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## Embedding solar gardens in the urban fabric

by Allen Best

Denver is getting green roofs. Why not roof-top solar gardens, too?

That's one of the potential outcomes of a program being pursued by the city. It recently was awarded a \$1 million state grant to further its vision.

The vision is community solar gardens not just on roofs, but also on parking lots and vacant land, all owned by the city government.

In providing the land or other underlying infrastructure, the city hopes to dismantle one of the major challenges facing community solar developers in more dense urban settings: cutting a deal with the owner of the ground.

That explanation comes from Jonathan Rogers, renewable energy specialist in Denver's Office of Climate Action, Sustainability, and Resiliency. Rogers joined the staff in April 2019 and quickly began working on the idea of using the assets of

the city government to expand the penetration of distributed energy resources.

He assembled a rough list of 158 city rooftops, parking lots, and vacant land parcels owned by the city government. The spaces, whether on roofs or soil, were mostly of 10,000 square feet in size, as that is approximately the size needed to make economic sense for developing a community solar project. The parking lots are adjacent to recreation centers, libraries, and schools.

Denver's program has several goals in mind. One is to create more local energy generation. The city government hopes to be able to generate 40% of the electricity it consumes.

A second goal is to provide electricity for lower-income residents.

The third and fourth goals overlap. The program hopes to see the solar gardens distributed across the urban fabric. This visibility helps provide connection to the broader goal of carbon reduction, says Rogers. A related motivation is to increase resiliency of its power supply to reduce the risk of power outages such as have occurred in California's cities due to wildfires.

Have no illusions. Most of Denver's power will come from elsewhere. That's true for city residents and businesses. For municipal facilities, the program estimates 60% of power can be generated locally.



**A community solar garden in Arvada, Colo. Photo/Allen Best**

With this grant, Denver wants to build 4 megawatts of community solar generation. Bids were due last week. In the future, Denver's programs aim for even more solar capacity.

The 158 locations identified for the community solar gardens may not all work out. Some roofs may not be able to withstand the added weight, for example. The final siting must accord with the capacity of the Xcel Energy transmission and distribution network. Among other considerations may be whether the location will be desirable for future electric vehicle charging needs.

Denver's program should be viewed in the shifting energy landscape. One of those shifts was the Community Solar Gardens Modernization Act. The 2019 law adopted by Colorado increased the maximized allowed size of a community solar garden to 5 megawatts. Before it was 2 megawatts. With PUC authorization even 10 megawatts will be allowed beginning in 2023.

The \$1 million grant is among \$10 million allocated by the [Colorado Department of Local Affairs Renewable and Clean Energy Challenge program](#) for implementation of projects in the realm of renewable energy and energy efficiency. **San Miguel County** got \$750,000 in the same funding, **Gunnison** and **Gunnison County** got \$510,000, **Fort Collins'** Aztlán Community Center \$200,000, and **Grand Junction's** BioCNG storage \$540,000. **Erie** got \$766,7094 for a hydropower project and **Breckenridge** \$650,000 for its aspirations for a net-zero workforce housing project.

Denver's project should also be seen as part of a partnership with Xcel Energy's Energy Future collaborations. That program also keys in carbon reduction and maximized energy efficiency options along with the support of economic development.

Eight communities have signed MOUs with Xcel: **Alamosa, Breckenridge, Denver, Lakewood, Louisville, Lone Tree, Nederland, and Westminster**. Those MOUs are the forerunners for work plans.



## June snowstorms? How to explain this in a time of rapidly rising temperatures

by Allen Best

If the storm that dropped up to a foot of snow in Colorado's mountains on June 8-9 was unexceptional, it provokes a question about the shifting climate.

How can snowstorms occur in June when temperatures in Colorado have been rising significantly in recent decades?

The short answer is that weather remains variable. The climate—the accumulation of weather over longer periods—has been warming, but not so much as to drown out the noise of short-term variability. On any given day, short-term variability will trump broader trends.

The Colorado River swells with runoff during a big water year. This year it is not among them, even with a June snowstorm.

June snowstorms are part of that short-term variability.

Records taken at Aspen, Breckenridge, and Climax—the mine between Leadville and Copper Mountain—all show frequent snow during June for the last 70 to 90 years. In Summit County, last week's snow was good enough to cause skiers to flock to Loveland Pass for a powder party. The largest June snowfall was 16 inches in 1984.

June snow is not weird—yet. But in coming decades, it may be.

"I think there's a strong likelihood we will be measuring some decline in late season snowfalls in the next 30 years," says Peter Goble, a climatologist with the Colorado Climate Center.

Temperatures have been rising across Colorado for the last 30 years, an average 2 degrees F, but more so in some areas—

western Colorado and particularly southwestern Colorado—than others.

It can still get cold—and record-breaking cold at that. But for every one new record low temperature in Colorado, there are three record high temperatures set, says Goble.

Along the Continental Divide north of Denver, the story is similar to that of ski towns on the Western Slope.

“Yes, June snows have become an endangered species at the 8,000- to 9,000-foot elevation level in the northern Front Range,” said Klaus Wolter, a former long-time staff member of the Earth System Research Laboratory at the National Oceanic and Atmospheric Administration. The same can be said about September snows, which were much more common as recently as the 1990s, he adds.

Wolter, who lives at around 9,000 feet near the old mining town of Ward, west of Boulder, said that it’s striking how big snow events have petered out in recent decades. But they still occur, as witnessed by the foot of snow that fell last week near Red Feather Lakes, northwest of Fort Collins.

And, to add a couple more wrinkles, the precipitation west of Boulder and Fort Collins might look very different west of the Continental Divide. He also points out that May temperatures have actually dropped 3 degrees Fahrenheit at Ward in the last three decades. None of this is simple.

“As we have all just had a crash-course in how science works with covid-19 (and I am sure we will learn plenty more about it than we ever wanted over the next few months), climate change has similar issues where what is considered firm ground at any given point may be a bit shaky after all.”

Firm is the effect on river runoff of warming springs such as this one.

The winter produced an “average+ snowpack,” as Eric Kuhn, the former general manager of the Colorado River Water Conservation District, described it in a mid-April tweet. By then, the predicted inflow of the Colorado River into Lake Powell for April-June had declined to 75% of average.

Since then, the spring splish-splash into Powell, the second biggest reservoir in the

Colorado River Basin, has diminished even more, to just 57% of average, according to a [report issued June 10 by the Western Water Assessment](#).

On the main stem of the Colorado River—including the Roaring Fork, Eagle, and Blue rivers—runoff was forecast to be near to slightly below normal. Looking back to mid-

winter, there were higher expectations.

Who purloined the precipitation? It was likely a result of above-average temperatures.

Nearly all of Colorado and Utah had temperatures 2 to 4 degrees above normal, and some places in western and southern Colorado had temperatures up to 6 degrees above normal, the report said.

Colorado had average high temperatures in May that ranked among the top 10 highest for the month since 1895, as did Utah.

This is part of a well-defined warming trend in Aspen, Vail, and Steamboat Springs, but also Summit County and the Colorado River headwaters in Grand County. The shift is documented on a website sponsored by the Aspen Center for Environmental Studies. It’s called the [Forest Health Index](#). There you can study temperature, precipitation, and other data for those river basins in Colorado that are at least one-third covered by trees. That’s most of them.

In the Roaring Fork River Valley, for example, the average temperature has

“June snows have become an endangered species at the 8,000- to 9,000-foot elevation level in the northern Front Range.”

**Klaus Wolter  
Ward, Colo.**

bobbed up and down year by year since 1980, but there's been a general rise. Think about a hill in Iowa rather than the face of Maroon Bells. Still, that's a breathtaking change when compared with climatic shifts of the past.

Less clear are the trends in the average peak streamflow. Precipitation also has giant ups and downs without a remarkable trend. The profiles of the Eagle, Yampa, and Blue rivers look similar.

The basins also have charts for frost-free days. This jumps around, too, but the trend is toward a longer growing season. That's true in Aspen, and it's true in Summit County, too.

Adam McCurdy, director of forest and climate for the [Aspen Center for Environmental Studies](#), says the numbers come from a combination of satellite, radar, and station data to reflect the general state of the river basin. The Roaring Fork data, for example, does not reflect precisely the temperatures and precipitation in downtown Aspen. They're a more general look at Aspen, Basalt, and Carbondale. The

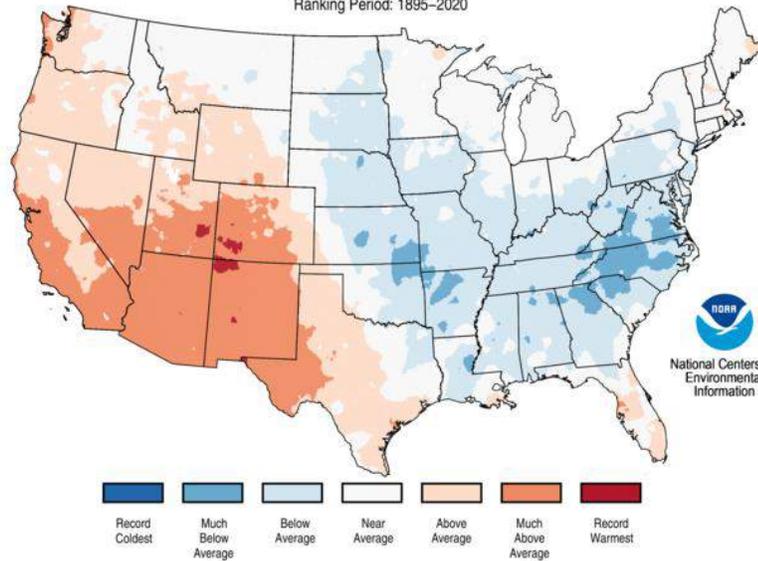


**Frost-free days remain greatly variability in the Roaring Fork Valley, as this chart from 1980 through 2018 illustrates. The same is true in other parts of Colorado, but the trend is clearly toward less frost and more warmth.**

### Mean Temperature Percentiles

May 2020

Ranking Period: 1895–2020



Created: Thu Jun 04 2020

Data Source: 5km Gridded Dataset (nClimGrid)

same would hold true for the upper Colorado River, which includes Winter Park and Kremmling, almost 50 miles apart.

Taking stock of the Colorado River Basin more broadly, scientists have been producing studies that detect a growing role of warming temperatures in the decreased river flows.

Jonathan Overpeck and Bradley Udall several years ago issued a study that found roughly half of the decreased flows in the Colorado in the 21st century was due to higher temperatures. The water was being taken up by increased evaporation but also transpiration by plants. In other words, what fell as snow and rain was returning to the atmosphere.

In a paper [published in May](#) in the Proceedings of the National Academy of Sciences, the two climate scientists—Overpeck from the University of Michigan and Udall from Colorado State University—dissect what is going on.

“It makes sense that longer growing seasons enabled by warming temperatures mean more total evapotranspiration, drier soils and reduced river flows,” they say.

What about increased precipitation? After all, a warming atmosphere can hold



**Fire season has begun in southeastern Colorado, as was evident with smoke from a fire as seen from the Durango home of Britt Bassett on June 11.**

more precipitation, about 7% per one-degree increase Celsius (1.8 degree Fahrenheit).

Outside the American Southwest, some areas have been getting more rain and snow. That unevenness holds true even within Colorado. The Durango area has been getting distinctly drier. Precipitation in the Denver-Greeley area, in contrast hasn't changed all that much.

Overpeck and Udall would have us think of the Dust Bowl, a time during the 1930s on the Great Plains of both hot temperatures and drought. Recent "flash droughts" on the High Plains in 2012 and 2017 highlight how extreme spring and summer temperatures can speed the onset, and worsen the impact, of dry spells and droughts.

Now, it's fire season, too. Gunnison County this year found itself in "exceptional drought" in May, while the Aspen area has been in moderate drought, points out McCurdy, taking a break from parenting leave and the diaper-changing duties for an infant to talk with a reporter. In this case, Aspen and Vail would be just fine being called something other than exceptional.

## **NOAA says expect a very hot summer, maybe even a record year for heat**

Colorado and other Western states should expect above-average temperatures for July, August, and September, part of what could be a record year for global heat.

It's part of a trend, notes [the New York Times](#): "Each decade since the 1960s has been warmer than the one before, and the five hottest years occurred in the second half of the last decade."

Globally, last month was tied with 2016 for the hottest May on record, with average land and sea temperatures that were 0.95 degrees Celsius, or 1.71 degrees Fahrenheit, above the average dating back more than a century.

It is now virtually certain that globally, 2020 will be one of the five hottest years on record, NOAA climatologist Karin Gleason told the newspaper.

The five hottest Julys have occurred in the last five years, and nine of the 10 hottest have occurred since 2005.

Also notable: nights have been warming more rapidly than days.

# What will it take for Colorado to hit decarbonization targets in 2030?

by Allen Best

Closing most of the coal plants in Colorado during the next decade will be the easy part.

Transportation—already the No. 1 source of greenhouse emissions in the state—will be a much tougher challenge.

But even that won't be enough to allow Colorado to hit its targeted reductions in greenhouse gas emissions. There will have to be reductions in emissions caused by buildings, but also farm operations and other sectors of the economy.

The Colorado Climate Action Plan, a law also known as HB 19-1261, specified a target of 26% reduction by 2025, as compared to 2005 levels. Colorado is already at roughly 18% based on improved energy efficiency and planned coal plant retirements.

Far heavier lifting will be required to achieve the 50% reduction by 2030 identified by the law and then the 2050 goal.

Can Colorado hope to hit that 2030 target using the tools available? For their last two meetings, members of the Air Quality Control Commission have been asking that question in different ways.

The commission has been moving forward deliberately, methodically, on vehicle emissions standards and tightening of regulations governing oil and gas extraction and distribution. In May, the commission adopted regulations reducing use of hydrofluorocarbons, a powerful greenhouse gas, in refrigerants.

Far more are being queued up, such as regulations to further reduce methane

emissions from oil and gas operations, the fourth largest source of emissions in Colorado.

Coal plant closings continue to be announced, in line with explicit legislative orders to utilities to reduce emissions 80% or more by 2030 and shifts in technology and costs that make those closings easy to justify. The commission has authority, under its requirement to create rules to address regional haze, to make sure the emissions drop rapidly.

But will all this be enough? Should the state be moving even faster? At the commission's May meeting, and then with more elaboration in June, a significant minority of commission members expressed reservations about the pace of the state's actions.

**A**uden Schendler, a commission member, juggled baseball and football idioms to make his point at the June meeting about "astoundingly hard" rule-making. "We keep knocking things out of the park," he said, "But they only move the ball a little bit down the field."

Schendler, along with two commission members from Boulder County continued to wonder whether broader, more muscular top-down regulations will



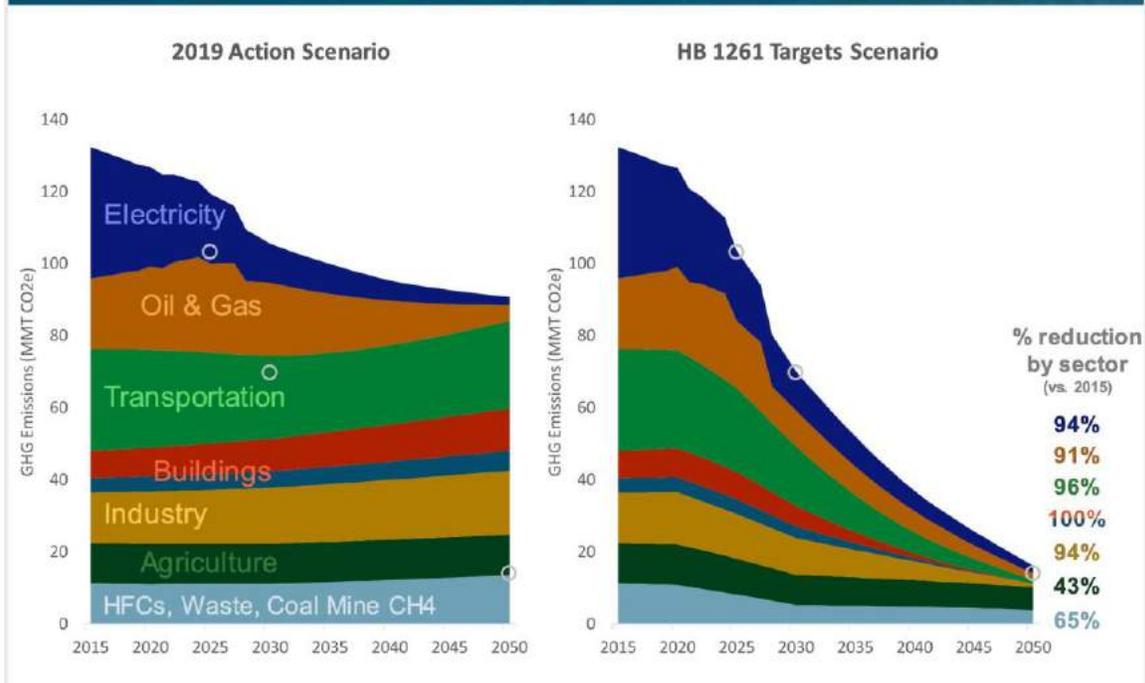
**Auden Schendler**

be necessary in Colorado for the state to briskly decarbonize its economy as identified by the law. More sweeping changes might require additional legislation or even voter approval of tax reform.

"We need to stop digging a deeper hole," said Elise Jones, an air commission member who is also a Boulder County commissioner. She pointed to actions taken by DRCOG, or the Denver Regional Council of



## HB 1261 Targets Scenario: Updated Emissions by Sector



Governments, that she described as working against Colorado’s decarbonization goals. She did not describe them.

Along with Jana Milford, a commissioner who is also from Boulder County, Jones fretted about long-term infrastructure decisions being made now that will work against the state achieving its goal.

“We have an emergency here,” she said later.

HB 1261 made the air commission, or AQCC, the lead agency in achieving emissions reductions, but also describes roles for the Public Utilities Commission and other state agencies.

Two agencies stand out in creating this theoretical path forward. It’s described without apparent sense of irony as a “roadmap” by the Colorado Energy Office and the Colorado Department of Public Health’s Air Pollution Control Division. They predict September delivery after a summer of continued work.

But what exactly will it look like? In their draft plan, the agencies describe a variety of

actions that altogether may—or may not—get Colorado to where it needs to go. The process they favor calls for checking in on the progress from time to time during the next decade, then modifying the course as necessary. They call it adaptive management. This approach is suggested by the law, which says revisions to the plan may occur “as necessary over time to ensure timely progress toward the 2025, 2030 and 2050 goals.”

To Jones, from Boulder County, it feels “like flying blind a little bit.”

Jones wondered whether carbon pricing might be the broad policy, the backstop, that Colorado needs to diminish emissions.

This would be a substantial shift for Colorado—and politically a heavy, heavy lift, quite possibly requiring direct approval of voters. Funding could be shifted from income to pollution, i.e. a carbon tax. An alternative would not reduce income tax but instead fully refund taxes on carbon to

the public through a process carbon fee and dividend.

“A backstop may or may not be the right thing,” said, Tony Gerber, a commission member who is physician and professor from National Jewish Health.

John Putnam, director of environmental programs for the CDPH&E, said an attempt will be made to address this in the roadmap. But several times in the course of two afternoons speaking with commission members last week he identified a funding gap. California, has \$50 million just to administer its cap-and-trade program, he said. And his agency, he said, has funding for only 5 or 6 people in its climate change department.

At least one environmental group says the state needs to move more briskly.

“We can’t just check back every two years. We really have to put a lot of thought into what the total regulations will be,” said Stacy Tellinghuisen, senior climate policy analyst for Western Resource Advocates.

While the state’s process has involved some stakeholder groups, she said she believes the state – even if short-funded given the enormity of the task – should make more effort to tap the expertise of stakeholder groups. She pointed to the formulation of stakeholder groups by Maine as part of its effort to achieve comparable reductions in emissions to those in Colorado.

**T**he draft roadmap sketched by the two agencies starts with the electric source— mostly, but not completely, on its way toward decarbonization—and also sees steady work in reducing methane emissions from the production of oil and gas. The steps here range from proposed rules governing continuous monitoring for methane to, down the line, electrification of oil and gas operations, something that already has started but which could be expanded.

Two tough sectors will be transportation and buildings. Unlike electrical generation, which involves a handful of utilities, most of them already regulated by state government, transportation involves several million people. It’s already the largest source of emissions in Colorado.

The state has plans to induce electrification of transportation, with a goal



of having 42% of vehicles on the road by 2030 electrified. Xcel Energy recently submitted its proposal to spend \$102 million to help add charging infrastructure, to encourage more comfort among EV buyers. And there’s a possibility that Colorado might tag along with California’s upcoming efforts to adopt emissions standards for medium- and heavy-duty vehicles.

How much will Coloradans reduce their annual vehicle miles traveled as a result of the stay-at-home procedures now commonplace during the time of covid? The two state agencies and their consultant, Energy + Environmental Economics, tend to think we’ll be driving less. Nobody really knows, of course. “There is a lot of uncertainty,” agreed Amber Mahone, from the consulting company, when pressed by Milford.

Ditto for oil and gas operations. The modeling here suggests a flattening of extraction in Colorado in the next decade, unlike the rambunctious growth of the past

two decades, first in the Piceance Basin and then in the Wattenberg Field. But nobody really knows.

Legislators have already tightened building codes, requiring local jurisdictions to adopt one of the last three iterations, each of which successively tamps down energy use in homes and other buildings. Before, there was no requirement.

Will Toor, director of the Colorado Energy Office, discussed expansion of benchmarking from commercial buildings, such as has been adopted by Denver, Boulder, and Fort Collins (and which is being studied by Aspen, perhaps among others). A bill introduced into the Legislature this year—but dropped, because of covid constraints, would have required rulemaking around benchmarking.



(For a primer on benchmarking, [see Urbanland story.](#)) Performance standards are designed to incentivize modest improvements over time to allow lower-performing buildings to move up to higher performance.

And a renewable natural gas standard was also dropped, for similar reasons, but could have a role in reducing emissions from buildings.

As for taking action to reduce emission of methane from coal mines, Schendler advised that this should be done—because it’s relatively easy and it has a big impact. As an employee of the Aspen Skiing Co., he was largely responsible for Colorado’s sole success to date in that regard.

## FERC accepts Tri-State’s contract termination filing, but what does that mean exactly?

The Federal Energy Regulatory Commission on June 12 accepted Tri-State’s contract termination payment filing and referred it to FERC’s hearing and settlement judge procedures.

What to make of this?

In a statement issued by Tri-State hours later, chief executive Duane Highley called it a “decidedly positive outcome.” He said that the decisions give each of Tri-State’s members a voice and they will be treated equally on wholesale contract and rate matters.

“Importantly, FERC rejected arguments that it did not have jurisdiction on contract termination payments.”

Jessica Matlock, general manager of LaPlata Electric, one of two member co-ops weighing whether to seek an exit from Tri-State, said FERC had three choices: 1) reject the contract termination payment tariff; 2) accept and approve it; or 3) accept but suspend the tariff.

“FERC went with the third path, and because the CTP tariff is not approved, our Colorado case moves forward.”

An administrative law judge for the Colorado Public Utilities Commission in May spent about a week hearing from both La Plata and United Power about what constitutes fair and equitable terms of exit. Tri-State also had its days in court.

The judge has not issued a decision, but Matlock said she’s hopeful that one will be rendered by late June or early July.

Meanwhile, the legal skirmishing between United Power and Tri-State continues in Adams County District Court. There has been a press release, but nothing really new.

## Hope continues for carbon capture in Wyoming, New Mexico—and even Colorado

In New Mexico, the Escalante coal plant will close later this year. In Colorado, the first of the Comanche plants will close in 2023, and one of the Craig units in 2025.

But still, hope remains that carbon capture and storage technology will arrive in time.

Jason Begger, executive of the Wyoming Infrastructure Authority (soon to be the Wyoming Energy Authority), drew attention to his state's ongoing effort to "turn a liability into an asset." Speaking on a webinar sponsored by the Center for Climate and Energy Solutions, Begger drew attention to the [Wyoming Integrated Test Center](#), which he described as the largest coal-combustion research center in the United States.

Located near Gillette, the center is the host site for \$20 million in prize money through the NRG COSIA Carbon [XPRIZE](#) competition. There are divisions for both coal and natural gas. Within the coal category there were 12 teams creating technologies for use at a coal plant.

The winners—which Begger said he hopes will be announced by early next year—demonstrate technology that can best remove carbon dioxide emissions from coal combustion.

The hope is that the technology can be scaled up and spread across the world.

"This isn't just about power plants. Oil plants are huge emitters of CO<sub>2</sub>, too," he said. "You are going to have to move these emissions from the sources to places where they can be used."

Wyoming also sees coal as the key to firming up renewables, because of the baseload generation.

He also said that for the United States to not burn coal will not provide the global answer for warming. "It doesn't matter what an individual state is doing," he said. He pointed to Asian countries—India, South Korea, and China among them—who have or will surpass the U.S. in carbon emissions.

Wyoming contributed \$15 million to the prize money, and Tri-State Generation & Transmission \$5 million. Basin Electric, a partner with Tri-State on a coal plant at Wheatland, Wyo., provided the facility.

Hope also continues in New Mexico, where the Public Service Co. plans to stop operating the 847-megawatt San Juan Generating Station by mid-2022. A company called [Enchant Energy Corp.](#) will get the plant near Farmington for \$1—yes, one George Washington—and plans to spend \$1.3 billion for a carbon-capture system that would reduce emissions by as much as 90%.

Peter Mandelstam, the chief operating officer for Enchant, told [Bloomberg](#) earlier this month that a federal tax credit similar to what allowed wind energy to prosper, was crucial to the New Mexico project. "The Enchant project only works if the tax credit is in place."



The San Juan Generating Station near Farmington, N.M.

Bloomberg explained that Congress more than doubled the tax credit in 2018, providing \$50 for every metric ton of CO<sub>2</sub> that's sequestered, or \$35 a ton for producing oil worth the captured carbon. Financing, however, was held up by unanswered tax questions. The IRS issued proposed regulations in May.

CCS—the “S” sometimes stands for storage, and in other cases sequestration—has had a checkered history. The federal government has bestowed many billions of dollars in aid for projects, most notably of late at the Southern Co.'s Kemper plant in Mississippi. But Southern pulled the plug in 2017 because of cost overruns. Similar problem caused a project in Illinois to be shelved about a decade ago.

One problem has been that it takes so much power—about a third of electrical generation at a plant—to sequester the carbon.

Even so, 13 commercial systems are operating in the United States, and 30 more are in development, according to the Carbon Capture Coalition.

At least one Colorado utility also remains interested in carbon capture. Jeff Lyng, director of energy and environmental policy for Xcel Energy said in the webinar that “advanced” carbon capture remains one of the options for the utility to achieve its stated goal of achieving zero-emissions energy. Alice Jackson, president of Xcel's Colorado division, said the same thing in late April at a Denver Museum of Nature and Science event.

Lyng also identified the following as being possible pathways for Xcel to its mid-century goal of zero-emissions:

- advanced, dispatchable renewables
- zero-carbon fuels
- advanced nuclear, modular reactors
- long-duration storage and demand response. By long duration, Lyng specified, he means days, weeks and months – not merely hours.



## Solar co-op launched for Grand & Jackson counties

The non-profit [Solar United Neighbors](#) has launched a new cooperative for Grand and Jackson counties, which are coterminous with the Middle Park Electric.

The primary advantage of the solar cooperative is that members can leverage through their amassed numbers to achieve improved group economics. Solar cooperatives have previously been established in the Yampa Valley around Steamboat Springs and Craig, the Grand Valley around Grand Junction, and in the Fort Collins area.

Partners in this new co-op, called the [Colorado Headwaters Solar Co-op](#), include Fraser's municipal government, New Energy Colorado, and Solar CitiSuns, among others.

“The cooler mountain air and higher alpine elevations make for an ideal landscape for solar, as panels produce more energy being closer to the sun and in colder temperatures,” said Jacob Schlesinger, chair of the co-op steering committee and partner at Keyes & Fox, LLP.

Time is of the essence, he said, as the 26% federal tax credit will be reduced.

After a competitive bidding process facilitated by SUN, co-op members will select a single solar company to complete the installations. However, joining the co-op does not obligate members to purchase solar.

# Coal plant to close but much needed to hit 2030 goal

FORT COLLINS, Colo. — The Platte River Power Authority plans to cease production of electricity from its 280-megawatt Rawhide power plant north of Fort Collins by 2030, 16 years before its original retirement date.

The utility delivers electricity to Fort Collins and also three other owner communities: Loveland, Longmont, and Estes Park. They are also owners.

The decision to set the retirement resulted from a confluence of several factors. One of them, a new survey of customers this spring in the four towns and cities, once again affirmed broad support for non-carbon energy resources. The survey found 63% of residential customers viewed the non-carbon resources as somewhat or very important.

Platte River also has an 18% interest in two coal-burning units at Craig Generating Station. Unit 1 is scheduled to end production in 2025 and Unit 2 no later than 2030.

The stage for today's announcement was set in December 2018 when Platte River directors [adopted a policy](#) calling for 100% non-carbon energy mix by 2030.

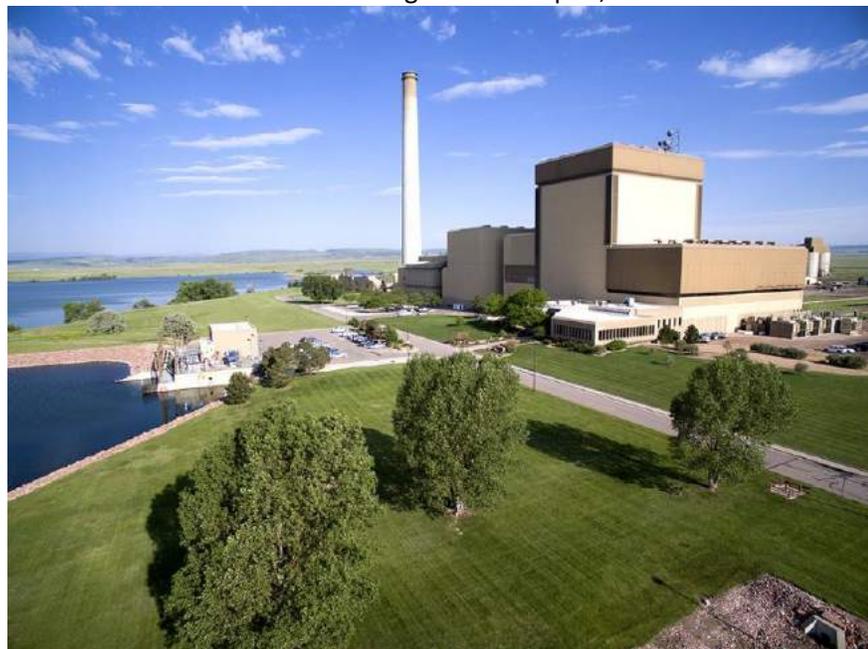
**The Rawhide power plant lies north of Fort Collins.  
Photo/Platte River Power Authority**

The [resource diversification policy](#) identified nine advancements that must occur in the “near term” to achieve that 2030 goal. They include active participation by Platte River in an organized regional market; matured battery storage performance and declined costs; and increased investment in transmission and distribution infrastructure.

Platte River is among most Colorado utilities who will be joining energy imbalance markets in the next two years. There is common agreement, however, that deep decarbonization such as planned by Platte River and other Colorado utilities will require participation in a robust regional transmission organization, or RTO, such as operate in other parts of the country.

Xcel Energy in December 2018 gained national attention when it announced its intentions to reduce carbon emissions 80% by 2030 as compared to 2005 levels. It operates in eight states and supplies more than 60% of the energy consumed in Colorado. Xcel said it planned to achieve emission-free electricity by 2050, but like Platte River, said technology must continue to evolve for it to achieve that goal.

Holy Cross Energy, the co-operative serving Vail and Aspen, has shown



innovation that has attracted national attention, but nonetheless has committed only to a [70% carbon-free goal called Seventy70Thirty](#). It could, however, achieve that in 2021.

Several coal plants in Colorado have already been retired, and many more large units will be retired in the next decade. Only the plants at Hayden and Brush and Comanche 3 at Pueblo are currently scheduled to remain in operation. Xcel is the sole or majority owner of the three plants.

Spread of covid-19 interrupted Platte River's integrated resource planning process, which had been scheduled to include public meetings. But managers of the utility decided it was best to announce the retirement to support state regulatory timelines. Colorado last year adopted a law that identified a target of 80% emissions reduction from the electrical sector by 2030 and 50% more broadly in the state's economy.

"Although circumstances associated with the coronavirus prevent us from making this announcement in alignment with our current IRP process, we need to continue moving forward to reach our Resource Diversification Policy's 100% noncarbon goal," said Jason Frisbie, chief executive of Platte River.

"Rawhide Unit 1 has served us extremely well for the past 36 years," said Wade Troxell, Platte River Board chair and Fort Collins mayor, "but the time has come for us to move toward a cleaner future with grid modernization and integration while maintaining our core pillars of providing reliable, financially sustainable and environmentally responsible energy and services."

Platte River Power projects that 55% of electricity will come from coal this year, supplemented by 19% from hydropower, 17% from wind, 3% from solar. Another 1% comes from natural gas; and 5% comes from purchased power, which could include fossil fuels.

Construction to build Rawhide Unit 1 began in 1979 and commercial operations started in 1984 and have performed with exceptional reliability, capacity, and environmental performance. It had been scheduled to retire in 2046.

"Unit 1 has outperformed nearly every other coal plant of its type in the nation and that is a testament not only to its design but also to the people who run it," noted Frisbie, who began his career at the Rawhide Energy Station and became its plant manager before being promoted to chief operating officer, then general manager and CEO of Platte River.

In addition to Unit 1, the 4,560-acre Rawhide Energy Station also hosts five natural gas combustion turbines and a 30 MW solar farm, along with another 22 MW of solar power (with battery storage) currently under construction. Energy from the 225 MW Roundhouse wind farm located in southern Wyoming will be delivered to the Rawhide Energy Station and then to the owner communities.

Frisbie said plans will be developed to smoothly transition 100 workers to new roles at the other generation resources at Rawhide after the coal-plant closure. Following its retirement, Unit 1 will undergo a lengthy decommissioning process.

Coal for Rawhide comes from the Antelope Mine near Gillette, Wyo.

## Want to be on the mailing list for Big Pivots?

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## Colorado Springs looks to close its downtown coal plant by 2023, second plant by 2030

COLORADO SPRINGS, Colo. — The role of natural gas as a bridge fuel will inevitably be part of the discussion on June 26 when the Colorado Springs City Council takes up plans for the city’s municipal utility.

The city’s Utility Policy Advisory Council and advocates back plans for closing the Martin Drake Plant, which is located near the city’s center, by 2023, and then closing the newer Ray Nixon plant, which is about 15 miles south of the city center, by 2030.

The Drake plant has two units, constructed in 1968 and 1974, while the Nixon plant has one unit, completed in 1980. Together, the units have a total generating capacity of not quite 400 megawatts, [according to Wikipedia](#).

If the city council goes forward with that plan, Xcel Energy will have the only coal

**The Martin Drake coal plant lies on the edge of downtown Colorado Springs. Photo/Allen Best**

plants still scheduled for operation after 2030. It owns Pawnee altogether, and has majority interest in the Hayden units and in Comanche 3.

The advisory group’s recommended portfolio, No. 16, calls for replacing generation at the Drake Plant with smaller generators that burn natural gas, using technology adapted by General Electric from jet engines to electrical generation. The technology is called Aeroderivative. A new gas plant is proposed to replace the generation from the Nixon plant. Together, the natural gas generation would total 500 megawatts.

The Sierra Club, which has had a notable presence at meetings, has advocated for portfolio No. 17. It would have less gas and more wind, said Anna McDevitt, the senior campaign representative for the Sierra Club’s Beyond Coal initiative in Colorado and New Mexico.

“Other utilities are retiring coal and replacing with renewables only,” she said in prepared remarks at last week’s meeting. Portfolio 17 “would allow Colorado Springs utilities to catch up to what the rest of the state is doing. Not to mention, CSU’s own data shows that in 2030, gas would hardly be used more in portfolios with the gas plant than portfolio 17 without a new gas plant...”

What is at stake here?

In other words, she said in a later interview, choosing the recommended portfolio will force ratepayers to run a gas plant that is rarely operated.

The same note was struck by Gwen Farnsworth, senior policy energy advisor at Western Resource Advocates. She worries natural gas infrastructure will end up being stranded by emerging technology.

She suggests competitive bidding, allowing wind, solar, and storage to compete directly against fossil fuels. They can effectively compete on cost against both existing natural gas generation as well as new natural gas, so that existing gas can be used more as a backup than baseload.

Black Hills Energy, the utility that serves the Pueblo-Canon City area, is testing that out with its competitive solicitation that was filed in a Renewable Advantage 120 Day report (19A-0660E) filing with the Colorado PUC. The new solar projects would displace gas burned at the existing units near the Pueblo Airport that are operated as needed under a power-purchase agreement.

## **Upheaval in New Mexico legislatures races, as the conservative Dems fall**

SANTA FE, N.M. – Defeat of four of five-conservative-leaning Democratic state senators in the primary election has progressives—including climate change activists—beaming.

“The results were remarkable, in part because of how influential the incumbents were and how long many of them have been in Santa Fe,” said the [Santa Fe New Mexican](#). The newspaper made no mention of climate change, but instead of pointing to the power of the “Formidable Five” in blocking high-profile legislation, including a bid to legalize recreational cannabis and efforts to tap more of the Land Grant Permanent Fund for early childhood education.

A group called Conservation Voters New Mexico offered a different takeaway. The Senate, it said in a press release, will have a more pro-climate majority if the Democratic candidates who won in the primary election are elected.

“The oil and gas industry spent thousands of dollars to defeat me, but our message spoke louder than their money,” said Siah Correa Hemphill, who defeated one of the Democratic incumbents. “People are ready for change and want our state to invest in our communities. It’s time we put people first.”

The conservation group, via its political action committee, Verde Voters Fund, spent \$458,000 in races across the state, \$140,000 less than the money from the oil and gas industry. They lost a few races, according to the tally on their press release, but not many.

The conservation group did not predict exactly what difference this may make if the Democrats prevail in the November election.

## **Another wind farm, but will revenues make up for loss of fossil fuels?**

SANTA FE, N.M. – At least 29 more wind turbines will be built for another wind farm southeast of Albuquerque, in Tarrant and Lincoln counties, the result of another lease approved for state trust lands in New Mexico.

Pattern Renewable was the winning bidder of a public auction for the right to develop the 16,422 acres for the Western Spirt Wind Farm.

A press release from the office of Stephanie Garcia Richard, the commissioner of public lands in New Mexico, said this is the eighth wind energy lease she has signed since taking office in January 2019. With several other wind projects, this newest wind farm will increase New Mexico's wind generating capacity by 414 megawatts. The project will also yield \$80 million for New Mexico schools.

The newest wind farm, said Garcia Richard, will make a dent in New Mexico's effort to be carbon neutral by 2045.

In May 15 story, Garcia Richard told the Albuquerque Journal that both storage and improved transmission will be necessary to advance New Mexico toward its carbon reduction goals.

But the replacement of fossil fuels with renewables is not a perfect one, she told the newspaper. "Even with all this interest in renewables, in comparison with the loss of revenue from oil and gas, this cannot fill that void," she said.

She said the state school trust lands must be diversified to increase manufacturing, technology, agriculture, and recreational uses.

New Mexico, which has even more ambitious economy-wide decarbonization goals than Colorado, also has a much bigger and powerful oil and gas industry operating in the state's share of the Permian Basin.

In February, New Mexico ranked third in the nation in crude oil production, with 1.1 million barrels per day, compared to 503,000 barrels a day from Colorado, which was fifth in the nation, [according to the EIA](#). Wyoming ranked 8th with 278,000 barrels a day.



## Ski industry group adopts a new, urgent tone in linking covid and climate change

by Allen Best

The National Ski Areas Association, the ski industry's primary trade group, was long restrained in its conversation about climate change. That has changed.

The front-and-center story in the current issue of the organization's official magazine, the NSAA Journal, has a muscular call to action. The story, "Cross-Crisis Solutions," links the global covid-19 pandemic and global climate change.

In crisis lies opportunity, says Heather B. Fried, the article's writer, and the magazine editor.

"From one immediate crisis to another that's been smoldering on the backburner, the opportunity in this moment feels palpable," she writes. "The lessons we take out of covid-19 may mean that, sometime down the line, we won't also have to face the disappearance of winter."

Kelly Pawlak, the president of the trade organization for almost two years, strikes a careful but determined tone. "I would like to think the bipartisan support for covid-19 relief packages will persist, and that some of that same urgency will carry over in tackling other world problems, like working to find solutions to our climate crisis."

The article suggests the need to fight the Trump administration rollback of the low-carbon fuel standard and supports extension of tax incentives for renewable energy generation.

**A** disclosure: I write periodically for Ski Area Management, a trade magazine. In 2003, the editor, Rick Kahl, asked me to summarize what was being said about global warming. This was a topic to which I had hitherto paid little attention. What I read caused me to bolt upright. It changed my career path.

During my deep dive during the next year into the science and politics, I visited Auden Schendler, who was trying to reform best practices at the Aspen Skiing Co. and even then had set out to help create the national policies needed to make meaningful change. The ski industry's voice today sounds an awful lot like that of Schendler a decade ago.

**The Colorado Solar and Storage Association is proud to support BIG PIVOTS.**

We welcome other supporters of the energy transition to join COSSA's celebration of the Summer Solstice with a kickoff event to a summer of online trainings, virtual exhibits, and industry discussions to ensure Colorado's clean energy industries are united during the COVID-19 crisis.

View the agenda for the June 18, 2020 online event at <https://cossa.co/solstice/>

Tickets are \$25, with \$10 donated to the Food Bank of the Rockies to support their efforts during the COVID-19 Crisis



For Ski Area Management, I continued to contribute articles about energy efficiency in buildings, about the latest understandings about impacts of warming on high elevations. My fact-finding did not uncover imminent Armageddon for Colorado ski areas. Narrower winters, true, more rain instead of snow, like soggy Whistler. Probably less affluence among a middle class that even high-end ski resorts depend upon to fill out the season. Lower-elevation ski areas, though, face a much more dire future.

The ski industry is a mixed bag politically. If anything, it edges toward the conservative. Ski company offices tended to think of themselves as environmentalists, because they're not miners nor, on a large scale, loggers. But climate change is a far different—and difficult—discussion. It's us, not them.

**M**y articles danced around this difficult conversation. So did, I think, the policies of NSAA. That has shifted over time. Geraldine Link, the director of public policy, most recently has guided the organization into partnerships within a broader coalition of outdoor industry groups to create a unified and amplified voice about the need for federal policies to address climate change.

Link was featured prominently in the NSAA's story. "The carbon reductions that we are seeing right now, estimated to be around 5% globally, show us how much we will have to do in the future to curb warming," she says.

"If we need a 7.6% drop in emissions to meet the target of keeping to a 1.5-degree Celsius temperature rise, we won't be shutting the world down to get there. We need to make investments and decisions now – in transportation, power and infrastructure – that help us transition to a green energy economy."

In a follow-up e-mail, she insisted this is not a new direction for the organization. "NSAA has voiced concern on climate

change, taken action on climate change, and encouraged our members to take action on climate for quite some time now,” she said. My ears hear a new, more urgent tone.

David Perry, formerly of the Aspen Skiing Co. and now of Alterra Mountain Co., says in the article that he sees at the intersection with covid a “massive opportunity for the dialogue around the climate crisis to be raised to a new level.”

Economists say we need a high price on carbon emissions to reflect the true cost of emissions and accelerate the necessary changes. A month ago, I’d have said that was utterly impossible.

But look no further than Black Lives Matter to see how quickly public opinion can pivot. It has been so long in coming, this toppling of the statues erected to those men—always, the men—who took up arms to defend and expand slavery, the statues themselves erected decades later to buttress the Jim Crow laws, those laws working hand in hand with the white-robed agents of terror, the Ku Klux Klan, to defend the old order of the antebellum South.

It seems like a time that anything just might be possible.

### **You might also be interested in...**

#### **[Dylan and the Sand Creek Massacre](#)**

Bob Dylan has the Sand Creek Massacre on his mind. Wonder what he’ll do with it. Colorado has several other massacres he could toy with.

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