

# BIG PIVOTS

Energy and water transitions in Colorado and beyond

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## Xcel didn't shine in solar+storage projects. Now it's in the doghouse of state regulators

by Allen Best

In the staid world of utility regulation, Colorado's largest electrical supplier recently got the verbal equivalent of a scolding by all three members of the Colorado Public Utilities Commission.

In various ways, the commissioners all told the Public Service Co., Xcel Energy's Colorado subsidiary, that the utility didn't seem to be taking seriously its job of helping reinvent the electrical grid of the future.

The reprimands were delivered in three cases involving solar plus storage and how

they can be managed in microgrid applications.

The essential idea is that the relationship between utilities and consumers must evolve. In the old model, the utility delivered electricity from central generation, often a big, coal-fired power plant, and the customers turned on the switch and expected to get power.

In the evolving model, there's more distributed generation, such as rooftop solar collectors, and demand is negotiable. You might not charge your car until there's excess power. Storage in the form of batteries lies in the middle of this more complex relationship.

"The world is changing, and we need a utility that changes quickly," said Jeffrey Ackermann, the PUC chairman, at the

commission's weekly meeting on Sept. 23.

Ackermann went on to identify the robust but still emerging area of "consumer-choice opportunities, all these things that kind of

make the utility uncomfortable but part of which the future is clamoring for."

John Gavan, another PUC commissioner, upbraided Xcel, saying it won't be just about selling kilowatt-hours in the future. It will

**'The world is changing, and we need a utility that changes quickly.'**

Jeffrey Ackermann  
*PUC chairman*



“increasingly be about solutions as the utility industry rapidly transforms,” he said, borrowing a key message that Amory Lovins, co-founder of the Rocky Mountain Institute, has been delivering for decades.

Gavan added that third-party software and hardware solutions will have to be integrated, which will require the utilities to develop system integration skills, as have other industries.

This has happened before. “In the 1980s, I watched as AT&T struggled through this same kind of challenge, and they didn’t do so well,” said Gavan, who had a career that included director of information technology for MCI Communications for 19 years.

“There are lots of lessons out there. I urge Public Service Co. at the highest level to carefully think through these issues that will make the changes internally that will allow them to be successful in this emerging business segment.”

The PUC in 2016 had authorized Xcel Energy’s subsidiary to spend \$9.1 million in two projects, one of them in conjunction with Panasonic and other partners in a



**Xcel partnered with Panasonic and others in a test-the-edge experiment near Peña Station that employed roof-top solar over a parking area. Results were muddled. Photos/Allen Best**

complex of buildings near Peña Station, the last commuter rail stop on the way to Denver International Airport.

Xcel installed solar collectors atop a large field of parking adjacent to the Panasonic building. The project has the capacity to be a microgrid, capable of being operated as part of the regional grid or separately. Battery storage is part of the configuration.

The second project was at the neighborhood formerly known as Stapleton, now called Central Park. It has a high

concentration of solar collectors on roofs, more than 20% in some areas. A 2016 release from the PUC explained that Xcel planned to install six batteries on the customer side of the meter at solar-equipped residences. Another six batteries were to be installed on Xcel's distribution lines. These utility-sited batteries were to store excess energy and discharge it during peak load hours.

**B**oth projects seek to understand the potential for energy storage to help Xcel manage the impact of high penetrations of solar photovoltaic energy in neighborhood electrical lines. In addition, the company also planned to evaluate the capabilities of batteries installed on distribution feeder lines to regulate voltage, reduce peak demand, and reduce energy costs for the benefit of all the company's customers.

In a 2015 filing with the PUC, Alice Jackson, then a regional vice president for Xcel in Colorado, explained that the company's innovative clean technology

program was intended to provide the company with opportunities to gain experience with new distributed energy technologies that "will benefit our customers in the long run."

Already, in some areas of Xcel service territory, the concentration of rooftop solar "is causing a two-way electricity flow on our system," she explained. "This has challenged us to try to find new ways of accommodating distributed solar generation while maintaining the same levels of safety and reliability that our customers have enjoyed for years."

Jackson went on to say that in addition to finding new ways to forecast wind and solar, "we know that the installation of batteries on the distribution system provides a potential solution to the adverse effect that high penetrations of distributed solar can have on our distribution system. For this reason, we believe the time is right to work to gain operational expertise with batteries and to test various battery configurations to understand the impact and benefits this



**Denver's neighborhood formerly called Stapleton, now called Central Park, has high levels of rooftop solar penetration Photos/Allen Best**

technology will have for our system,” Jackson said.

“The company believes understanding how battery integration on our system both on the grid itself and on the customer side of the meter will be critical to ensuring that we can efficiently and effectively design and operate our distribution system as batteries enter the market place.”

In July 2020, Xcel filed its “Final and Comprehensive Report on the Panasonic and Stapleton Pilot projects under the Innovative Clean Technology Program.” Dan Greenberg, a PUC staffer, told the commissioners at their Sept. 23 meeting that the final report “offers minimal insights.”

“Of the original project objectives, how many objectives would you say were successfully met,” asked Megan Gilman, the third PUC commissioner and a former owner of a solar retail company in Eagle County.

Of the 17 objectives, replied Greenberg, 6 were unequivocally successful, another 6 were partially successful, and the remaining 5 had no useful data. There were problems with equipment of mostly a trivial nature that prevented the projects from delivering more meaningful results, he explained.

The question before the commissioners is how much of the cost recovery to allow the company of this research.

“The project was not entirely successful and satisfying,” said Gilman, but she said she did not want to take action that would discourage Xcel from continuing its work to help create the grid of the future.

One question before the PUC and the utilities it regulates is what constitutes the optimal integration of batteries. Another related question, said Gilman, is “what do we see as an ideal mix of rooftop and utility scale solar?”

The broader question before the Colorado PUC is this new interface of utilities and consumers, something that loosely falls under the umbrella of a concept called distribution network planning. While a 2019 Colorado law gave the PUC direction to conduct investigation of this topic, it does not provide precise direction of what this new future will look like.

[For a full explanation of this wonkish but cutting-edge concept called distribution network planning, see this story.](#)

The PUC has inadequate staffing to investigate this fully. Under prodding from Ackermann, Gilman wondered whether new legislation will be needed to help assist and guide the PUC. Gavan said it was important to remember that “market forces are very much at work here as well,” pointing to a rapidly growing number of solar-plus-storage systems. “It’s not just policy but market forces,” he said.

Solar-plus-storage was also the centerpiece of a separate case that also elicited frowns from the PUC members. In that case, Xcel was required to consult with stakeholders about incentives. Meetings were held but not all who were involved though them as productive they needed to be. Gilman described the report that Xcel produced as “fairly generic.”

The Colorado Solar and Storage Association wanted the PUC to reverse itself on a decision the PUC members had made. The commissioners agreed they could not do so but made clear that they were sympathetic to the trade group’s motivations. As such, the commissioners said, they agreed to make it clear to Xcel of their serious intent.

Call it a slap, not a hard whack, to the knuckles of Colorado’s giant utility.

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**“Market forces are very much at work here as well.”**

John Gavan  
*PUC commissioner*



**Boulder from the air during a December morning. Photo/Allen Best**

# Can Colorado's largest utilities keep electrical empires intact?

**by Allen Best**

Colorado's two largest electrical utilities this autumn are trying to quell revolts, to keep their empires intact.

Money and the pace of change lie at the core of revolts faced by both Xcel Energy and Tri-State Generation and Transmission.

The fundamental question is whether the utility paradigm of the latter half of the 20th century can survive the rapid changes now underway in how we produce and consume electricity.

Xcel has been fighting the municipalization effort in Boulder for more

than a decade. Tri-State has been skirmishing with members for just as long, although the attempts by United Power and La Plata Energy are relatively new.

## **Boulder and Xcel Energy**

In Boulder, voters must decide whether to accept a new franchise agreement proposed by city leaders and Xcel Energy. The agreement speaks vaguely to accelerating changes by Xcel, already considered one of the nation's most progressive utilities. Opponents say Xcel has moved more slowly than it can and should.

The unrest in Boulder began more than a decade ago. As much or more than any other municipality in Colorado, Boulder residents have been attentive to the consequence of greenhouse gas emissions. The city government has embraced goals and taken actions on a long agenda from

electrifying transportation to reining in emissions from buildings.

It can also be argued that the city and surrounding county have had an outsized impact on Colorado’s cutting-edge efforts to decarbonize the economy. Jared Polis, the governor, made his fortune and began his political career there, and most of the top legislative leaders of the last two years, including the 2019 session that produced such far-reaching legislation, call Boulder home.

Dissatisfied with Xcel’s pace of decarbonization, advocates about a decade ago began to make the case for municipalization. Colorado has 28 community-owned electric utilities, from Colorado Springs to Gunnison, Trinidad and Wray, that together deliver 17% of the electricity in the state, according to the [Colorado Association of Municipal Utilities](#).

Xcel, of course, has no interest in this proposed divorce and has spent a lot of money to keep Boulder. And within Boulder, there’s considerable disagreement about whether the city government can deliver the goods as effectively as the investor-owned utility. Legal and other costs have already been massive—although opponents argue that Xcel makes massive amounts of money from Boulder each year.

Xcel drew national attention in December 2018 with its announcement that it intended to achieve dramatic reductions in the carbon intensity of its electricity.

At the announcement at the Denver Museum of Nature and Science, Polis—by then elected but not yet governor—pointedly suggested that his election had something to do with the timing of Xcel’s announcement. He was probably right.

The proposed agreement offered by Xcel to Boulder voters would modestly accelerate the decarbonization of Boulder’s electrical supply and vaguely dangles the experimentation of two microgrids. It gives

the city several off-ramps from this new franchise agreement.

The Boulder Daily Camera on Oct. 10 endorsed the new franchise agreement. The underlying justification was the risk of a costly divorce from Xcel:

“If Boulder residents choose to reject the franchise agreement and continue on the path toward municipalization, it will prolong a legal battle with Xcel that has already cost tens of millions of taxpayer dollars and countless hours of city staff time,” said the newspaper “It’s simply not realistic to expect the company to surrender a chunk of its business without a fight.”

**“It’s simply not realistic to expect the company to surrender a chunk of its business without a fight.”  
Boulder Daily Camera**

**B**oulder’s city council has split on this issue. Mayor Sam Weaver has been ambivalent after early and even recent support for municipalization. Strikingly, nearly all the mayors of the last decade support municipalization and oppose the ballot question 2C. One of their arguments is that Xcel takes \$25 million or more out of the community each year.

Matt Appelbaum, a former mayor, this week wrote a lengthy analysis that talked about the superior prices of electricity available from municipal utilities and the now improved potential for internet with city-owned utilities in Colorado, including nearby Longmont.

“Xcel sure would love to kill the muni before it becomes obvious to everyone that competition is coming and big, vertically integrated monopoly energy providers are grossly expensive, inefficient, unable to keep up with technology and cities’ needs for more resilient power, and, essentially, historical artifacts that should have been eliminated years ago,” he wrote.

Underscoring Appelbaum’s argument was a report issued yesterday, Oct. 15, by Empower Our Future, a pro-municipalization group. The report cited modeling that

showed that “Boulder citizens can, with confidence, expect that a locally owned utility would at least break even financially within 5 to 10 years of startup, relative to continuing to source more carbon-intensive electricity from Xcel.” Those savings, added the report, would be sufficient to lower electricity prices while achieving 100% renewable electricity and modernizing Boulder’s electric system.”

(Whew – and if only municipalization could also end the country’s semi-civil war.)

For an issue underway since 2017, this proposal came about with remarkable speed relatively late in summer. Appelbaum says he thinks the city council would not have approved sending it to voters if they had not been panicked about the impact of covid-19 on the city’s revenues. He points to several things that should have been done by the city but which were not.

Also a last-minute addition to the conversation was the city’s request for proposals. The RFP was issued on June 17. The deadline on Aug. 14 yielded two bids proposing to provide all of Boulder’s power at 8 to 15% lower than a similar RFP in 2018. The bids promised to achieve 100% renewable electricity for the city by 2030.

Electricity prices are coming down, plunging, really, just as the costs of telephone and internet connectivity did.

Do you remember the costs of long-distance telephone service? In the early 1980s, when I was in Colorado’s Grand County, it was a long-distance call from Fraser to Granby, and from Granby to Grand Lake another long-distance phone call, each of these at 30 cents a minute. West along Highway 40, it was the same thing. The next town 10 to 15 miles down the highway was another long-distance call.

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**Tri-State intends to have all three units at Craig closed by 2030. Photo/Allen Best**

In 2007, when Boulder set out on this municipalization odyssey, who would have imagined the changes that would arrive by now. Can Xcel hold together its empire? It lost Fountain, the city south of Colorado Springs, earlier this year. Boulder matters far, far more.

### **Tri-State and its dissidents**

Tri-State's empire started fragmenting in 2007, too. The utility had asked for its then-44 members to commit to contract extensions to 2050 in order to finance a new coal-fired power plant located in Kansas. The Kansas site was presumably chosen because of perceived easier permitting there instead of Colorado, where the majority of the company's customers are located.

It ran into unexpected opposition in Kansas—and at home, too. [I detailed the full history in this story posted in May.](#)

Tri-State has lost two members in the last five years. Can it keep United Power, by far its largest member, with 96,000 meters and responsible for something like 17% of total demand for generation from Tri-State?

And also La Plata, which has 55,000 meters and is No. 3 in terms of power?

Arriving in April 2019, chief executive Duane Highley had two monumental tasks: shifting the utility's direction and holding onto its members. He gets paid \$10 million annually in base salary, just a couple steps down from Ben Fowke, the chief executive of Xcel Energy, who gets paid \$18.9 million. If he can pull this off, he's probably worth it.

Part of Highley's strategy seems to be to stall. By going to the Federal Energy Regulatory Commission, he delays the exit by United and La Plata. I wrote about this extensively in September. [See "A shallow win for Tri-State."](#)

The Denver Post last week weighed in with an editorial written with—in a very unusual arrangement—Don Coram, a Republican state legislator from Montrose.

But Highley has also sought to buy time using changes in the partial-requirements contract with the members. The old contract had allowed members to generate up to 5% of their own power. A new contract ostensibly sought to allow more flexibility, but United and La Plata saw it as a sham.

Last week, Tri-State held a press conference where Highley was joined by former Colorado Gov. Bill Ritter to announce an even more flexible contract and plans to lower rates. Tri-State plans to reduce wholesale rates 8% by the end of 2023.

Highley also reported a specific process to implement partial requirements contracts that will allow members to propose projects that help deliver up to 300 megawatts. This “open season” occurs early next year. Under the new contract, utility members can self-supply up to 50% of their load requirements, subject to availability in the open season, in addition to the current 5% self-supply provisions and a new community solar provision.

United was officially unimpressed.

“We think this is a great step in the right direction for the future of Tri-State and congratulate their efforts in trying to make this happen,” said Bryant Robbins, the interim chief executive, in a release sent out shortly after Tri-State’s announcement.

“Unfortunately for United Power, we serve an area in which our competitors’ rates are as much as 25% to 35% less than ours. We are going to need much more than the proposed 8% reduction in wholesale power to be competitive.”

La Plata issued no similar press release but this week announced it would hold a series of town halls in various parts of its service territory of southwestern Colorado to discuss power supply options.

“For several years, LPEA has been exploring how to best source affordable, reliable, and sustainable electricity to power its communities,” the announcement said. “The meetings will feature a short presentation on the paths being explored, where LPEA is in the process, and next steps.”

What is also pertinent is that Poudre Valley, the second largest member of Tri-State, had kind words for Tri-State. The

“potential of greater contract flexibility will help Poudre Valley REA achieve our 80 by 30 renewable energy goal,” said Jeff Wadsworth, the chief executive of the Windsor-based cooperative. “The clean energy transition has begun,” he added.

What’s next? In the Tri-State story, the essential question is one of strength and stamina. As with Boulder, lots of money is spent on the lawyering. How much pain is there before a compromise is struck? Or somebody drops out? Tri-State is said to be in bad financial shape but I have to think it will be in much worse shape if it loses close to a quarter of its electrical sales.

Tri-State is fast turning, as it must – and, if be truth be known, isn’t that much different than Xcel Energy. But it stood still far too long.

I am most interested in what it submits to the Colorado Public Utilities Commission on Dec. 1. That’s when Tri-State lays out its plans for much deeper reduction of its electrical supplies to customers within Colorado.

Closing the coal plants in Craig will get it a ways, but to meet the state’s 80% reduction command by 2030 it will have to shed some or all of the power from Laramie River Station at Wheatland, Wyo. It’s partners with Basin Electric, the North Dakota-based sibling of Tri-State, which operates in states of the upper Midwest. I suspect—here is my conspiracy mind at work—that it’s no accident that work is underway at the DC tie between the Western and Eastern grids near Stegall, Neb. My suspicion is that it will accommodate more power from Laramie River to Basin Power.

If I was betting, I’d put my money on Xcel and Tri-State holding onto their pieces. But neither can afford to be stodgy. They’re not out of the woods yet.

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# Natural gas to go under microscope at Colorado PUC

Natural gas use, both by consumers and the extraction and processing phases, will come under the microscope of the Colorado Public Utilities Commission beginning with at least one information meeting tentatively scheduled for early November.

The purpose hinges upon the targets identified by HB 19-1261, the “Climate Action Plan to Reduce Pollution,” which specified economy-wide carbon reduction of 50% by 2030.

The state’s Air Quality Control Commission, aided by the Colorado Energy Office, have primary authority for creating and executing efforts to attain those goals, but SB-236 also identifies the PUC as having a major role because of its regulation of utilities.

PUC Commissioner Megan Gilman had flagged the issue several times. She will have responsibility for guiding the hearings.

Bob Bergman, a PUC staff member, cited the language of HB-1261. The law speaks to the need to “require the use of all available practical methods which are technologically feasible and economically reasonable so as to reduce, prevent, and control air pollution throughout the state of Colorado.”

The PUC plans to invite academics and others to help inform the discussion.

Nearly all buildings in Colorado use fossil fuels, primarily natural gas but also propane,

for heating and warming of water and, to a lesser extent, cooking. For Colorado to meet its 2030 goals, according to a roadmap to decarbonization recently released by state agencies, some reduction in the building sector must begin by 2030 and such use must almost entirely be curtailed by mid-century if the goals are to be met.

There are myriad issues, though. For example, there are questions of stranded assets. There are questions about the cost of natural gas to those consumers unable to upgrade their buildings so that gas will be unnecessary.



PUC Commissioner John Gavan nodded at the need to avoid duplicating work of the Air Quality Control Commission, which has been engaged in rule-making on how to reduce methane emissions from the oil-and-gas sector. He suggested that the PUC would benefit from taking a look at emissions from these mid-stream and upper-stream sources.

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Colorado's Yampa River slices through Cross Mountain shortly before entering Dinosaur National Monument. The canyon is said to be among the most difficult of any to raft in Colorado, Class V waters, meaning its on the edge of unboatable. *Photo/Allen Best*



## Assessing risk of causing wildfire in warming West

by **Allen Best**

As smoke from the California wildfires drifted eastward this summer, Holy Cross Energy CEO Bryan Hannegan had worries of his own in Colorado. In August, the hottest ever in Colorado, a fire called Grizzly Creek growled and then charged several communities in the middle of his service territory along a 100-mile segment of Interstate 70 that includes the resort communities of Vail and Aspen.

But it was the fire that didn't happen that will worry him even after snowstorms arrive. What if the wires and other electrical

infrastructure of Holy Cross Energy had started a fire? Despite all of Holy Cross's planning and policies, including extensive efforts to prevent its equipment from starting fires, one wildfire in the wrong place could cause liability that would take down the electrical cooperative.

"I can't speak for them, but I would venture to guess that every utility in the state, regardless of size, is worried about the potential for wildfire," Hannegan said.

Utilities have always worried about wildfire at some level, but those concerns and the responses have elevated significantly as fires have ravaged California several times since 2017. Pivotal was California's 2018 Camp Fire. The fire at Paradise killed at least 86 people and caused the bankruptcy of Pacific Gas and Electric.

"I think that scares anybody who is involved in any utility," said Geoff Hier, director of government relations for the Colorado Rural Electric Association, a trade group of Colorado's 22 electrical cooperatives.

This story was originally published in [Energy News Network](#).

Climate change also figures prominently in the thinking of utilities along with the mosaic of conditions that have created greater risk for both wildfires and damages. Fires were successfully suppressed for much of the 20th century, delaying the inevitable. And Colorado, higher and wetter than many places, was less vulnerable.

Then came the 21st century. The Colorado Department of Public Safety's 2020 Wildfire Preparedness Plan reports the average of 8,170 acres burned annually in the 1960s had doubled by the 1990s, then doubled again. Entering this year, the top 20 wildfires had all occurred since 2000. Fires this year in Colorado, like those in California, have made those statistics obsolete.

Wildfire risks will almost certainly worsen. The [Fourth National Climate Assessment](#) published in 2018 projected the annual area burned in the contiguous

## Colorado's highest wildfire-risk counties

The Colorado State Forest Service in 2018 reported that half of all Coloradans lived in areas at risk of wildfire.

By this assessment, 14% of houses in Colorado have moderate wildfire risk, and 17% have high or extreme risk.

Colorado's top 5 counties with housing units in this high and extreme risk category are Jefferson at 43,000 units followed by Larimer, Boulder, El Paso, and Summit.

But there's another way of looking at risk. In Gilpin County, 95% of housing units are at high or extreme risk. Clear Creek follows at 90%, San Miguel at 85%, Hinsdale at 82%, and San Juan at 81%.

By this assessment, 14% of houses in Colorado have moderate wildfire risk, and 17% have high or extreme risk.

See: [Colorado Forest Atlas](#).

western United States will increase 200% to 300% by mid-century. In a sense, this year's fires are merely a warm-up. And this year's hot summer will, in the future, be considered cool.

People have also been rapidly moving into the foothills of Colorado and other areas called the wildland-urban interface, an average increase of 2.5% annually from 1990 to 2010, according to a [study conducted by Silvis Lab](#). As of 2017, half of all Coloradans lived in areas at risk for wildfires, the Colorado State Forest Service reported in 2018.

Electrical lines and other equipment cause fewer than 2% of all wildfires, according to Steve Rohlwing, manager of asset risk management for Xcel Energy, Colorado's largest electrical utility. In a filing with the Colorado Public Utilities Commission in July, Rohlwing said Xcel is aware of 14 wildfires at or near the company facilities. None were among Colorado's 10 largest.

If the probability is low, the consequences can be high—as was horrifically illustrated in California's Camp Fire in November 2018. That fire was caused by the wind-whipped wires of Pacific Gas & Electric and sent the utility into bankruptcy in expectation of \$30 billion in wildfire-associated liabilities.

"Wildfire risk has taken on increased prominence across the industry in recent years as many factors have contributed to increased wildfire impacts in the U.S., including changing climate conditions and increased development in high-fire-threat areas, and as a result of several highly publicized tragedies in California," said Brooke Trammell, Xcel's regional vice president for rates and regulatory affairs, in [testimony before the Public Utilities Commission](#).

Xcel stepped up its fire-mitigation program after California's fires in 2017 destroyed 10,280 buildings, forced 230,000

people to evacuate, and killed 45 civilians and two firefighters. The damage was estimated to be in excess of \$18 billion. The [Wall Street Journal later reported](#) that at least 17 major wildfires that year in California were linked to Pacific Gas & Electric.

Modeling by Xcel revealed potential in Colorado for its electrical infrastructure causing a wildfire resulting in \$2.6 billion in impacts in 1% of cases. That's akin to a 100-year flood. After the planned mitigation, the risk falls to \$1 billion.

The utility says 2,100 miles of its overhead distribution feeder lines in its service territory and 2,900 miles of transmission lines are within the wildfire risk zone that was developed by the Colorado State Forest Service. Its goal has been to "harden" the electrical delivery system and revise operations to reduce risk by increased use of tools such as infrared inspection to identify thermal "hot spots" with priority in high wildfire risk areas, LIDAR technology, and drones to provide detailed pole-top inspections.

By the following June, the company had assembled a wildfire mitigation team to explore what types of additional or accelerated projects could further mitigate the risk of utility-caused ignitions. Xcel spent \$10.7 million in 2019 while inspecting 2,900 miles of transmission lines and replacing 2,305 distribution wooden poles among the 67,162 it inspected.

In its filings, Xcel identifies \$590 million in wildfire mitigation programs from 2019 through 2025. At least some of these costs may be recovered through additional revenue via a rider on customer charge. If approved by the Public Utilities Commission, a typical residential electricity customer's bill would increase by 49 cents a month, to \$69.53, Xcel says on its website. The rider would be adjusted during the next four years.

Colorado's electrical cooperatives have also stepped up their efforts to prevent

electricity-sparked wildfires and prevent damage from other wildfires to electrical equipment.

United Power began creating its wildfire mitigation plan in 2012. Bryant Robbins, the interim general manager, said directors concluded that the greatest financial risk facing the cooperative was a fire in the mountains, and one specifically started by the utility's facilities.

A fire two years before in foothills west of Boulder, just outside of United's service territory, caused damage, including 172 burned structures, valued at \$660 million. It was the most destructive wildfire to that time in Colorado. Fires along the Front Range in 2012 killed three people and also racked up \$568 million in property damage.

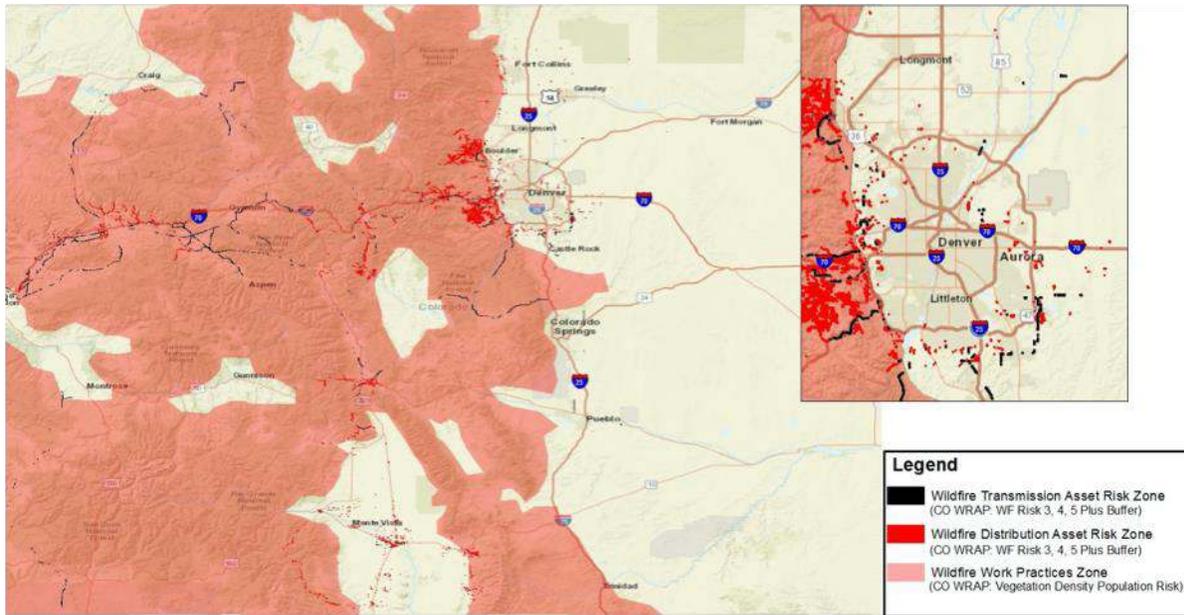
"We began to see some of those damage amounts," said Robbins, then the manager of United's mountain division. "We did not want to be the source under any circumstance, negligence or not, of any fire," he added.

United has 5,700 meters in the forested foothills of the Rocky Mountains among its 96,100 meters.

To mitigate risk, the cooperative in 2012 expanded the crews assigned to trimming trees in the rights-of-way of electrical lines from one to six and expanded other mitigation efforts.

Wind gusts in the mountains of up to 120 mph are dangerous enough that United Power put one sub-transmission 34.5-kilovolt line underground. United is also encouraging its new members to put distribution lines underground, an expensive ask at about \$1 million a mile on the flats without heavy rock. In mountainous areas, it can run \$20 million a mile. But those lines are much more resistant to fires.

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Like other utilities, United has changed construction standards. “We no longer install any kind of porcelain insulators and replace existing ones, when possible,” Robbins said. The porcelain insulators, he explained, are vulnerable to lightning strikes.

Despite all this, United feels vulnerable. “Insurance companies not wanting to insure utilities in case of fire — that is the biggest issue we’re running into,” Robbins said. “Three years ago we had \$100 million of general liability insurance that would cover United Power’s negligence as an ignition source, to handle claims. That got reduced to \$75 million last year and then this year \$45 million. We’re hoping that Colorado will enact legislation this coming session that will mitigate that issue. We feel this is mostly the direct result of the claims they had to pay out in California.”

For United, Holy Cross, and other utilities operating in forested areas, getting access to rights of way to remove trees has been problematic at times. Many property owners want and expect the electricity but they want their trees, too. Further complexity comes from federal administration of 36% of Colorado’s lands. Utility managers complain the agencies can be slow to approve vegetation removal.

Tom Walch, chief executive of Grand Valley Power, is concerned about the potential for a fire on Grand Mesa, east of Grand Junction. There, he worries about liability and the need to step up the removal of trees in rights of way. Part of that challenge is across federal lands, he said.

Walch said fires of recent years, particularly those in California, have raised awareness of the potential for trees and electrical lines coming into contact. Before, he said, a common sentiment was “don’t cut down our trees, don’t mess with our forest. We love it here.”

“The disastrous fires in California a couple of years ago really brought more people around to understanding that utilities had to have the right to control the right of way if they were going to be required to maintain service in these forested areas,” Walch said.

**E**lectrical cooperatives in Colorado want state legislators to specify best practices for vegetative management in rights of way and a process for clarifying the liability of utilities if those best practices are maintained. The Colorado Rural Electric Association is working with Xcel and Black Hills Energy, Colorado’s second investor-

owned utility, as well as the municipal utilities, to formulate a uniform position. It is also working with the National Rural Electric Cooperative Association to address rights of way issues at the federal level.

The cooperatives want more: a backstop authority, funded partly by the state and partly by the utilities. The goal is to provide additional financial resources to help cover fire-related liability for any one utility that would otherwise drag it into bankruptcy—if the utility had taken all feasible steps to reduce the risk of fire from its system. California has adopted such an approach.

## **New governance needed for water in 21st century**

“The challenge we’re facing right now is that New Mexico is trying to solve 21st century problems using 20th century solutions. We have a governance infrastructure and physical infrastructure and practices that were developed and solidified during the late 19th and 20th centuries. ... We really aren’t prepared for the change that’s happening.”

— New Mexico rep. Melanie Stansbury, D-Albuquerque, in an Associated Press story about shifting hydrology patterns caused by a warming climate and the greater volatility.

She likened overhauling water policy and modernizing management to expansive efforts like reforming the criminal justice system or updating the electric grid to accommodate more renewable energy.

“These are big problems that will span the next century,” she said. “We’re not going to solve it in the 2021 (legislative) session.”

But Colorado’s coronavirus-induced financial distress has put that conversation on hold.

At Holy Cross, Hannegan was thinking about wildfire risk when he became chief executive in 2017. He had a personal reason to do so. When he was in his 20s, a wildfire caused by utility equipment incinerated half of the 10 homes on the block in California where Hannegan’s family lived. The Hannegan house—where his parents still live—was severely damaged.

“If not for the grace of God, the house where my parents live to this day would have been gone,” he said.

A wildfire in July 2018 delivered a harsh reminder of the need for preparedness. It was caused by target shooters, not the utility, but Aspen very nearly lost electricity. A fire was beginning to lick up a wooden pole holding the third and last transmission line into Aspen when a quick-thinking utility employee arrived and extinguished the blaze.

**A**fter that, Holy Cross redoubled efforts to reduce vulnerability to wildfires, using the tools of United, Xcel, and other utilities. The task, Hannegan said, is to find failures before they happen. “When things do fail, as they inevitably will, will they fail in a way that substantially reduces the potential for sparks or something else that could increase risks of wildfire?”

But even as utilities get smarter and more diligent about reducing the risk of wildfire, the threat of a catastrophic fire continues to rise, the result of a climate becoming hotter and drier.

“My biggest fear is that it will still not be enough because the risk is so great,” Hannegan said. “This is not something that will go away in a year or two. This is a long-term trend that we have to factor into our business operations.”

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