Gordon works to save coal and address climate change

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Body

On May 30, Gov. Mark Gordon joined U.S. Secretary of Energy Rick Perry, Utah Governor Gary Herbert and Thomas Farrell, CEO of the gas and electric utility Dominion Energy on stage in the Grand Ballroom of the 775-room Grand America Hotel in Salt Lake City.

The panel was part of a Herbert-hosted, Dominion-sponsored energy summit. Of the politicians and executives in attendance, Gordon alone wore cowboy boots.

Twenty minutes into the panel discussion, ***climate change*** protestors rushed and occupied the stage. The two dozen or so protesters chanted and sang slogans: "your time is up" and "keep it in the ground." They unfurled banners that said much of the same, along with other slogans: "100% renewable energy" and "Invest in our Future, Not ***Climate Change***."

The activists held the stage for about four minutes before being escorted off without protest. Herbert suggested the protesters should have their own conference, rather than "disrupt what we have done here."

But Gordon, who last summer spent his primary campaign defending himself from opponents' charges that he was a secret foe of fossil fuels, offered protesters his résumé as an environmentalist.

"Just a couple of things you should know," Gordon said, speaking in fragmented sentences. "Board of directors at Sierra Club," a position he held in the 1990s, "got my first job working for Friends of the Earth back in 1980. Known Armory Lovins, who is the Soft Energy Path guy, since I was 14."

"We are still friends and we are still working on those problems," Gordon continued. "The problem is that we in this country have tried to suggest that a 100% renewable portfolio is somehow going to address ***climate change***. It will reduce that amount of carbon we release in the atmosphere domestically ... but it doesn't take carbon out of the atmosphere. It doesn't address ***climate change*** and what we can do with coal."

Address ***climate change*** with coal? While it sounds paradoxical, the concept lies at the heart of the governor's vision for saving Wyoming's most valuable industry.

Though the idea likely raised eyebrows in Salt Lake City, it was consistent with what Gordon said to the University of Wyoming Board of Trustees two weeks earlier.

"Wyoming has the solutions for our ***climate***," Gordon told the trustees, according to a report in the Laramie Boomerang. "If you push as hard as you can to put a 100% renewable platform on this planet, you have done nothing to eliminate carbon dioxide in the atmosphere. We can take our coal products and we can make them part of the solutions."

It's even somewhat consistent with what he told President Donald Trump and other state governors during a lunch at the White House last week.

"The President has been a strong supporter of coal and advancing new technologies that support carbon capture and sequestration that is critical in addressing ***climate change*** and to provide a bridge to a cleaner and healthier future and really good jobs," Gordon said.

But is the coal-as-***climate***-savior approach a fundamental shift or simply the next in a litany of coal lifelines pitched by Wyoming power-brokers?

For his part, Gordon speaks more about ***climate change*** as reality than most Wyoming politicians. Even he, however, couches such discussions in the "political reality" of ***climate change***. The phrase is shorthand among conservative policy makers, and increasingly Wyoming politicians, for 'like-it-or-not, market and electoral forces require that we deal with this.'

In office, Gordon is not acting as a foe to the coal industry. He's called for technological advances to stem the tide of coal plant closures, advocated for increased coal exports and even wants to sue Washington state over its rejection of a coal export terminal permit that could help Wyoming mines. Last year he asked lawmakers for $10 million to build a small-scale coal plant with carbon capture technologies. They gave him $5 million.

There is little new there. Former Gov. Matt Mead supported efforts to open coal plants for export on the West Coast. Mead also took strides to establish Wyoming as a research hub for carbon capture technologies that could be attached to coal plants.

But Gordon is also calling for a new path for Wyoming with a technology called "bio-energy with carbon capture storage." BECCS, an as-yet-unproven technology could - its backers claim - turn coal-fired power plants from carbon emitters to carbon subtractors.

It's what Gordon calls "carbon negative coal solutions."

If it's viable, the technology could give Wyoming another dog in the fight for coal's future.

In his first budget proposal this fall, Gordon plans to ask the Legislature for money - he's uncertain yet how much - to chase matching grants from the U.S. Department of Energy so UW researchers can pursue the technology, he told WyoFile last month.

But in a state where large wind energy projects are underway and solar energy is beginning to entice investment, critics say Wyoming needs to let go of coal and instead prepare its workers, communities and tax structure for transition. The race has been run, they say, and no one is looking for new coal technology in a world where cleaner natural gas, and even renewable energy, are increasingly more economical to build than coal plants.

In April the federal data that seemed to confirm predictions espoused by Gordon's friend Armory Lovins in the 1970's: renewable energy sources surpassed coal on the electrical grid for the first time.

"The energy grid is being transformed literally as we speak," said David Schlissel, an economist with the Institute for Energy Economics and Financial Analysis.

"It's not a matter of 'if' and it's barely a matter of 'when' anymore because it's happening," Schlissel said. "Either you get swamped by the tsunami of renewables, or else ... you get on a surfboard and ride the wave."

But Wyoming keeps betting it can beat the tide and its new governor is joining in. And as with most things Wyoming coal, the play centers on Campbell County and the Powder River Basin.

Brought to life during the Mead administration, coal boosters tout the Integrated Test Center north of Gillette as a cutting-edge laboratory for the solution to carbon dioxide emissions.

But as yet, this hotbed of carbon innovation remains a dirt lot with some unused pipes and an empty modular office building.

The Basin Electric Power Cooperative's Dry Fork Station looms above the site, five pipes rise from the ground. On the east side of the plant another, larger, pipe hookup awaits.

The pipes connect to Dry Fork's "stack." The Dry Fork Station is the newest coal fired power plant in the country, and for many pollutants - sulfur, mercury, particulate matter - the cleanest. Both mercury and sulfur emissions out of the stack stay well below the levels prescribed in its environmental permit, according to an August, 2018 profile in industry publication Power Magazine.

But the stack at the Dry Fork Station still emits carbon dioxide, the principal global-warming gas of concern, unabated.

The empty pipe heads await a carbon-capturing savant.

Possibly as soon as this fall, engineers from five countries will descend on the ITC, bringing their ideas for capturing, storing, or best of all using, the plant's carbon emissions. Next summer, Japanese motor builder Kawasaki will join the fray, while a Denver company with a carbon-capture idea may start experimenting with Dry Fork's carbon emissions as soon as July, said Jason Begger, executive director of the Wyoming Infrastructure Authority, which runs the project.

Under Mead, Wyoming taxpayers invested $15 million in the ITC, Begger said. Private-sector energy interests kicked in $6 million more. Those funds will last until 2027, he said.

To provide longevity to the coal industry, a magic-bullet technology needs to capture enough carbon to assuage a world alarmed by ***climate change***. It needs to be cheap enough to entice utility operators into retrofitting aging coal plants instead of shuttering them and moving on. It needs to arrive soon, as in maybe yesterday. Closures loom for many of the power plants fed by trainloads of Powder River Basin coal.

Kipp Coddington, director of Energy Policy & Economics at UW's School of Energy Resources, is optimistic that such a technology can arrive in time. Wyoming's efforts at carbon capture go back a decade, he said. Coddington now sees a fertile mix of the infrastructure, policies and research necessary for success.

"Wyoming in my humble view is one of the handful of jurisdictions worldwide where, if this is going to happen commercially, it's going to happen here," he said.

Coddington sees three paths forward for coal in the face of diminishing demand from electric utilities. New technologies could siphon carbon from power plant emissions and store it underground to make coal power compatible in a carbon conscious world. Better yet, commercially successful uses for carbon could emerge that create demand for the captured carbon and and subsidize its collection.

Finally, the black rock could avoid combustion altogether, and instead be used to produce new materials instead of electricity.

Researchers and companies are expected to pursue all three approaches in Campbell County, and boosters like Gillette-raised entrepreneur Jim Ford like the multi-pronged approach.

There's the 10,000 foot well drilled just east of the ITC under the auspices of the energy-department-funded CarbonSAFE project. Scientists at UW's School of Energy Resources, which Coddington called one of the top five or six teams in the field worldwide, are using the well to explore how to best stash carbon emissions underground.

"Bring your knowledge," Ford, who works part time for the ITC, said. "Bring your expertise and plug in and do something about [carbon], or do something with it." Like others in coal-built Gillette, Ford is tired of the slings and arrows of ***climate*** worriers from elsewhere. "Don't just complain and lob shells," he said.

Schlissel, the IEEFA economist, called carbon capture "unproven," and as yet, uneconomical. IEEFA's stated goal is "accelerating the transition to a diverse, sustainable and profitable energy economy." A recent study by Schlissel and that group concluded government-funded attempts to develop economic carbon capture technologies have a record of "dismal performance" so far.

The study concluded the federal government had spent "billions" pursuing carbon-capture technologies over a decade without success.

The problem is simply numbers, Schlissel said. Capturing carbon today adds about $60 to the cost of a megawatt hour of coal fired electricity. That makes it cost $70 more a megawatt hour than the current cost of wind energy in Colorado, according to the report.

"Why would anybody do that?" Schlissel asked. "It doesn't make sense."

Installing the technology to a coal plant also carries significant capital costs. With much of the U.S. coal fleet aging, there's little incentive for utilities to make the investment.

"Take an old car that runs fine now but it's old," said Rob Godby, the director of the University of Wyoming's Center for Energy Economics and Public Policy. "Why would you put a new motor in it? Or not even a new motor, an entirely new interior. A really expensive stereo. At a certain point you just say I'm going to invest in a new car and get rid of the old one."

Even Coddington, the policy chief at the UW School of Energy Resource, a place well-invested in carbon-capture research, said there's reason to be skeptical.

"At the 10,000 foot level there's tremendous optimism and that's why all this work has to go forward," he said. "It gets immediately very complicated, largely for economic reasons, when you look at a particular plant and say why aren't they doing carbon capture and storage?"

It's a race against time and coal plant closures, Coddington said.

"In order to maintain Powder River Basin coal, large chunks of that cohort are going to have to deploy this technology," he said. "Do I think that is likely? I just don't know."

For many plants, it's a "heavy lift," he said. Still, Coddington sees chances.

A new federal tax credit may make carbon capture technology more economical for utilities. While the U.S. coal fleet is aging out, he said, some countries continue to invest in the plants. Utilities and governments abroad may see more reason to make investments in carbon capture technologies. There could even be a "coal renaissance" where new plants are built with carbon capture technologies if they become economical, Coddington said.

Predictions for the economic viability of carbon capture often depend on a profitable use for the captured gas.The most economical use of captured carbon developed so far is enhanced oil recovery - pumping it into old oil wells to stimulate production. Of course, oil, too, releases carbon dioxide when burned.

"From a ***climate*** point of view it's kind of insane," Schlissel said.

Would it then be better not to burn the coal at all? In Campbell County, there are ideas for that too.

Ford's previous employer, Atlas Carbon, for example, uses coal to make filters, including ones used to make the Dry Fork Station burn cleaner than its predecessors. Atlas Carbon developed technology that grinds coal down to a level finer than cigarette smoke or ink toner, Ford said, which the plant uses as a filter "like a big carbon cloud" to absorb the mercury.

Last spring, Atlas Carbon received a $15 million loan from the state.

Atlas is far from alone in looking for new uses for coal. But if the goal is preserving the mining industry there's a problem. Power plants are high-volume customers. Powder River Basin mines shipped around 293 million tons to power plants last year.

Turning coal into products doesn't come anywhere close to that kind tonnage. Atlas Carbon goes through a limited amount of coal a year, Ford said, about "a fraction of the production from a small-scale mine up here."

Coal mines provided more than 4,700 direct jobs in Campbell County.

A 'coal products' industry would look different. The jobs would be fewer, but they would likely be high-paying and bring a new level of technical expertise to the area, proponents argue.

A lower-coal-volume industry also wouldn't do much to fill state coffers under the current tax structure.

"We've got to help ourselves," Gillette mayor Louise Carter-King said. "I don't think we're going to get help from many other places. There's gotta be a way to use this natural resource that we have that's not harmful to the ***climate***."

In Salt Lake City, Gordon offered the ***climate*** protesters an engineering proposal. To address ***climate change***, a renewable energy system could be paired with BECCS.

The technology uses a coal-fired plant to burn biofuels like agricultural waste, weeds and grasses, which pull carbon from the atmosphere as they grow. A BECCS plant would use carbon capture and storage technology to keep CO2 from the atmosphere. As new biomass is grown to fuel the plant it captures more carbon. The idea, in theory, is that by growing new plants, burning them without releasing carbon, replacing them and repeating the capture process as they grow the process reduces the carbon in the atmosphere.

"It requires a commitment and courage to move forward," Gordon told the crowd. "It's frustrating to me that instead of having a good conversation, what we do is polarize and as part of that polarization we will not listen to each other."

Gordon sees BECCS as a way for Wyoming coal to carve out a place for itself as the world moves to curb the levels of carbon dioxide in the atmosphere, he says. "We have the opportunity to take a fully-functioning industry with a footprint in place and actually turn it into part of the ***climate*** solution," he said. "This is potentially a real solution."

There are significant challenges to BECCS. It's an unproven and largely undeveloped technology. And environmentalists have their doubts. Those opposed to the technology say its not certain burning large amounts of biomass will lead to negative emissions, and that the ecological costs of harvesting the biomass may be too great.

It's also unclear whether Wyoming, full of coal but not known for its rapid vegetation growth, is a good place to locate a BECCS plant. Trees or biomass may have to be imported from elsewhere, or significant ***changes*** to the landscape would have to occur. For BECCS to have a negative carbon impact, the growth cycle for the source materials needs to be significantly accelerated.

The economists interviewed for this article agree nations will need ways to pull carbon out of the atmosphere if the world hopes to curb the worst impacts of ***climate change***. Whether there's a place for a "carbon negative coal solution" in that quest remains to be seen.

"The question of pulling CO2 out of the atmosphere should be studied," Schlissel said. "There are technologies that are able to do that but that's different than keeping a coal plant running."

Still, Schlissel conceded that coal plants aren't going away soon. Other countries, particularly in Asia, continue to build them. "The transition is going to take decades and there will still be coal plants operating for a long time," he said.

That's why Begger still sees a business opportunity for the state. "There's an incredible market opportunity behind carbon management," said Begger.

For the ***climate-change*** concerned, it's something Wyoming could do to help stem the tide. "Personally, I think we need to talk about [BECCS]," Godby said. "If as a country or as a world we're going to meet our ***climate*** goals, it's gotta be everything.

"What [Gordon] would argue, and I would agree with him on this, is who has more at stake to develop that than us?" Godby said.

Wyoming's research into carbon capture isn't wholly focused on saving coal electricity, though it is often pitched that way in the political arena. The research could lead to new cottage industries like Atlas Carbon', an exportable technology with a Wyoming patent, or, as Gordon suggests, even a Wyoming solution for the world's carbon problem.

In hanging on to coal, however, Wyoming may be missing opportunities. "I'd focus on solar and wind," Schlissel said. "And I'd focus on not only using them but I'd build manufacturing facilities. I'd give incentives to companies to come to Wyoming. Let's give jobs and retraining to the people who are going to lose their jobs in the Powder River Basin."

Gordon argues Wyoming will be at the center of energy development, including wind energy, regardless. "No matter what happens in our energy future Wyoming is in the crosshairs," he said. Predictions show much of the wind energy northwestern states are seeking to green their grids will come from Montana and Wyoming, he said.

Indeed, the largest onshore wind farm in North America is planned for Carbon County and construction could start soon on the 1,000-turbine project. Other large wind projects proceed elsewhere in the state.

In an interview, Gordon expressed some concern at the impact large wind development would have on the state. "Now you're talking about the landscape," he said. "It seems to me there's a value that should be ascribed to that landscape."

"This isn't a statement anti-wind," he said. But, "if we can do something that's carbon negative using the same footprint and doesn't have to stand up a bunch of new generating capacity from another technology be it solar or wind, can we have a mix here that's beneficial for all involved?"

Asked by WyoFile if he thinks BECCS could be viable within eight years (the duration of Gordon's governorship if he wins reelection) Gordon didn't have a concrete answer. But, he said, "I think it's probably one of the most urgent things we can do to remove carbon from the atmosphere so I hope we won't dilly dally around getting that done."

Graphic

Wyoming Gov. Mark Gordon speaks during the Greater Cheyenne Chamber of Commerce luncheon on Friday, April 5, 2019, in Cheyenne. Ramsey Scott/Wyoming Tribune Eagle

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