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A short list of new or wider 'bridges' for electrons in and beyond Colorado

by Allen Best

When they created the Colorado Electric Transmission Authority in 2021, state legislators gave it a mission that can be summarized in two words: build bridges.

Or, if possible, upgrade the existing bridges of electrical transmission as necessary to help Colorado achieve its 2050 goal of a net-zero emissions economy while satisfying escalating demand.

Directors of CETA have now embraced a short list of potential projects that align with this mission and may get further study, if CETA can find partners to finance the study.

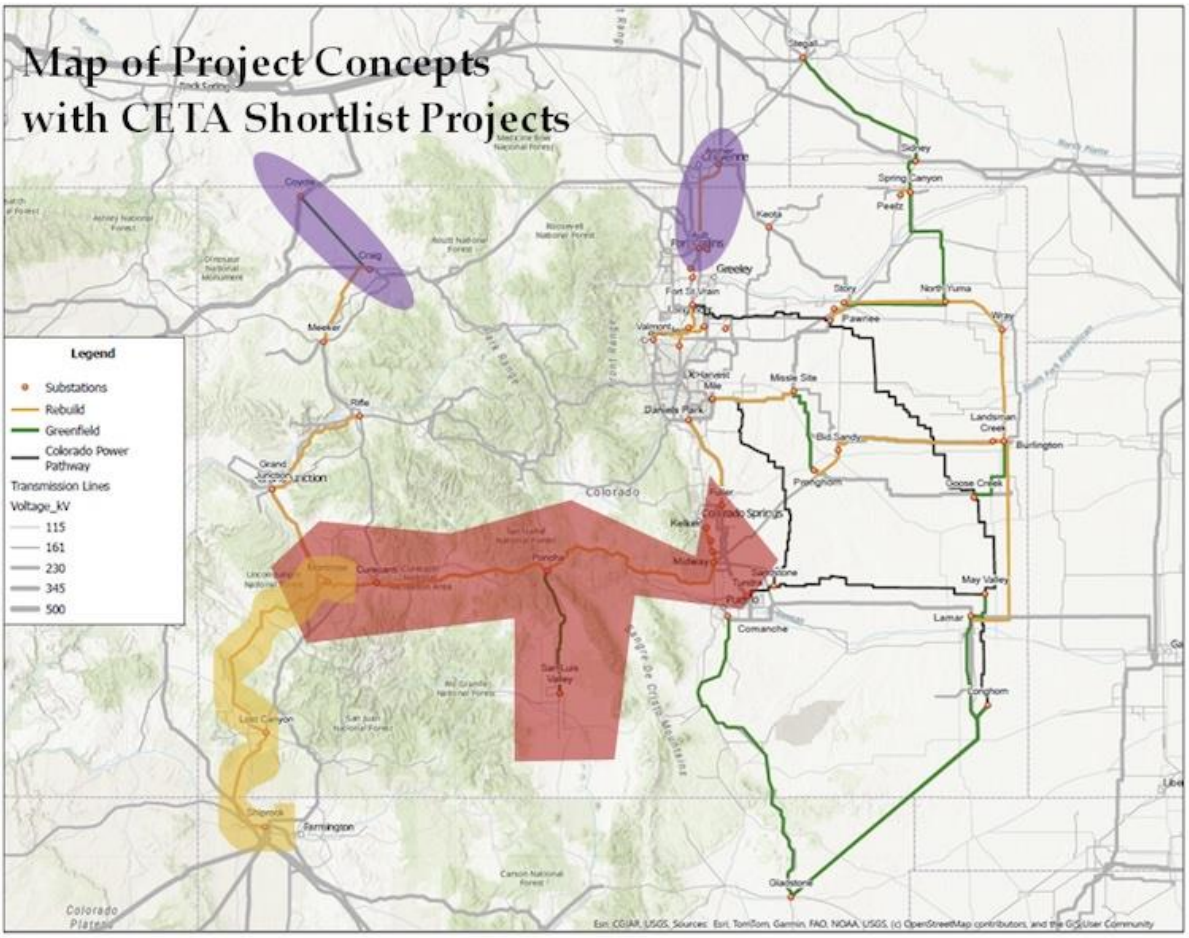
Several projects consist of upgrading existing transmission lines. But two would yield transmission lines in new places, likely triggering concerns about impacts to endangered species. And three of the projects would involve deliberate attempts to strengthen Colorado's transmission capacity beyond its existing borders.

Colorado is rectangular, 380 miles by 280 miles. In terms of electricity, though, it is best understood as an island. There are bridges from Colorado to other states, but they are limited. For Colorado to go far deeper into decarbonization of electricity, bridges from this island must be created to balance demands with supplies within and beyond its borders. More common will be renovating, rebuilding and reconditioning existing transmission lines.

CETA reported to state legislators that 80% of Colorado's needs could be met by upgrading 2,000 miles of existing lines or adding 550 miles of new transmission lines, called greenfield development.

New or upgraded transmission lines beyond the state's borders would gain Colorado access to renewable resources across a broader area, encompassing multiple time zones and different weather systems. Improved transmission east and west would achieve that — or going north or south before heading west or conceivably east. CETA has explicit authority to help create transmission outside Colorado to serve the state's needs.

Utilities build electrical transmission, of course. Xcel Energy, the state's largest electrical utility, is constructing a $1.7 billion transmission project called Colorado Power



Pathway. All 550 miles will be east of I-25. Tri-State Generation and Transmission has recently completed or is now building several shorter transmission segments, also all in eastern Colorado.

Utilities commonly serve their own interests or at least those of their members and customers. In creating CETA, legislators saw need for a quasi-independent group, not a state agency, to ferret out potential partnerships with existing utilities. It also provided CETA with a powerful but narrow set of tools to get necessary projects done that Colorado's utilities, for whatever reason, have not and may not on their own.

CETA has little money to work with, just an annual $500,000 legislative allocation for administration of the organization. It has about $150,000 annually in discretionary income. Even for studies, that does not go far. Above all it must be strategic.

Transmission lines are notoriously expensive to build. That same report to state legislators in January said $4.5 billion in investments in transmission will be needed during the next 20 years to achieve the state's clean energy goals, meet growing electricity demand, and integrate the changing resource mix of utilities.

Legislators did give CETA authority to issue revenue bonds and it can also exercise the power of eminent domain. These might be of value to CETA's partners once specific lines had been identified and electrical utilities also want to pursue them. Again, finding the partners is the first step.

At a meeting held July 10, directors embraced the short list of projects recommended by Maury Galbraith, the executive director. The handful of lines were culled from a list of three-dozen examined by consultants and then reviewed by 16 utilities,

environmental groups and other organizations.

Most of the lines recommended for further study lie in the western half of the state. Two would connect to lines going westward into other states. However, one other project would focus on improving transmission capacity from eastern Colorado into Wyoming, one of the most congested paths in the West.

The projects are:

Pueblo to Montrose and then south into New Mexico

Three of them can easily be lumped together as they are connected, and all of them would use existing rights of way and transmission paths but would be upgraded. Looking at this from east to west (and then south), the new transmission would go:

• from the Pueblo-Colorado Springs area west to Poncha Springs,

• then to Curecanti, the electrical generating dam on the Gunnison River, and Montrose.

• From Montrose, the improved line skirts the western side of the San Juans Mountains to a destination in northwestern New Mexico at Shiprock.

Altogether these lines would upgrade and enlarge carrying capacity using existing transmission corridors across 353 miles. This work is estimated to cost nearly $1.5 billion.

San Luis Valley across Poncha Pass

A far shorter but likely more difficult work would be a new line from the Alamosa area north across Poncha Pass, a distance of 64 miles. Cost is an estimated $307 million. Both Xcel and Tri-State have existing lines across the pass, but those lines have small capacity.

The valley has some of Colorado's best solar potential. It also has important habitat for Gunnison sage grouse. Many commenting organizations noted that this wildlife issue could pose a challenge. And the Office of the Utility Consumer Advocate questioned whether the gained solar would outweigh the cost.

Craig to Coyote substation

This 345-kilovolt line would be relatively short, 38 miles, connecting the substations at the existing Craig coal-fired power plant to intersect a new substation called Coyote along a major new transmission line across the northwest corner of Colorado called Gateway South.

The 416-mile Gateway South transmission line built by PaciCorp, a utility, delivers wind-generated electricity from the area around Medicine Bow, Wyo., to central Utah, where it can then be shipped to other markets in Arizona, Nevada and California. The 500-kV line was completed in November 2024.

Like the San Luis Valley, though, this area north and west of Craig has sage grouse habitat that might, at the least, complicate routing decisions.

Ault north into Wyoming

This 230-kV line would link the Ault substation north of Greeley to Archer, a substation near Cheyenne. This substation has proximity to links to the east although by itself it would not provide a link to the Eastern Interconnect Grid.

It could also provide links to the west, as would the improved connection to the Four Corners area. The Gateway line from Wyoming would also set up Colorado to integrate with other utilities in the Western Interconnection Grid.

The United States has three grids. The Eastern, the Western and then Texas. You can't just run a line between the Eastern and Western grids. They operate somewhat differently. You might say they need translators. More formally they are called high-voltage direct-current interconnection sites, or DC ties.

The United States has six of these narrow doorways between the Eastern and Western Grids, and Canada has one more. Of these six,

Project	Region	Description	Miles	Cost
Poncha – Midway 345kV Line to double circuit	SLV	Upgrade needed to realize full benefit of SLV Alternatives (if they go through Poncha), with increased access to Front Range load areas.	80	$505
New Montrose-Curecanti-Poncha 345kV Line #1	W	New W-E backbone to Front Range (requires Poncha - Midway). Supports power transfers from the Western Slope and the SLV to the Front Range load centers.	103	$361
SLV Alternatives	SLV	San Luis Valley capacity needed for local reliability and deliverability of new resources (~900 MW in CETA study). CETA study identified San Luis Valley – Poncha 230 kV double-circuit, but multiple alternatives exist. Expansion enhanced by upgraded capacity to Midway.	64	$307
Project	**Region**	**Description**	**Miles**	**Cost**
Craig - Coyote 345 kV Line	NW CO-UT	New line from Craig to the planned Coyote substation on the PacifiCorp's new 500-kV Gateway South line. Supports import/export between CO and Utah/Wyoming, with enhanced access to future EDAM market. Would at least double existing 650 MW tie with Utah (via TOT 1A). Project footprint would be entirely within Colorado. Mitigated $40M in annual congestion costs in CETA study.	38	$180
Ault - Archer 230 kV Reconductor Ault - Terry Ranch 230 kV Reconductor	N (CO-WY)	Uprate of existing lines to improve import/export between CO and WY across TOT3. Helped to mitigate TOT3 congestion observed in CETA study. Supports Husky-Ault upgrade.	76	$37
Project	**Region**	**Description**	**Miles**	**Cost**
Montrose – Maverick – Lost Cany – Shiprock 345kV Line	SW	New western slope 345 kV backbone concept that would improve area reliability and increase ability to integrate new West slope resources	170	$598

Colorado has one, located northeast of Lamar at the May Valley substation. It's operated by Xcel Energy. Two others of these — translator portals — lie just north of Colorado in Nebraska.

If Colorado lies within the Western grid, it is best understood as an island. Utilities felt little need to build bridges to other areas because we generated most of our own electricity from coal mined in Colorado. And Colorado is very well blessed with wind (or

cursed, depending upon your point of view) along with solar. This wind almost exclusively exists on Colorado's eastern plains. And, of course, it has good hydro. For that matter, Colorado had far more demand than any of the surrounding states.

Going forward, though, utilities must figure out how to better share power with others. This is commonly done through an organized wholesale market. The most common configuration is an RTO, or regional transmission organization. State legislators in 2021 ordered that all the utilities join an organized wholesale market by 2030.

Colorado utilities have two primary candidates. To the west lies CAISO, which stands for California Independent System Operator. Environmental groups, in particular, have long seen this as a better fit for Colorado.

Just one major — and at this point insurmountable — problem exists. California legislators for a decade have refused to let CAISO become truly independent. Even for more left-leaning politicians in Colorado, that's a deal-killer. A new effort is underway in the California General Assembly to loosen the ties, but similar efforts have been underway for years.

The other RTO has a base in Arkansas and is called the Southwest Power Pool. Among decision makers at Colorado utilities, it has gained the upper hand. It has a market mechanism for sharing based on projected supplies and demands. This day-ahead market is called Markets+. Many of Colorado's larger utilities are scheduled to join it next April. Xcel wants to but is awaiting approval by the Public Utilities Commission.

None of this was mentioned at the June 10 board meeting of CETA, but the context matters in understanding the reaction to the recommendations summarized by CETA's Galbraith about where to devote additional study.

Galbraith explained why some of these lines would be challenging given the existence of endangered species. Karl Rabago, a director who had worked in the electric sector since 1992, lauded the effort to dive into endangered species challenges early. "I voted once for a transmission line that went through sage grouse and prairie chicken territory, and it's not a good memory," he said. “Let's make sure we give it the attention it needs.”

The line from Craig would provoke wildlife issues, too, but Steve Black, a consultant who shepherded the selection process, said that project had scored high as a possible candidate because it received broad support from organizations who see a high benefit to cost ratio. There might be ways to work around the sage grouse challenge, such as by hewing to already disrupted habitat via existing roads and highways.

Chris Caskey, a board member from Paonia, said he believes the potential climate change benefits — the ability to secure more clean energy — outweighed the negatives. "We just need to proceed with open eyes," he said. "We need to not let the perfect be the enemy of the good."

Caskey also said CETA is ultimately looking for one project that can be achieved with a partner, because CETA doesn't have the resources itself to do much on its own. He went on to describe a "sweet spot" that he

defined as a project that satisfies clear needs and is doable but has not been done.

Others similarly agreed that it was best to move forward, despite possible troubles. "We will learn how to improve through the experience of actually working on these projects. which then will give us rich viewpoints " for future planning, said Leia Guccione, the board chair and, in her professional life, a team leader at RMI.

Site- and routing-specific information will "not come for quite some time," said Black.

This short list amounts to a signaling to potential partners. Potential partners might include Tri-State Generation and Transmission, Southwest Power Pool, and Xcel Energy.

"We hope they are interested in the same lines as we are and they will be willing to fund some of the diligence of route selection," explained Galbraith in a follow-up interview. "I don't have a timeline."

Ron Lehr, who has experience with Colorado electricity matters starting in the 1970s, made the case for advanced study of the line from north of Greeley into Wyoming. It had scored very low on the metrics created by consultants, but he argued that there were other considerations that had been overlooked. He made several arguments for this addition.

"We don't have utilities in Colorado that look out beyond the borders of the state. They want to do their business within their franchise area and pretty much ignore their neighbors and beggar the other states," he said, using the meaning of beggar of having policies that harm others. "We need to challenge that."

Putting a priority on this line north from the Greeley area, he said, would send a signal to the Southwest Power Pool, which has not played its cards yet as it moves into Colorado. This line would also put the Colorado grid closer to interconnection sites to the Eastern Grid in Nebraska and Wyoming.

CETA, he said, needs to give the signal to utilities that it will not just "crouch" in the southwestern part of the state. Most of Colorado's renewables lie east of the Rocky Mountains, and for that matter, so do more than 80 percent of Coloradans. "Our transition game is played on the eastern plains."

Lehr's final point was that CETA has financing tools that may be part of the conversation in getting projects done and hence lining up partners.

Although Galbraith expressed reservations that Xcel or other utilities will "step into our shoes," and take over projects that CETA has initiated, board members were persuaded.

How much will any of this matter? That's hard to say. Transmission remains costly and time-consuming, an average 15 years for a 100-mile line. The Colorado Power Pathway was an aberration. This lengthy process creates financing challenges.

Galbraith said that by identifying the short list early it can raise awareness of the need for these lines. "But we need to do a better job of addressing environmental concerns and property rights concerns. The delay is almo st more expensive in most instances than the line itself," he said. "Delay is extremely costly."

Can these electrical utilities on the Front Range find synergy in transmission issues?

by Allen Best

Four electrical utilities that deliver electricity from Colorado Springs to Fort Collins have a common problem. All have rapidly expanding demand, and all, in turn, need to add new sources of generating capacity.

Can they save money by sharing electricity? Improved transmission would be crucial. The power providers — Colorado Springs Utilities, CORE Electric Cooperative, Platte River Power Authority, and United Power — have agreed to explore potential synergies to achieve common purposes.

Together, the four utilities provide electricity to 1.5 million Coloradans, collectively putting them just behind the 1.6 million customers of Xcel Energy, the state's largest electrical utility.

The utilities began talking about this last November, and they are just beginning the work of figuring out how they might collaborate.

“This is a positive first step in exploring alternative ways for our four utilities to support growth and resiliency across our service territories,” stated Pam Feuerstein, chief executive of CORE. “Additional transmission would enable CORE to continue providing affordable and reliable power to our members, now and into the future.”

One option might be to use existing rights of-way to erect upgraded transmission capacity, similar to going from a two-lane highway to a four-lane highway. In this case, the utilities might decide to create a 345 kV electron highway. That's as large as they get in Colorado right now, except for a new 500-kV line that nicks the state's corner northwest of Craig.

"There could be some commonality where CORE, for example, has a 115kV transmission line, that those rights of way could be used to develop a larger project," said Feuerstein. "It's way too early to tell at this stage. This is really just the beginning of us exploring opportunities.

Also an option is to create expanded transmission bypassing metropolitan Denver, in more rural areas served by United Power and CORE.

The electrical utilities share common borders. The service territory of Colorado Springs Utilities, for example, comes close to that of CORE, which serves Castle Rock and Parker and other parts of rapidly growing Douglas and Arapahoe counties.

CORE's expansive service territory — from 60 miles east of Denver to 65 miles west of Colorado Springs — is proximate to Brighton-based United Power, which serves one of Colorado's fastest growing areas along the I-76 and I-25 corridors north and east of Denver. United's service territory extends to Longmont, one of the four municipal members of Platte River.

These four utilities are also defined by what they are not. Unlike Xcel, which provides power for much of metropolitan

Denver, they report only to customers, not to private investors.

By banding together, they might be able to avoid charges for sharing electricity over the transmission lines owned by Xcel Energy or possibly Tri-State.

Congestion along the north-south lines has become a growing challenge that limits flexibility as the utilities try to meet rising demand while supporting Colorado's ambitious carbon reduction goals.

The analogy again might be to Colorado's north-south highways. If time is of the essence, you might want to avoid I-25 by taking an alternative route, including E-470. And in this case, an alternative might provide a way to avoid paying Xcel to use its lines.

Growth in demand undergirds the effort to achieve synergies.

“We expect our growth to continue, so addressing transmission congestion is critical,” said Mark A. Gabriel, chief executive of United Power.

“United Power serves an area that is growing quickly, attracting large residential developments and new businesses alike. A more reliable transmission route would help to stabilize costs and increase reliability for current and future members in the cooperative’s service territory.”

The cooperative serves 115,000 members across a 900-square mile service territory stretching from the oil-and-gas wells of the Wattenberg Field to the foothills west of Arvada. During the last four years demand in April, to cite just one month, has grown from 350 megawatts to 500 megawatts.

CORE has more members, 170,000, but less demand.

Colorado Springs has 269,000 metered customers in the city and in surrounding areas and has been growing at a rate of 1% to 2% in demand per year. Travas Deal, the chief executive of the city's utilities, suggested that demand could grow much more rapidly from data centers and other businesses if the city had the electrical resources.

The city recently put out a request for proposals for 1,900 megawatts of new generating capacity. The door is open for wind, solar and natural gas and whatever else may come along. Some of that generating capacity might come from individual projects, but Deal says that the electrical generating capacity might be delivered at better prices with larger economies of scale. In other words, through shared demand.

"We understand the need, we understand the opportunities," said Deal.

In a prepared statement, Jason Frisbie, chief executive of Platte River Power Authority, alluded to this shifted dynamic. “All options are on the table to help improve reliability and reduce costs, including opportunities to enhance transmission capabilities as we move into an organized market," he said.

In a complementary move to help manage costs and maintain reliability, Colorado Springs Utilities, Platte River Power Authority and United Power will join the Southwest Power Pool (SPP) Regional Transmission Organization on April 1, 2026. CORE is also evaluating market participation, including the SPP.

We can do better

by Allen Best

Looking back, it's so easy to see the wrongness of Amache, the place of sagebrush and cactus amid southeastern Colorado's sandy soils. During World War II, it was briefly the state's 10th largest population center.

Except, of course, Amache was no city as we normally think of them. It was surrounded by barbed wire fences. Guards in towers wielded both guns and search lights. "Concentration camp" fits if defined as "a place where people are imprisoned not because of any crimes they have committed, but simply because of who they are."

An essay about our national debate

In the case of Amache, Japanese-Americans were rounded up in California and other West Coast states and put on trains to Colorado. More than two-thirds were American citizens. The action was justified under an executive order issued by President Franklin Roosevelt soon after the attack on Pearl Harbor.

"Successful prosecution of the war requires every possible protection against espionage and against sabotage" to the national defense materials, premises, and utilities, said the order. Amache was quickly and shoddily created. In 1943 it housed more than 7,300 people.

The story is told well in a 2024 book, "Amache," by Robert Harvey. His parting words haunt: "If citizens of the United States had looked less to political cheerleaders and professional patriots, and more to the constitutional democracy they were fighting to save, evacuation might never have happened."

On the July 4th weekend, I visited Amache once again, my third or fourth trip there. American flags fluttered along county roads in the hot winds as semi-trucks hauled harvested wheat to grain elevators. Cattle

huddled along fences, their tails swishing at flies, as temperatures marched north of 90 degrees.

Amache became a national historic site in 2024. The National Park Service calls it a "prison on the plains." The federal government then had used a sugar-coated word: the Granada Relocation Center. The closest town was Granada. People got out of prison, but just on passes.

All the 560 buildings cramped together amid the one-square-mile enclosure have been torn down or moved elsewhere. Only a few concrete foundations remain. A warning sign cautions that rattlesnakes might be amid piles of rocks. Now, a new building recreates the barracks where entire families lived and shared single light bulbs. Their spaces, about 500 square feet, were only a little larger than average hotel rooms of today.

Some of those relocated to Amache had been farmers in California. In their parched quarters in Colorado, they applied their skills. One explanatory panel tells how they took tea bags, egg shells, and vegetable scraps to try to create tiny nutritious plots to grow food.

Milton Eisenhower's words linger. The brother of the future president, Eisenhower headed the War Relocation Authority shortly after it was formed but favored more respectful treatment of Japanese-Americans. In this, he was strongly opposed by governors of most Western states. Ralph Carr, Colorado's governor, was an exception.

"I have brooded about this whole episode on and off the past three decades for it is illustrative of how an entire society can somehow plunge off-course," said Eisenhower in 1974.

Has our entire society today plunged off-course in our actions regarding immigration? Surely, somebody reading this will say: "But the immigration of today is different. We have LAW-BREAKERS crossing our southern border. OUR immigrant forebearers arrived here legally."

I grant that critical distinction, but I also see overlap. Today, as in 1942, it is common to demonize whole groups of people. Our president has done this time and again, painting otherwise law-abiding immigrants as criminals capable of the worst crimes. In fact, as statistics from Texas and Georgia show, as a group they are, other than crossing borders to seek better lives, uncommonly law-abiding.

Do we need observance of our laws? Yes, although personally I am far more threatened by people driving 20 and 30 mph over the posted speed limits on our highways. Will a political candidate campaign about restoring law and order to our highways? I doubt it. Easier to provoke fear of "they" and "them."

Immigration is a difficult, nuanced topic. Instead, we settle for bold and often thoughtless actions. We have granted immigration police great freedom — including, apparently, the ability to violate constitutional rights. The budget reconciliation bill appropriates $45 billion for detention centers. The president wants one in every state.

As in the case of the Japanese-Americans during World War II, we have policies that don't match the threat or the problem.

We can do better today with our immigration policies. We can do better.