

# BIG PIVOTS

Energy and water transitions in Colorado and beyond

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by Allen Best

In New Mexico last week, a couple in Santa Fe was weighing whether to build a house on the 20-acre lot they had purchased. Among the

questions perplexing them was how the warming and drying climate might marginalize their asset.

Relatively few people were asking such questions a decade ago. Now they are. Most people remain more concerned about making the next mortgage payment or a dozen other concerns, but climate change has ceased to be a future worry. It's right outside the door, evident in the rising heat, the larger and more frequent wildfires, and the news of broader and exceptional "drought."

One aspect of the warming that has been widely if mostly anecdotally observed has been the melting of snow in winter months. Less snow has been making it to spring—and that means less water flowing in rivers come summer.

"New paper out on widespread increased snow melt during the winter in the US West by well-known scientists," tweeted Brad Udall, who is himself something of a well-known climate and water scientist affiliated with Colorado

State University.

"These papers never have good news, alas. Meanwhile #coloradoriver runoff currently forecast at 45% despite 80% snowpack."

In the paper, "Winter melt trends portend widespread declines in snow water resources," four researchers—three from Colorado—

compared records of 1,065 snow-measurement stations in the West between the Mexico border and continuing northward into the Alaskan Arctic since the 1970s.

Melting before April 1 has increased at almost half of the stations by an average 3.5% per decade.

This so-called winter melting has been most prominent in November and March, although it has occurred in all months, they

**We call it a drought because we don't have a vocabulary to describe what is happening**



The snow-water equivalent is measured at a site in January. *Photo/Natural Resources Conservation Service*

say in the [paper published in Nature Climate Change](#).

“Historically, water managers use the date of April 1 to distinguish between winter and spring, but this distinction is becoming increasingly blurred as melt increases during the winter,” said Noah Molotch, a study co-author and associate professor of geography and fellow at INSTAAR.

The mountains have often been described as the water tower of the West, akin to the tanks that stand over many small communities. The snow melts rapidly during spring, of course, but then slowly melts well into summer. Now, there’s less snow to melt. The tank on the hill has less water.

“That slow trickle of meltwater that reliably occurs over the dry season is something that we have built our entire water infrastructure on in the West,” Keith Musselman, of the Institute of Arctic and Alpine Research, told CU Boulder Today, an arm of the University of Colorado.

This causes my mind to wander to the Colorado mountain town of Red Cliff, a place of roughly 300 people located at an elevation of 8,600 feet not far from the Continental Divide. One of the life-time residents there, a “powder man” in several of the local mines, observed that the snowpack normally grew until St. Patrick’s Day, then began to shrink. The snow depth could rise again with new snow, but only temporarily. With warming winters, I wonder when the snowpack at Red Cliff now ceases to rise. Might it now be early March?

**A**uthors of the new study point out that this shift in melting could affect wildfire season and agriculture irrigation needs. They also note that their findings are consistent with what climate models suggest will continue to happen.

One feature of this incremental warming has been early runoff, with peaks roughly two weeks earlier in this century.

In Steamboat Springs, the [Pilot reported on April 7](#) that the snow-water



**A rivulet along the Colorado River near Granby, Colo., on April 2, the Indian Peaks component of the Continental Divide in the background. Photo/Allen Best**

equivalent going into April stood at 14.5 inches, according to the Natural Resources Conservation Service. If that stays as the peak, the 2020-21 winter will have peaked seven days earlier and with about 3.4 inches less water than the 30-year median peak. “The thawing has begun earlier than we would like,” said Kelly Romero-Heaney, the water resource manager for the city of Steamboat Springs.

Maybe it will snow in May—a lot. I remember the spring of 1983 when I was working in Winter Park. A so-so ski season was followed by an exceptional spring. We barely saw the sun. It seemed to snow every day. And then when the snow melted, the gush took water managers downstream at Glen Canyon Dam by surprise, almost toppling that massive plug that creates the playground of Lake Powell.

Powell and its companion behemoth in the desert Southwest, Lake Mead, have struggled in the 21st century. The two reservoirs, largest in America, have a

capacity for 54.5 million acre-feet. They’re not close to half full—and they’re likely to decline more this year. Too many years have been like 2020.

Nearly all the water flowing in the Colorado River originates in the headwater states, most of all Colorado, and mostly as snow. In 2020, the snowpack in the upper basin was 114% of average. That snowpack yielded only 55% of average runoff.

Let’s wrap our minds around those numbers again: snowpack 114% of average and runoff 55% of average. Wow.

**T**his year, the snowpack is nowhere near as good. “Current conditions resemble 2002, 2012, and 2013 and the beginning of 2018, four of the five driest years on record,” said the Bureau of Reclamation in an April 15 report. As Udall noted in his tweet, the Bureau projects flows 45% of average into Powell.

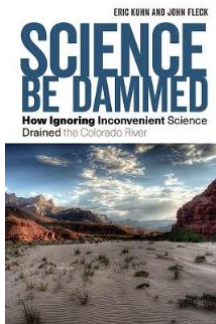
As KUNC and other news outlets have reported, this marginal runoff will almost certainly mean that water levels in Lake



Mead, the reservoir outside Las Vegas, will drop below the critical threshold of 1,075 feet. As per an agreement among the seven states in the Colorado River Basin in 2019 and also Mexico, this means there will be further cuts in deliveries to Arizona, Nevada, and Mexico. California could also see its river allocation restricted if the declines continue.

Have Colorado and other states in the Southwest come to terms with the new reality? Yes—and no. A bit of history is worth visiting.

Eric Kuhn and John Fleck, in “Science Be Dammed: How Ignoring Inconvenient Science Drained the Colorado River,” demonstrated how willfully those who created the framework of compacts and water-delivery infrastructure in the Colorado River ignored available evidence that the river might not well deliver the quantities they wanted to assume. They assumed upwards of 20 million acre-feet. In fact, in the 21st century, the river has been delivering an average 12.5 million.



The science that framers of the Colorado River Compact ignored when they gathered in Santa Fe in 1922 was that of substantial periods of lesser flows in the 19th century. Congress had better evidence yet—but again ignored it when approving the compact in 1929.

Further scientific research has yielded confirmation of decades-long periods of low flows, the megadroughts of a thousand years ago.

[See my 2020 review of this book.](#)

Not until the 1960s was there a grudging appreciation for limits. And not until 2007 was there more explicit acknowledgment of the need for revised assumptions.

We’re now in the midst of that acknowledgement. In the 2019 agreement among the basin states, commonly called the “Drought Contingency Plan,” Arizona

took the biggest cut, but California got creative, too. That agreement might just as easily have been called the “Buying Time Agreement,” because that is essentially what it did, providing interim measures while a greater vision was assembled to be implemented in 2026. Work is just now beginning on that next iteration.

In 2019, when I interviewed Udall, he said he objected to the word “drought” in the title of the plan. It suggests a temporary condition. He and others have been producing evidence that roughly half the runoff decline has been the result of warming caused by accumulated greenhouse gases. The higher temperatures result in increased evaporation, sublimation, and transpiration. Other researchers have reached much the same conclusion. In a 2019 paper, Udall and Jonathan Overpeck chose to call it a “hot drought.”

Others in the Colorado River Basin have similarly been parsing their vocabulary.

“‘The drying trend’ is the new abnormal—it is not a drought,” Kuhn tweeted this morning.

James Eklund points to increasing temperatures of 1.5° F globally since his great-grandparents began ranching in western Colorado in 1888. Eklund, a former director of the Colorado Water Conservation Board, among other postings, uses the phrase “aridification,” the gradual change of a region from a wetter to a drier climate.

He also coined a word, “spongeification,” in a 5,000-word essay published in the [April 15 issue of The Water Report](#). By this, he means the process by which dry soils and depleted groundwater aquifers soak up the runoff that does materialize.

Eklund, in an e-mail, told me that he intentionally used the word drought



Lake Mead as seen from Hoover Dam in December 2019. *Photo/Allen Best*

sparingly “because we’re not in a drought (which implies that we might rebound next year).”

It had snowed hard in metro Denver the day he wrote me, and he made note of that snow (which wasn’t nearly so heavy in the Colorado River Basin).

“Despite the snow out the window (and thank heavens for it!), the water year in Colorado and in the Colorado River Basin is going to be challenging at best and perhaps seriously disruptive,” he wrote. “Despite all the coverage and hyperbole, I do not see the current water apparatus (of which I consider myself a part) moving quickly enough to confront the challenge climate change presents to our water systems.

Eklund’s essay makes the case for stepped up implementation of demand management, as I understand it, a way for ranchers and farmers in places like Colorado to lease their water. Whatever the techniques, there must be responses sufficient to the shifting climate.

Then there is conservation. The [Las Vegas Sun this week](#) lent its cautious support for a bill that proposes to make removal of ornamental grass mandatory – not voluntary, a response to incentives, as has already resulted in the uprooting of more than 200 million square feet of grass

lawns. If the only time we set foot on grass is to mow it, what real purpose does it serve?

I see a greater role for landscape architects in our future. Dumping gravel on a yard, one of the common solutions to water scarcity that I have seen in Las Vegas and Santa Fe – and, actually, in my own relatively verdant neighborhood in suburban Denver—just doesn’t cut it.

But back to drought, a word that falls short, at least given our current meaning of it. I think we need a better word or phrase that conveys what happens better than “drought.”

Once we can come up with a better word or phrase, we’ll more readily get to work on adaptations necessary with this shifting climate that will change and then change and change again. **BP**

#### **Recommended reading:**

Brad Udall and Jonathan Overpeck on [“Climate change and the aridification of North America.”](#)

Assistant Colorado climatologist Becky Bolinger assigns grades to the Colorado River Basin’s snowpack in [Washington Post](#).

Also, [“Alternative Management Paradigms for the Future of the Colorado and Green Rivers.”](#)

# Why S&P knocked down its rating for Tri-State from A- to BBB-plus

Analyst cites desire by 7 members to get buy-out from wholesaler

by **Allen Best**

Once again the question looms, this time prodded by a downgrading by S&P Global Ratings, whether Tri-State Generation & Transmission can pivot rapidly enough to stay afloat in the turbulent world of this energy transition.

Two years ago S&P Global Ratings gave Tri-State an A rating. Then it downgraded the wholesale power provider to 42 electrical cooperatives in Colorado and three surrounding states to a rating of an A-.

Now, S&P has downgraded the ratings to BBB-plus.

David Bodek, an analyst for S&P, told [BondBuyer.com](http://BondBuyer.com) that early departures by member cooperatives could produce “an economic tipping point where a smaller customer base frustrates Tri-State’s ability to achieve economies of scale in its operations and hinders (Tri-State’s) capacity to sustain financial performance consistent with historical levels.”

In a statement on its website, Tri-State described the rating as “comparable to the ratings of other

investor-owned and cooperative utilities in the region.”

Duane Highley, the chief executive since April 2019, conceded the “challenges and uncertainties that are reflected in changes to our investment-grade credit ratings,” but urged that member cooperatives stay the course with Tri-State.

“A complex effort like this does not happen overnight, but there is a long-term plan to transform the association and address the issues raised by the rating agency,” he said. “While it will take time, when our transition is complete, I believe Tri-State will be a leader in the cooperative world and recognized as the most competitive power supply option for our members.”

**H**aving lost 2 member cooperatives already, Tri-State has 7 additional cooperatives that want to shop their options.

Based in metropolitan Denver, Tri-State grew rapidly in the 1990s, when it added many of the members previously supplied by the bankrupt Colorado Ute. It expanded again in 2003 with the addition of several cooperatives in New Mexico. That put it at 44 members.

In planning for the future, it looked entirely to the past. It assumed continued



Tri-State in 2006 planned an even larger coal plant in southwest Kansas adjacent to this plant.

rapid growth of electrical use and laid plans to meet that demand by building a massive new coal plant at Holcomb, Kan.

To finance this new coal plant, in 2006 Tri-State asked for member cooperatives to extend their contracts to 2050, a decade longer than existing contracts.

Two refused, and both are now gone.

Kit Carson left in 2016 after agreeing to pay a \$37 million exit fee. Luis Reyes, the chief executive of Taos-based Kit Carson, this week told Big Pivots that he expects the exit fee to be paid off within the next 15 months.

Following Kit Carson's lead, Delta-Montrose then asked for an exit fee, and after much more difficult wrangling, reached a settlement for a far larger figure, one that reflects it has more customers. It left the Tri-State cooperative in July 2020.

Two Colorado cooperatives, Brighton-based United Power then asked for a figure, and it was soon followed by Durango-based La Plata. United was told it would have to pay \$1.25 billion.

The two cooperatives appealed to the Colorado Public Utilities Commission to determine what constitutes a fair and just fee. After a week of hearings in August 2020, an administrative law judge at the PUC recommended \$234.8 million for United Power to leave and \$97 million for La Plata. This was based on what Tri-State had charged Kit Carson and Delta-Montrose.

Tri-State had headed off the Colorado proceedings by getting jurisdiction under the Federal Energy Regulatory Commission for such matters using a legal maneuver that included expanding its membership to include a greenhouse in Fort Lupton.

If the venue was moved to Washington D.C., Tri-State's core problem remains the same. There are many options out there for power supply, and Kit Carson, the first to leave "the family," seems to have never regretted its decision. But Tri-State needs to hang onto its members.

In February, United and La Plata—this time joined by 5 others—complained to FERC that Tri-State was stalling in giving exit numbers.

"Tri-State's refusal to perform the calculation required by Rate Schedule No. 281 violates the filed rate doctrine and is patently unjust and unreasonable under Section 206(a) of the Federal Power Act," the cooperatives said in a Feb. 26 filing with FERC.

**N**otable about these 7 member cooperatives wanting buy-out numbers from Tri-State is their diversity. They range in size from 3,000 to 100,000 meters, from semi-urban customers to ranch country, from places that hew conservative in all things political and cultural to recreation-dominated resort communities that tilt liberal.

United Power, with service territory stretching from homes in the foothills of along Coal Creek Canyon west of Arvada to the oil-and-gas fields between Denver and Greeley, has nearly 100,000 members and had growth in sales in 2020 of 5%. As of 2020, United was responsible for 18% of Tri-State's total demand.

Two cooperatives, Wheat Belt and Northwest Rural Public Power, are in the ranch and farming country of western Nebraska.

Springer Electric Cooperative has 3,000 members in the sparsely populated ranch country of northeastern New Mexico.

The remaining two asking for exit numbers are San Miguel Power, which includes Telluride in southwestern Colorado, and San Isabel Electric, which serves Pueblo West, the housing development, and the country south to the New Mexico border, including Walsenburg and Trinidad.

United Power, at its annual meeting on Wednesday evening, was asked about the negotiations with Tri-State.

Bryant Robbins, the chief operating officer, answered that United—which still has a lawsuit against Tri-State in Adams County District Court—has never said it will leave Tri-State. “All we have asked is to get a number so that directors can decide what is best for members,” he said.

Looking from the outside, the S&P analyst sees Tri-State as taking on water.

“We view the members’ FERC complaint as an outgrowth of more than a decade of divisiveness that 3 successive general managers and the board have been unable to conciliate,” Bodek told [BondBuyer.com](#). “This level of discord can consume management resources and frustrate strategic planning.”

S&P also considers Tri-State’s \$3.3 billion debt, as [reported to the SEC in December 2020](#), a high debt-to-capitalization ratio, if not atypical for a generation and transmission cooperative utility.

As for the coal plants, Tri-State pursued the Kansas plant until about 2010 but not seriously after that. Still, it didn’t formally drop its plans until 2020. **BP**

## Kit Carson Electric adds solar, storage and will hit its 2022 target months early

Financing announced last week will allow Kit Carson Electric Cooperative to achieve the goal it laid out in 2016 when it left Tri-State Generation & Transmission—and it looks to be crossing the finish line months early.

CoBank Farm Credit Leasing will provide the financing that will yield 21 new megawatts of solar capacity and 15

megawatts of storage. Luis Reyes, the chief executive of Kit Carson, said he expects the work to be completed by the end of 2021. That’s 6 months earlier than was originally projected.

Installations will be at both Taos Mesa and at Angel Fire. The electrical cooperative has 30,000 members in Taos and two adjoining counties in northern New Mexico. Included are four ski areas.

With this addition, Kit Carson has surpassed 41 megawatts of solar and 15 megawatts of storage capacity.

“Kit Carson aims to be the greenest co-op in the country,” said Reyes in a press release. “The addition of these two new solar arrays gives us almost twenty solar projects within our territory, making Taos and the surrounding areas the “Solar Capital of the World.”

In leaving Tri-State in 2016, Kit Carson set out to develop its solar capacity. The goal was to be 100% daytime solar by 2022. Its wholesale power supplier is Denver-based Guzman Energy

Torch Clean Energy will develop the new solar and storage projects and sell the power to Kit Carson in power-purchase agreement. The company has an appetite for the tax credits available through the federal government, something that Kit Carson, as a cooperative, does not have.

Once constructed, KCEC will surpass the 41 megawatts required to meet its goal of 100 percent daytime solar energy. Originally set to be reached by 2022, this goal can be achieved up to nine months earlier than anticipated. **BP**

*(In a coming issue of Big Pivots look for a story about how climate change, wildfire, and Kit Carson’s battery storage are interconnected).*

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# Holy Cross takes strategic step in solar + storage

by Allen Best

Another small but important piece of the giant puzzle that Holy Cross Energy has set out to solve was revealed Tuesday.

The electrical cooperative serving members in the Vail-Aspen-Rifle area has agreed to purchase electricity from a solar and battery storage project being built by Ameresco Inc. Near Glenwood Springs, on the Spring Valley Campus of Colorado Mountain College, the company will install solar panels capable of generating a maximum of 4.5 megawatts of electricity.

Adjacent to the solar panels it will operate battery storage with a capacity of 5 megawatts (or 15 megawatt hours). Batteries will be charged with electricity generated by the solar panels.

The batteries can be tapped to supply electricity during times of peak demand on a daily basis. In the Vail-Aspen area, peak demand typically occurs in evening hours, with the strongest demand during winter months.

The lithium-iron-phosphate batteries can also augment Holy Cross's electrical generation during times of disruption, such as caused by wildfires or storms.



“That battery and local generation is an important part of the infrastructure that is real important to creating a resilient energy system for the future,” said Steve Buening, the vice president for power supply and programs at Holy Cross.

The battery storage will be able to have 5 megawatts of power vs. 15 megawatt-hour of capacity. Buening compares the 5 megawatts to what happens when you press on the gas pedal of an internal-combustion car, while the megawatt-hour is how much the gas tank can hold.

With 45,000 members, Holy Cross is among the larger of Colorado's 22 electrical cooperatives. As of 2018 it was responsible for 2.2% of electrical sales in the state.

Holy Cross has been assembling disparate pieces of infrastructure, some in and among the communities it services, others hundreds of miles away, as it pursues a goal of completely decarbonizing its electrical supply by 2030.

In addition to the new solar-plus-storage complex near Glenwood Springs, Holy Cross plans a 5-megawatt solar farm on McLain Flats, near the Aspen/Pitkin County Airport. Construction is scheduled to begin this spring.

Complementing this local generation will be electricity generated for Holy Cross at the Arriba wind farm, to be constructed during the next year along Interstate 70 near the eponymously named town 120 miles southeast of Denver. The wind farm will have 100 megawatts of capacity,

enough to supply roughly a third of demand by Holy Cross members.

In storage, Holy Cross has something of the same approach, a mixture of local and smaller and elsewhere and larger.

See also: [Holy Cross and the 'Journey to 100%'](#)

Directors of Holy Cross in 2020 adopted a plan that lays out potential strategies, including pumped-storage

hydro. Water in pumped-storage projects is released to generate electricity to meet peak demands, then pumped uphill again when electricity is more abundant and hence cheaper.

It's not new technology. Colorado has two such projects, the larger and older being near Georgetown. There, the Cabin Creek project uses a 1,200 feet vertical drop between two reservoirs to generate a maximum of 324 megawatts. The system went on-line in 1967 but has been upgraded since then.

Bryan Hannegan, the chief executive of Holy Cross, has spoken about the value of small pumped-storage hydro projects in the Aspen-Vail area, perhaps combined with larger capacity pumped-storage projects elsewhere.

Why the battery storage now for Holy Cross instead of waiting for prices to tumble further. Prices of battery storage have dropped about 80% in the last decade and are projected to decline even more, from \$137 per kilowatt-hour to as low as \$100 by 2023, according to Bloomberg New Energy Finance.

Holy Cross decided that the prices were already good enough.

"One thing that may be holding back investment in utility-scale energy storage is concerns about being an early adopter at higher prices than in the future if battery prices continue their downward trend," says Buening.

That being noted, the savings are good enough already to yield lower costs of electricity for Holy Cross members.

"We were ready to go ahead," he says.

Xcel is also planning 275 megawatts of battery storage as it closes two coal-fired power units at Pueblo in the next several years. In a recent filing with the Colorado Public Utilities Commission, the utility plans even more in the years beyond 2024. It's Colorado's largest utility with 52.5% of Colorado's electrical sales for 2018. **BP**

## A big, big deal if it pans out, this idea of carbon capture near Ignacio

A new wrinkle on the continuing story of carbon capture and sequestration was added on Thursday when hopes to deploy a form of the technology in Illinois and Colorado were announced.

A technology from Net Power has been licensed to a developer, 8 Rivers Capital.

In Illinois, 8 Rivers is working with agricultural giant Archer-Daniels-Midlands to replace some emissions from a coal power plant.

In Colorado, 8 Rivers is working with the Southern Ute Indian Tribe Growth Fund for a natural gas plant to be located on a brownfield site on the Southern Ute Reservation surrounding Ignacio. That project is to be called the Coyote Clean Power Project. The nature of the partnership with the Southern Ute Indian Tribe Growth Fund has not been described.

Coyote Clean Power will decide in 2022 whether to go forward with the plant.

[Bloomberg](#) reported that each of the power plants has been projected to cost \$500 million. But the developer would have access to a U.S. tax credit, [called Section 45Q](#), for carbon storage projects. That would yield about \$50 for each ton of CO2 injected into the ground.

Where would that ground be? Not all geology is accommodating. The Bloomberg story noted the proximity of CO2 pipeline to the Southern Ute site. Kinder Morgan's pipeline carries CO2 from the McElmo Dome area near Cortez to the Permian Basin oil field for use in enhanced oil recovery. A company, Enchant, also has been talking about putting CO2 into that pipeline from the San Juan Generating Plant, located about 60 miles from Ignacio near Farmington, N.M. **BP**



## Will Colorado use a new metric to help usher out natural gas from buildings?

by Allen Best

Andy Bardwell was among dozens of people who testified to a Colorado legislative committee on April 8 about a bill, [HB 21-1238](#), that would result in more aggressive efforts to reduce natural gas in homes and other buildings. A mathematician with a Ph.D., he may have been most concise as to why the bill should become law.

“There is an imaginary cost and then there is the real cost,” he said in describing the metrics used to determine the cost effectiveness of programs offered by Xcel Energy and other investor-owned utilities.

Bardwell described the metric now used by state regulators as badly flawed.

“Right now, we are paying heavily for our lack of paying attention to global warming, and we have a chance now to rectify that,” he said. “Let’s do it. Let’s make better decisions.”

The bill, “Public Utilities Commission Modernize Gas Utility Demand-side Management Standards,” sponsored by Rep. Tracey Bennett, a Democrat from Boulder, and Sen. Chris Hansen, a Democrat from Denver, has a strong social justice component, which is becoming common in many legislative initiatives in Colorado and other states.

This bill, however, may be first in the nation to propose replacing the discount rate method of

evaluating benefits with one that calculates the net-present value. The latter takes a longer view and places greater value on renewables and less on heating and other technologies that have ongoing costs of fossil fuels.



**Rep. Tracey Bennett**

Introducing her bill, Bennett described the bill as accommodating “adoption of new clean energy technologies as they become more widely available and/or cost effective,” helping Colorado realize its economy-wide carbon reduction targets.

Some technology that could reduce greenhouse gas emissions from buildings isn’t so new, she went on to say. She cited the work of Paul Bony, who has been in the business in one way or another for 25 years in the Delta-Montrose area installing geothermal heat pumps. His company of 13 full-time employees installs 70 such systems annually, obviating need for natural gas for home heating.

Moreover, she said, Colorado Mesa University in Grand Junction has been converting its campus to renewable thermal technology. As a result, it has among the lowest operating costs (for energy) in the Colorado university system, she added.

“It’s going to take decades and decades to decarbonize our buildings,” she said. “This is just the start. This gives the PUC (Public Utilities Commission) more tools” to advance energy efficiency and also new technologies as they become cost effective.

**N**ot all of those testifying at the meeting of the Colorado House and Environment Committee agreed with Bardwell. A representative of homebuilders flatly opposed the bill, warning that it will make housing more expensive in Colorado, burdening homeowners with electricity costs that are higher than those of natural gas. “We want to make sure the policy doesn’t move faster than the technology.”

In varying degrees, Xcel Energy, Black Hills Energy, and Atmos Energy—all of them investor-owned natural-gas utilities—also opposed the bill. Also affected would be Colorado Natural Gas. Municipal providers of natural gas would not be affected, as they are not regulated by the PUC.

George McGuirk, senior regulatory analyst for Xcel Energy, outlined several concerns. Responding to a question, he said Xcel estimates the bill would approximately double the amount of money it must spend on efforts to reduce use of natural gas, from \$18.5 million in the most recent year in which demand-side programs were tallied to a portfolio of \$35 million to \$40 million.

Already, he said, Xcel has started encouraging customers to shift from natural gas to electricity. Electricity will in the coming decades become stripped of most of the carbon emissions associated with its production. “Given the efforts we have made in cleaning our electric system, we have been able to begin pursuing beneficial electrification,” he said. But, he added, this “needs to be done very strategically at this point.”

Rep. Mike Weissman, a Democrat from Aurora, pressed to know the costs to customers overall but also the benefits, in that their natural gas costs will go down.

The program costs will be passed along to the broad base of ratepayers, he said, but conceded that “there will be a bit of a wash between the two.”

The bill would require Xcel to apportion 25% of its budget for demand-side management for income-qualified customers. Jan Rose, of Colorado Coalition for a Livable Climate, said those more wealthy can afford energy efficiency, and those who need most energy efficiency in their homes cannot afford the upgrades. “This is deeply unfair at a social and moral level,” she said.

**A**lso not on board with the bill at the hearing was a traditional ally of Democratic initiatives. Phil Hayes, political and legislative director for the AFL-CIO, said union pipefitters have concerns about the bill that will require an amendment. That and other concerns being addressed in amendments caused Democrats on the



committee to postpone a vote on the bill to another meeting.

State Sen. Chris Hansen, a Denver Democrat and bill co-sponsor, said last week that he has been assured that the disagreements with the unions have been worked out.

The bill also has a provision that would accommodate behind-the-meter renewable sources, described by one legislator as a carveout.

Several provisions in the bill would make weatherization of buildings and shifts from gas to electricity for heating of homes and water financially more attractive.

One would apply the social cost of carbon to decisions involving natural gas, similar to what Colorado began requiring of decisions involving production of electricity with a 2019 law. That cost is \$46 per ton of carbon dioxide. This bill would also require state regulators to use a social cost of methane of \$1,040 per short ton. This would include estimated leaks from pipelines and other infrastructure.

Carbon dioxide lingers in the atmosphere at least a century, while methane—the primary constituent of natural gas—dissipates entirely after 20 years but has 86 times the heat-trapping power during that short life.

A second provision — the one at the heart of Bardwell’s testimony – would change the formula used by state regulators to evaluate the cost effectiveness of demand-side management programs. The proposed new metric would, according to the text of the bill, require “that the calculation of future benefits reflects the avoided costs to ratepayers resulting from reduced consumption of natural gas.”

Leslie Glustrom, of Clean Energy Action, told legislators that the discount rate issue “sounds kind of wonky, but it’s not that hard.” She cited the example of a compound interest rate of 7% applied to \$1,000. That formula produces \$2,000 after a decade.

“The discount rate is kind of the reverse of that process,” she said. “Discounting future fuel costs to make them like a small fraction of what they will be.”

Two pediatricians also testified in favor of the bill, describing adverse effects of natural gas on children. Howard Geller, senior policy advisor for the Southwest Energy Efficiency Project, said Xcel’s gas programs that encourage efficiency in 2020 produced \$30 million in economic benefits.

Republicans on the committee were sparse in their questions. One exception was at the outset when Rep. Dan Woog, a Republican from Erie, asked Bennett if her bill had calculated the effects of mining lithium and cobalt in China, which has few and less rigorous worker protections.

“We need to focus on the things we can do here,” Bennett replied. “Do you have any data on those effects from China?”

“No, I do not,” he said. **BP**

## **New Mexico’s first billionaire made fortune in solar sector**

New Mexico’s first billionaire on the annual Forbes’ list is Ron Corio, who has a net worth of \$1.1 billion.

Moving to New Mexico in 1979, he launched Array Technologies a decade later at the age of 28. The Albuquerque Journal explained that his company makes tracking systems for solar arrays that tilt and turn the panels to follow the sun. The company, which went public last October on the Nasdaq Stock Market, with a valuation of \$3 billion, controls 30% of the U.S. solar tracking market.

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“I kept my head down and worked hard,” Corio told the Journal. “The big thing is to do something you believe in and persevere at it,” he said.

“That’s what it comes down to, to get this kind of success—believe in what you do and stick with it.” *BP*

## Are sustainability folks in businesses complicit with evil fossil fuelers?

Auden Schendler says his new essay, [“The Complicity of Corporate Sustainability,”](#) was the result of a recent epiphany, one coincidental while riding a bicycle. And perhaps the damning extent of it was. But in a sense, it’s the logical conclusion of the journey he began in the 1990s when he was crawling under trailers to install insulation and doing the other menial grunt work of saving the environment.

Schendler, the senior vice president of sustainability at the Aspen Skiing Co., has gone from the bottom-up to top-down approaches during his career. In recent years, he has become very clear that the work that matters is less the self-transformation of an individual or company and more the way that power is leveraged to produce systematic change.

That means political power, in filings of the Colorado Public Utilities Commission (where the Aspen Skiing Co. is a frequent intervenor) to the halls of Congress, where Mike Kaplan, the chief executive of the Aspen Skiing Co., has sometimes appeared. It’s not enough to change out the light



**Auden Schendler**

bulbs in the parking garage, as important as that is.

Schendler is a student of social change and has examined the civil rights movement of the 1950s and 1960s.

In the essay published by the Stanford Social Innovation Review, Schendler turns to religion for the grounding of his argument.

“Many awkward stances are difficult because they are also moral stances. As a theologian once explained to me: ‘Jesus wasn’t killed because he preached loving kindness. He was crucified because he preached justice.’ In a sense, changing lightbulbs and cutting carbon footprints is loving kindness—there is nothing not to like. Tackling the systemic climate problem head-on, that’s ultimately about justice. And that will get you in trouble.”

Schendler’s newest argument might annoy some people because he wants to move the onus of responsibility from the individual or company and to the supplier of products that cause the greenhouse gas emissions. He wants to put the rifle scope directly on fossil fuels.

An imperfect comparison here is that of Big Tobacco and consumers —like me, for roughly 24 years of my life. Whose fault was my smoking habit? The gas station that sold me the cigarettes, one pack at a time (yes, for almost all of those years). Was it RJ Reynolds and its subsidiaries (Camels, Lucky Strike and a dozen others), who wanted me to think I was more manly, like the Marlboro guy, if I smoked?

Or was it me?

Global warming is different, because the fossil fuels being burned inordinately benefit the few at the expense of many—including future generations.

Schendler argues that businesses with their sustainability programs and universities with their supporting roles have been complicit in the continuing burning of fossil fuels. It’s more than a

distraction, and a dodge of the hard, controversial work.

It is evil, he says, “because it represents complicity. Complicity with the fossil fuel industry and the structure it created – its capture of government, its ownership of the economy, its buried but enduring subsidies, its support, by political proxy, for anti-democratic practices that would restrict regulation, the construction of a world in which citizens exist in a fossil economy, not of their creation but nonetheless blame themselves for it.”

Schendler wrote a 2009 book, “Getting Green Done,” about the hard work and many failures of business sustainability. This is the chapter, he says that should have ended the book. **BP**

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