



Case Study: How Kit Carson Electric Engineered a Cost-Effective Coal Exit

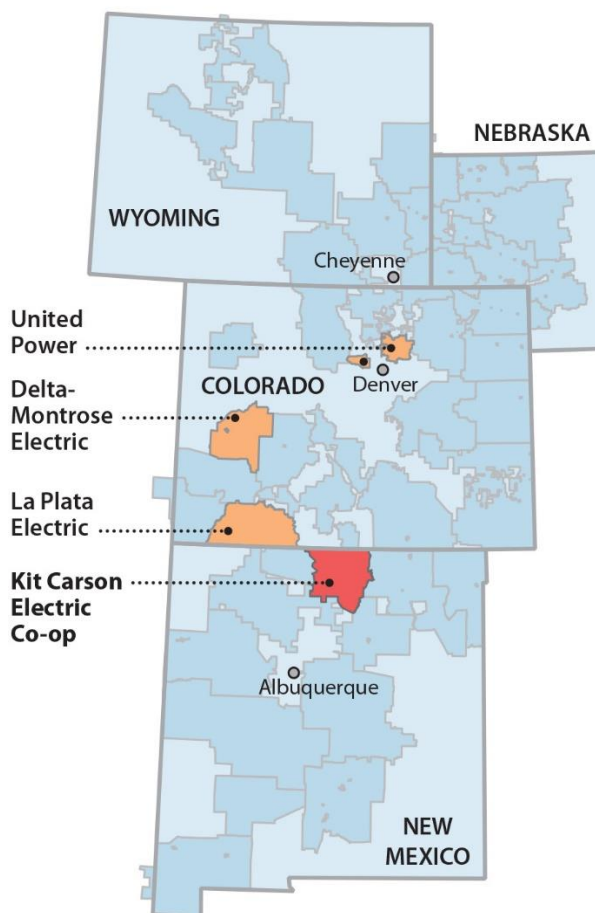
New Mexico Co-op Serves as a Potential National Model; Benefits Include Transparent Pricing, Cleaner Energy, More Local Economic Development, Freedom of Choice, Lower Costs

Executive Summary

Tri-State Members Seeking Changes or Exit

In 2016, the Kit Carson Electric Cooperative, in Taos, New Mexico, left the Tri-State Generation and Transmission Association, saying it could get cheaper power on its own from renewables. Three other members, all in Colorado, are now re-examining their relationship with Tri-State.

Tri-State G&T members' service areas



In ending its longstanding relationship three years ago with Tri-State Generation and Transmission Association, Kit Carson Electric Cooperative in northern New Mexico struck a path that has simultaneously created greater local control of how electricity is generated and saved the small co-op millions of dollars.

The deal has sparked what may be a larger member revolt against Tri-State, which wields considerable muscle across its four-state reach even as it has remained out of step with market trends that are undermining the economic viability of coal-fired power, a Tri-State mainstay.

The Kit Carson co-op move suggests a model for other rural electric co-ops to follow, not just regionally but nationally as well—the co-op is partnering with the U.S. Energy Department's National Renewable Energy Laboratory (NREL) to create a template for other co-ops interested in pursuing solar-powered electricity production.

The economics of the New Mexico co-op's new business model argue for such changes based on benefits that include greater transparency into wholesale power prices, more local choice on how electricity is generated, and lower long-term retail electric rates.

Overview: A Multicultural Co-op

Kit Carson Electric Cooperative (KCEC), founded in 1944 under the Rural Electrification Act of 1936, is a non-profit, member-owned utility company that serves an area of north-central New Mexico encompassing high-desert, mountainous, and canyonland terrain in Rio Arriba, Taos and Colfax counties.

Its roughly 30,000-square-mile footprint covers a region that is also demographically and ethnically diverse. About 50% of the population is Hispanic, about 10% is Native American, and the remainder is mostly Anglo. Languages spoken commonly in the area include English, Spanish and Tewa.

While KCEC's main offices are in Taos, a town known for its arts and tourist amenities, its customers include second-home enclaves at Taos Valley and Angel Fire ski resorts, small outlying rural communities, and the pueblos of Taos and Picuris, which predate European exploration of North America and are among the oldest continually inhabited places in the U.S.

KCEC, as part of a strategy aimed at local economic development, does not limit its business to electricity production and distribution. While it has about 29,000 electricity customers, it also counts 7,000 broadband Internet customers and about 2,700 propane customers. KCEC's latest annual report (2017¹) shows \$42,818,481 in revenue and \$43,546,614 in costs. The largest expense—57% of the total—was for power generation, as has historically been the case, most of it from outside sources.

The co-op is governed by a diverse, local 11-member board of trustees, and business decisions require collaboration and agreement across various segments of the community.

Transitioning to a Better Business Model

KCEC over the past three years has moved fundamentally to reinvent its business model by exiting a long-term contract with Tri-State Generation Transmission Association (Tri-State), a largely fossil-fueled power provider based in suburban Denver. Tri-State, according to its most recent annual report, gets more than 60% of its power from coal (41 percent) or natural gas and oil (22 percent).

Tri-State, after KCEC's departure in 2016, has 43 member co-ops in four states (it is named for its original presence in Colorado, Wyoming and Nebraska—its expansion into New Mexico came later).

¹ [Kit Carson Electricity Cooperative Annual Report](#). 2017.

As far back as 2008, KCEC began to push for more local development of solar resources in response to community preferences for cleaner energy. Most of Tri-State's power—then and now—is generated by fossil-fired plants across the Rocky Mountain West.²

By the early 2010s, KCEC managers and executives had identified at least three increasingly unacceptable flaws with the co-op's Tri-State contract, which was not scheduled to expire until 2040:

- First, Tri-State's wholesale pricing—that is, the price Tri-State charged KCEC—kept going up (by 106% in total from 2000-2016).
- Second, Tri-State's cap on self-generation limited members to 5% of total power consumed, effectively hobbling local development of renewables.
- Third, the absence of long-term transparency prevented KCEC from knowing how often and when Tri-State would increase rates.

Seeking to address these shortcomings, KCEC pushed for contract revisions but made no progress. In 2015, the co-op began exploring contract-termination possibilities.

In October 2015, Tri-State put KCEC's departure proposal to a vote of its full membership. The deal required, at Tri-State's insistence, a \$37 million cash exit fee from KCEC to mitigate the effects of its departure on other co-ops supplied by Tri-State. Tri-State's membership approved KCEC's exit by a vote of 44-0.

KCEC contracted with a new wholesale commercial electricity provider, Guzman Energy, a Denver company "designed specifically to help transition an outdated energy economy into the renewable age."³ KCEC chose Guzman over four other bidders that had responded to a request for proposals. Competitors included Cargill, Inc, the agriculture and energy conglomerate; JP Morgan Chase; Morgan Stanley; and the Public Service Company of New Mexico, the biggest electricity provider in the state.

KCEC realized at least three specific gains in establishing the relationship with Guzman:

- Pricing predictably—the Guzman contract runs for 10 years, and it guarantees a set wholesale price for power through the life of the contract.
- Hometown freedom to become a largely solar-driven electricity co-op within a few years' time (the Guzman deal has no self-generation cap).
- Local economic benefits tied to lower long-term electric rates and to job creation associated with KCEC's solar buildout.

² Tri-State Generation and Transmission Association, Inc. [Annual Report 2017](#).

³ [Guzman Energy Home Page](#).

“Now our members have a 10-year short-term fixed-cost of power purchase contract, and a plan to develop 35 megawatts of solar power by 2022, which will allow KCEC to generate 100% of its year-round daytime power supply from the sun,⁴” KCEC’s chief executive wrote in the co-op’s 2016 annual report.

The power purchase agreement with Guzman immediately led to lower annual wholesale electric prices for KCEC—\$67.25 per megawatt-hour (MWh), a 15% drop from the \$79.17/MWh Tri-State had charged the co-op the year before⁵—and cleared the way to more solar expansion.

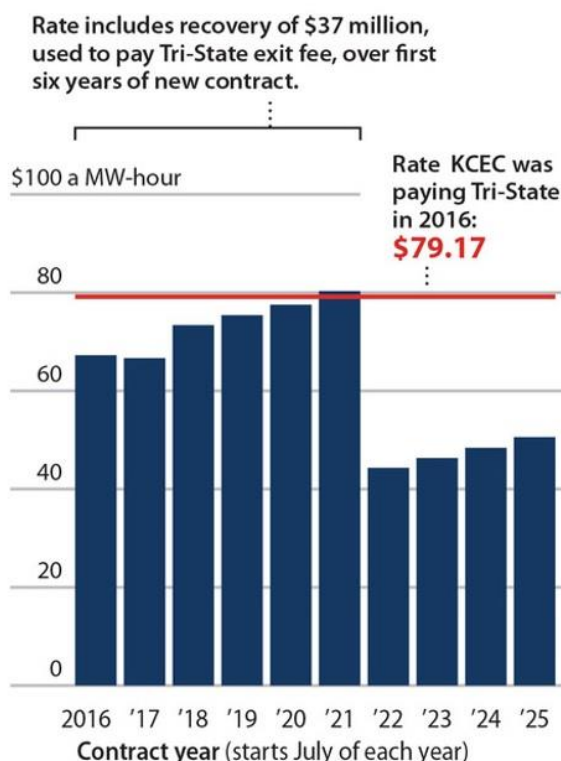
As KCEC’s chief executive wrote in a March 2019 letter to a member of the New Mexico Legislature, “Guzman Energy enabled us to take a huge step toward that goal, financing our exit from Tri-State and developing a partnership that provides flexibility and support that will cost significantly less than we would have paid had we stayed with Tri-State.”⁶

KCEC had endured 12 rate increases from 2000-2016 under Tri-State, increases that doubled the price KCEC was paying for power from Tri-State over the full 16-year period, from \$39.06/MWh to \$79.17/MWh.⁷ These increases were predictable in only one sense—that they could be expected year after year. The unknown piece of the puzzle was by how much (Tri-State had unilateral discretion to change rates).

KCEC’s new power purchase agreement also sets the price bar markedly lower than Tri-State’s, which in its most recent annual report put its average 2017 wholesale rate to members at \$75/MWh.⁸

The KCEC-Guzman deal, by comparison, after setting 2017 rates at about \$67/MWh, more than 10% below Tri-State’s wholesale rate to KCEC in 2016, put them even lower in 2018, at \$66.66/MWh. From 2019-2022 the Guzman wholesale rate to

Figure 1: Kit Carson Electric Cooperative’s New Deal Will Drastically Lower Its Wholesale Power Costs by 2022, Once It Has Paid Off Its \$37 Million Tri-State Exit Fee



⁴ Kit Carson Electric Cooperative Annual Report 2016.

⁵ KCEC letter to New Mexico State Sen. Clemente Sanchez. March 28, 2019.

⁶ Ibid.

⁷ Ibid.

⁸ Tri-State Generation and Transmission Association, Inc. Annual Report 2017.

KCEC will average about \$75/MWh as the co-op pays off its exit-fee loan. After that, it plummets for the final four years to an average of about \$47/MWh through 2026.

Tri-State, in the meantime, has shown limited interest in developing a truly post-coal generation model. While it has invested some in renewables, it still gets most of its power from coal-fired generation, is heavily invested in coal plants and coal mines—with significant ownership stakes at plants and mines in Arizona, Colorado, and Wyoming—and has been dubbed by KCEC “the most carbon intensive generation and transmission cooperative in the entire country, with an aging fleet that is also significantly more expensive than market prices.”⁹

Part of KCEC’s motivation—and part of the benefits it seeks to reap from redefining its business model—is through ripple-effect local economic development that creates and sustains hometown employment by investing a little more than \$1 million construction-wise per megawatt of new solar capacity. The co-op is systematically adding solar arrays megawatt-by-megawatt, most recently at Angel Fire (2MW/\$4.6 million), Eagle Nest (1MW/\$2.3 million), Northern New Mexico College and Questa (1.5MW/\$3.55 million each), and at the Taos water treatment plant (4MW/\$8.9 million).

KCEC executives estimate that the local direct economic benefits of its solar buildout will total \$10 million annually by 2020 and say it will support about 50 full-time-equivalent jobs per year. They estimate further that the deal with Guzman will save the co-op \$50-\$70 million over the full 10-year life of the agreement.

Replicating the Kit Carson Pivot to Solar

The co-op’s solar program is anchored to a federal initiative that promotes KCEC’s potential for replication through a “Resilient Renewable Energy Roadmap for Rural Electric Cooperatives”¹⁰ that KCEC is developing jointly with the National Renewable Energy Laboratory in Golden, Colo.

The initiative is part of a broader program that includes similar partnerships between NREL and the City of Orlando; the City of San Diego; the Montana Renewable Energy Association; PJM Interconnection and the National Association of Regulatory Utility Commissioners; the Clean Energy States Alliance; and the Great Plains Institute.¹¹

NREL’s description of the KCEC initiative and its potential for replication **[emphasis added]:**

“KCEC is currently partnering with multiple stakeholders to plan the deployment of an additional 35 megawatts of solar photovoltaics by strategically deploying smaller one-megawatt solar arrays across their service area. In coordination with NREL, the team has developed a tool

⁹ KCEC letter to New Mexico State Sen. Clemente Sanchez. March 28, 2019.

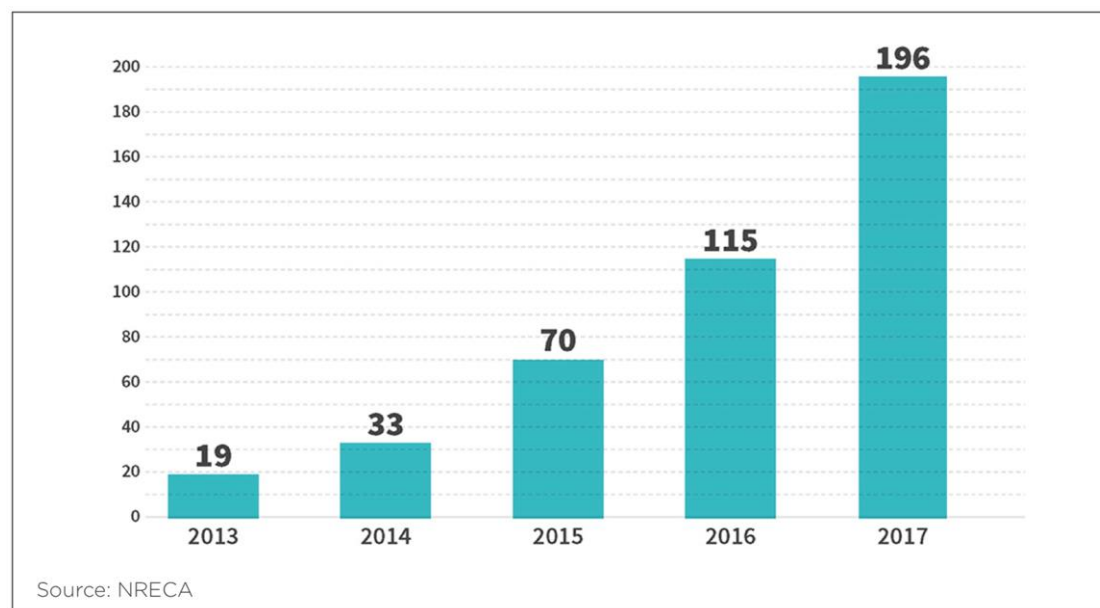
¹⁰ National Renewable Energy Laboratory (NREL). [Transforming Energy through the Solar Energy Innovation Network](#). June 2018.

¹¹ Ibid.

*to identify the benefits and impacts of solar-plus-storage at specific locations on the grid, conduct complex scenario analyses across an entire distribution system, and identify opportunities for infrastructure and operational cost savings and improved resilience. Using the model, the team is writing an operational plan for solar build-out on their system. **The model will be made available to other cooperative utilities interested in deploying solar.** The team will share lessons learned, including insights on the shifts needed in organizational structure, systems, and procedures that will help build the internal capacity necessary for cooperative utilities to apply the tool.”¹²*

While KCEC was perhaps ahead of its time a decade ago in terms of its solar ambitions, that is no longer the case. The utility-scale solar industry is growing regionally,¹³ nationally¹⁴ and globally.¹⁵ According to the National Rural Electric Cooperative Association, only 1% of rural electric co-ops had done much more than dabble in solar by 2013, and only 20% of the association’s 42 million members were interested in doing more.¹⁶

Figure 2: Co-Ops Lead the Electricity Industry Nationally in the Number of Community-Solar Projects



By 2015, co-op solar had begun to catch on, however, and in the four years since, co-op solar capacity has increased tenfold (**see Figure 2**), according to an NRECA

¹² NREL Solar Energy Innovation Network: Resilient Renewable Energy Roadmap for Rural Electric Cooperatives; Lead Organization, Kit Carson Electric Cooperative

¹³ IEEFA. Growing Interest in Developing Navajo Utility-Scale Solar, October 2018.

¹⁴ IEEFA U.S.: The Gathering Solar Wave, January 2019.

¹⁵ IEEFA. Solar Is Driving a Global Shift in Electricity Markets, May 2018.

¹⁶ Scientific American. How Co-ops Are Bringing Solar Power to Rural America. March 22, 2019.

report,¹⁷ which concluded that a sea change in perceptions of solar possibilities among co-ops had occurred:

“Attitudes about solar shifted from it being a special product for a few (typically wealthy) members to it being something in which all members can participate.”¹⁸

In the U.S. more broadly, utility-scale solar capacity has roughly doubled annually over the past several years, according to data compiled by the Energy Information Administration (EIA), and the agency sees the trend gaining momentum. Well over half of new electric generating capacity in the U.S. this year will come from renewables, by EIA’s estimates, and 18% of total new capacity will be in utility-scale solar.

Even though solar is in its early ascendance, several states already get significant portions of their electricity from solar. California, according to EIA data, increased the solar portion of its electricity generation to 20.3% in 2018 from next to nothing five years earlier. Hawaii, historically reliant on expensive oil imports, was getting 12.4% of its power from solar by 2017.

Other states have also shown rapid growth in solar activity, including Colorado (3% of the state’s total generation), New Mexico (4.8%), North Carolina (5.4%), Arizona (6.7%), and Massachusetts (11.4%). New Mexico—like the entire southwest U.S. and a good part of Florida—is at a distinct advantage solar-wise for the regular amount of sunlight it receives. The “average daily solar resource” in the KCEC service area, by NREL calculations, is among the best in the country, registering in excess of two kilowatt-hours per square meter per day.¹⁹

A Disruptive Model

As KCEC negotiated its Tri-State exit, other Tri-State members took note, and in December of last year, the Delta Montrose Electric Association (DMEA) asked the Colorado Public Utilities Commission (PUC) to require Tri-State to release DMEA from its contract as well.

DMEA was frustrated, according to public filings, by Tri-State’s resistance to DMEA’s move toward independence, a move it had worked at deliberately, as the co-op’s CEO wrote to members in March:²⁰

“DMEA’s decision to bring our complaint against Tri-State before the PUC was not rushed or reactionary. We worked with Tri-State for more than 10 years to stabilize electric rates and pursue more local generation, all without success. We also spent two years negotiating a reasonable exit charge from Tri-State, also without success.”

¹⁷ NRECA. [A Solar Revolution in Rural America](#), July 2018.

¹⁸ Ibid.

¹⁹ NREL. [The National Solar Radiation Database \(NSRDB\)](#). Presentation at American Meteorological Society 97th Annual Meeting. Dr. Manajit Sengupta, January 22–26, 2017.

²⁰ DMEA. [The Powerlines Report](#). March 2019.

DMEA is being formally supported by two other Tri-State member co-ops in Colorado: United Power in Brighton and La Plata Electric in Durango. This particular combination of Tri-State members—DMEA, United Power (which accounted for 14.1% of Tri-State’s member revenue and 12.1% of its total operating revenue in 2017) and La Plata—is striking for its geographic, economic and demographic diversity. DMEA provides power to Delta, Gunnison and Montrose counties on the western slope of the Colorado Rockies in a region that is dedicated primarily to agriculture. United Power serves a suburb of Denver. La Plata is the electric co-op in Durango, a college town and destination outdoor recreation center. The Colorado Energy Office has weighed in as well by submitting a brief to the PUC in which it notes that a groundswell against Tri-State’s hold on its members could very well develop—for the greater good:

“If the Commission prescribes a formula to establish a just and reasonable exit charge, it may allow other members of Tri-State to exit voluntarily and fairly in order to pursue additional renewable energy generation and economic development in their service territories.”²¹

DMEA’s move against Tri-State was supported also by 54 of the state’s 100 legislators, who wrote to the Colorado Public Utilities Commission in favor of DMEA’s filing and in support of “allowing all Coloradans access to less expensive power from local and diverse generation sources.”²²

Competition from Xcel,²³ the Minnesota-based energy conglomerate that powers much of the Colorado’s populous Front Range, has helped drive a regional expansion of clean energy. Denver-based Public Service Co. of Colorado is an Xcel subsidiary and, as such, is part of the company’s move toward 100% renewable generation by 2050. New Mexico is also committing to a shift to renewables, with the enactment last month of a standard that requires the state to get 50% of its electricity generation from renewables by 2030 and 100% by 2045.

One result of KCEC’s separation has been a Tri-State campaign to discredit the move and to portray it as ill-advised, an assertion that KCEC has addressed head-on.

“Despite the pall” that Tri-State executives have tried to cast over KCEC’s moves, KCEC’s chief executive wrote in his letter²⁴ to the New Mexico legislator, KCEC executives and managers “feel confident that the future of our members is cleaner, more affordable, and reliable.” The letter challenges several claims by Tri-State in its campaign, which appears aimed at discouraging other member co-ops from defecting as KCEC has done.

²¹ State of Colorado PUC filing, [motion to intervene](#). January 22, 2019.

²² State of Colorado Senate letter to Colorado Public Utilities Commission. January 14, 2019.

²³ CNN. [Xcel Energy was a coal-first power company. Now it’s going carbon-free](#). March 26, 2019.

²⁴ KCEC letter to New Mexico State Sen. Clemente Sanchez. March 28, 2019.

KCEC's chief executive wrote also that there is "virtually no scenario" going forward in which KCEC's deal with Guzman "is not materially cheaper...even if Tri-State's rate stays flat."

He added: "We will have paid significantly less in wholesale rates, accessed much lower rates by building generation inside our own community and off the transmission system, created jobs and increased tax [revenues] in our territory, and done what we believe is right for our community and our environment, all with a partner that is aligned with our goals and with whom we enjoy working... This is a classic David (KCEC) and Goliath (TS) battle in which David will prevail."

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