

BIG PIVOTS

ENERGY and WATER transitions in Colorado and beyond

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Two big factories for new energy along I-76. And the takeaways?

by Allen Best

Two companies in the blossoming new and renewable energy sector in late June announced plans for factories along Interstate 76 on metropolitan Denver's northeastern fringe.

Together, the two companies say they will have upwards of 1,200 workers and will invest \$440 million in their factories that will produce photovoltaic solar panels and advanced energy-dense batteries. They offer well-paying or better jobs.

Very pointedly, these factories will not be in the coal towns of Colorado. I'll get back to that.

In explaining their businesses, both cited the advantages of location. Each factory will be within a mile of Interstate 76, with straightforward connections to both I-70 and I-80 as well as I-25 and E-470. Both also cited the proximity of Denver International Airport.

VSK Energy, a new manufacturer of solar photovoltaic modules, also cited Colorado's "central location" in the United States as a factor.

Amprius Technologies, which hopes to begin production in 2025 of energy-dense lithium-ion batteries, cited the proximity to Montana, the source for silicon that is key to

the company's "secret sauce." The silicon derivative is to replace graphite on the anodes on its batteries, increasing their capacity by as much as 10 times. As such, these energy-rich batteries will be able to charge to full capacity in six minutes and can double the range of a Tesla to 650 miles. The company says this will provide greater value to both drones and to aircrafts. If true, this sounds like a game-changer.

Andrew Huie, the vice president of infrastructure for Amprius, also pointed to easy access to the quantities of electricity that will be needed. The company is taking over 775,000 square feet of an empty 1.3 million square-foot building that had previously been used as a distribution center for Kmart and Sears.

Building a new facility or one requiring new electricity capacity could otherwise take years. He knows from experience, as in a previous

Colorado has rapidly been adding clean-energy sector jobs. But will any end up in Craig?

career stop he helped expand the Panasonic battery manufacturing capacity, including a 2.7 million square-foot factory in Kansas that is to cost \$4 billion.

Huie said Colorado's drier climate was advantageous when manufacturing batteries compared to the more humid climates of Texas and Georgia, other finalists in the selection process.

Both companies also cited the availability of a skilled workforce suitable to their needs. Amprius will employ 300 people, with everything from \$30/hour jobs to those paying \$200,000 a year. The California-based Amprius will also need six Ph.D.s in its research department in Brighton. Amprius also cited the proximity of Colorado School of Mines, the University of Colorado-Boulder and Colorado State University as a benefit.

The solar factory, to be located at the recently completed 76 Express Commerce



Lithium-ion batteries will be assembled at a warehouse previously used as a distribution center for Sears and Kmart, above, while the solar modular assembly line will be located at the 76 Commerce Center. Photos/Allen Best

Center, will get more than \$9 million in performance-based tax credits from Colorado during the eight-year ramp-up if it delivers the predicted jobs with minimum average annual wages of \$65,312.

Both companies similarly cited what Vikram Solar's Ashwini Agarwai called a "strong cultural fit." Supply chains matter, but it helps that Colorado has shown initiative in wanting to be a national leader in the energy transition.

"Colorado and Gov. Polis are embracing clean energy, and batteries align with Colorado's clean energy goals," said Huei. "There may be synergies," he added.

Of note, too, is that both companies have leadership from Asia. VSK, the solar company is a majority U.S.-owned and operated joint venture between one of the largest solar energy solution providers, Vikram Solar, and other partners.

Kang Sun, the chief executive at Amprius, holds a Ph.D. in materials science and physical

chemistry from Brown University but got his first degree, in macro molecular science and engineering, at China's prestigious Nanjing University.

Brighton, site of the two factories, has had a stake in the energy transition since Vestas, the Danish wind company, arrived in 2010 to manufacture nacelles.

Now, other companies have proliferated. The Denver Business Journal points to three other battery companies in the northern Front Range: Thornton-based Forge Nano uses nanotechnology to precisely engineer materials that can make lithium-ion batteries and hydrogen fuel cells significantly more effective. Louisville-based Solid Power also plans a battery materials production site in Thornton. A Fort Collins company, Prieto Battery, also plans a production facility.

Federal policy also matters. The 2022 Bipartisan Infrastructure Act and, more important, the 2023 Inflation Reduction Act, give clear direction to the market through various incentives. Sriram Das, chairman of VSK Energy, called out the latter as a "landmark

moment.” His company, he said, was “taking a decisive step toward achieving solar technology self-sufficiency, fortifying America’s energy security and propelling large-scale solar development.”

Amprius has no direct impetus from the law, however.

Here’s one final major takeaway, and it’s a bit troubling for those of us who would hope to see all of Colorado emerge from this energy transition strongly. These factories are not going in Craig and Pueblo, where the coal plants are being closed in roughly six and a half to seven years, perhaps less. They’re going on the edge of the metroplex.

Pueblo has fared relatively well in this energy transition, although major questions also remain.

In 2009, Pueblo gained a factory to produce towers for wind turbines. The current owner, CS Wind America, in April broke ground on an expansion that will produce at least 850 new employees by the time the expansion is completed. The building then will encompass 1.58 million square feet.

In announcing the expansion, CS Wind cited the Inflation Reduction Act’s encouragement of American clean-energy supply chains and expansion of clean energy jobs.

It’s adding solar and storage capacity that would have been almost inconceivable a decade ago.

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Jeff Shaw, president of the Pueblo Economic Development Corporation, said he expects a lot of other renewable-sector projects in the Pueblo area during the next 12 to 18 months to be announced and probably throughout the state. “A lot of it has to do with the Inflation Reduction Act,” he said, and in particular the buy-American provision.

But Pueblo is still weighing its opportunities for life beyond burning coal. Xcel Energy, the primary owner of the two remaining units at Comanche, has pledged to continue paying property taxes to 2040. All the new solar and storage don’t come close to replacing Comanche.

As for Craig, it’s future remains littered with question marks.

It’s 90 miles from the closest interstates, north and south. It has a skilled workforce, but not a metropolitan area from which to solicit workers. It has a great location, if you love the outdoors. No traffic jams on I-70. But it tends toward bitterly cold winters.

It does have infrastructure, both the Craig Generating Station and, about 15 miles away, Hayden Generating Station.

Can this massive infrastructure built for the combustion of coal somehow be reconfigured to other good purposes in this new energy economy?

There was hope for hydrogen, but Xcel Energy’s Pawnee plant, in northeastern Colorado, got first on Colorado’s blessings.

Might nuclear replace coal? There’s hope – bolstered by billions of new federal aid, even if boosters have a habit of downplaying costs. The Economist got it exactly right in its headline for a June article: [“American aims for nuclear-power renaissance: The Biden administration is pouring billions into the industry. The payoff isn’t certain.”](#)

In every transition, there are winners and losers. Please note the demise of Colorado’s oldest newspaper, the Rocky Mountain News, and – well, every newspaper this writer ever worked at full time.

Maybe Craig will figure out its next career soon. Or maybe not.



Colorado bulks up on battery storage with two projects in Pueblo County

Colorado now has its largest battery ever and its second-largest solar installation.

The project east of Pueblo, near Avondale, has 100 megawatt-hours of battery storage, surpassing the 5 megawatt-hours at the Spring Valley Campus above Glenwood Springs that formally began use in November 2022.

See: [A biggest ever in Colorado for battery storage.](#)

Much more can be expected as Xcel completes its plans that were triggered by its electric resource planning process in 2016. That plan approved by the Colorado Public Utilities Commission ultimately calls for 275 megawatt-hours in Pueblo and Adam counties.

More battery storage yet will almost certainly be coming on line during the next several years, the result of the electric resource plan most recently approved by the PUC for Xcel. That plan approved by PUC commissioners in 2022 calls for 400

megawatts of battery storage to go along with 1,600 megawatts of solar and 2,300 megawatts of wind energy.

The Thunder Wolf Energy Center will have 248 megawatts of solar energy, making it the second biggest solar installation in Colorado. Still largest is the Bighorn Solar project, which comes in at 300 megawatts. It is located on land adjacent to Comanche Generating Station in Pueblo that is owned by Rocky Mountain Steel.

This project, however, is located on Colorado State Land Board property, which will get revenue from lease payments. NextEra Energy Resources is the developer and sells the power to Xcel via a power-purchase agreement.

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Solar developers have arrived in southeast Colorado. Will the transmission lines?

by Allen Best

Driving between the courthouses for Baca and Moffat counties, in opposite ends of Colorado, takes nearly 8 hours, assuming you don't get stuck in traffic in Denver or a snowstorm on a mountain pass. The closest road distance between Springfield and Craig is 451 miles.

In common, other than being in the same state, these two counties have utility-scale solar projects either approved or under consideration.

They are hardly alone. Large solar projects are being considered across many locations in Colorado, but especially in eastern Colorado adjacent to a major transmission line whose construction was started in June.

Moffatt County came first, at least in its 2020 approval of a 145-megawatt project called Axial Basin Solar. The project is to be located on land near the Colowyo Mine. The coal mine is to close by 2030.

That solar project has the advantage of being near transmission lines that will have capacity as coal-fired combustion winds down at the nearby Craig Generating Station from 2025 to 2030.

The story in Colorado's southeast corner is more complicated and still tentative.

On June 22, the county commissioners heard from representatives of [Stellar Renewable Power](#) a Dallas-based company. It was [launched in 2021 by KKR](#) with a

mission of sourcing "opportunities through greenfield development and acquisition of early-stage assets." Company representatives sought resolution indicating support for a 300-megawatt solar farm coupled with 50 megawatts of storage.

A representative said that much land along transmission corridor has been leased by wind or solar developers.

First, though, the project needs transmission. The county is blessed – or perhaps cursed – with strong winds, some of the most reliable in Colorado. It also has abundant sunshine.

After nearly two decades of waiting, there is now a strong possibility that transmission lines will get built to the county. Xcel Energy Colorado, doing business as Public Service Co. in early June started building a \$1.7 billion, 450-mile loop around eastern Colorado to pick up wind but also solar energy. The alignment will come closest to Baca County at a substation near the May Valley Ranch north of Lamar.

Xcel has proposed a 60-mile extension, called Longarm, that would dip south into Baca County. The proposed 2,240-acre solar farm would be near a new substation, whose site has yet to be precisely identified, a few miles from the hamlet of Two Buttes.



Highway 287, called the Port to Plains Highway, bisects downtown Springfield.

Before the Longarm extension goes forward, Xcel must get approval from the Colorado Public Utilities Commission, the agency charged with looking after the interests of ratepayers of the monopoly utility. It has given provisional approval, but Xcel must come up with the final evidence that this would be a good way to spend ratepayer money.

Will the project make the cut of proposed projects being reviewed by Xcel? The utility has received 1,073 bids from various wind, solar, and other developers.

Xcel's 180-day report, containing the preferred portfolio, is to be submitted to the PUC on Aug. 16. It is to identify which projects have been identified for development.

The commissioners declined to approve a resolution in support, because of the still speculative nature of the project. Too, explained Glen "Spike" Ausmus, the chair of the commissioners, the county has yet to adopt 1041 regulations. They want to do so.

The 1041 regulations were named after the legislative bill in 1974 that authorized counties to adopt identify, designate, and regulate areas and activities of state interest through a local permitting process.



Corn grows aplenty in the Walsh area, but areas beyond the Ogallala and other aquifers, such as along this road south to the Santa Fe Trail near the border with Oklahoma, below, remain as grazing land.

Headwater counties on the Western Slope were quick to adopt the 1041 regulations as a way of gaining leverage over transmountain diversions planned by Front Range cities. With construction on some renewable projects to begin in eastern Colorado next year, some counties are now accelerating their planning efforts.

Sara Blackhurst, the chief executive of Action 22, a public policy advocacy group of 22 counties in southeastern Colorado and the San Luis Valley, says Baca County is far from alone among rural counties trying their best to get ready for arrival of renewable energy with limited resources. Many don't have the budgets to pay consultants.

"I am very fond of Baca County commissioners. They want to do something, but they are not going to do something willy-nilly. They want to make sure they have all their ducks lined up in a row."

Regulations aside, Baca County has indicated in various ways that it would welcome development of renewable resources.

Ausmus, the commissioner, did indicate that Baca County wants to see transmission,



wants to see renewable energy development. “If it doesn’t happen, we are going to be really upset,” he said at the end of the hearing.

The county needs alternatives going forward, because the present course clearly is headed toward diminishing returns from its agricultural sector.

That corner of Colorado, one of the worst-hit areas in the Dust Bowl of the 1930s, has no access to snowmelt from the Rocky Mountains.

Natural precipitation averages 18 inches a year, better than many parts of Colorado but not enough to grow corn and other animal-feed crops with strong results. To do that, farmers have been tapping the Ogallala and other aquifers. However, at least in some areas, the Ogallala has been tapped out, and pumps drawing on even deeper formations have started sucking air.

SEE: [“Can Colorado grow as much food with less water?”](#)

Even without that drier and inevitably hotter future, the county ranks among the 10 to 15 poorest as measured by per capita income among Colorado’s 64 counties.

The Census Bureau estimated 25% of the county’s residents were living in poverty in 2021. That compares with the statewide average of less than 10%. Almost all metro-area counties are less. Jefferson, the state’s most populous, is below 7%. It’s at 3% in Douglas, among the states most affluent.

Median household income for Baca County came in at \$41,000 compared to a statewide average median of \$80,000. Jefferson County was at almost \$94,000.

Housing prices are less, though: \$89,000 in Baca County, compared to just a trifle under \$400,000 for the statewide and \$540,000 in tech-dominated Douglas County with its rolling hills of many large and opulent homes.



Almost barren in places, Baca County has semi-lush – for the Great Plains – and even rugged and handsome areas.

Here and there are bright spots, as seen through the eyes of Cheryl Sanchez, director of Baca County Economy Development. Springfield has a new Family Dollar Store plus a Cobblestone Inn & Suites. A hemp-processing facility west of Springfield that has been operating for a half-dozen years employs 100 people.

And the Baca County has history and scenery, the latter particularly in the western end. It has canyons and wild-looking landscapes as well as a portion of one extension of the Santa Fe Trail.

“People that will bring their children to do living history rather than reading it in a book – that’s a better experience,” says Sanchez.”

She also hopes that Springfield can persuade more travelers to stop and linger instead of barreling through will help Baca County.

But for now, the tax base of Baca County remains sparse. A declining population corresponds with a declining tax base, which in turn means fewer county services.

“Their budget is pretty streamlined,” says Sanchez.

A case in point: Baca County has no county manager or administration. That’s lean.

A plateau, a dip – and now time for a sharp rise in Tri-State rates

by Allen Best

Rapidly rising rates were one of the complaints of some of the members of Tri-State Generation and Transmission.

So, after a hike in 2017, rates stayed flat until 2021, when they were actually reduced by 4%.

Directors representing member cooperatives in Colorado and three other adjoining states decided at their June meeting that it's time to raise them again, this time by 6.36%. Pending approval of the Federal Energy Regulatory Commission, they will go into effect in January.

The vote was 33 to 5 in favor of approving the recommendation of a rate design committee. The committee of member representatives had met 14 times before making its recommendation.

Duane Highley, the chief executive, pointed to record inflation (in recent decades), higher fuel and energy prices, and supply chain pressures.

Cost of copper has increased 50% and that of aluminum 60%, while the cost of transformers has grown 3%, points out Lee Boughey, the vice president for communications.

The new rate, if approved by FERC, will result in an annualized increase of 1.4% from 2017 through 2024.

What might this mean for those Tri-State members looking to leave entirely? United Power appears determined to be gone by May 1, 2024, and awaits only a final determination from FERC about how much it will have to pay Tri-State—almost certainly north of \$200 million, but the formula to determine the price amount must be approved.

That same formula will be applied to Granby-based Mountain Parks Electric, which decided in January to also leave. See: [“Mountains Parks: We're out of here.”](#)

Five members are seeking partial requirement contracts that allow them to produce up to 50% of their own power in addition to the 5% of existing so-called all-requirements contracts.

Before any of these can go forward, however, FERC must approve the formula for determining what they must pay Tri-State and its remaining members to leave them whole. In a January 2023 statement, Tri-State blamed United Power for slowing that proceeding by opposing a settlement agreement, leading FERC to reject the settlement.

The statement quoted Jessica Matlock, chief executive of Durango-based La Plata Electric Association, who said the rejection of the settlement “stalled our efforts to deliver local clean energy projects that could provide significant economic development benefits to our communities and emissions reductions to our state and region. The settlement represented a huge step in the evolution of the generation and transmission association business model, and in bringing the direct benefits of the clean energy transition to rural communities.”

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To fill its 50% self-generation allocation, La Plata selected the company formerly called Crossover Energy Partners. It was acquired by Strata Clean Energy.

See October 2021 story: [“Not a done deal, but La Plata Electric plans a big move.”](#)

Jessica Matlock, the chief executive of La Plata, told Big Pivots in early June that the deal with Strata is off.

“Our exclusivity agreement ended, so we are going back out to the market to see what is there,” she said.

She also said that working a new deal with Tri-State remains an option. “We are still committed to working with Tri-State on another solution. We are constantly trying to find ways to get more flexibility in our contract.”

Also in 2021, Tri-State allotted Poudre Valley Rural Electric Association and San Miguel Power Association the authority to self-supply portions of their existing contracts.

In 2022, High Plains Power in Riverton, Wyo., and Jemez Mountain Electric Cooperative in Espanola, N.M., were allocated self-generation opportunities.

Building electrification money available for pilot programs

To qualify for state funding, the pilot projects in a new program overseen by the Colorado Energy Office must serve at least five houses or housing units or, alternatively, at least three businesses or building units.

The backstory: Colorado legislators in 2022 allocated \$10.85 million to a program, with the intent of funding 5 to 10 electrification projects in communities through June 2026. It’s the first such program in Colorado and one of the first in the nation.

The seed money is intended to provide an opportunity to learn more about the advantages and challenges of implementing

community-scale electrification projects in Colorado. It may also allow the state agency to learn how to best support such efforts in the future.

How can adoption of heat pumps and other newer, highly efficient technologies be scaled up?

As Colorado goes about decarbonizing its economy, buildings represent one of the most difficult challenges. They collectively rank among the top five contributors of greenhouse gas emissions. But unlike closing a few coal plants or replacing a few million cars and trucks, buildings are more difficult to change out.

The grants will cover up to 50% to 85% of total project costs, depending upon the project’s disproportionately impacted, low-income or just transition classification.

The money can be used to purchase and install high-efficiency electric equipment for space heating, water heating and cooking, upgrade electric infrastructure to support high-efficiency electric equipment; or purchase and install other innovative building heating technologies.

The Colorado Energy Office will accept applications for the grant program on a rolling basis until funding runs out or until June 30, 2025. Public, private and non-profit organizations are all eligible to apply. For more information.

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United Power picks Guzman for a third of wholesale power

Brighton-based United Power has picked [Guzman Energy](#) to become a wholesale supplier beginning in May 2024.

Under the agreement, Guzman will meet approximately one-third of the cooperative's power needs. With approaching 110,000 members, United is Colorado's second largest electrical cooperative.

As a result of its 900-square-mile service territory in the high-growth areas wrapping around the north and west side of Denver International Airport, United has had annual growth in electrical demand of 6%.

Where will the remainder of United's power come from? It has not disclosed the answer. Trista Fugate, the chief marketing officer for United Power, promised that more announcements will be forthcoming.

A press release from United and Guzman stressed that the agreement features "fixed wholesale power pricing that provides the cooperative predictable and stable power supply costs."

Mark Gabriel, chief executive of United Power cited Guzman's "excellent track record of providing economical resources for cooperatives." The company's "commitment to integrating renewables will help us control costs while still keeping our eye on environmental impacts," he added.

The 15-year contract represents the biggest coup yet for Guzman, the Denver-based company that since 2016 has made a business of picking off electrical cooperatives and municipal

providers currently supplied by Xcel Energy and Tri-State Generation and Transmission.

Guzman's first major customer, in 2016, was Kit Carson Electric in New Mexico, which had been supplied by Tri-State. It then picked up Delta-Montrose in 2020. It is also scheduled to provide electricity to Fountain plus six other municipal utilities in southeastern Colorado. Those contracts have not yet started. Its most recent success was in picking up the business of two other electrical cooperatives that serve the Grand and Yampa valleys on the Western Slope.

But before United hooks up with Guzman, it must become disentangled from Tri-State. Gabriel has consistently declared that United will be legally gone from Tri-State next May. Before that can happen, though, the Federal Energy Regulatory Commission must rule on what formula that will constitute a fair and equitable exit fee when cooperatives leave Tri-State.

Also to be resolved in a lawsuit by United Power against Tri-State in Adams County District Court. The court had scheduled more than a week for the trial beginning in late June, but agreed with a Tri-State request to postpone the proceeding. A new date has not been announced. United's Fugate said United plans to be gone from Tri-State next May regardless of the trial's outcome or schedule.



Smiles and a contract signed: Jeff Heit, Robin Lunt and Chris Miller from Guzman Energy on the left, and Mark Gabriel and Beth Martin, chair of the board for United Power, on the right.