

BIG PIVOTS

ENERGY and WATER transitions in Colorado and beyond

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Xcel's Kenney says nuclear could well lie in the future of Colorado electricity

by Allen Best

Xcel Energy has two nuclear power plants in Minnesota. The current chief executive of its operations in Colorado previously oversaw nuclear power plants in both California and in Missouri.

Will Xcel submit plans for a nuclear power plant in Pueblo as part of its Just Transition Electric Resource Plan?

Not likely says Robert Kenney, the chief executive of Public Service Co., the Xcel operation in Colorado. But he says that the high costs of nuclear might come down in time to help Xcel figure out how it will hit its 2040 carbon reduction targets.

"At Xcel we do have a background in running nuclear plants," Kenney told Big Pivots in a brief interview after a transmission line groundbreaking near the company's Fort St. Vrain plant in Weld County. A nuclear power plant from 1979 to 1989, it was later recommissioned to burn natural gas.

"I do think that (nuclear) is a clean, safe, reliable resource that has to be part of an all-

of-the-above analysis, particularly as we add more renewable energy," said Kenney. "These are intermittent resources, and so you need something that's dispatchable. Right now it's either natural gas or nuclear."

Duane Highley, the chief executive of Tri-State Generation and Transmission Association, Colorado's second-largest electrical generator, said in a May session that nuclear remains too expensive and he doesn't expect costs to come down until 2035 to 2040. (See: ["Duane Highley talks about Tri-State's journey from coal."](#))

"I can't say whether the cost curve is going to come down by 2030 or 2035," said Kenney. "I do know that the advanced and small-modular reactor technology is still maturing," but may not be mature enough to be a candidate for new generating resources in the next few years.

"But I do think it's something that we've got to be willing to embrace. I think the cost is significant, and I think that there's probably a role for the federal government to

play in helping to backstop some of these financial concerns. But I do think it's something we have to keep in mind."

Xcel was scheduled to submit its next electric resource plan to state regulators in Colorado on Aug. 1, although the company has now sought an extension – its second – until mid-October. Those plans speak to what kind of projects Xcel thinks it will need to meet electrical demands while also achieving the goals set by both the company and by

"We have a lot of big brains running around the place, and I think we're going to be able to figure it out."

Robert Kenney

Colorado for continued reduction in emissions. The review process commonly takes two to three years, but the addition of new resources can take a much lengthier time yet. For example, Xcel submitted an electric resource plan in 2016 that yielded bids for wind and solar in late 2017. Those bids in some cases delivered projects that in some cases did not come on line until mid-way through 2023.

This particular resource plan is to look first at how Xcel might be able to create new energy infrastructure at Pueblo and Hayden.



Robert Kenney

It will close coal plants in both locations.

In 2023, Xcel formed a task force to look at the question of what comes after Comanche 3, the coal unit in Pueblo that is planned for retirement by the end of 2030. The task force – which conspicuously lacked representation from the City of Pueblo, which has an energy commission – concluded that the best answer was a major nuclear power plant. A natural gas plant was the second choice of the task force, but with far fewer jobs and much less tax base and, as such, of lesser interest.

What was this task force all about? Can it seriously be considering nuclear at Pueblo – or anywhere else in Colorado, for that matter, given the still enormous costs of nuclear? Bill Gates, as part of his climate change work, has put \$1 billion toward a new nuclear power plant in Wyoming but recently told a TV interviewer that he suspects the project will cost \$10 billion before it is completed. Others, looking at the recent cost-overruns, might wonder whether even that figure may be optimistic.

“I think what we’ve said, and I think (the task force) would agree is that the technology’s not mature enough for this particular acquisition period. And I think

that’s the challenge. It’s not going to be a technology that we’ll be able to deploy in the ‘25 to ‘29 time period,” said Kenney.

Kenney acknowledged that several types of electrical generation are being developed and face the same cost hurdles. The cost of geothermal is coming down, if doubts remain about how much it can deliver for Colorado. Colorado Gov. Jared Polis in June estimated that enhanced geothermal can deliver 4% to 8% of Colorado’s electricity by 2040.

Green hydrogen – making hydrogen from renewable sources – also remains a possibility, and Xcel has been engaged in efforts to be part of a pilot project in northeastern Colorado. The pilot, however, failed to gain federal funding.

“They’re all in various stages of maturity. I admire the engineers. I’m not one, but I have a lot of confidence in human ingenuity. We’re on our way to reaching 80% carbon-free (energy) by 2030. We’ve made commitments to be 100% carbon-free by 2050. And I think that the 2030 to 2050 time period is where there is some measure of uncertainty. But what is certain is that we have a lot of big brains running around the place, and I think we’re going to be able to figure it out.”



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How much land will solar & wind need?

by Allen Best

To achieve its goals for reduction of greenhouse gases by 2040 and 2050, Colorado will need much more renewable electricity to meet growing demands from transportation and buildings. The Colorado Energy Office estimates that Colorado will need three times as much wind as it now has and five times as much solar.

Sounds staggering. Will Toor, the director of CEO, says it should not be seen as onerous.

New solar with capacity of 10,000 megawatts during the next 15 years will require between 75 and 125 square miles of land, he said in a session on July 9 organized by The Nature Conservancy.

“That sounds like a lot of land, but it’s about one-tenth of 1% of land in the state,” he said. He compared it to the 500,000 acres projected for low-density exurban sprawl. The sprawl will use 500 times as much land.

“We’re talking about relatively small scale, but one that we need to get right,” he said.

Local governments in Colorado have reacted to the new renewable energy projects in various ways. For example, Mesa County this past spring adopted regulations that no stakeholders seemed to like perfectly but with compromises that were acceptable to landowners and solar developers in Palisade and other communities.

Others have adopted regulations that would seem to enact onerous conditions. Lightly populated Washington County, on Colorado’s great plains, has such regulations.

Other counties have adopted moratoriums. And San Miguel County in western Colorado has drawn statewide attention for its careful formulation of regulations governing solar projects. See page 9.

[SB24-212](#), a bill introduced in the final days of the legislative session, originally was drafted to assert strong state authority into local land-use matters. It ran into stiff and predictable opposition from local governments, who tend to be starchy protective of their turf. But at least one

industry group, Colorado Solar and Storage Association, which represents about 90% of solar companies in Colorado, offered only lukewarm support when the bill was finally introduced during the last two weeks of the session.

State Sen. Chris Hansen, a prime sponsor of SB24-212, described a “very thoughtful and engaging process that lasted for several months” as the bill was drafted and revised. The process included the “opportunity to hear hundreds of points of views.”

The bill intends to offer best practices, making state experts available on call while preserving local control with the goal of avoiding roadblocks.

This most certainly will not be the last conversation at the state capitol, said Hansen, but he hopes it will set Colorado up for success.

The law requires a study that will, according to Rep. Karen McCormick, a Democrat from Longmont, define “what we are doing and what we might be able to do better.”

The bill will provide a central repository for knowledge about how to address renewable energy projects. State Rep. Kyle Brown, a Democrat from Louisville, said even a municipality as large as Louisville doesn’t have the staffing with the expertise that will be provided as a result of the bill.

“I think it’s a great example of the way that local government and the state can collaborate on our shared goal of taking climate action,” he said.

Kelly Flenniken, the director of Colorado Counties, asked a question that caused Toor to acknowledge pushback from many counties. The counties said that they thought that what existed was already working well. So why fix what’s not broken?

Their question was legitimate, he replied, and it led to the distinction of “where is it working well and where is it not working well.”

Where exactly renewable generation gets located will, of course, depend upon

transmission. Xcel Energy is well along the way on two segments of its 550-mile Colorado Power Pathway that sweeps around eastern Colorado. Two segments are well underway, and ground-breaking for a third of the five segments was held July 11 adjacent to the St. Vrain natural gas plant near Platteville. The 75-mile segment will link with a new substation near the Pawnee coal-fired plant near Brush.

Some counties have done almost nothing. Baca County, the state’s Colorado’s most southeasterly county, has the state’s best wind energy, according to a study by the National Renewable Energy Laboratory, and it also has very strong solar. Existing transmission has been maxed out. It needs new power lines.

At least two ideas have surfaced, and there may be more. Xcel Energy had proposed a 50-mile extension from the Colorado Power Pathway called the May Valley-Longhorn extension. Another developer has the idea of creating a new transmission line that will export power from new wind and solar projects in Baca County in a southeasterly direction into Oklahoma and Arkansas.

County commissioners meeting in Springfield for the last year have been meeting with solar and wind developers who expect that transmission will eventually be built to export renewable generation even as the Ogallala and other aquifers continue to decline.

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Wheat stubble flung as Xcel begins work on third segment of 550-mile power line

by Allen Best

As a ceremonial cliché, I suppose it's harmless. Nor can I really think of any better way to mark the beginning of actual, physical construction of an electrical transmission line than by giving people — who likely haven't worn gloves for their work in decades, maybe ever — white hard-hats, orange Dayglo safety vests, and white garden-sized shovels, all for

the synchronous flinging of dirt as cell-phone cameras capture the moment.

This flinging occurred July 11 in a field of wheat stubble immediately south of St. Vrain, the natural gas plant that is part of Xcel Energy's empire of electrical generation in Colorado.

Xcel is holding onto its gas plants but shedding all but one of its coal-burning units in the next four and a half years. Taking the place of that lost generation will be at least 5,000 megawatts of new generation, mostly from wind farms and solar projects whose electrons will be collected by the 550-mile Colorado Power Pathway. The transmission pathway will cross 12 of Colorado's 64 counties. Cost has been pegged at \$1.7 billion.

Still possible is the May Valley-Longhorn extension in southeastern Colorado, site of Colorado's best wind and very strong solar,

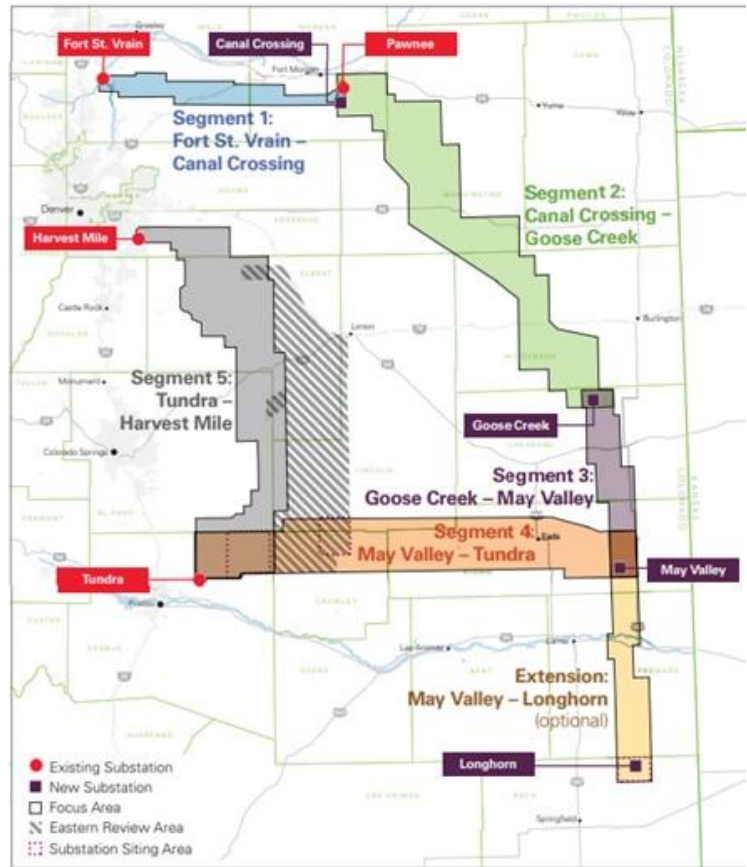
too. The cost of that extension has been estimated at \$200 million.

The dirt-tossing was to mark the beginning of a 75-mile segment from St. Vrain with a new substation southeast of Fort Morgan, near Pawnee, the coal plant. This segment, one of five, is expected to be completed by 2026 at a cost of \$256 million.

Two of the five segments are already well along the way toward completion in 2025. Together the segments connect the substation in Morgan County with the May Valley substation north of Lamar.

That will leave just two segments, from the May Valley substation to Pueblo, and then from Pueblo northward in a corridor east of Interstate 25 and into the Denver metro area. Those segments are expected to be complete by 2027.

That's about the time that Xcel largely exits coal from its Colorado operations. One Comanche unit at Pueblo has already been retired, a second will retire in 2025. The two units at Hayden will close by 2028. Xcel also owns production

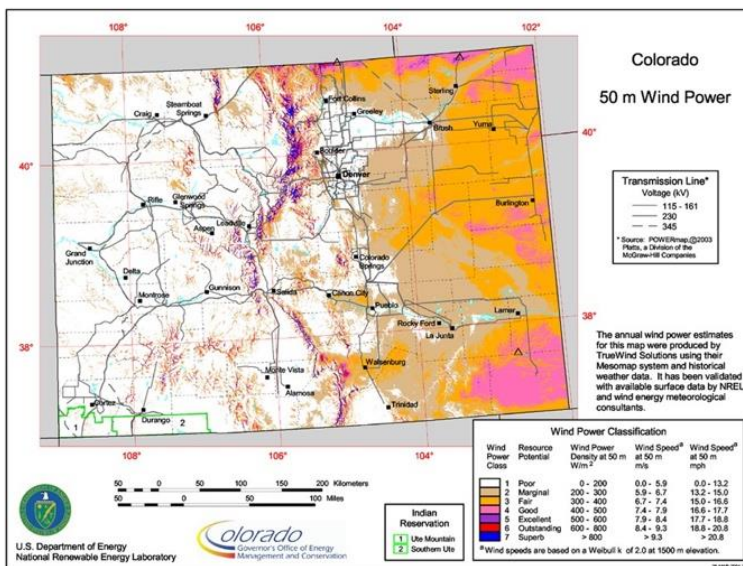


from Craig, whose three units will also get quiet in the next four-plus years. It will convert Pawnee, a plant at Brush, to natural gas.

The wind and solar – plus some natural gas and battery – collected by the Colorado Power Pathway will replace the coal generation.

“There cannot be an energy transition without transmission,” said Sandra Johnson, Xcel’s senior vice president for transmission in remarks prior to the ground-breaking. From the company’s headquarters in Minneapolis, she oversees transmission in the eight states in which Xcel operates.

Johnson traced the conception of the transmission line that will significantly alter





Two of the five segments of the Colorado Power Pathway 345-kv transmission line are well along the way toward completion. Above, foundation south of Cheyenne Wells ready for a tower to be added. And at right, the line near Sheridan Lake seemingly completed but not yet energized.

eastern Colorado to 2019. Xcel was planning a proposal to state regulators about how exactly to pivot from coal to primarily renewables and dramatically reduce its greenhouse gas emissions. It was called the field of dreams project.

“Planners back then had the foresight to recognize that where the energy resources are is where we need to build transmission,” Johnson said.

Xcel had erected a tent amid the field of wheat stubble large enough for a few dozen people, mostly company employees but also a few elected officials, current and former, as well as three reporters. The remarks were mostly congratulatory, displaying pride. They



were filled with numbers. For example, the transmission lines had required 600,000 cubic yards of concrete, or as much as was required to build Denver’s Mile High stadium. Two more stadiums of concrete are yet to be poured for the foundations for towers that are commonly 20 to 40 feet underground. Towers are generally 140 feet high but cannot exceed 190 feet.

Wrapping up the formal remarks, Robert Kenney, the president of Public Service of

Colorado, Xcel's division in Colorado, nodded at the zeal evident in remarks of his transmission team. He was, he said, surrounded by "people who get excited about steel and concrete and find transmission towers beautiful."

Kenney described the Colorado Power Pathway as a "critical transmission super-highway" that will put an additional 5,000 megawatts of clean energy onto the electrical grid in Colorado.

This 5,000 megawatts of new generation will be phased in over the next 5 to 10 years, Xcel says. The company estimates that 75% to 80% of the new generation will be for wind, with the remainder being a mixture of solar and storage.

Currently, 2,300 megawatts of that new generation are in the process of being contracted but are not yet under construction. This comes from the company's energy resource plan submitted to state regulators in 2021.

Xcel's team emphasized that this new highway of electrons will improve reliability.

"It's a big loop around the eastern part of the state that allows for power to flow in multiple directions so that if there's an outage somewhere in the system, power can flow a different way," said Heather Brickey, the project director for the Colorado Power Pathway.

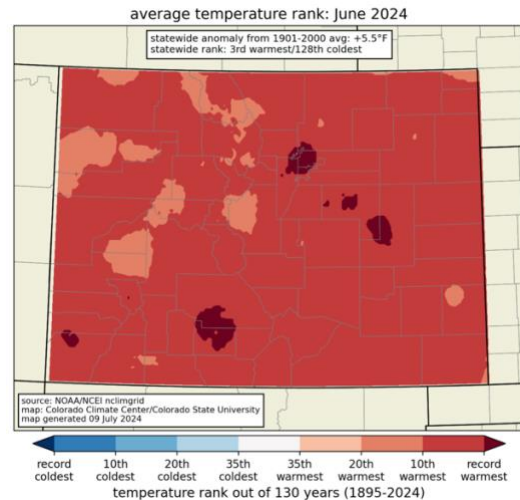
Ian Billick serves notice after almost 25 years at the helm of Rocky Mountain Biological Lab

Ian Billick, the director of the Rocky Mountain Biological Laboratory in Gunnison County, has served notice that he will be moving on – by June of next year.

He has been director of the lab at Gothic since 2000 but first arrived at the laboratory as an undergraduate research student in 1988 and then did his field work for his PH.D.

Billick told the Crested Butte News that he and his wife are looking forward to the

graduation from high school of their youngest son next June. That provides a milestone for other changes. "I like to do that as least every 25 to 40 years or so," he said. He is exploring business opportunities with local partners to support field research and land management building up integration of all the emerging techniques for observing the Earth from satellites to iPhones.



June was indeed the third warmest ever in Colorado

Russ Schumacher, the Colorado state climatologist, reports that June was indeed warm across Colorado. It came in third warmest when averaged across the state as compared to the historical record of the last 150 years.

Only Junes of 2022 and 2012 – and those were years of major wildfires across Colorado. The difference between this June and those was that this year's June was rainy in the mountains and across the Western Slope, "That is a very unusual combination in summer." [See more here.](#)

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Solar regs tweaked under the dark skies of San Miguel County

by Allen Best

Perhaps my first visit to Norwood was in 1986. I had been at Moab and was working my way back to Vail. I remember that USA Today, then a new newspaper with distinctly national aspirations, had a newspaper vending machine in Norwood. Remember those things – where you put in a quarter or whatever?

The Denver Post, despite its motto of “Voice of the Rocky Mountain Empire,” did not. You had to drive another 50 minutes through the twisty canyon of the San Miguel River to Telluride for that privilege.

I tell that story to suggest part of the reason why there was resistance to large-scale solar development in this western portion of San Miguel County where Norwood is located. It’s decidedly rural, proudly so, and has vistas treasured by the locals of Lone Cone and other local landmarks.

Tellingly, Norwood has a dark-sky ordinance and work was underway to seek designation for San Miguel County altogether, a first-ever in the United States designated-dark-sky county.

The prospect of large amounts of solar energy production worried the locals. A further compromise in the regulations governing solar development in San Miguel County was approved by the county planning commission on July 11. The amended proposal for regulations will now go before the county commissioners; no date has been set.

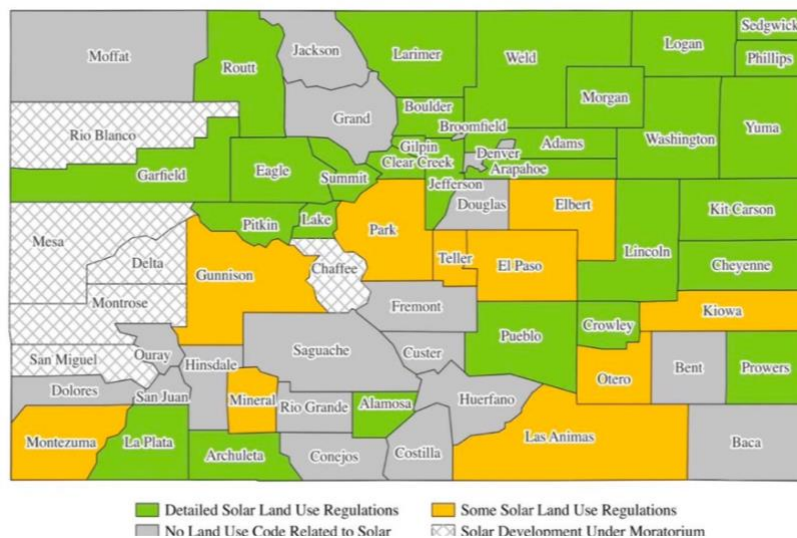
San Miguel is ready for only limited large-scale solar energy systems, defined in this draft of consisting of more than 30 acres. No more than three permits for these large-scale solar system on private lands will be permitted within a five-year period. Medium-sized solar was previously defined as 40 acres or less.

One other change of note: any project can consist of no more than 30% in land designated as “prime farmland.” That can be increased to 50% if the project employs agrivoltaics, which is defined as the “integrated use of land for both solar panels and agricultural production such as crop or livestock production or pollinator habitats, underneath or adjacent to solar panels.”

Prime farmland in the vicinity of Norwood, which sits at an elevation of 7,000 feet, or about the same as Avon, consists almost entirely of hay for livestock consumption.

The industrialization of remote landscapes, not just solar power, is a general question that, if it has not been addressed, needs to be,” said Dr. Bob Grossman, president of the Western Slope Dark Sky Coalition. See more at [Norwood Dark Sky Advocates](#).

Adrienne Dorsey, of the Colorado Solar and Storage Association Institute, describes



Solar regulations by county in Colorado as of 2023.

the review as an effort to get regulations right.

“The community has really been focused on solar projects that are right-sized and right-sited, and I think what came out of the planning commission meeting (last week) really reflects that.”

The institute is the new education arm of the industry group. It does not specifically advocate, unlike COSSA itself.

“On the Western Slope in particular, people are pretty concerned about large-scale solar coming in and consuming agricultural land and impacting wildlife,” Dorsey said. “The term ‘industrial’ keeps getting used, and they are conflating large-scale solar with industrial, which does not align well with rural and small-town values.”

As was reported by [the Denver Post](#) in June, San Miguel County in May 2023 adopted a six-month moratorium on new solar projects. County commissioners have twice extended the moratorium. The newspaper said 10 Colorado counties had moratoriums.

As this story was being proofread (the first time), Art Goodtimes returned my phone call. He’s known broadly across Colorado and beyond for his poetry and outsized personality. He has also overseen the Telluride Mushroom Festival for several

decades; it will return again this year during the third week of August.

Goodtimes was also a long-time San Miguel County commissioner and a savvy analyst of politics. And he lives on Wrights Mesa near Norwood, one of the prime areas for solar.

“It’s not just about the scenic quality” of San Miguel’s landscapes, he said. And western San Miguel County has changed much in recent years.

He pointed me to additional factors: a 115-kv line between Norwood and Telluride has unused capacity, which antagonized some worried about the west-end of the county having to absorb impacts caused by the east end. There was also a wildfire associated with a lithium-ion battery and hence a desire to truly understand battery storage and its impacts.

And while there is generally strong support for solar in San Miguel County, he said, then there was a sense that care must be taken to figure out the best, lowest-impact spots for solar first.

Some counties have adopted moratoriums but have moved more swiftly to adopt new regulations. Mesa County zipped through a process in less than six months for communities around Grand Junction.

In south-central Colorado, Fremont County, home to Canon City and Florence, in one adopted a six-month moratorium in considering all things new regarding utilities, including solar and other types of electrical generation, storage, geothermal but also water and sewage treatment.

The National Renewable Energy Laboratory in March issued a report that attempted a comprehensive review of county-level policies across Colorado that regulate ground-mounted or free-standing solar (not rooftop) application. At the time, 28 of Colorado’s 64 counties had utility-scale solar applications.

[See the full report here.](#)

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Delta-Montrose Electric plans major solar and battery with fed bucks

Delta-Montrose Electric came close to winning the lottery in the recent funding provided by the U.S. Department of Agriculture program.

The electrical cooperative received a loan of \$72 million. If Delta-Montrose completes the project, up to 40% will be forgiven. The cooperative also intends to use another provision of the Inflation Reduction Act to potentially defray nearly all the rest, leaving its members on the hook for just 10% of the cost.

The Montrose Daily Press explains that the money will be used to add 80 megawatt-hours of battery storage. Construction will not begin before 2027 with completion expected in 2030.

Mateusz Pena, the cooperative's chief engineer and energy resources officer, told the newspaper that the 80 megawatts of battery storage will provide electricity for 10% of the cooperative's overall load.



Mateusz Pena

Where this will go has not been decided. Montrose County has a moratorium on issuing of special-use permits for power generation facilities.

However, ground is to be broken in July for the 80-megawatt solar farm on Garnett Mesa, a short distance east of Delta. It is expected to be operational by the end of 2025. Delta County commissioners had originally rejected the solar farm but then approved it after it was modified to allow some continued agricultural use.

Delta-Montrose was supplied by Tri-State Generation and Transmission until reaching a separation agreement in 2020. Its contract

with Tri-State allowed it to generate a maximum of 5% of its own power. Its contract with Guzman Energy allows it to self-generate up to 20%.

Solar project in San Luis Valley a no-go because of conflicts with wildlife

A solar project that would have covered 780 acres just west of Alamosa was rejected by the Alamosa County commissioners.

Two of the three commissioners cited concerns expressed by Colorado Parks & Wildlife and the U.S. Fish and Wildlife Service. The land in question lies within the migratory range of the Monte Vista Wildlife Refuge and Rock Creek and the Playa Blanca State Wildlife Area, the [Alamosa Citizen reported](#).

Korsail, the developer, said its Cornflower Solar project would have delivered revenues of \$400,000 annually to the county.

The county commissioners did award a 1041 permit to Xcel Energy to replace an aging transmission line from Alamosa to Antonito. The 69-kv line was built in the 1950s and will be replaced by transition with the same capacity.

Simpson and opponent agree about climate change but also need for phased approach

State Sen. Cleave Simpson, who represents the San Luis Valley and much of Southwestern Colorado, is a Republican who has been an occasional sponsor of bi-partisan energy legislation in Colorado.

This year, he has a Democratic opponent Vivian Smotherman. But it sounds like they have much in common, including their position on climate change.

The [Alamosa Citizen reported](#) that in a recent forum they agreed that climate change impacts are dire. Simpson, a fourth-generation alfalfa farmer in the valley, said his

surface water rights no longer produce adequate supplies.

But both candidates agreed that the transition from fossil fuels needs to happen in a thoughtfully paced manner. “We cannot turn off all of the gas wells or oil wells tomorrow and just go with wind and solar — it’s not going to work,” said Smotherman. “It has to be done intelligently.”

Smotherman also farms in the San Luis Valley and, like Simpson, had an earlier career in fossil fuels, in her case it was in off-shore oil and gas. Simpson was a coal mining engineer.

Solar industry group passes out passel of awards to legislators and others

The Colorado Solar and Storage Association continues to assert itself in the public sphere. It’s latest twist is a call out of “champions.”

This year they include four legislators — President Steve Fenberg, Sen. Chris Hansen, House Majority Leader Monica Durango and Rep. Kyle Brown — who were the prime sponsors of [SB24-218](#), called Modernize Energy Distribution Systems. Climate and energy wonks believe this was easily the most important bill adopted by Colorado legislators in the 2024 session.

“By modernizing our energy distribution systems, expanding access to distributed generation, and creating a market for virtual power plants, we are laying the groundwork for a resilient, sustainable future,” said Hansen. Also credited were the Colorado Energy Office, Natural Resources Defense Council, IBEW Local 111, Western Line Contractors Chapter of NECA, and Xcel Energy.

Fenberg and Hansen also were cited for their sponsorship of two other bills, [SB24-212](#), Local Govs. Renewable Energy Project, and [SB24-207](#) Access to Distributed Generation.

COSSA also cited Mesa County Commissioner Cody Davis and Mesa County Planning Manager Sean Norris for their parts in quickly creating a solar code for Mesa County. Colorado Counties also got a nod for collaboration with the solar industry to develop a pioneering land use code.

Xcel Energy’s Interconnection Breakthrough Project Team, including Brandon Wellcome, also got a nod of approval for streamlining rooftop solar approvals.

Crested Butte struggles a bit with climate action plan

In early June, the Crested Butte Town Council reviewed a draft of the town’s climate action plan. The Crested Butte News reports a discussion about just how valuable the information is and of their wisest strategies for trimming emissions.

A 2022 inventory concluded that 90% of the town’s emissions could be traced to buildings, while 7% came from transportation. Mayor Ian Billick said the town has been pursuing two GHG reduction strategies: encouraging more people to live in Crested Butte, where living can be done more efficiently than in outlying areas; and displacing use of natural gas with electricity.

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