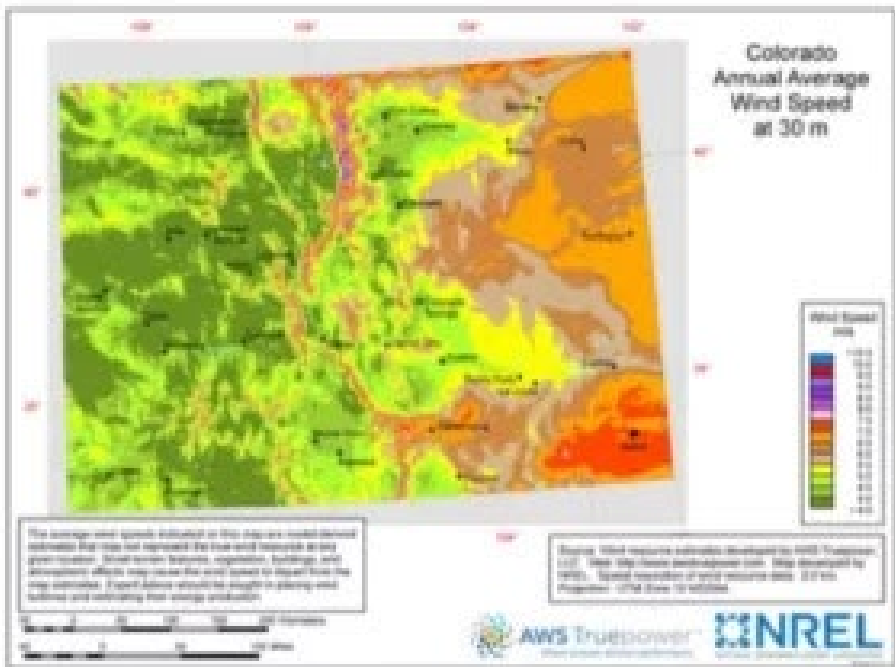
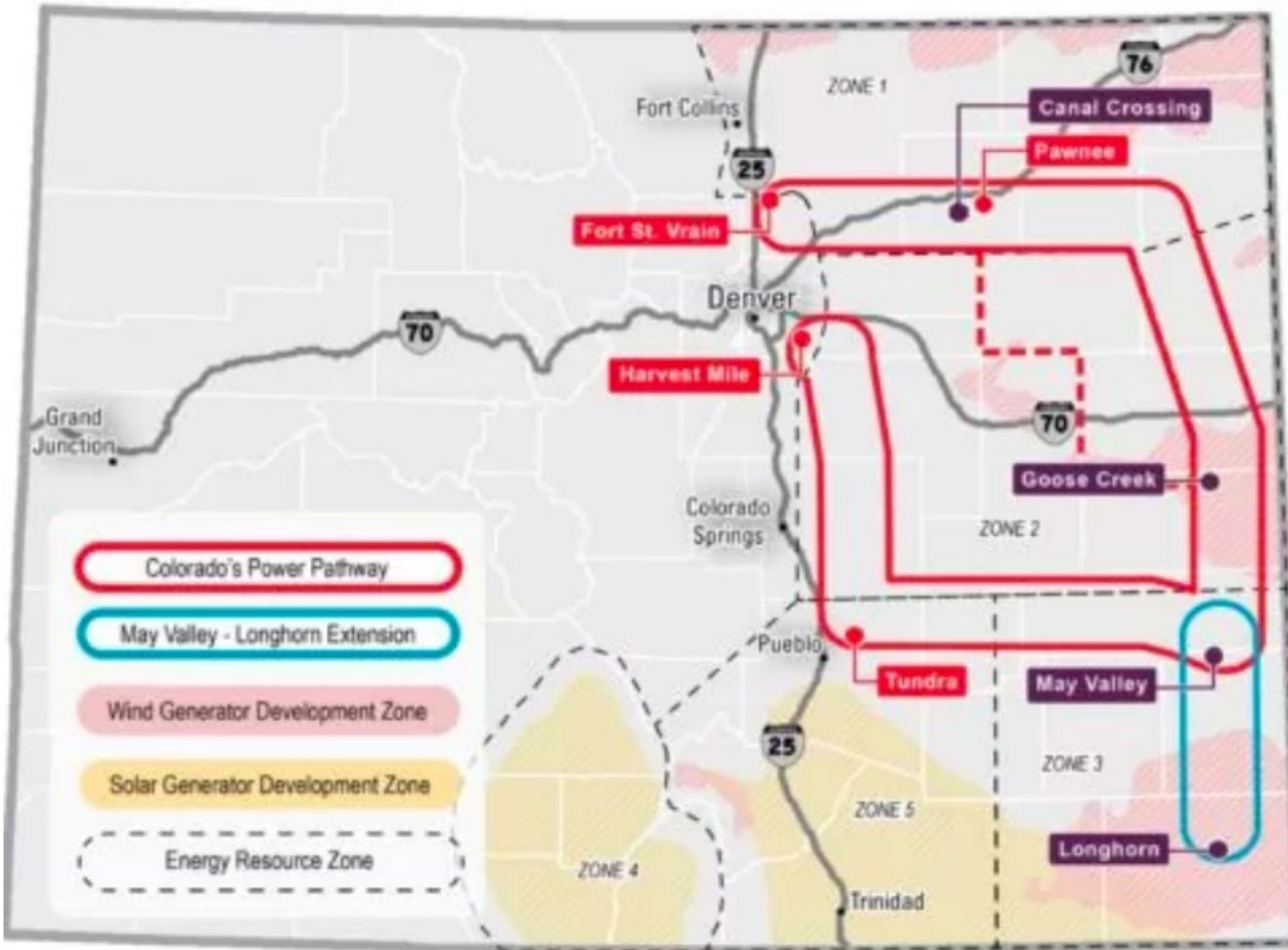
The PUC commissioners are under no obligation to accept any of the proposals.

This is from Big Pivots 48 (Nov. 15, 2021). Have issues of the e-journal delivered to your e-mail box by signing up for a subscription.

Today (Nov. 15), they listened as Xcel representatives were questioned by attorneys from various groups, then quizzed the Xcel representatives themselves. Their questions indicated they had been following the arguments and had some thoughts of their own.

John Gavan, for example, wanted to know the vulnerability of Chinese-manufactured transmission hardware to cybersecurity threats. Gavan also asked a question that revealed the final costs of what Xcel proposes for transmission could cost upward of \$2.2 to \$2.3 billion. The hearing continues at least until Wednesday afternoon, perhaps to be continued at a later date.

One long-time observer of the PUC describes the current commissioners—Gavan, of Paonia, Megan Gilman of Edwards, and Eric Blank of Boulder—as “wickedly smart,” with both brains and backbone.



Xcel's proposed Colorado Power Pathway transmission lines would create a semi-circle in eastern Colorado: extending from the St. Vrain power plant near Greeley east to Yuma, then south to the Lamar area. From there, it would march west along the Arkansas Valley to connect to the massive transmission lines in the Pueblo area that feed power to metropolitan Denver.

Joined at the hip, or at least the substation, to this transmission freeway are Xcel's plans for new generation to replace closing coal plants and to meet burgeoning demand expected in the next decade and perhaps beyond.

That's the big picture for consideration of the 90-mile extension of a transmission line from the substation north of Lamar called May Valley to a substation close to Springfield called Longhorn.

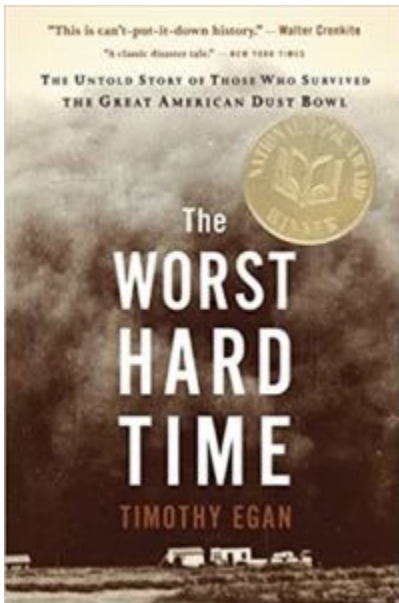
“Landowners in southeast Colorado would love to have the ‘mailbox money’ that comes with renewable energy development on their farms and ranches,” the letter from the county commissioners says. “Those who currently have development will happily tell anyone that drought, hail, and commodity prices have no effect on the royalty payments they get from wind towers. A steady source of income is welcome to almost any operation.”

As was noted in a [June 2020 story by Big Pivots](#), maps from the National Renewable Energy Laboratory show Colorado’s southeastern corner as a blob of red for annual average wind speeds at 30 meters. At 80 meters above ground, the blob broadens and turns purple.

Nate Blair, manager of the distribution system and storage analysis group at NREL, said the theoretical potential of the wind generation from Baca County alone was nearly as great as the total summertime generating capacity from all the coal, gas, and other generating sources across Colorado as of 2017.

Colorado’s first major wind farm, Colorado Green, located about 15 miles south of Lamar, began production in 2003. It was at the time the nation’s fifth largest wind farm.

But even better wind resources lie to the south in Baca County. It was at the very heart of the Dust Bowl of the 1930s.



Timothy Egan, who wrote “The Worst Hard Time,” stopped by Denver’s Tattered Cover for a reading in 2006. He said Baca County gave him his very best material. The book went on to win the National Book Award for Non-Fiction.

Following the success of Colorado Green, two wind developers Iberdola and Baca Green Energy, jointly leased 42,000 acres of farms and pastures. Towers were erected to test the steadiness and velocity of the wind. There was plenty of wind, but it was stranded. Existing transmission lines were inadequate to ferry any more electricity to markets. For Xcel Energy, Tri-State Generation and Transmission, and other utilities, the lowest-hanging fruit and hence the most easily plucked lie along existing transmission lines. The wind developers let the leases lapse.

It’s useful to compare Colorado today with the Colorado of 2003, when Colorado Green came on line. No renewable portfolio mandate had been adopted then. Indeed, Xcel Energy was assembling plans for Comanche 3. The coal-fired power plant at Pueblo was formally approved by the Colorado PUC in early 2005. That was just two months after Colorado voters approved the first tepid renewable energy mandate of 10% by 2015.

Xcel famously opposed the amendment then blew past it and several more that were adopted by legislators. Wind prices tumbled and Xcel, and other utilities, became more comfortable integrating it into the power generating mix without sacrificing reliability or cost.

By 2016, the company was willing to step more boldly into renewable energy on its own. Even the most ardent renewable energy advocates were shocked in late 2017 when the company revealed the low, low bids it had received for wind, solar and battery storage. Wind routinely undercut the cost of coal, and even solar was competitive.

The next year, U.S. Rep. Jared Polis ran for governor of Colorado on a platform of 100% renewable generation by 2040. He won convincingly.

A month after his election he showed up at an event at the Denver Museum of Nature and Science sponsored by Xcel Energy. David Eves, then the Xcel CEO, announced that the company believed the technology existed to achieve 80% reduction in carbon emission from its generating sources by 2030 as compared to 2004 levels. Further, he said, Xcel was willing to set a goal of zero emissions by 2050, making a leap of faith that technology would be devised in the intervening 30 years to achieve that.

During his time at the lectern, the governor-elect Polis said elections have consequences, and he pointed to his election as a catalyst for Xcel's action.

That 2018 election has had enormous consequences in the Legislature. Before, the Republican-dominated Senate had effective veto power over the more ambitious climate and energy legislation. Democrats gained a majority in both chambers in that election. Together with an occasional Republican ally ([See: "How Kevin Priola became a reliable vote for energy & climate legislation in Colorado."](#)) legislators passed SB 19-261, setting a goal for decarbonizing the economy 50% by 2030 (and 90% by 2050). Another, almost equally important bill required Xcel to achieve an 80% reduction in carbon emissions by 2030. Dozens more energy- and climate-related bills have been passed since then.

The general plan is to decarbonize electricity to replace the use of fossil fuels in other sectors, transportation, buildings and more.

That, in turn, makes development of wind in southeastern Colorado more likely.



Transportation has become Colorado's second largest source of greenhouse gas emissions, but the state hopes to have nearly a million electric cars on the roads by 2030 and has been taking steps to electrify medium- and heavy-duty vehicles.

In early May, I drove to Walsh, a town 518 people in southeastern Colorado. Like nearly all small towns on the Great Plains, it's shrinking. It has been for the better part of a century. Mechanized agriculture has required fewer workers and caused farms to be consolidated. Since 2000, the town has lost a quarter of its population.

Gone are the two cafes that people can remember, and the 11-man football team has dwindled to 6-man, with just 7 turning out the year before last, when I checked. A grocery store remains in operation, but only because of creation of a cooperative. The private sector wasn't interested. There just aren't enough shoppers any more.

In their October letter to the PUC, the commissioners in the three-county area cited job creation of wind generation, a strategy to stanch this population erosion.

"For our communities, the full-time jobs with benefits that come with development means that there will be careers at home for our kids so that they can stay here. Most people think that agricultural products are our most valuable export from rural communities, but those of us who live here know that the most valuable export is our children who move away for greater opportunities," the letter says.

"Every 35 wind towers, give or take, is a full-time job that can be filled by someone from our community."

Those who remain are Fred and Kay Lynn Hefley. They own 6,000 acres and lease 1,000 acres in Baca County. They grow corn irrigated with water from the underlying Ogallala Aquifer as well as dryland wheat and grain sorghum.

They had written a letter to the PUC in 2018 that I happened to notice. They were unhappy that Tri-State Generation and Transmission, the wholesale provider for their local electrical provider, had not stepped away from coal to develop their wind.



Others had also recognized the potential of renewables in southeastern Colorado. In 2009, the Colorado Energy Office had commissioned a study called REDI (Renewable Energy Development Infrastructure) that noted the wind potential of southeastern Colorado. Utilities had met for several years to talk about a transmission line that could have carried wind from Wyoming down far-eastern Colorado and eventually to the Southwest. Nothing much came of all this.

With Fred driving his pickup, we went to the site of one of the four 80-foot wind turbines erected over a decade ago as the result of grants awarded by the Colorado Department of Agriculture and the Natural Resources Conservation Council, a federal agency. Kansas, he said, was maybe 12 miles to the east and Oklahoma a similar distance south.

Returning to Walsh, we drove along a fence with dust piled two wires high. On farm and ranches of southeastern Colorado altogether, the margins between prosperity and peril seem always to be thin, a constant dialogue between hope and discouragement.

In early November, I talked with the Hefleys again, this time by phone. They seemed heartened. Xcel Energy had held a meeting in Springfield, the county seat of Baca County 21 miles to the east. “We are hopeful,” they said, “but we are not hoping for it tomorrow. (Xcel representatives) said it would be 5 or 6 years before they would ever get this far, to Walsh. I believe they are truly working on it.”

Fred and Kay Lynn Hefley at their farm south of Walsh, about 12 miles from Kansas and Oklahoma.

But the PUC commissioners will have the final say on that. Since March, thousands and thousands of pages of testimony have been filed, of which I have read just a few hundred.

Alice Jackson, the chief executive of Xcel’s Colorado division, in her Oct. 22 rebuttal testimony, nicely laid out the scope of what is underway in Colorado.

“The clean energy transition is occurring in stages, with changes to the bulk electric system and the way it behaves at each stage, from the type of power injected to where it is injected,” she said.

“Colorado can show the rest of the country how to take the next step in the clean energy transition in a reliable and affordable manner. Transmission infrastructure is a key part of that next step, enabling the collection and utilization of all forms of clean energy to advance decarbonization across various sectors of the economy.”

In the past, transmission and generation were treated somewhat separately by the PUC. This presented what was commonly described as the “chicken or egg” dilemma. Build the transmission and then figure out the generation, or vice versa? This time, the PUC is looking at the plans by Xcel for massive new amounts of wind and other renewable generation at the same time it looks at the transmission necessary to get it to where it is needed. They are, as Jackson notes in her testimony, joined at the hip.

The end game is closing coal plants: Hayden by the end of 2027, the unit at Craig of which it is part owner by 2028, and converting Pawnee, the plant at Brush, to natural gas.

Questions abound. For example, why haven’t Tri-State, Colorado Springs, or any other utilities chosen to join Xcel in its transmission? Jackson says just because the other utilities have not chosen to join Xcel in this new transmission highway—for reasons not publicly identified—does not mean they can’t get on the on-ramp once its built.

Could Xcel use existing transmission to add more renewables? That's one criticism. Another criticism is that the system has not been configured in a way that will most advantageously add the best renewables in the next several decades.

And there are questions whether Xcel, being in a hurry to get this new transmission built by 2027, in order to get the new renewable generation on line by 2030, is looking past some potentially game-changing technology.

Lafayette resident Larry Miloshevich argues in a 97-page filing that Xcel's existing transmission system can deliver more renewables than Xcel gives it credit for. A Lafayette resident, Miloshevich spent 20 years at the National Center for Atmospheric Research, where he researched cloud physics and atmospheric water vapor. Since 2016, though, he has been following proceedings at the PUC where, he says in his Sept. 22 filing, he advocates in favor of "forward-looking measures that accelerate the transition to renewable energy in cost-effective ways." Unlike nearly all those who intervene in PUC proceedings, he has no legal training.

In essence, Miloshevich makes the case that Xcel proposes to use 20th century technology when better is now available.

Both Xcel and the Colorado Energy Office suggest new technology may be appropriate to discuss in coming years, but not now. In fact, the major thrust of Jackson's testimony is that this is not time for what-if dawdling.

"We cannot—and should not—study potential options in perpetuity," she wrote.

"The State of Colorado's emission reduction goals both for the power sector and statewide demand action, and the Pathway Project is a considered and well-supported approach to facilitating that action."

What-iffing is an inherent part of the process, though. What effect will time-of-use rates have on electrical demand in coming years? (Too soon to say, says the PUC chief economist, Erin O'Neill).

And how much electricity do the models say will be needed if a heat dome occurs in Colorado during the summer of 2030 such as caused elderly people in Portland last June to literally bake to death in their apartments.

Another what-if comes from Miloshevich but is echoed by others.

"Optimizing the existing transmission system could enable the integration of new renewable energy quickly and cost-effectively, and reduce the scope and cost of needed new transmission," he says. "New transmission, including Power Pathway, would also benefit from deploying those technologies, especially the advanced carbon-core conductor, which would increase the capacity and performance of the Project while substantially reducing its total cost."

Xcel Energy plans to retire Comanche units 1 and 2 in 2022 and 2025 but wants to keep operating Comanche 3 on a part-time basis until 2040.

Chris Neil, rate analyst for the Colorado Office of the Utility Consumer Advocates, makes that same argument. Instead of waiting until new transmission is completed, Xcel can add new generation in the next few years, he said in his Oct. 22 testimony.

Front-loading renewable generation—installing it sooner than the transmission—has a net-present value that is \$318 million less than the alternative that would add new wind and other generation beginning in 2025.



Developers have proposed thousands of new renewable generation for 2022-2024, he says, and the existing transmission system can accommodate those additional renewables.

The indirect background for this argument is the testimony of James F. Hill, the director of resource planning and bidding for Xcel. His Sept. 3 testimony warns against front-loading renewables because of how much the wind turbine and solar panels must then be curtailed because of transmission congestion. But his chart indirectly made the case for front-loading as less expensive, despite the increased curtailment.

The Office of the Utility Consumer Advocates also hired Chris Clack to review Xcel's plans. Clack has become a nationally and internationally known figure in the realm of climate and energy. He has a Ph.D. in applied mathematics and plasma physics from the University of Sheffield, England, where he focused on nonlinear magnetohydrodynamic waves. In Colorado since 2012, he was the lead scientist at the University of Colorado-Boulder on mathematical optimization study of wind and solar energy within the United States. In 2016, he founded Vibrant Clean Energy.

Xcel's transmission plan "is not appropriate for its intended purpose and a reconfiguration is warranted given the widely available wind and solar resources across Eastern Colorado and current policies" in Colorado, he says.

Clack argues that Xcel emphasizes northeastern Colorado when it would better give priority to southeastern Colorado. In this, he focuses on Baca County—where the Hefleys farm—but also adjoining Las Animas County. The county seat of Las Animas is Trinidad, but there is a lot of (underappreciated) landscape between there and Springfield.

"The technical potential for wind and solar PV in the Southeastern portion of Colorado could power the entire state," he writes. The two counties contain 11% of the total maximum technical potential for wind development in the entire state and 10% of the total maximum technical potential for solar PV development, he says.

In addition to diversifying more from wind, geographic diversity would help Xcel's portfolio, he says, and minimize need for additional backup generation.

Clack also finds Xcel's plan failing to look forward past 2030, when by a new Colorado law, Xcel and other utilities must figure out how to integrate into a broader electrical market to allow greater sharing of electricity. The premise is that costs can be lowered and vulnerabilities reduced. The wind seems to always be blowing somewhere.



The Pawnee coal-burning plant near Brush would be switched out to burn natural gas beginning in 2028, according to Xcel's plan, although testimony has been presented to PUC commissioners that the plant could be shut down altogether with no adverse consequences to costs and reliability.

One final and very important piece of testimony was delivered by the Sierra Club and Natural Resources Defense Coalition, banded together in one of these dockets as the Conservation Coalition. They hired Derek Stenlik, who has a consulting business called Telos Energy in New York state that specializes in grid planning and technologies that enable renewable

integration.

Stenlik, in his 68 pages of testimony, talks in depth about models, especially as they relate to the reserves that utilities want in order to ensure reliability and how effectively an individual resource can serve that purpose. In Xcel's filings, he testified, he found a "clear bias toward new natural gas resources in the upcoming procurement process."

The upshot? Increased capacity and higher cost to Xcel's ratepayers., he says. He similarly found that the Xcel studies "discounted the capacity contributions of renewable resources and energy storage."

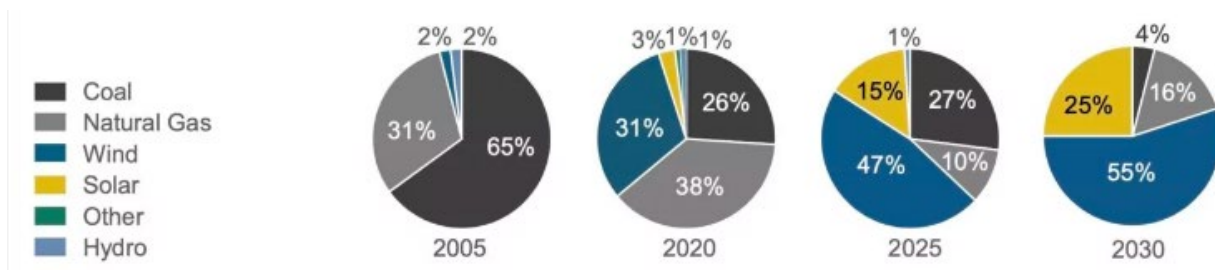
Wonky enough for you? Hey, read these studies yourself. But it matters immensely. No utility wants to see the lights go off, and especially for extended periods. The most recent horror show was in Texas during February 2021—although it must be noted that it was natural gas, not wind, that was the primary failure in that case.

That takes us to Comanche 3. In theory, this coal-fired power plant can deliver reliable power because—well, it doesn't rely upon the sun shining or the wind blowing. In practice, it has been down often, including nearly all of 2020 and also during the summer of 2019 when demand on Xcel's system peaked.

Xcel wants to keep it operating from 2030 to 2040 as a backup, about 33% of the time. Stencilik disputes this value, as it's slow to crank up.

"Comanche 3 may not be able to start in time when needed for reliability purposes," he says.

While he does not dwell on the future of Pawnee, the coal plant Xcel wants to convert to natural gas, Stencilik suggests it could be closed down by 2024 with no real loss of reliability.



Xcel's past and projected resource mix to 2030. The company wants to purchase gas-burning infrastructure but use it selectively.

Often, PUC commissioners have closely hewed to advice from the Colorado Energy Office. Keith Hay, who shepherds public policy for the Colorado Energy Office, generally supported Xcel in a Sept. 24 filing. He also warned that Xcel, even with the May Valley-Longhorn extension, which he recommends get a conditional approval, will need more generating resources to meet demand looming beyond 2030 as Colorado electrifies transportation and other sectors.

"The commitment to electrification will propel load growth for" Xcel and other utilities "for years to come," he said.

Seen very broadly, one issue here is whether Xcel will create transmission that will enable Colorado to meet its decarbonization goals, not just of electricity but also in other sectors. But a secondary issue is whether Xcel is doing so in the most expeditious way.

On the latter question, the expertise of a long-time Xcel observer from Minneapolis, home base for the company, may deserve attention.

John Farrell, of the Institute for Local Self Reliance, pointed out why investor-owned utilities were needed—but also need to be watched. The formula used to determine the revenues the company can earn are based on capital expenditures.

"Utilities even now still generally make their money when they build stuff, so they are always going to be biased to spend capital and get a return on investment," he said last week in a forum sponsored by Empower Our Future, a Boulder-based group.

Xcel has the lobbyists to prevent changing this incentive, said Farrell. The company's position is "we will give you the energy you want, and we are happy to own it."

A report to investors in early November more or less makes the same point. The PowerPoint reports Xcel plans \$9.93 billion in capital expenditures in Colorado from 2022 through 2026 on transmission, electrical generation and other assets.

I don't know why Maestas is doing it, she's doomed like every single democrat except Manchin. We will have permanent one party rule.

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Know the West

Two Democrats kill chances of reforming the outdated hardrock mining law

The nearly 150-year old law allows mining companies to extract resources like copper and lithium royalty-free.

[Cody Nelson](#) Analysis Nov. 18, 2021

Democratic Sens. Joe Manchin, D-W.V., and Catherine Cortez Masto, D-Nev., prepare for the Senate Energy and Natural Resources Committee. The two blocked what would have been the most consequential update a hardrock mining law has received in nearly 15 decades.

Tom Williams/CQ-Roll Call, Inc via Getty Images



Amid the recent skirmishes over revising the reconciliation bill, known as the Build Back Better Plan, lawmakers once again skipped a chance to reform the General Mining Law of 1872.

Under this outdated law, hardrock miners can extract profitable minerals such as gold and silver from public lands without having to pay any federal royalties. Though it has been challenged several times over the past few decades, mainly by Democrats, the law has not been significantly updated in the nearly 150 years since its passage.

In August, a House committee, chaired by Raúl Grijalva, D-Ariz., tried to modernize the legislation by adding language to the reconciliation bill to establish federal royalties of [between 4% to 8%](#) on these mines. This would have been the most consequential update that the mining law has received in the nearly 15 decades since President Ulysses S. Grant signed it into existence.

However, hardrock royalty reform never even reached a vote thanks to Democratic Sens. Catherine Cortez Masto, D-Nev., and Joe Manchin, D-W.V., who made his personal fortune in coal mining. Manchin initially [signaled support](#) for the royalty provisions in October when he spoke in front of the Senate Committee on Energy and Natural Resources, stating that he could “never imagine that we don’t receive royalties on so many things we produce in this country.” But he later reversed course and [reportedly promised](#) Cortez Masto that he’d block any mining royalties, effectively killing reform before it even reached the full Senate. On Nov. 4, royalty reform was officially out of both the House and Senate bills.

[RELATED: <https://www.hcn.org/articles/politics-the-westiest-programs-in-bidens-infrastructure-investment-and-jobs-act>]

These senators' actions all but guarantee that the U.S. public will continue to miss out on billions of dollars in revenue that could have supported the Build Back Better Plan's priorities, including paid family leave and important climate investments. The bill also would have held companies accountable for cleaning up the abandoned mines that pockmark the West. Instead, mining companies will continue to exploit public land for their own financial gain.

THE GENERAL MINING LAW of 1872 law was passed in the wake of the mid-19th century California gold rush as part of a push to encourage white settlement of the West. Previously, prospectors sometimes staked claims to land without the permission of the federal government, let alone that of the Indigenous people who were being dispossessed of the land in question.

In order to regulate the blossoming industry, Congress passed a few early mining laws beginning in 1866. The General Mining Law of 1872 took their place. It established the location system, which permitted individual miners and corporations to stake claims to mineral discoveries on the public domain, on land that had never been in private ownership.

A [long](#) list of royalty-free minerals besides gold and silver fall under this "location-system" regulation, including lithium and copper, which are becoming more valuable due to their use in green energy technologies like solar panels and electric vehicles. The industry has extracted some \$300 billion worth of these minerals from public lands since 1872, according to [Earthworks](#). And though mining companies have evolved tremendously since the days of digging with pickaxes and now use some of the largest machinery on earth, the return they make to the American public remains as paltry as ever.

This is why a broad base of critics from conservation organizations to lawmakers think it is high time to reform the 1872 law. Currently, the government earns hardrock mining fees for things like registration and annual maintenance, which generated about \$71 million in revenue in fiscal year 2019, but it's a small amount compared to the money that would be derived from royalties.

The industry has extracted some \$300 billion worth of these minerals from public lands since 1872, according to [Earthworks](#).

Kennecott Copper Mine near Salt Lake City, Utah. The mine is the largest man-made excavation in the world, and has produced more copper than any other mine in history. Under the General Mining Law of 1872, hardrock miners pay zero royalties on profitable minerals extracted from public lands.

Loop Images/Universal Images Group via Getty Images

For example, in September, the House Natural Resources Committee proposed a new royalty that would have raised [\\$2 billion](#)

[over 10 years](#). And that's likely a conservative estimate: The federal government has no data on the amount or value of the hardrock minerals extracted from public lands, which account for more than 80% of the mineral mines on federal lands, according to the [Government Accountability Office](#).



In contrast, mines operating under the more heavily regulated leasing system, for resources like coal and oil shale, account for just 17% of mining on federal lands, but generate much more revenue through royalties. In fiscal year 2018 alone, they brought in \$550 million. Coal is by far the primary revenue generator under leasing-system mining.

The proposed reforms also would have added a reclamation fee for abandoned mines and increased the yearly maintenance fee for claims from \$165 to \$200 per claim, adding another combined [\\$1 billion](#) in revenue over the next decade.

This money could, among other things, provide funding to address a myriad of environmental and health threats across the Western U.S. caused by past mining. Before the 1970s, for example, companies abandoned mines once work was complete — leaving behind [tens of thousands of often-toxic scars on the land](#) that could cost [over \\$50 billion](#) to address.

ATTEMPTS TO REFORM the General Mining Law have been going on for years, but a well-funded network of lobbyists and special interest groups has continued to thwart any success. Mining interests [regularly](#) spend north of \$16 million annually on lobbying; this year, they've already spent over \$13 million.

The National Mining Association spent the most in 2021, coming in at \$1.5 million, according to data from OpenSecrets, a nonprofit campaign finance and lobbying watchdog organization. Several companies that would be directly impacted by mining law reform have lobbied against it, including Newmont Corp., a gold-mining company that has invested over \$800,000 to fight efforts to change the law.

[RELATED:<https://www.hcn.org/blogs/goat/another-round-against-hardrock-handouts>]

This helps explain why one ongoing effort to reform the law — the Hardrock Mining and Reclamation Act — has stalled in recent years. Democrats have introduced the legislation in Congress at least six times since 2007. The bill's most recent iteration, in 2019, failed amid a major industry-led lobbying blitz. Among those fighting it were mining giant [BHP Group](#) and the National Mining Association, which [targeted](#) the bill in a \$1.2 million lobbying [campaign](#).

And mining industry lobbyists have power beyond their financial influence: They are also intricately linked to the government. According to OpenSecrets, [nearly 65%](#) of the industry's lobbyists previously worked in the government, many in positions related to mining.

The lobbying campaigns help illuminate why Manchin, who said in October that it was time to bring the “outdated law into the 21st century” was willing to suddenly reverse course. According to [OpenSecrets](#), he received more campaign donations from the mining industry than anyone else in Congress, raising nearly \$50,000 from the industry in the current fundraising cycle. Cortez Masto's campaign also benefited: Both the National Mining Association trade group and Barrick Gold Corp., one of Nevada's largest mining companies, have recently [donated](#) to her campaign.

[RELATED:<https://www.hcn.org/issues/53.3/indigenous-affairs-mining-nevada-lithium-mine-kicks-off-a-new-era-of-western-extraction>]

Nevada's economy depends on gold mining; [nearly \\$8.2 billion](#) worth of the metal was extracted in the state in 2020. Cortez Masto's predecessor, former Nevada Democrat Harry Reid, was against any challenges to the 1872 Mining Law, calling them “ill-conceived reform efforts that would have hurt rural Nevada” in a 2009 [op-ed](#). It [seems](#) that Cortez Masto is picking up right where Reid left off, protecting the industry in an attempt to keep rural voters.

Neither Manchin nor Cortez Masto responded to requests for comment.

This story was produced in collaboration with the [Project on Government Oversight](#), a nonpartisan independent watchdog that investigates and exposes waste, corruption and abuse of power.

From AWWA: Comments on EPA Strategic Plan for 2022-2026

Wednesday, 17 November 2021

The entire letter has been pasted below. Here is a PDF of the letter:

Government Affairs Office
1300 Eye Street NW
Suite 701W
Washington, DC 20005-3314
T [202.628.8303](tel:202.628.8303)

November 12, 2021

Faisal Amin
Chief Financial Officer
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: [EPA Strategic Plan 2022-2026 \(EPA-HQ-OA-2021-0403\)](#)

Dear Mr. Amin:

The American Water Works Association (AWWA) appreciates the opportunity to comment on the EPA Strategic Plan for 2022-2026. Our comments below are organized by the relevant sections of the strategic plan.

Goal 1: Tackle the Climate Crisis (pages 7-19)

EPA should, within the confines of its authority, assist water systems and others in increasing efficiency to reduce emissions of greenhouse gases, to improve data and information available to support decision-making as communities adapt to climate change, and assist with adapting to existing and future water resource challenges. However, it is unclear what authorities and resources EPA plans to use to assist water systems with these goals. EPA has previously developed decision support tools with mixed success. There are likely opportunities for additional research and data collection and dissemination that would be of assistance. Although additional funding will be needed to actualize the research program.

For objective 1.3 (Advance International and Subnational Climate Efforts), AWWA appreciates the specific mention of assistance with *“adaptation and resilience strategies for ... building resilient water infrastructure, managing flood and fire risk, and mitigating public health impacts of natural disasters and other extreme weather events.”* Addressing both short-term and long-term needs related to adaptation and resilience is essential for the water sector (and other sectors which interface with the water sector). We encourage EPA to provide additional information on how the Agency plans to continue, expand, or modify such efforts to reach these goals. EPA is not a water resource management agency. Nor does EPA direct infrastructure investments. Therefore, it is unclear what approach(s) are being proposed here. Additional detail is needed to understanding EPA’s proposed plans and assess their viability.

Goal 5: Ensure Clean and Safe Water for All Communities (46-56)

On page 46 there is a mention that *“EPA will also address a critical public health issue by working with states and water utilities to remove lead service lines that contribute to high lead levels in drinking water. EPA will help utilities identify their lead service lines and work with federal and state funding authorities to help utilities*

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remove the lines.” AWWA agrees as to the criticality of solving issues around high lead levels and the replacement of lead service lines.

Page 49 characterizes lead service line as *“the most significant sources of lead in drinking water.”* This statement is overly simplistic. Lead service lines are a large potential source of lead in drinking water in areas where they exist. It is important that all sources of lead that are in contact with drinking water be removed over time. Lead-containing materials include plumbing materials and fixtures within building plumbing. Consequently, investing in removing lead over time must be balanced with ongoing efforts by water systems and customers to manage water quality to minimize corrosivity and the concentration of lead in drinking water that is consumed.

As a professional organization serving the technical education needs of the water sector and as a participant in the Lead Service Line Replacement Collaborative, AWWA has helped to identify tools to facilitate lead service line replacement. The statements in the draft plan indicate EPA plans to take an active role in assisting with lead service line inventories and lead service line removal. We encourage clarification of the Agency’s direction so that communities and individual households have a clear sense of what to anticipate as support from EPA for lead service line replacement. While there is currently legislation that will provide some funding to assist with LSL replacement, the bulk of the cost of lead service line replacement will be borne by individual homeowners and businesses either directly or through community-level fees and charges. Assistance from EPA facilitating reduction of this financial burden through its own programs and engagement of other federal funding agencies could help the sector accelerate lead service line replacement.

On page 48, there is a mention that *“EPA will promote and certify water operators.”* EPA does not certify water operators. Rather, licensure is completed through state agencies, which EPA could support. It is also unclear what *“promote”* refers to in this phrase. EPA actively works with and supports workforce development and licensure programs through its existing water sector workforce programs.¹ Growing and expanding the skillset of the water sector workforce is an important objective for the sector. AWWA would appreciate EPA’s support for the ongoing efforts underway through a number of nongovernmental organizations to address the sector’s workforce needs. A more accurate framework for the EPA strategic plan would be *“EPA will support water sector efforts to strengthen the sector’s workforce, promoting the importance of water operators and providing assistance to state agencies managing licensure and certification.”*

Page 49 discusses PFAS. EPA recently published the PFAS Strategic Roadmap: EPA’s Commitments to Action 2021-2024,² and it provides a path forward for how EPA intends to use regulatory authorities to address PFAS. However, neither the Roadmap nor EPA’s strategic research action plans³ describe the research necessary for advancing these regulatory actions. A clearly communicated research strategy for

1 EPA. [2021. Water Sector Workforce.](#)

2 EPA. 2021. [PFAS Strategic Roadmap: EPA’s Commitments to Action 2021-2024.](#)

3 [EPA. 2020. Strategic Research Action Plans 2019-2022.](#)

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PFAS is needed to maintain public trust in EPA processes and to gather adequate science to support the planned rulemakings.

Page 50 states that *“EPA will also update and develop new health advisories and benchmarks that can be used by federal and state partners, drinking water utilities, and others to better characterize the potential health risks associated with drinking water contaminants.”* Communities across the United States have experienced challenges as a result of the release of previous health advisories where there has been no opportunity for public review and comment prior to issuance. Health advisories have in recent instances become *de facto* standards despite the absence of analysis of the feasibility or consequences of treating them as such. EPA should place a high priority on collaborative engagement of the drinking water community including opportunities for public comment prior to release of future health advisories.

Page 51 states that *“The risk to the environment and public health from cyber-attacks and the limited adoption of cybersecurity practices within the water sector gives urgency to federal-state engagement on improving the operational security of public water systems and publicly owned treatment works.”* At present, the draft Strategic Plan does not recognize the critical need to engage water system owner-operators as stakeholders in crafting policies intended to mitigate cyber risks. Currently EPA is pursuing funding in the FY22 budget to expand sanitary surveys to include assessing cybersecurity resilience, yet it has not engaged the sector to identify what such an approach could accomplish and more importantly, what it is unlikely to achieve.

AWWA supports the use of a tiered, risk-based performance model to determine cybersecurity requirements for the sector. Moreover, investments in technical training and assistance, cyber-breach event reporting, communication of threat information, and funding for cybersecurity improvements should be aligned into a cohesive program. Achieving this objective will require a collaborative effort not yet reflected in EPA practice nor the draft Strategic Plan. EPA should revise the Strategic Plan to reflect an effort to ensure that all Agency efforts to advance cybersecurity are based on collaboration with water system owner-operators through the water sector’s associations and Water Sector Coordinating Council as well as other contributors to a sustainable national cybersecurity response including state primacy agencies and the Department of Homeland Security.

Page 51 notes that *“EPA will also work to facilitate compliance with updated Federal Flood Risk Management Standards for critical infrastructure, which includes many water systems.”* Executive Order 14030 (Climate-Related Financial Risk)⁴ reinstated the FFRMS originally created under Executive Order 13690⁵ and subsequently repealed under Executive Order 13807.⁶ There are complex technical and policy questions that must be addressed in implementing the FFRMS with regards to EPA programs, including capital investments made through the state revolving loan fund and Water Infrastructure

4 86 FR 27967. [25 May 2021. Executive Order 14030: Climate-Related Financial Risk.](#)

5 80 FR 6425. [4 February 2014. Executive Order 13690: Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input.](#) \

6 82 FR 40463. [24 August 2017. Executive Order 13807: Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects.](#)

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Finance and Innovation Act programs. However, EPA has taken no formal action to date towards addressing how the FFRMS will be addressed in these and other Agency programs. Consequently, there is currently nothing for EPA to *“facilitate compliance”* with regards to its programs. Although FEMA did issue a 2016 proposed rulemaking on FFRMS,⁷ it only covered FEMA programs and was formally withdrawn in 2018⁸ and has not yet been re-established. Regardless, EPA should initiate its own stakeholder consultation and rulemaking process for the incorporation of FFRMS into its programs.

Draft Learning Agenda (pages 94-105)

With regards to EPA's priority questions on the "*drinking water systems out of compliance*" learning area (pages 96-97), the following may help to inform EPA's process for questions 1 through 39:

1. *To what extent does EPA have ready access to data to measure drinking water compliance reliably and accurately?*

EPA has ready access to violations data through the Safe Drinking Water Information System (SDWIS). Primacy agencies have more detailed information on compliance information through SDWIS-State and similar state-level programs. However, it is important to note that SDWIS has long-recognized limitations and concerns around the accuracy of the data reported.¹⁰ Improving the accuracy and timeliness of information available to EPA ultimately requires replacement of the existing data systems with one that allows for better data verification, which EPA has now been working on for more than a decade with limited progress.

2. What factors determine system noncompliance and continuous compliance?

Although all of the example factors listed in this discussion may be related to compliance, it is important to recognize compliance (or non-compliance) as an endpoint that does not directly measure any one factor but rather is the result of a combination of many factors including the system's technical, managerial, and financial (TMF) capacity, the health of its source waters (for compliance endpoints related to quality), the complexity of rule requirements (especially for non-health based endpoints), and other factors. Although it may be possible to develop a statistical model that can explain existing compliance information, its use to predict compliance at any given system is likely to be useful only as a screening-level tool for further investigation, rather than a direct predictor of compliance.

3. *How can we determine if a system has the technical, managerial, and financial capacity to provide safe water on a continuous basis to its customers?*

7 81 [FR 57402. 22 August 2016. Updates to Floodplain Management and Protection of Wetlands Regulations to Implement Executive Order 13690 and the Federal Flood Risk Management Standard](#)

8 83 [FR 9473. 6 March 2018. Updates to Floodplain Management and Protection of Wetlands Regulations to Implement Executive Order 13690 and the Federal Flood Risk Management Standard.](#)

9 Note that the order of questions 3 and 4 is reversed on the initial list (pages 96-97) and the existing strategies (pages 97-99).

10 As an example, see the Office of Inspector General's July 18, 2017 Report 17-P-0326 at https://www.epa.gov/sites/default/files/2017-07/documents/_epaig_20170718-17-p-0326.pdf.

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Primacy agencies have the task of and experience with engagement with systems that have challenges with TMF capacity impacting or likely to impact compliance. Because of the complexity of water system operations and the complexity of regulatory compliance, it may or may not be possible to predict compliance, but the relationships primacy agencies have can be leveraged as a way to help achieve timely return to compliance at systems that are in noncompliance.

If you have any questions regarding this correspondence or if AWWA can be of assistance in some other way, please contact me directly or Adam Carpenter at [\(202\)326-6126](tel:2023266126) or acarp...@awwa.org.

Best regards,

FOR THE AMERICAN WATER WORKS ASSOCIATION

G. Tracy Mehan, III

Executive Director, Government Affairs

cc: Radhika Fox, EPA/OW
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Who is AWWA?

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes more than 4,500 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our 50,000-plus total membership represents the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

"People often claim to hunger for truth, but seldom like the taste when it's served up." - George R.R. Martin

Biden pick to lead U.S. Fish and Wildlife vows 'collaborative conservation' at agency

[Former Montana wildlife official Martha Williams wins support from some Republicans](#)

By: Jacob Fischler - November 17, 2021 1:11 pm



Two bison at the Baca National Wildlife Refuge in Colorado's San Luis Valley. (Dana Shellhorn/USFWS)

President Joe Biden's nominee to lead the U.S. Fish and Wildlife Service pledged Wednesday to let science guide decision-making at the agency and to collaborate with government and private partners.

Martha Williams, the former director for the Montana Department of Fish, Wildlife and Parks, told the U.S. Senate Environment and Public Works Committee that wildlife conservation was a shared

responsibility.

She said collaborating with state, local and federal partners, along with private citizens and industry, was one of two central beliefs she brought to the agency.

“It is with a strong commitment to collaborative conservation that we can achieve our goals,” she said.

Her other central tenet was a commitment to scientific integrity. Two Republican senators raised issues Wednesday with the agency’s scientific findings.

U.S. Sen. Kevin Cramer (R-N.D.) said federal definitions of wetlands sometimes defy common sense and frustrate farmers. He asked Williams to reverse the definition on a specific tract of land in his state. Williams offered to investigate the area’s wetlands definitions.

Before the hearing, Williams won the endorsement of Montana Republican Sen. Steve Daines, who wrote [a letter](#) to Environment and Public Works Chairman Thomas E. Carper (D-Del.) and ranking Republican Shelley Moore Capito of West Virginia on Tuesday.



Martha Williams is President Biden’s nominee to lead the U.S. Fish and Wildlife Service. (U.S. Fish and Wildlife Service)

In the evenly divided U.S. Senate, the support of even a single Republican like Daines gives Williams more breathing room on her confirmation vote on the floor.

Daines wrote that Williams, as a veteran of state government, was wary of federal overreach and would empower state wildlife agencies. He said she recognized the problems with the Cottonwood decision, a federal judicial ruling that members of both parties have complained makes forest management more difficult.

“She also understands Montanans’ concerns with top-down, over-reaching policies and frustrations with bureaucratic regulatory challenges like those posed by the Cottonwood decision, has witnessed and even helped facilitate tremendous, state-led, wildlife conservation successes such as the sage

grouse, gray wolf, and grizzly bear recovery in Montana,” he wrote. “I believe Ms. Williams will bring a pragmatic, balanced approach to the U.S. Fish and Wildlife Service.”

Daines’ support contrasted with his position on Bureau of Land Management Director Tracy Stone-Manning.

Daines was among the strongest opponents of Stone-Manning, who also led a Montana state agency under Bullock before Biden nominated her to direct a U.S. Interior agency. The Senate confirmed Stone-Manning along party lines in September, following a lengthy and acrimonious debate.

Grizzlies

Daines, who is not a member of the panel and was not at Wednesday’s hearing, wrote that he hoped Williams would allow the state to have primary management of the grizzly bear recovery.

But responding to a question from Sen. Cynthia Lummis (R-Wyo.) at the hearing, Williams indicated the federal government would lead grizzly bear management in Montana.

She said state authorities should lead fish and wildlife management, unless federal laws like the Endangered Species Act and the Migratory Bird Treaty Act applied. Grizzly bears are listed under the Endangered Species Act.

A U.S. Fish and Wildlife Service employee pulls a fish trap net at the Baca National Wildlife Refuge in Colorado's San Luis Valley. (Dana Shellhorn/USFWS)



Lummis appeared satisfied with Williams' answer on federalism but was less pleased with her response to potentially removing the grizzly bear in the Yellowstone ecosystem, which includes parts of Wyoming, Montana and Idaho, from the Endangered Species Act list.

Williams said she would support the long-term recovery of the grizzly population and would adhere to federal law and underlying science to reach that goal.

Lummis said grizzlies had sufficiently recovered, reaching previous benchmarks for population.

"It's been a long-term recovery, and they are recovered," Lummis said. "Every single objective has been met... I think what I'm hearing you say is that you're not willing to consider delisting."

Williams said she didn't mean to definitively reject the idea, but disagreed that all objectives under federal law had been met. While population numbers were robust, grizzlies in the Yellowstone area have not met all five criteria needed for delisting.

Capito said she was concerned administrative action to strengthen the Migratory Bird Treaty Act, which penalizes polluters for incidental harm caused to migratory birds, would add "another burdensome layer" to development, including for infrastructure construction.

Democrats on the Senate panel, including Sen. Benjamin Cardin of Maryland, asked about specific land and water management issues in their states.

Williams, who grew up on a farm in Baltimore County, told Cardin and Sen. Sheldon Whitehouse (D-R.I.) she would work to protect coastal areas and watersheds, including the Chesapeake Bay Watershed.

U.S. Sen. Mark Kelly (D-Ariz.) said the invasive salt cedar plant consumed scarce water in his state and asked about federal resources to fight invasive species.

Williams responded that invasive species work was handled across several Interior agencies, including the Fish and Wildlife Service. She added that she'd experienced invasive species management dealing with invasive mussels in Montana.

Williams has been exercising the authority of the FWS director as the principal deputy director of the bureau since Inauguration Day. That position does not require Senate approval. Biden nominated her to be the Senate-confirmed director last month.

Williams led the Montana Department of Fish, Wildlife and Parks from 2017 to 2020 under Democratic Gov. Steve Bullock, according to a biography on the FWS website.

Before becoming the state agency's director, she worked there for more than 20 years as legal counsel, according to the letter from Daines.

Williams was deputy solicitor for parks and wildlife at the U.S. Interior Department from 2011 to 2013.

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EPA, lawmakers inch toward limit on toxic chemical leaching into drinking water

How the federal government plans to do more to keep potentially deadly chemicals from slipping through regulatory cracks.

By [Kyle Midura](#)

Published: Nov. 17, 2021 at 10:32 AM MST|Updated: 22 hours ago

WASHINGTON (Gray DC) - The infrastructure bill signed by President Joe Biden earlier this week contains billions of dollars to cleanup a dangerous chemical in drinking water across this country. But, the federal government's struggle with how to prevent forever chemical contamination in the first place isn't over just yet.

There's been a slow drip of regulation over the last twenty years, as the EPA tries to contain a class of deadly chemicals linked to cancer. Health studies find 95% of Americans have PFAS in their bloodstream, but there's no national, enforceable standard for what level of exposure can be considered safe.

The slow pace of progress frustrates lawmakers like Sen. Shelley Moore Capito (R-W.Va.).

"I want a level we can use as a standard nationally," she said in a recent interview, "And we can be sure that our children and grandchildren are not going to be having any ill effects from drinking [from] their own water systems."

The Biden administration promises just that, [outlining steps leading to a better flow of resources for cleanup and forcing polluters to cover the bill](#).

Contamination is largely the byproduct of Teflon manufacturing and a foam used to fight jet fuel fires but the chemical can even be found in food packaging at low levels. Under the government's timeline, a true legal limit is still years away, set to arrive around fall 2023.

"Believe it or not, that's pretty much light-speed for this regulation," said Gina McCarthy, the White House National Climate Advisor and former administrator of the EPA.

McCarthy said there's strong health science surrounding PFOS and PFOA but not for hundreds of chemical cousins in the PFAS family.

"We have to do the analytic work," she said.

Rather than regulating every PFAS chemical on its own, following extensive study, the EPA plans to sort them into groups based on danger and cost of cleanup.

That, experts said, will make it tougher for newly-developed formulas to sidestep regulation and identify where the invisible threat is greatest. Once regulations are in place, action could follow swiftly.

“We jump on those quickly, effectively and broadly,” McCarthy said.

Lawmakers said they’re anxious to see progress.

“Hopefully we can get [research and new regulation] sooner than the dates they set out,” Capito said.

Members on both sides of the aisle support following the science but are also considering passing their own legal standards out of concern the country cannot afford to keep waiting. Several states have implemented their own limits on some PFAS compounds.

In Colorado, President Biden’s infrastructure bill could help low-income residents ditch fossil fuels

Sam Brasch November 17, 2021



Neal Ashforth, an installer at Northwest Colorado Council of Governments, suits up to add insulation to the underside of a manufactured home in November 2021 at the Dotsero Mobile Home Park in Eagle County, Colo.

One night three years ago, Laura Rascon’s daughter woke her in a panic.

The family lives in the Dotsero Mobile Home Park, a small community sandwiched between Interstate 70 and a line of mountains just east of Glenwood Canyon.

The shoddy doors and windows left plenty of cracks for chills to press inside. Their propane furnace was also broken, so each family member carried a space heater from room to room to stay warm.

That evening, 9-year-old Coral Chavez admitted she brought the glowing face of the heater too close to her bed. Rascon rushed to her daughter’s room to find flames creeping up a blanket, which she tossed out the front door. The fire died in the snow, but the entire experience left Rascon terrified.

“I was so scared,” she said in Spanish. “We didn’t know if it was going to happen at night or if it could happen if she was home alone after school. I worried so much every day.”

Today, Rascon is looking forward to a far less anxious winter thanks to the federal Weatherization Assistance Program. For the last 45 years, the U.S. Department of Energy program has supplied grants to reduce the energy

bills of low-income households. However, the work on Rascon's home and others in Dotsero went beyond extra insulation, caulking and new windows.

In March, the Northwest Colorado Council of Governments also replaced all of the propane-powered appliances with electric alternatives. Rascon's kitchen now centers around a new induction stove with a smooth glass top. A cold-climate heat pump outside the backdoor works as an air conditioner in the summer and a furnace in the winter. Another heat pump provides hot water.

"It was really satisfying at the end of the project to see our staff capping off the propane lines here," said Doug Jones, who manages the energy program for the council, which is one of six Colorado groups that received the federal grants.



Laura Rascon with her daughter, Coral Chavez, in November 2021 at their home in Dotsero, Colo. Sam Brasch/CPR News

Not your grandpa's weatherization program

The Dotsero project hints at a broader strategy to expand the purpose of Colorado's Weatherization Assistance Program.

Born in the 1970s energy crisis, Congress designed the program to help low-income families save money by saving energy. In its early years, states

and territories receiving grants through the program focused on the basics of home energy efficiency, like sealing drafts or adding insulation. A [Department of Energy history](#) notes that the program was soon expanded to fund more extensive home retrofits and swap out inefficient lightbulbs or water heaters.

The federal program is now set to get a \$3.5 billion boost from [the bipartisan infrastructure bill](#), which President Joe Biden signed into law Monday. Energy [assistance advocates](#) estimate the increase will fund weatherization for an additional 400,000 homes in total.

The funding could help supercharge Colorado's strategy to make homes more energy-efficient and help some residents move away from fossil fuels. Ryan Harry, who leads Colorado's version of the program, said the work in Dotsero is an early example.

"A lot of what we're trying to do is called beneficial electrification, which is moving from fossil fuels burned on-site to electric appliances that might eventually or currently rely on renewable energy," Harry said.

Most [buildings](#) in Colorado rely on fossil fuels for interior and water heating. The combined greenhouse gas emissions of all those burners, along with some wood stoves, add up to [about 10 percent](#) of the state's overall contribution to climate change, which is why many environmental groups want the state to push Coloradans to switch to electric appliances.

Harry said electrification is now far more feasible due to recent technological improvements in heat pumps, which work like reversible air conditioners. The devices offer an efficient option for electric-powered heating, but they're currently still more expensive to operate than natural gas furnaces.

Propane, however, is more expensive than either natural gas or electricity – and the price is expected to [surge even higher](#) this winter.

“We saw this opportunity with propane-heated homes,” Harry said. “Propane tends to be about three times as expensive as natural gas on a per-energy basis. And so those homes are paying more for energy anyway.”



The propane tank at the entrance of the Dotsero Mobile Home Park in November 2021. Most residents in the community still rely on the fuel for their heating, water heating and cooking. Sam Brasch/CPR News

High-voltage stakes

Most of the homes in Dotsero draw fuel from a bus-sized propane tank just outside the entrance to the mobile home park.

Doug Jones, who led the weatherization project for the Northwest Colorado Council of Governments,

contacted the park’s owner about replacing propane with electric heating and cooking systems last year. The owner had already attempted to switch the park natural gas but abandoned the idea when he learned it would require an expensive pipeline connecting the remote community in Eagle County. When Jones proposed electricity instead, the park’s owner was enthusiastic.

The organization finished electrifying the first three homes in the park in the fall of 2020. Jones expects 15 of the park’s 80 units to be fully electrified by the end of the year. The full set of improvements reduced average monthly utility bills for the upgraded households by \$80 in the winter and \$30 over the summer.

Dan Binning, the executive director of the Colorado Propane Gas Association, said even if those conversions saved residents money, electrification could be a risk in an era of unreliable electricity grids.

“Looked what happened in Texas last year,” Binning said. “Where there’s a natural disaster, they don’t bring in electric water heaters, electric heaters, electric stoves. They bring in propane.”

Neal Ashforth shines a light in a new vent while winterizing a home in November 2021 at the Dotsero Mobile Home Park in Eagle County, Colo. Sam Brasch/CPR News

The cost-cutting demonstrated in Dotsero could still help justify Colorado’s broader strategy. Under the rules for the federal program, the lifetime savings from any upgrade must exceed its upfront price. Other rules restrict how states can spend the federal money, only allowing work to switch homes from fossil fuels to electricity under narrow circumstances.



Harry said Colorado’s program won’t directly spend federal money on electrification projects and will instead use the funding boost from the infrastructure bill to expand its annual reach from about 2,000 to 3,000 homes. Additional state and local funding for weatherization, like a new surcharge on most Colorado customers’ utility bills, can then be freed to pay for “deeper retrofits,” including electrifying more propane-heated homes.

The short-term impact of the plan is small. The Colorado Weatherization Assistance Program has about 200 propane-heated homes on its upgrade list in a typical year, a tiny fraction of the more than 2 million households across Colorado.

Harry sees greater promise in creating demand for electrified homes. By buying and installing heat pumps, he said Colorado's program could help bring down the cost of the devices and train a workforce of capable installers.

"That's where the conversation really expands to, 'OK, when does it start making sense to convert [natural] gas homes?"