

# BIG PIVOTS

ENERGY *and* WATER *transitions in Colorado and beyond*

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## Colorado puts the kibosh to plastic bags. What's next?

by Allen Best

Colorado has a law signed Tuesday afternoon by Gov. Jared Polis in the shade of a tree outside of the Governor's Mansion. Beginning in 2024, stores can no longer give out either single-use plastic bags or foam containers such as for coffee and other food products.

With this law, called the Plastic Pollution Reduction Act, Colorado became the 10th state to take action against single-use plastic bags and the 8th against foam. It is the first interior state in both cases, according to the Colorado Public Interest Research Group, an advocacy group that was a key advocate for the legislation.

Danny Katz, the executive director of CoPIRG, also noted that Colorado is the first state to repeal a law that denied local governments the ability to regulate plastic pollution in their communities. This cleared the way for Denver to institute its ban on free plastic shopping bags beginning July 1.

Rep. Lisa Cutter, a Democrat from Jefferson County and a prime sponsor of the bill, called it a "great first step." Environmental groups agreed that the work is far from done. Further legislative efforts may attempt to suppress the large amounts of plastic used in packaging and which cannot be easily recycled.

The numbers cited by CoPIRG defy the imagination. The group estimates 1.2 million foam cups get distributed each day in Colorado and 4.6 million plastic bags.

Those numbers seem unbelievable. But then I reflect on a trip I took in May to hear the meadowlarks sing amid the sand hills of northeastern Colorado. It's a sparsely populated area, neighbors sometimes a mile apart. Even so, along the border between Phillips-Yuma counties, plastic bags snagged on the barbed-wire fences fluttered in the spring breeze.

Everywhere we go, from the borrow pits of graveled county roads on the Great Plains to our city streets to the mountain rivers, we see the evidence of our mindless devotion to the easy packaging of plastic.

This plastic is not a climate change problem, per se. But it is concurrent with our proliferating use of fossil fuels and acceleration in greenhouse gas emissions. Pew Charitable Trusts say that production soared from 2 million metric tons in 1950 to 348 million metric tons in 2017—an amount that would double by 2040 if no changes are made.

Mountain resort towns led Colorado's push against proliferation of plastic. Telluride was first, in 2010, with a law that precluded distribution of free plastic bags at its two grocery stores (it now has a third). This followed a contest among ski towns to attempt voluntary reductions.

There was opposition, says Stu Fraser, then the mayor, but the council was united. Ginny Fraser, the former mayor's wife, says



there does seem to be less plastic in the town.

Others followed Telluride in the next several years: Aspen, Boulder, Breckenridge, Carbondale, Crested Butte, and Vail.

Basalt also banned single-use plastic bags, but the ban was overturned by voters. Aspen's ban was contested in a legal case that went to the Colorado Supreme Court, but the ban was upheld because the fees collected for distribution of paper bags were earmarked for program costs. As such, the town said it was a fee, not a new tax. Justices agreed.

The bill allows exemptions within stores and also the types of stores. Plastic bags used for apples and oranges, for example, are exempted. So are bags used by pharmacists to deliver medication. There are other exemptions as well.

Some stores are also exempted. Those with two stores or fewer in Colorado do not have to comply with the law. That means the community-owned grocery store in Walsh, a town in southeastern Colorado, will not have to comply. Ditto for the unique grocery store and deli in southeastern Colorado called the Dolores

Food Market. And presumably there's a gas station in Julesberg or Craig that is individually owned and not part of a chain that won't have to comply with the ban on plastic-foam coffee cups.

But City Market/King Soopers, Safeway, Walmart and dozens and dozens of other chain stores—yes, they will have to comply.

State Rep. Alex Valdez, a Democrat from Denver, said at the bill-signing at the Governor's Mansion that HB21-1162, of which he was a prime sponsor, that plastic is not just a matter of visual pollution. "Plastic ends up in the food you eat," he said, describing the measure as an effort to protect long-term human health.

The bill was adopted along mostly partisan lines. Even those Republican legislators who supported some clean energy legislation bills—Senators Kevin Priola of Brighton and Don Coram of Montrose, and Rep. Marc Catlin of Montrose—opposed the bill.

Among those standing behind Gov. Jared Polis as he delivered his remarks was the mayor of Avon, Sarah Smith Hymes.

Avon adopted a ban on free plastic bags that went into effect in 2018. Town leaders wanted to push further to take on

disposable polystyrene foam products, such as are commonly used to package fast foods. Styrofoam is one branded polystyrene product. This bill addresses that.

“It really went smoothly,” she said of Avon’s action in an interview after the bill signing. She credited Aspen with crafting a path but also Vail in helping normalize the idea of carrying reusable bags into grocery stores. “It didn’t take very long for people to begin taking bags when walking into stores.”

Her professional career, which included working in China, where she spent many years selling American processing and packaging machinery, made her aware of plastic and other pollution on a global scale.

In Avon, where she settled down to rear a family, she became cognizant of plastic bags plugging up storm drains and of plastic litter along the Eagle River and tributary creeks.



“It was on my mind for many, many years,” she said.

Avon is a town of 6,500 people, small by conventional standards—except that it’s in a resort area. It has a Home Depot, a Super Walmart, and a good-sized City Market. The proliferation of plastic, she says, impacts the community far more than the population alone would suggest.

Like Cutter, the state representative, Smith Hymes believes there is far more work to do. There’s just too much plastic packaging and no way to recycle it.

## Is plastic in drinking water a problem?

Avon gets its water from the Eagle River. Is the water polluted by plastic? Are you ingesting tiny bits of plastic when drinking a glass of water?

Upper Eagle River Water and Sanitation District, the water provider for Avon, has never tested for microplastics, nor is it part of the sampling and monitoring prescribed by the Safe Drinking Water Act, reports Diane Johnson, public affairs manager for the district. Plastics have not been a part of the “emerging contaminants” of the Environmental Protection Agency.

“As far as drinking water treatment, our facilities use sedimentation and filtration (in Avon) and microfiltration (in Edwards), which would seem to be sufficient at removing any microplastics coming in from the river and entering the drinking water supply,” she reports.

“Our understanding is that microplastics are more of an issue in large lakes and the oceans where they can accumulate over time,” she says.

Of greater issue are the microplastics entering the wastewater stream from homes and businesses. Microplastics can come from synthetic fibers in clothes cleansed by washing machines and small, exfoliating beads in many face and body washes.

Research reported in a 2020 paper published in a Royal Society of Chemistry’s journal found that various techniques in wastewater treatment can remove microplastics with a high level of efficacy.

As for polystyrene and single-use plastic bags, they do not appear to affect Upper Eagle Valley’s water operations. “They could get caught on our bar screen on our intakes in the Eagle River, but we don’t think this has ever occurred or been an issue for us,” said Johnson.



# There Will Be Fire

by Allen Best  
Big Pivots®

Colorado's scariest wildfire in 2020 was not its largest. East Troublesome shocked because of its sprint and then its leap. It grew by 87,000 acres in a fiery dash across the headwaters of the Colorado River and past Grand Lake, most of that in just a couple hours. Smoke plumes rose 40,000 feet. The winds, variously estimated at 50 to 100 mph, were strong enough to bend over lodgepole pines.

**East Troublesome was unlike any other fire in Colorado. When will a megafire hit Vail, or Aspen or some other headwater community?**

Then embers vaulted across two miles of treeless tundra at the Continental Divide, raining into the Estes Valley, at the eastern gate to Rocky Mountain National Park.

Nothing like this had ever occurred in modern Colorado history.

Eight months later, Colorado again had something extraordinary, a record-smashing heat wave in mid-June. Two Colorado towns, Alamosa and Cortez, had six consecutive days of record high temperatures. Leadville, Grand Lake,

Dillon, and Del Norte had five straight days of record highs. In Vail, one town employee reported having gone to South Carolina to see a son—and being shocked to find the

heat was no worse than that of Eagle County.

It's not just new temperature records, but the jumps. Grand Junction, for example, shattered an old record by 4 degrees.

In the Pacific Northwest and British Columbia, the margins were even greater. Portland's all-time high of 107 degrees was obliterated, with a new record of 112 degrees.

More shocking was the heat in British Columbia. "If you were drawing up a list of possible locations for hell on Earth before this week, the small mountain village of Lytton in Canada would probably not have entered your mind," [said the Guardian](#) on July 3. The community of 250 people in the foothills of two mountain ranges registered a high of 121 degrees, surpassing anything ever recorded in Las Vegas and tying the all-time record in Death Valley.

Both phenomena—the East Troublesome Fire and the heat domes of June and early July—are likely manifestations of the warming climate.

It's going to get worse, warn climate scientists, much worse. Temperatures will rise. Wildfires will become larger, more unpredictable. Welcome to the age of megafires.

### **In the steps of California**

California has been getting megafires and, inevitably, so will Colorado, says Mark Novak, the Vail fire chief. When that happens—most likely in the next 10 to 15 years, he believes—Colorado will look back on East Troublesome and other fires during the shocking 2020 fire season as, well, not so shocking.

"I can't tell you exactly at what point," says Novak, "but we will look back and say, 'Remember when Pine Gulch (a 2020 fire near Grand Junction) and East Troublesome seemed like a really big fire?'"

**Lead photo/Brad White, Grand Fire Protection District No. 1**

Before arriving in Vail in 2014, Novak saw a progression during his 30-year career on the West Coast.

"What we're seeing today in Colorado is very similar to what California was seeing in the early years of the 2000s, from 2003 to 2007," says Novak. "I believe that in 10 to 15 years we will see the same type of fire that California was seeing in 2017, 2018 and 2020. I think that (East Troublesome) was just the first case of what we will see in the future."

In November, just weeks after the East Troublesome made its run, Novak told Vail Town Council members their community can someday expect something similar.

"I am here to tell you that fire burned extremely well and extremely fast through every fuel type," he said.

"It burned literally through aspen groves, it burned through beetle kill, it burned through green stands, it burned through sage (brush). It burned through farmers' fields that were stubble. This was not necessarily a beetle-kill problem," he said. "We should not rationalize that this kind of fire would not occur in Vail."

"You scare me to death every time you speak," a town council member responded.

Colorado, like California, has been seeing progressively larger fires, but on a different order of magnitude.

As Colorado's ski areas came of age after World War II, fires were rare. There were fires, such as the one in 1994 west of Glenwood Springs that killed 14 firefighters amid the pinyon and juniper covered hillsides of Storm King Mountain. But in Vail, Aspen, and other headwater communities, wildfires were so distant that



**Mark Novak**

little attention was paid to flammability of buildings. In Vail, shake shingles were required. In Summit County, regulations discouraged removal of trees.

Fires in the 21st century have been larger, more frequent, and more destructive.

The year 2002 was a harbinger. A dry winter was followed by a warm and windy spring. In early June, three wildfires broke out almost instantaneously, one of them the Coal Seam Fire in Glenwood Springs. Surveying the state's forests by planes that first Sunday, Colorado's governor, Bill Owens, solemnly told reporters, "All of Colorado is on fire."

The governor was widely ridiculed, but since then most of the state has been on fire. Most damaging were blazes in the foothills along the Front Range urban corridor. The Fourmile Canyon Fire west of Boulder destroyed 172 homes and other structures in 2010, the most destructive wildfire to that time. Then came 2012, hot and dry. High Park Fire killed one person and destroyed 248 homes west of Fort Collins. Days later, the Waldo Canyon Fire killed two people and destroyed 346 homes on the outskirts of Colorado Springs.

Flames have begun to singe Aspen, Vail, and other ski towns. In 2018, the Lake Christine Fire in the El Jebel-Basalt area incinerated 12,588 acres and nearly shut down electrical deliveries to Aspen during the Fourth of July weekend. Another fire, Grizzly Creek, shut down Interstate 70 in Glenwood Canyon for almost six weeks in 2020.

Fires covered fewer than 100,000 acres during the decade of the 1970s. Just last year, 650,000 acres burned in Colorado (and another 176,000-acre fire burned in a border-straddling fire that was mostly in Wyoming).

California covers a third more ground than Colorado. But the area burned last year, 4.4 million acres, was six times that of Colorado.

## Will forests come back as before?

We have more higher temperatures and more wildfires. What will this mean in the future?

At least in the foothills along the southern Front Range, that's likely to result in fewer trees. A 2020 University of Colorado Boulder-led study of 22 burned areas dominated by Ponderosa pine and Douglas fir found that they failed to bounce back as compared to regions burned 100 years prior.

"This study and others clearly show that resilience of our forests to fire has declined significantly under warmer, drier conditions," said Thomas Veblen, now a professor emeritus of forest ecology and a study co-author.

Conclusions of that study do not directly apply to higher-elevation forests such as those found in around Aspen, Vail, and Steamboat Springs—except in this regard: "We can expect to have an increase in fire continue for the foreseeable future," Veblen said.

Vail's Novak began his career fighting fires in the San Diego area in 1984. At the time, fires of 5,000 to 10,000 acres were considered large.

In 1990, he relocated to the Lake Tahoe Basin, on the California-Nevada border. The year 2007 was a pivotal one. One of the houses he had grown up in Southern California burned. At Tahoe, a major fire called Angora burned 250 houses within four hours. One of his children's teachers lost her home, as did firefighters and police officers. Wildfire, more than before, had become personal to Novak.

Angora provoked a shift in attitudes in the Tahoe Basin. Forest thinning, which had been adamantly opposed, became more accepted. That fire now doesn't make California's top lists based on size,

destruction, or deaths. The largest to date was 2020's August Complex Fire, which covered more than a million acres, followed by the Mendocino Complex Fire of July 2018 that burned 459,000 acres. Deadliest was later that year. The Camp inferno killed 88 people at Paradise. Many others have killed 10, 15, or 25 at a time.

### **Hot and dry, off the charts**

Fire in Colorado's Rockies, as in California's Sierra Nevada, has always been a part of forest ecosystems.

The frequency varies depending upon vegetation. In the foothills above the Front Range urban corridor, forests of Ponderosa pine and Douglas fir evolved with low-intensity, fast-moving fires that occurred every few decades.

On the Western Slope, in places like Aspen and Vail, the fires have historically occurred every 120 to 250 years. Frequency increases in the lower-elevation pinyon and juniper forests. Intervals in the higher-elevation spruce and fir forests lengthen to 400 years or more

Fires are natural. Even big fires are natural, as charcoal collected from the mud of lakes and the scars of trees demonstrate. What we see now is not natural.

It begins with rising temperatures. The Colorado River Basin—including Aspen and Vail and the location of the East Troublesome Fire—have warmed 2 degrees Fahrenheit since 2000 as compared to the 20th century average. This, according to a report by Western Water Assessment, is likely warmer than at any time in the past 2,000 years.

A 2009 paper by Connie Woodhouse, of the Laboratory of Tree-Ring Research at the University of Arizona in Tucson, and others, compared the 21st century warming with a notably warm period of 1,000 years ago. During that period from 900 to 1300 AD, the Northern Hemisphere was warmer than all but the most recent decades. Drought was a companion. The worst 10-

year period was 1146 to 1155. That, perhaps not incidentally, was about the time the ancestral Pueblo – as the Anasazi are now more commonly called—began emigrating from the Four Corners area.

Mike Metcalf, an archaeologist based in Eagle, takes the long view. His work has examined human habitation of Colorado and other Western states since the glaciers rapidly retreated 13,500 years ago. "Somebody who has studied climate tends to be skeptical of simplistic explanations," he says. "There are so many things, so many variables that control climate."

But the warming and consequent aridification of the last few decades defy conventional explanations. "The amount of drought in the West is off the charts," says Metcalf.

A study published in 2020 in the journal *Science* concluded that climate change has made drought conditions 46% worse between 2000 and 2018.

Drought, as conventionally understood, no longer serves a useful purpose in describing what is being measured. Instead, some are using the word "aridification." The effect can be seen in the reduced runoffs of the Colorado River

### **Red flags early & often**

Five red flag warning days had been issued by the National Weather Service in Routt County, reported the *Steamboat Pilot* in its June 22 issue, compared to 9 in all of 2020.

To the west in Moffat County, 18 red-flag warnings had been issued compared to 25 all of last year.

The *Pilot* explained that red flag warnings are based on metrics that include humidity, wind, how long conditions are forecast to last and how dry some of the fuels, like grasses, are in an area. When issued, the warnings mean conditions make fires more likely to start and spread.

into Lake Powell. The river flowed 543,000 acre-feet this year, compared to the May average of 2.34 million acre-feet since Glen Canyon Dam was completed in 1966. In 2020, the winter snowpack was actually pretty good, but the runoff was subpar. This year, with drying soils sopping up more amounts of moisture, the fast-falling levels in the giant reservoirs in Utah, Arizona, and Nevada have become a national story. As Metcalf points out, the trends just keep accelerating.

Now comes new evidence that high-elevation forests in Colorado since 2000 have burned at a rate greater than at any time in the past 2,000 years. To draw this conclusion, the University of Montana's Philip Higuera, a fire ecologist, and two colleagues waded into the work of paleoecologists who had plumbed the depths of 20 lakes to document the fire history.

Twelve of the lakes were in the Park Range near Steamboat Springs. Others lakes were on the southeast side of Rocky Mountain National Park, near Estes Park.

Comparing the fire record of recent years with that 2,000-year history, Higuera and his co-authors, the University of Wyoming's Bryan Shuman and University of Montana doctoral candidate Kyra Wolf, came up with a startling conclusion: The frequency of fire in high-elevation forest has shrunk from once every 230 years on average in the last two millennia to about 120 years during the current century.

Warm, dry conditions provide the overarching cause of increased burning in high-elevation forests.

"It isn't unexpected to have more fire as temperatures rise," said Wolf, the co-author. "Our records show that fire tracked past variations in climate just as it does today. What's striking is that temperatures and correspondingly fire are now exceeding the range that these forests have coped with for thousands of years—largely as a result of human-caused climate change."

This wasn't necessarily unexpected, although the timing may be. For decades, scientists have predicted that climate warming will increase wildfire activity in high-elevation forests beyond the historical range of experience, said Higuera—who spoke in March at a session sponsored by Carbondale's Wilderness Workshop.

"It's sobering to see that it's clearly happening, and early in the 21st century—not in 2050, not in 2075, but in 2020," he said.

### **Very limited tool box**

We don't know exactly how hot it will get. That's partly because we don't know whether the atmospheric pollution can be bent down. The rate of accumulating carbon dioxide, the most common greenhouse gas, has not abated in the 21st century even as the science around the risk has solidified.

We're polluting the sky as if there were no tomorrow. The observatory located at an elevation of 11,135 feet at Hawaii's Mauna Loa has documented the pollution of carbon dioxide. CO2 levels in 1958 stood at 320 parts per million, a relatively modest increase from pre-industrial times. In 2013 the levels surpassed 400 ppm. This year its hit 420.

Staying in this fast lane, what temperatures will that produce in Aspen, Vail, and other ski towns in Colorado? A study expected to be issued later in July will paint a more definitive picture of that future heating in headwater communities.

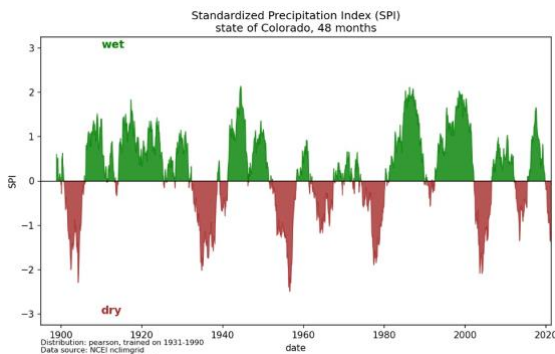
A 2016 study along the northern Front Range by the Rocky Mountain Climate Organization delivers a glimpse of that hotter future. Fourteen days with temperatures greater than 80 degrees were recorded during the late 20th century at a site in the foothills west of Boulder comparable in elevation to Aspen and Vail. This is projected to more than double in the next decade or two. By the time today's



toddlers reach retirement age, there will be 100 days.

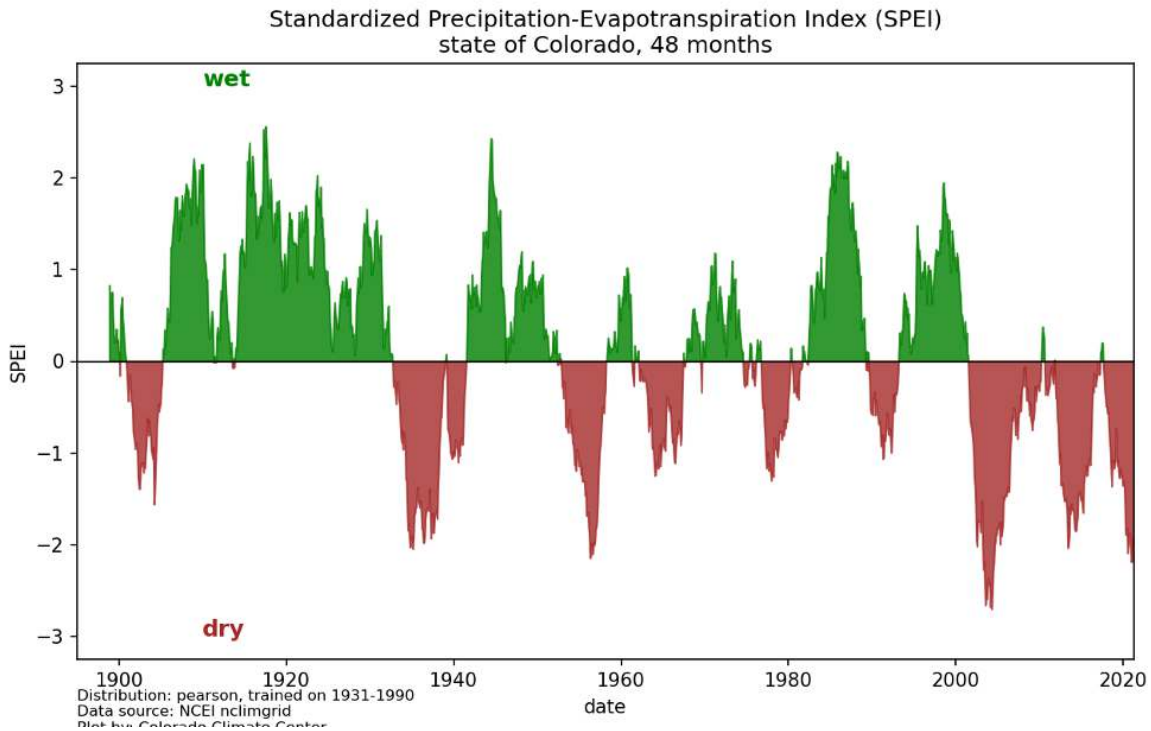
“We will be hotter and we will be drier,” says Stephen Saunders, a former undersecretary in the Department of the Interior who was the lead author of that study. “If you have increased temperature and the same amount of precipitation, you will indeed be drier.”

That observation was demonstrated last week in a PowerPoint presentation by Russ Schumacher, the Colorado state climatologist. The first slide shows



standardized precipitation index for Colorado since 1900. There are periods of wet and periods of dry—including during the 21st century. But the standardized evaporation-transpiration chart—transpiration is what a plant “exhales” in response to heat—tells a very different story during the 21st century. There are no peaks in the 21st century; only valleys of drought. The warming atmosphere is absorbing moisture from the ground and from vegetation.

Measurements conducted by federal agencies at the Garfield County Airport in Rifle, on Hardscrabble Mountain near Eagle and in Summit County bear this out. One measure of the dryness, called the thousand-hour test, showed the moisture content in wood on Hardscrabble dropping from 12% on June 1 to just 8% at mid-month. “From a wildfire behavior



**HOW TO READ THE CHARTS:** The top chart of precipitation for the last 125 years shows a pattern of ups and downs that has continued into the 21st century. But the bottom graph shows the influence of higher temperatures on moisture resulting in sharply decreased river flows.

*Charts/Russ Schumacher, Colorado state climatologist.*

standpoint, you don't necessarily like to see 8%," said Ryan Hughes, a fuels specialist for the U.S. Forest Service. Five days later after that measurement, the Sylvan Lake Fire broke out south of Eagle.

Tom Veblen, now a professor emeritus of forest ecology at the University of Colorado Boulder, has studied wildfires in Colorado from almost every angle: tree rings, lake deposits, journals of explorers and 19th century newspaper accounts. We know 1847 was a fiery year, and so was 1851.

Also 1879, the year that Vail's Back Bowls became mostly treeless, the result supposedly of "spite" fires set by Ute Indians, although the evidence is lacking, he says. It was a dry year, the only time fires in high-elevation forests spread, and fires and prospectors were everywhere—including, at that point, in the hamlet that soon became Aspen.

What annoys Veblen most is the phrase "healthy forests." The metaphor, contained in the title of a 2004 federal law and also a 2021 Colorado law, powerfully draws on an analogy to human health. It also misleads in the context of high-elevation forests, says Veblen, and it was misused, he says, to characterize the East Troublesome Fire.

Areas covered by East Troublesome included large swaths of trees killed by bark beetles during an epidemic of the last 25 years. If bark beetles always have been in a fandango with forests, they came on particularly strong with rising temperatures and drought in the 21st century. The argument has been made that those trees killed by beetles need to be removed, to

## 6 of 8 hottest years in Colorado since 2012

Six of the eight warmest years in Colorado's historical record have occurred since 2012.

"What we would have thought as a warm summer 75 years ago is now considered a cool summer in Colorado," said Russ Schumacher, the Colorado state climatologist, on a webinar sponsored by the AAAS Colorado Local Science Engagement Network.

That temperature increase has quite a bit of impact on water volume, he said.

And warming will continue.

"We have high confidence that (warming) will continue if greenhouse gas emissions continue that course that we are on." It's just a question of how much," he added.

Laurina Kaatz, the climate scientist at Denver Water, made the same point. She described the East Troublesome Fire as having "all the hallmarks of climate change."

abate fire danger. Scientific studies in the last decade don't leave that idea standing. One of them, by Hart and colleagues in 2015, found that prior beetle kill is not causing an increase in the extent or severity of fires of Western states.

"The fuels are the needles," explains Veblen. "Once needles turn (red) and fall to the ground, to the forest floor, we actually have a decline in the ability of fires to spread through the crowns, through the canopy of the forest," he says.

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**Stark scenes like this were abundant for those who traveled through the East Troublesome burn area on Christmas Day. Photo/Allen Best**

“What we are seeing is an increase in fire, yes, and an increase in bark beetle activity, both of which are driven by climate change, both driven by warmer conditions.

“Within the research community and also within the fire management community over the last 5 to 10 years there has been a greater realization how all of those changes are being driven by climate change,” he says. “But there is still a tendency to hold onto some of the old narrative.”

Thinning of forests, he says, has little value except in areas adjacent to communities and structures. “The people in the fire mitigation business are very motivated to use the tools they have, but those tools are very, very limited.”

### **Heat domes and climate change**

There’s no escaping the rising temperatures. If the atmospheric emissions ended tomorrow, temperatures will

continue rising for decades. “That is baked into our system,” says Veblen.

“It’s just going to get hotter,” says Brad Udall, a climate scientist at Colorado State University who has conducted groundbreaking research on aridification of the Colorado River Basin. His 2016 study with Jonathan Overpeck found that roughly half of the “drought” could be attributed to rising temperatures. “You ain’t seen nothing yet.”

Colorado was hot last August when the Cameron Peak Fire broke out in the Medicine Bow Range, north of Rocky Mountain National Park. Another fire, the Williams Fork, broke out about the same time in the area north of the Eisenhower Tunnel. For a time, those in Winter Park and Fraser worried that the fire might sweep across the Vasquez Range and make a run on their communities.

Another heat wave engulfed Colorado last September, if nowhere near as intense



**Lodgepole pine in some areas revealed intensity of the wind. Photo/National Park Service**

as those of June, either in the Southwest or in the Pacific Northwest.

“Increasing frequency and intensity of heat waves are where probably the most robust connection exists between a warming climate and extreme weather,” says Schumacher, the state climatologist. “Numerous studies of heat waves in different parts of the world have shown that they have become much more likely. It takes a particular weather pattern to set up for something like this to happen (in this case, the very strong high pressure or heat dome), but all indications are that these situations are made more likely by climate change.”

Writing in the *New York Times* last week, former Roaring Fork Valley resident Susan Joy Hassol made the same point in an essay co-authored with climate scientist Michael Mann. “Record-breaking hot months are occurring five times more often than would be expected without global warming,” they wrote.

In Colorado, this shift seems to be playing out by extending the “hot season,” says Schumacher.

The East Troublesome fits in with that pattern of lengthening wildfire season, 75 days longer than in the 1970s. It broke out on Oct. 14, the last day of the first rifle-hunting season. It spread somewhat slowly from a remote area between Kremmling and Grand Lake for almost a week. Then, on Oct. 20, came the winds, hot and fast, by some estimates 100 mph. It’s likely a miracle that only two lives were lost that evening, those of two elderly people who had chosen to shelter in place.

“When you get fire behavior like that, there’s not a whole lot you can do to stop it,” said one firefighter. “That’s equivalent to trying to do something with a Category 5 hurricane.”

The wind and the heat picked up twigs and needles and lofted them across the Continental Divide. Grand Lake, at the west entrance, escaped serious damage, likely the result of mitigation work done over the last decade. But lodgepole pine near the

entrance to the national park just a few miles away testify to the heat and the winds, drooping like spaghetti.

Estes Park itself appeared sure to go up in flames as both the Troublesome and Cameron Peak fires approached. Sharon Brubaker, among the 6,700 residents of the community, didn't wait to find out. She



**Vail's Paula Cada and attainable housing built to resist wildfires.**  
*Photo/Allen Best*

loaded her 2-year-old grandson into her car and fled, despite fears of another threat: covid. "It was a gut reaction," said Brubaker. "I looked at the sky and I knew that I needed to get out of here."

Novak, the fire chief in Vail, had been working the Cameron Peak Fire, helping defend homes. When the flames came roaring at them, they abandoned the effort. That, he says, is the philosophy of firefighters in Vail and elsewhere. They will prep and leave, not stay and defend.

Later, talking to his town council, Novak emphasized that Vail could easily see the same congruence of weather that caused East Troublesome's extreme fire behavior. A fire starting in Eagle or Gypsum could roar up the valley through Vail and across Vail Pass into Summit County. That's

what happens in megafires—or a gigafire, as California's first million-acre fire has been called.

Paul Cada helped protect the YMCA of the Rockies near Estes Park as the East Troublesome fire roared in. "I saw what extreme fire looks like when it was coming into Estes Park," he says.

Since 2014, Cada has worked in Vail as the town's wildland program manager. It has been his job very fundamentally to prepare Vail for fire.

Vail, like other mountain communities, has evolved what it considers a mountain aesthetic. Wooden shake shingles, long a manifestation of that aesthetic, were banned on new housing in 2007. In 2020, the town adopted a new wildfire plan. Newer building codes require masonry exteriors and frown on decks that could be ignited by embers thrown from a mile away, as occurred in East Troublesome.

Some changes have been painful, facing opposition. One of them significantly discourages use of vegetation amid houses, rows of trees—that might catch on fire. Houses need strong fire-resistant berths of 30 to 60 feet.

A former Forest Service ranger likened Vail's response at one time of wanting to fire-proof the forest so that houses could be put amid the trees. Now, there's a new approach—one that doesn't totally preclude fire, but can improve the odds.

"You don't necessarily have to control extreme fire behavior to prevent significant loss to a community," he says. "What you do need to do is prepare the community for that, and that's really the approach we are taking in Vail. We are not necessarily able to stop or even control the extreme fire



**The East Troublesome Fire burn area near Granby and, below right, the setting sun in August, during the Cameron Peak, Grizzly Creek, Williams Fork, and other fires.. Photos/Allen Best**

behavior that we will likely see one day. It's about making sure our community is prepared to respond to it when it happens but also be able to bounce back as quickly as possible."

Vail has been aggressively trying to reduce fire risk along its flanks as well as in its subdivisions. Even so, both Cada and Nowak emphasize the limits of their work. It will not preclude extreme fires. The right combination of hot days and drought — well, that's when megafires happen.

Jerry Fedrizzi and his wife, Jan, have taken the onus of personal responsibility to heart. They grew up in Glenwood Springs, have lived in Eagle since 1968, but have a cabin at about 8,300-foot elevation above Glenwood Springs. The days of 30 below in Eagle have become distant memories, he said on a hot June day while describing his continued work to remove vegetation from around their cabin. A fire official who studied their

work gave them a 90% favorable rating, he reported proudly.

The temperature in Eagle was predicted to hit 97 degrees the next day, an unprecedented mark, and the wind was "just awful," he said.

Not one prone to despair, Fedrizzi was nonetheless troubled. "It's grim," he said, "and I don't know what will happen in the next 10 to 20 years."





Colorado Gov. Jared Polis speaks during a bill-signing ceremony at Boulder in June as Senate Majority Leader Stephen Fenberg, Rep. Alex Valdez, and Sen. Kevin Priola look on. *Photo/Allen Best*

## No cap-and-trade for Colorado, and why exactly not?

by Allen Best

Given his background as a business entrepreneur, you'd think that Gov. Jared Polis would be chummy with the idea of cap-and-trade or some other form of carbon pricing. Such mechanisms tell the market that this is the problem, now you figure out the most inventive way to solve it.

He is not, as he made abundantly clear—again—last Friday in an [executive order](#) that forbids state agencies and employees from working on any state-based, economy-wide cap-and-trade programs. “Such programs have been neither developed nor authorized under Colorado law and are contrary to the

position of my administration,” he wrote in the order.

This echoed his remarks in February after SB 21-200 was introduced and proposed to erect hard caps on emissions. He issued a letter and also gave an interview to the Colorado Springs Gazette.

The Air Quality Control Commission last year heard from environmental groups and at least two legislators, Sen. Faith Winter and then House Speaker KC Becker, about the need for hard limits on greenhouse gas pollution. Hard caps, they said, are the only way for Colorado to ensure it meets its greenhouse gas reduction targets identified in a 2019 law, including a 50% economy wide reduction by 2030 and a 90% reduction by 2050.

The AQCC took their arguments under advisement. Polis in a [Feb. 11 letter](#) made his opposition clear.

In his executive order, Polis acknowledged that economy-wide cap-and-trade programs may have merit, depending on the details, at the federal or

international level. But, he went on to say, “it is not an appropriate policy for Colorado.”

He went on to note that the many bills adopted in the 2021 session were part of the legislative priorities outlined in the Colorado GHG Reduction Roadmap that was adopted in January.

Polis also pointed out that his



**Comanche units 1 and 2 and, on the right, 3. Photo/Allen Best**

administration—via the Colorado Energy Office—has secured commitments from the electrical sector to reduce emissions 80% by 2030 and the state has adopted zero-emission vehicle standards. Too, there have been historic oil-and-gas reform bills (with more rulemaking scheduled at the AQCC this year).

**P**olis on Friday signed the compromise bill, HB21-1266, that emerged after SB-200 died. It’s a lengthy bill, 45 pages, triple most laws. It’s devoted to environmental justice but also to pollutants. Ironically, it does include a provision for collection of fees to administer programs based on levels of emissions.

During the legislative session, there was much pushback against Polis. He was being accused of all talk and no walk on climate change.

After the bill signing, those who work with Polis and his administration were far more restrained. Sen. Faith Winter, a prime sponsor of SB-200, [told the Denver Post](#) she believes Colorado can still meet its goals without cap-and-trade and believes that Colorado’s legislation will serve as a national model. She also said more should be done, especially in the transportation sector.

Western Resource

Advocates’ Erin Overturf, a key figure in creating policy designs adopted by legislators, had been a strong proponent of hard cap on emissions. But when I spoke to her hours after the governor’s executive order was issued, she didn’t directly criticize the governor. She was more oblique.

“Goals are not enough, and we need to be taking concrete steps to achieve those goals,” she said. She credits state legislators with pushing forward a strong

agenda.

I’m guessing that Polis was mindful that he has to represent the entire state—and if Colorado has trended Democratic in recent elections, only three years ago Republicans had veto power in the Legislature.

Patrick Cummins, senior policy advisor at the Center for the New Energy Economy, acknowledged the muddled politics of Colorado during a [webinar](#) conducted several days prior by the Colorado Local Science Engagement Network.

**C**ummins administered the Western Climate Initiative for 8 years, an attempt to put together a cap-and-trade program. It never got very far. California and Quebec were the only ones to see the concept across the finish line. Washington state has now agreed to join.

Developing and implementing such programs is “very challenging,” he said. “I



would observe that that the issue is not really the benefits or the efficiency or inefficiency of the program. The issue is really that these are the types of things that jurisdictions implement when they are really serious about driving down emissions. That's a high political cliff, and one that we struggle with this at the national level."

Colorado is not unique, he went on to say. "It's a national and international problem." He said he agreed that additional policies of carbon pricing will be needed to create the proper price signals. "But the thing is in Colorado you have to go to the ballot."

And that takes us back to Polis, who launched his 2018 campaign for governor in Pueblo. Pueblo, the city, was one of the first jurisdictions to embrace a goal of 100% renewables, a pledge followed by the Pueblo County commissioners.

But that was then. The Pueblo County commissioners bristled at SB 200 when it was introduced in late March. Their complaint: they want Comanche 3 to be able to operate until 2040, as its operator and primary owner, Xcel Energy, proposes. They worried about closing of the gas-fired power plant east of the city operated by Black Hills Energy, the local utility.

SB 200 went too far in too many ways, the commissioners said in an [op-ed published in the Pueblo Chieftain](#). And, they added, the bill sponsors had not sought input from Pueblo or from Xcel. Later, the Pueblo City Council similarly announced opposition.

Once a labor stronghold, a given for the Democratic Party, Pueblo has become deep purple, a city and a county that can go in either direction, as was evident in the 2016 presidential election. That makes Pueblo the equivalent of Joe Manchin. And Polis understands that.

**Y**esterday, I interviewed Will Toor, the executive director of the Colorado Energy Office. We talked for an hour about

this and other issues, which I'll share in future issues of Big Pivots. He made several key points. One is that the Polis administration studied carefully the successes and failures of other states, most notably California. California's successes in reducing emissions have been almost entirely the result of sector-specific actions, not due to its cap-and-trade regime.

That, in turn, has been the approach of the Polis administration. And, he added, the significant progress made in renewable energy in recent years was due in large measure to Obama administration policies that created the scales that made the economics of renewable energy incontestable. That also looks to be the approach of the Biden administration.

President Donald Trump arrived in the White House with vows to save coal, but of course, the coal sector tanked during his four years in Washington because the market fundamentals of renewables were unassailable.

Toor also spoke of the need for public policy, if it is to be durable, to achieve winners. Winners are created when there is clear and immediate evidence of gain, such as investment in rural areas, creation of jobs, and so forth.

Carbon pricing achieve those goals in the long run, but it is seen on the face of it as a negative. As such, it's less durable in a state like Colorado, trending toward blue but still purplish.

"The more we can do to make good climate policy and economic wins for all parts of Colorado, the less partisan it will become over time."

Expect more on this particular topic and other elements of Colorado's 2021 legislative session in future issues of Big Pivots.

*Do you have a different take on this? Please write or call if you wish to discuss. [allen@bigpivots.com](mailto:allen@bigpivots.com) or 720.415.9308. And Big Pivots does welcome editorial submissions.*

## Utah says ozone levels caused by wildfires and Chinese pollution

Air quality has improved along the Wasatch front in Utah. There's less particulate matter. As for the unseen but difficult ozone, Utah leaders seek a reprieve from a federal reclassification because, they say, the sources lie beyond the state's control. They cite nearby wildfires and the pollution from Chinese power plants.

The Salt Lake Tribune says they acknowledge current studies lack sufficient rigor, but they want the Environmental Protection Agency to give them a chance to prove it.

Environmentalists scoffed.

"If all cities and states, such as Los Angeles, blamed their emissions problems on international sources and the difficulty of reducing ozone concentrations, as Utah is attempting with its Demonstration, there would be no steps taken—including by states whose pollution impacts Utah—to reduction pollution," Joro Walker, staff attorney with Western Resource Advocates, told the Tribune.

The EPA is about to reclassify the non-attainment status from "marginal" to "moderate," says the Tribune. This would kick in mandatory emission reductions and planning for the northern half of the Wasatch Front.

## Clean fuel standard to go before legislators next year in New Mexico

A clean fuel standard that would require a 10% reduction in the carbon intensity of fuel used for transportation by 2030 and 28% by 2040 will almost certainly be on the legislative agenda next year in New Mexico.

The Albuquerque Journal reports Alicia J. Keyes, the state's economic development secretary, told a forum that the proposal will be to the agenda of next year's 30-day session.

Keyes said the proposal would give companies that make, produce, or refine fuels the option of buying credits from producers of hydrogen or other low-carbon fuels or from businesses that reduce their emissions. This would create a market that supports say would spur investment in clean energy. She cited California's law, which she said has boosted employment in biomass, wind, and solar.

## July 14 a red-letter date for Tri-State in its tussle with dissident members

The time seems to be drawing near for the reckoning of Tri-State Generation & Transmission with its members.

The wholesale provider has until July 14 to tell the Federal Energy Regulatory Commission why its tariff constitutes a "clear and transparent procedures" for its member electrical cooperatives who may want to get out.

"The lack of clear and transparent exist provision has allowed Tri-State to impose substantial barriers for its utility members in evaluating whether to remain in Tri-State," says the order, which was issued on June 17.

The order went on to say that Tri-State had 30 days to show why its rules are "just and reasonable and not unduly

The new website is live.

[Big Pivots](#)

(Tinkering still underway to make it more friendly to smartphones.)

discriminatory or preferential” or explain what changes are needed to make them so.

First Kit Carson Electric and then Delta-Montrose Electric left Tri-State, the latter in 2020 after contentious jousting. United Power then wanted an exit fee—and got one, which it proclaims as out of the ballpark. Durango-based La Plata also wanted a figure. An administrative law judge at the Colorado Public Utilities Commission in summer 2020 issued a decision that basically drew a straight line between the exit fees paid by Kit Carson and Delta-Montrose and said that United and La Plata should have to pay proportionate fees. But the Colorado PUC commissioners did not take up the recommendation because of Tri-State’s insistence that the federal agency has jurisdiction.

The order by the federal agency was provoked by a complaint filed in February by United and La Plata, joined by 2 other cooperatives in Colorado, 2 in Nebraska, and one in New Mexico.

For more background, see Big Pivots 35, i.e. April 18, 2020, or go to [Why S&P knocked down its rating for Tri-State from A- to BBB-plus.](#)