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The Official Publication of the Western Dakota Energy Association



A New Day Dawns for Coal Creek Station

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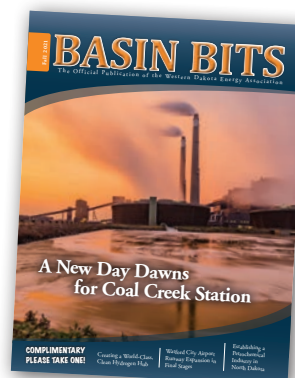
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On the cover: *With the recent news that Rainbow Energy Center is set to continue operations of Coal Creek Station, a new day has dawned for the plant and its employees, as can be seen in this August 2021 photo by North Dakotan photographer Laura Gardner (www.laurajeangardnerimages.com).*





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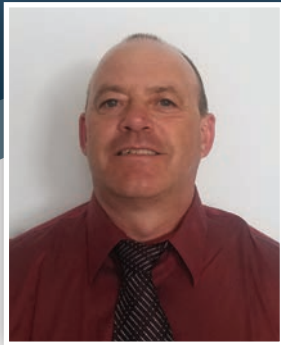


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From the Desk of the Western Dakota Energy Association's President



Shannon Holter

President

Western Dakota Energy Association

Production Foreman, Murex Petroleum

Member, Bowbells City Council

WDEA is a Busy Organization: Legislation & LoadPass Are Just the Beginning

When Geoff Simon informed me he would need my column for *Basin Bits* and that it would be my last as president of the Western Dakota Energy Association (WDEA), I thought to myself, "Wow, those two years flew by fast." We definitely experienced a couple of unique years due to the pandemic, with most activities done remotely—even our 2020 annual meeting. Choosing a topic for a column is usually difficult with so many options, but I thought, why not talk about WDEA?

People often ask me what WDEA is. Well, it's an association of cities, counties, and school districts in the energy-producing counties of western North Dakota. Its board consists of three city representatives, three county commissioners, three school superintendents, and two representatives from coal-producing counties. We contract with Joelle VanderLinden, who manages LoadPass Permits and keeps the books for the association, and consultant Brent Bogar, our "numbers guy," who now works for AE2S Nexus. We also work with Jonathan Rosencrans, now with the North Dakota Agricultural Weather Network, who developed, and continues to maintain, our Wise Roads project.

WDEA looks out for the betterment of our members—the school districts, cities, counties, and townships—primarily in front of the legislature, but occasionally it engages with state boards and commissions. The association has taken on many tasks in just my four short years on the board; things like LoadPass expansion, Wise Roads, an oil tax

distribution study, and, most recently, we've worked to find solutions to the TENORM disposal issue.

Loadpass, wow! Talk about a project that has exploded over the years. When I used to run a workover rig, we filled out a postcard permit and mailed it in. Now, as manager of an oil company, we can get on the computer, pick a starting point and destination, then, the map chooses the best route, and we pay for the permit online. It makes life easier for the industry, and counties and townships have more control over where heavy equipment will be allowed on local roads. And now LoadPass is expanding statewide, with more oil counties and cities joining the system.

The Wise Roads project (Weather Information System to Effectively Reduce Oilfield Delays and Disruption) has grown at an amazing rate. Jonathan took on responsibility for the project and ran with it. As I write this column, he just completed installation of the 38th and 39th weather stations in the oil-producing counties, all in just the past two years. The stations provide county road managers with information they need to impose road restrictions after rain or snow—and, more importantly, when they can leave roads open. And there's the obvious added bonus: farmers and ranchers can use the information, too.

With growth in the oil industry, our school district members have constant issues with school construction needs. There is never enough space for all the kids, and not enough money to build or expand. Our education members and staff have been active, spending time in Bismarck lobbying for school construction funding.

The coal county folks have a never-ending fight to educate the public about the importance of keeping the lignite plants running. It's a fight that honestly shouldn't be happening because coal has proven to be the most reliable and affordable power generation we have.

Here's to bigger and better things from WDEA in the future. Although my term as president will end soon, I hope to continue serving on the board until term limits kick in. Thank you to our members, fellow board members, and staff for all you have done. 🏠

ABOUT THE WDEA

The Western Dakota Energy Association (WDEA) is the trusted and unified voice for the betterment of the citizens of North Dakota and WDEA membership.

WDEA'S 2021 EXECUTIVE COMMITTEE SERVES WESTERN NORTH DAKOTA

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From the Desk of the Western Dakota Energy Association's Executive Director



Geoff Simon
Executive Director
Western Dakota Energy Association

Sensible people can agree we need oil. Modern society cannot function without oil. Petroleum—in the form of gasoline, diesel, jet fuel, or natural gas—supplies 94 percent of America's transportation needs. Ethanol and bio-diesel fuel now account for about five percent of the mix, and the remainder comes from electricity primarily powering urban subways.

Sensible people also understand that America produces, transports, and refines petroleum in a more environmentally friendly manner than any country on the planet. The drilling industry is heavily regulated, and bad actors are quickly weeded out of the marketplace. Oil and natural gas pipelines are subjected to an intensive environmental review in the permitting process, and, once completed, are rigorously maintained and subjected to continuous government inspection.

Given these incontrovertible facts, the Biden Administration canceling the Keystone XL Pipeline and placing a moratorium on leasing of oil and gas reserves under federal control is beyond comprehension. Biden's actions make absolutely no sense. There are no scientific, environmental, nor economic reasons that would support either action. These were political decisions that not only offended Canada, our most important trading partner, but were executed solely to pacify far-Left environmental extremist groups, which are, sadly, becoming an increasingly influential force in American politics.

From an energy perspective, most of the actions we observe today in the political arena, and increasingly in the business sector, are virtue-signaling, feel-good policies. Biden's decisions were purportedly made in the name

Biden Administration Needs an Energy Reality Check:

Anti-Fossil Fuel Policies Are Hurting America

...the Biden Administration canceling the Keystone XL Pipeline and placing a moratorium on leasing of oil and gas reserves under federal control is beyond comprehension. Biden's actions make absolutely no sense.

of preventing "climate change." The executive order canceling Keystone XL cites an Obama-era State Department document that claims, "approval of the proposed pipeline would undermine U.S. climate leadership by undercutting the credibility and influence of the United States in urging other countries to take ambitious climate action."

Seriously, Joe? China's carbon dioxide emissions surged past those of the United States in 2016, and they show no sign of abating. Chinese emissions now constitute 28 percent of the global total, compared to 15 percent for the U.S. And let's not forget, among the original signers of the Paris climate accord, the U.S. was the only nation on target to meet its carbon dioxide emission reduction goals, largely because of its increasing use of natural gas for electric generation.

There's a larger question we need to ask: Are carbon dioxide emission reductions really necessary? Despite extremist propaganda and the constant media drumbeat that higher concentrations of carbon dioxide in our atmosphere are causing "extreme weather," a close examination of the actual science reveals there is scant evidence for such claims. Around the globe, as acknowledged by the Intergovernmental Panel on Climate Change, there is no clear evidence of increasing frequency of extreme events such as heat waves, droughts, hurricanes, or floods, and little, if any, correlation with carbon dioxide emissions.


In addition to the fact there is no solid connection between carbon dioxide, climate change, and extreme weather, the data also shows that as people have become wealthier,

the fraction of that wealth destroyed by extreme weather has gone down. Disaster losses as a percentage of GDP are falling, and the reduction is greatest in the poorest countries. As populations become wealthier, they are able to build more resilient structures and find other ways to reduce damage from extreme weather.

Here's the kicker. People's wealth has increased, their lives have improved, and their life expectancy has increased for one main reason: the abundance and affordability of fossil fuels. The facts have been famously documented in Alex Epstein's book, *The Moral Case for Fossil Fuels*. Yet, despite the obvious benefits of fossil fuels and the little evidence their use is affecting the climate, we are coping with an insidious ESG (Environmental, Social and Corporate Governance) movement that strongly discourages investment in fossil fuels.

As we've witnessed in California and Texas, increasing reliance on intermittent wind and solar power has increased the likelihood of rolling blackouts. North Dakotans experienced it first-hand in the midst of a brutal cold snap in February. To sensible people, it's obvious—we need to maintain and invest in our coal fleet to ensure reliability.

As for the oil and gas sector, the shale revolution has allowed the U.S. to cut imports from OPEC to historic lows; a huge ESG benefit that is ignored. OPEC, Russia, and China have far fewer environmental regulations, so any increased reliance on them for energy is contrary to climate and emission-reduction goals. The ESG divestment movement has it backward. It is hurting North American oil companies on moral grounds, while supporting some of the world's most repressive regimes. Financial policies that insist we divest from oil will raise energy prices, jeopardize our national energy security, and leave more money on the table for OPEC and Russia instead of everyday Americans.

Is that what you want, Mr. Biden? 

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A New Day Dawns for Coal Creek Station

By Paul Adair

*With Rainbow Energy Center continuing operations of Coal Creek Station, a new day has dawned for the plant and its employees.
Photo credit: Laura Gardner / www.laurajeangardnerimages.com*



What a difference a year can make. In May 2020, Great River Energy (GRE) announced the company was planning to shut down or sell its Coal Creek Station by the end of 2022, as it was losing value compared to other power supply alternatives. The news came as a shock to people throughout North Dakota, as the economic significance of Coal Creek is immense.

Built in the late 1970s, the two-unit, 1,151-megawatt (MW) coal power station is located about 50 miles north of Bismarck, near Underwood, and is the largest power plant in North Dakota, employing approximately 225 workers. Requiring up to 22,000 tons of lignite each day, Coal Creek is also the sole customer of North American Coal's nearby Falkirk Mine, which provided 7.4 million tons of coal in 2020 to Coal Creek Station and employs 480 workers.

Fortunately, the path ahead for Coal Creek Station seems much brighter now that GRE has announced the plant is set to continue operations under new owner, Rainbow Energy Center LLC. In addition, Nexus Line LLC will purchase GRE's high-voltage DC transmission

system running between central North Dakota and Minnesota. Both Rainbow Energy Center and Nexus Line are affiliates of Bismarck-based Rainbow Energy Marketing Corporation (REMC), a North Dakota company that will bring over 28 years of proven experience in power and gas asset management across the U.S., Canada, and Mexico to Coal Creek Station.

"We understand the importance of the plant and neighboring coal mine to the state of North Dakota and to the communities near the facility, and, when Great River Energy made its initial announcement, we vowed to continue to work with others on a possible sale," says Therese LaCanne, a spokesperson for GRE. "Rainbow Energy gained our attention because they were interested in purchasing both Coal Creek Station and the high-voltage direct current (HVDC) system, and they have a larger vision for the site that includes developing carbon capture and storage at the plant. This transaction recognizes the value of preserving jobs in an area suited for carbon capture and reduces our members' power supply costs, while virtually eliminating Great River Energy's carbon risk."

Conversations between GRE and REMC began in earnest in August 2020 and required

the efforts of many people behind-the-scenes to bring the complicated transaction to fruition. When the announcement was finally able to be made on June 30, 2021, there was a great sense of relief for those directly impacted by the potential closure of the plant. This relief was mirrored across the country for those who were concerned about national baseload capacity and grid instability.

"When the announcement came out, I am told the look in the eyes of all the workers at Falkirk Mine and Coal Creek Station was one for the ages," says Lt. Governor Brent Sanford. "The employees at both locations were extremely grateful to be moving forward, and that's what was really important when you consider we are talking about a lot of good-paying, direct jobs affected by this decision. And while there is still a lot of work to be done in the months ahead, June 30 was certainly a day for celebration."

North Dakota has promoted an "all of the above" energy approach based on "innovation, not regulation" to advance energy development with environmental stewardship in the state. As such, North Dakota legislators have signed several bills that support the lignite industry as it continues to innovate for the future and



The 1,151-megawatt Coal Creek Station is the largest power plant in North Dakota and employs approximately 225 workers.

supply reliable, low-cost electricity for residents and businesses within North Dakota and beyond, like *House Bill 1412* exempting coal plants from the state's coal conversion facility tax for the next five years and freeing up funds to invest in innovative projects such as carbon capture and sequestration, and *Senate Bill 2152*, which provides a sales tax exemption for carbon dioxide used for secure geologic storage.

"This agreement is a win-win for everyone across the board; not just for Rainbow and Great River, but also for the Coal Creek employees, Falkirk Mine, the surrounding communities, and for the states of North Dakota and Minnesota," says Stacy L. Tschider, president of Rainbow Energy Marketing Corporation. "Great River Energy, North American Coal, and the state of North Dakota have been fantastic partners throughout this entire process and have stepped up significantly. It has been an extremely humbling experience for me, and it's very exciting to be part of a solution that has brought such good news to so many."

Moving forward, Rainbow Energy Center plans to focus on baseload energy from Coal Creek Station, leaning heavily on carbon capture and incremental generation from renewables to

fully use the capacity of the HVDC transmission system, which is critical for the security of the U.S. electrical grid. Carbon capture and storage ultimately helps to address the level of public concern about carbon dioxide emissions and allows North Dakota's vast reserves of lignite to continue being used for many years to come.

"We recognize the pressures on coal and have to find ways to take it to the next level—and that's through carbon capture," says Tschider. "Coal Creek is the biggest, most efficient, and best-run coal-fired plant in North Dakota, and the innovation the plant has shown year after year will be important as we pursue carbon capture and bring on some incremental renewable generation. GRE has built a 40-year legacy in the region, and it will be up to us to continue that legacy. What's really exciting for me is not currently where we're at, but where we're heading in the future."

Looking ahead, there will be a lot of interest in the work being done at Coal Creek Station; not just in North Dakota and throughout the U.S., but also from around the world. Carbon capture and storage are sure to play important roles for the transition to a carbon-free future in North Dakota and developing the technology at

Coal Creek Station will provide an opportunity to maintain economic opportunities, turning coal jobs into green jobs. This project will become a model for environmental leadership and demonstrate that the processes of capturing and storing carbon are doable, feasible, and critical for the drive to carbon neutrality.

"If people are against coal, there's not much we can do to change that, but if you are against carbon, let's all work together and share the vision of what we are planning to do here at Coal Creek," says Tschider. "Coal is the most abundant resource we have in North Dakota, so let's run toward it and make it better, rather than run away from it. I am very confident we are going to be able to make this a very viable successful business for the future of North Dakota."

The sale of Coal Creek Station and the HVDC system is expected to close later this year, once the required member and regulatory approvals are obtained. The sales and purchase agreements are the latest step in GRE's power supply transition, which will add 900 MW of wind energy before the end of 2023 and modify the 99-MW coal- and natural gas-based Spiritwood Station power plant to be fueled primarily by natural gas.

TENORM Waste Solutions Emerge: Slurry Well and Landfills

By Geoff Simon

North Dakota's oil industry may soon have more options for disposing of low-level radioactive material it produces if the state Department of Environmental Quality approves two landfill sites endorsed by the Williams County Commission.

The county approved conditional use permits for applicants Secure Energy and WISCO Inc. to allow disposal of TENORM (technologically-enhanced naturally occurring radioactive material) at their existing landfills. Secure's facility is 14 miles north of Williston, and WISCO's landfill is about 15 miles west of Williston, straddling the Montana border.

The county's approval came about 18 months after it enacted a moratorium on TENORM applications to allow time to study the issue. Both facilities already receive the low-level radioactive material for processing and analysis on-site, but most TENORM is now trucked to a landfill in Montana. The material is commonly found in tank bottoms, pipe scale, and in filter stocks used in saltwater disposal operations.

The county commission's approval of permits for the two landfills came despite a vote by the Williams County Planning Zoning & Commission that they be denied. Zoning board members heard concerns from neighboring landowners about truck traffic and safety, while others felt Williams County should not be "the dumping ground" for other oil-producing counties in the Bakken.

State regulations limit the amount of radioactivity that can be disposed in landfills to 50 picocuries per gram. Landfills are also limited to disposing of 25,000 tons per year. Radioactivity levels on-site are measured in micro-roentgens per hour.

Kurt Rhea, CEO of Radiation Pros, which provides consulting services to Secure Energy, explained to the county that the low-level alpha and beta radiation emitted by TENORM only travels a matter of inches or feet.

"Every day I go up to these sites, I'll have 5,000 micro-roentgens per hour in the bottom of these tanks north of Williston, but when I'm five feet away, walking by with the probe, I can't get higher than



Keith Norbeck explains slurry well disposal to WDEA board member David Montgomery.

20 micro-roentgens per hour, because it just doesn't propagate very far," said Rhea.

Representative David Richter, R-Williston, said a legislative committee had looked into the issue primarily because Montana has tightened its TENORM regulations. He said there was concern the state could one day stop accepting the material from North Dakota.

"My opinion, and what I took out of that study commission, is that the best solution might be a combination of different things," said Richter. "The landfill, the slurry wells to take things that are more than 50 picocuries per gram, and then there's still going to be waste that neither one of those facilities are able to handle in North Dakota."

Richter said the legislative committee had no desire to take over responsibility for local landfills. But that is something that concerned Commissioner David Montgomery, a WDEA board member.

"We all want local control, and that's one of my concerns with this issue," said Montgomery. "The state is watching this. I think

they're also very concerned about it. But I tend to believe that if something doesn't happen with one of the counties to dispose of the waste we produce, the state will make a decision for us, and they'll take that local control away from us."

The commission received reassurance of the safety of disposal operations from state Department of Environmental Quality (DEQ) Director Dave Glatt, who cited a study performed for the state by the Argonne National Laboratory. Glatt said the study indicated TENORM poses virtually no risk to the general public.

"The risk is primarily to the workers, those who handle the waste from inhalation and ingestion and those types of things," said Glatt. "We also asked them to look long-term. What if the landfills closed? The liner failed? They drilled through it? Somebody lived on top of it? In 10,000 years, they were not showing the risk to the individuals."

The Western Dakota Energy Association (WDEA) initiated its own study of

TENORM at the request of Williams County to get a handle on the scope of the issue. At its peak in 2019, it showed the industry generated 92,000 tons of waste annually. That total dropped to about 35,000 tons with the downturn in 2020. WDEA also hosted an informational meeting in Williston, at which it was pointed out many common materials such as fertilizer and kitty litter have levels of radiation similar to that found in TENORM.

After considerable discussion at the county meeting, Commissioner Montgomery made the motion to approve the conditional use permit for WISCO, Inc., whose application was considered first.

"We've, in the last 18 months or so, been provided a lot of information," said Montgomery. "I think it's time we have some trust, we have some faith in the system, with the information that the state has provided us, with the information the industry has provided us, and move forward."

The commission also heard of another disposal option from Keith Norbeck, whose company KT Enterprises began operating a slurry disposal well in McKenzie County in April. The operation pulverizes TENORM into fine particles that are then injected along with produced water into underground formations. It's another disposal option for the industry to consider.

Secure resubmitted its application to DEQ for a radioactive materials license, and WISCO filed a similar application in late July. The applications will be reviewed by DEQ staff, to be followed by a public comment period. DEQ action on the permits will likely occur this fall.



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Creating a World-Class, Clean Hydrogen Hub in North Dakota



Traditional Japanese Daruma dolls were part of a commitment ceremony demonstrating the companies' commitment to executing the acquisition of the Synfuels plant. From left to right: Paul Browning, CEO, Mitsubishi Power; North Dakota Governor Doug Burgum; North Dakota Lt. Governor Brent Sanford; Mike Hopkins, CEO, Bakken Energy; Steve Lebow, Chairman, Bakken Energy; and Paul Sukut, CEO, Basin Electric.

By Paul Adair

In June, Bakken Energy and Mitsubishi Power Americas (Mitsubishi Power) announced a new partnership that sets out to create a new, clean hydrogen hub for North Dakota; one that will produce, store, transport, and consume clean hydrogen in the state and be connected by pipeline to other clean hydrogen hubs being developed throughout North America.

Deeply rooted in North Dakota, Bakken Energy is focused on clean hydrogen production, storage, transportation, and use. The company strongly believes the state has immense potential to become a world-class leader in clean energy. Mitsubishi Power has a well-earned reputation of being the global

leader when it comes to hydrogen technologies and the use of clean hydrogen in power generation, and the company's energy storage solutions for its customers include green hydrogen, battery energy storage systems, and services.

"We provide our knowledge of the industry and intimate understanding of the region, and Mitsubishi Power brings a whole lot to the table when it comes to technology and engineering," says Mike Hopkins, CEO of Bakken Energy. "We both quickly recognized this would be a great fit and became fast friends, and—in a relatively short period of time—we were able to put together this strategic partnership agreement."

As a carbon-free energy carrier and a carbon-free fuel, clean hydrogen is sure to become increasingly important to America's

goals of carbon neutrality. The most common forms of clean hydrogen are green and blue. Green hydrogen is created from water using renewable energy and electrolysis, and blue hydrogen is derived from natural gas, with the carbon dioxide emissions captured and sequestered. The proposed hub in North Dakota will focus on the production of blue hydrogen.

"This project with Bakken Energy allows us to take the state's surplus of inexpensive, stranded natural gas and turn it into a value-added product: blue hydrogen," says Evan Canady, senior business development manager of renewable fuels at Mitsubishi Power, "helping to advance the Governor's goal of becoming carbon neutral by 2030. In addition to supporting regional, national, and global decarbonization goals, this

redevelopment is also a prime example of a public-private partnership that will not only create jobs in North Dakota but will also diversify the national economy and strengthen U.S. energy security.”

Bakken Energy and Mitsubishi Power are currently working with Basin Electric Power Cooperative and its subsidiary, Dakota Gasification Company, on the potential acquisition and redevelopment of the Great Plains Synfuels Plant located near Beulah, ND. The redevelopment would make the facility the largest producer of clean hydrogen (blue or green) in North America.

“We had actually put this partnership together before we got involved with Basin Electric and the opportunity to redevelop the Great Plains Synfuels Plant into a hydrogen facility,” says Hopkins. “We originally planned on creating a greenfield development, thinking it would be a great idea to build from scratch a large-scale, blue hydrogen production facility. But taking the Great Plains Synfuels plant and re-imagining it gives us a tremendous head-start by allowing us to take the facilities already in place and repurpose them, being able to go to market bigger, faster, and better.”

As part of the redevelopment plan, the central gasification process of the Great Plains Synfuels Plant will be repurposed to put natural gas into carbon capture and sequestration for the generation of blue hydrogen. The existing fertilizer plant on-site will use blue hydrogen as its feedstock to produce the clean (or blue) ammonia currently promoted by the federal government for the purposes of decarbonizing fertilizer.

The redevelopment of the plant represents a remarkable economic opportunity for North Dakota and enables a strong and resilient diversification mechanism for additional value-added production centered on clean hydrogen. The project will play an important part in reducing North Dakota’s overall greenhouse gas emissions, while potentially increasing overall fossil fuel production that will support more jobs, higher wages, and vibrant, healthy communities across the state.

“This project is great news, but what’s really exciting is what this project may mean for North Dakota in the future,” says James Leiman, North Dakota’s commerce commissioner. “There are so many interdependencies here that the possibilities ahead of us are virtually endless, and it’s difficult to fully quantify the importance of this announcement when there’s still so much to come.”

The announcement of Bakken Energy and Mitsubishi’s partnership and the potential redevelopment of the Great Plains Synfuels Plant are just the first steps among many for

The redevelopment of the plant represents a remarkable economic opportunity for North Dakota and enables a strong and resilient diversification mechanism for additional value-added production centered on clean hydrogen.

the two partners, who anticipate a significant market in the future for clean hydrogen. The real work is still to come—finding productive and commercial uses for the blue hydrogen produced in state.

“Once we’re up and running and there’s a market out there for blue hydrogen, we,

in North Dakota, will be ahead of the pack, out in that market with large volumes at the lowest cost,” says Hopkins. “The state is well-positioned to become the national leader in clean hydrogen production, and we have now everything in place to make it happen.”



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Watford City Airport Runway Expansion in Final Stages

Watford City ensured an aging municipal airport's need for significant upgrades would not limit its growth and prosperity, investing in a \$24-million upgrade.

By Jeff Tribe

Watford City was determined access to the sky would not be a limit to the immediate and long-term opportunities presented by the Bakken Formation.

"It's not just what helps us today," says Mayor Philip Riely of a \$24-million municipal airport upgrade responding to area oil and gas company requirements. "But what helps us today will also help us in the future."

Riely's story is aligned with Watford City's. One of 42 members of his home community's 500-student K-12 school system's 1995 graduating class, he and wife Debbie (who's also from a small North Dakota town) loved the area but found themselves part of an employment-seeking outmigration. Philip returned in 2000 to work with a gas capture company in conjunction with a production uptick, saw more jobs created during a 2005-06 oil price upswing, and viewed Watford City's rapid transformation as technology developed to provide access to one of the world's largest untapped oil and gas reserves.

"That changed everyone's perspective," says Riely.

Census figures indicate population has swelled from around 1,700 in 2010 to close to 8,000 in 2020. With a chuckle, Riely says it would be nice to attribute Watford City's exponential growth to visionary civic leadership, but, in reality, he says, it's the Bakken.

There are certainly challenges associated with accelerated expansion, concedes Daniel

Stenberg, economic development coordinator for McKenzie County.

"(But) there are a lot more opportunities that come about because of growth," adds Stenberg.

Developing an attractive community for families and businesses to move into requires quality road, water, school, and recreational infrastructure. But Stenberg says whether a municipality has an airport or not can be a reason oil or gas companies choose to locate there, given the inherent travel advantages. That factor emphasizes the importance of capitalizing on both existing, and advancing, Watford City opportunities.

"Our airport helps us put a piece into that puzzle," says Riely.

The existing airport was adequate for agricultural services, including crop dusting, but it did not have the required runway length and weight capacity for oil and gas industry-related craft. The mayor heard several comments that the airport was too small.

"It also needed significant restorative maintenance," says Luke Taylor, Watford City Airport's Manager. "Our runway was in rough shape and needed a large investment just to keep it functional."

Rather than simply patching problems, the municipality opted for major upgrades. The runway length was extended from the previous 4,400 feet to 6,550, with a full-length parallel taxiway. Alignment was altered slightly to enhance approaches, along with upgraded penetration and protection

zones. Full runway lights complete, to Taylor's experienced eyes—he, his two brothers, and their father are all pilots or crop dusters, and the airport's terminal is named after Luke's legendary naval pilot / lawyer / entrepreneur grandfather, Jim—a far superior facility.

"It's just a lot safer runway and airport environment," says Taylor. "It's going to be really nice."

Grading and associated work began in 2020. Runway construction, which started on April 1, 2021, is scheduled to be completed for reopening on October 1 this year.

According to Taylor, funding sources included Watford City (\$1.4 million), the Federal Aviation Administration (\$13 million), McKenzie County (\$5.4 million), and North Dakota Aeronautics Commission (\$4 million).

COVID-19's unfortunate cancellation of several projects did free up some funding, says Riely, providing a "great opportunity" for some significant—and significantly cost-effective—improvements. Taxes didn't have to be raised, he adds.

Riely takes the "30,000-foot view" on the municipal airport expansion / upgrade expenditure, mindfully investing in current opportunity during good times, while simultaneously enhancing and diversifying future potential against commodity price fluctuations.

"We have a brand-new airport," says Riely, "to hopefully stimulate our economy for sectors that might have dropped off." 🛩️

The Potential for Establishing a Petrochemical Industry in North Dakota

By Jeff Tribe

North Dakota's Energy & Environmental Research Center is taking a literal deep dive into the feasibility of unlocking a massive, diversified, value-added economic opportunity buried 6,000 feet below the state's surface.

A \$9.5-million study that commenced mid-August 2021 follows preliminary investigations on the potential for creating North Dakotan salt cavern storage facilities, which are instrumental in developing an in-state petrochemical industry.

Implementing salt cavern technology for liquid natural gas storage hubs has been an integral part of that industry's supply chain for 50 years, says Steven A. Smith, principal geologist in integrated analytical solutions at the Energy & Environmental Research Center (EERC).

In laymen's terms, storage caverns are created by hollowing out salt deposits with water or brine, within an appropriately stable geologic formation. Ample geological data compiled through area hydrocarbon industry activity since the 1950s, along with a preliminary study completed at the end of 2020, identified a specific area of interest north of Lake Sakakawea, between Williston and Minot, warranting further review.

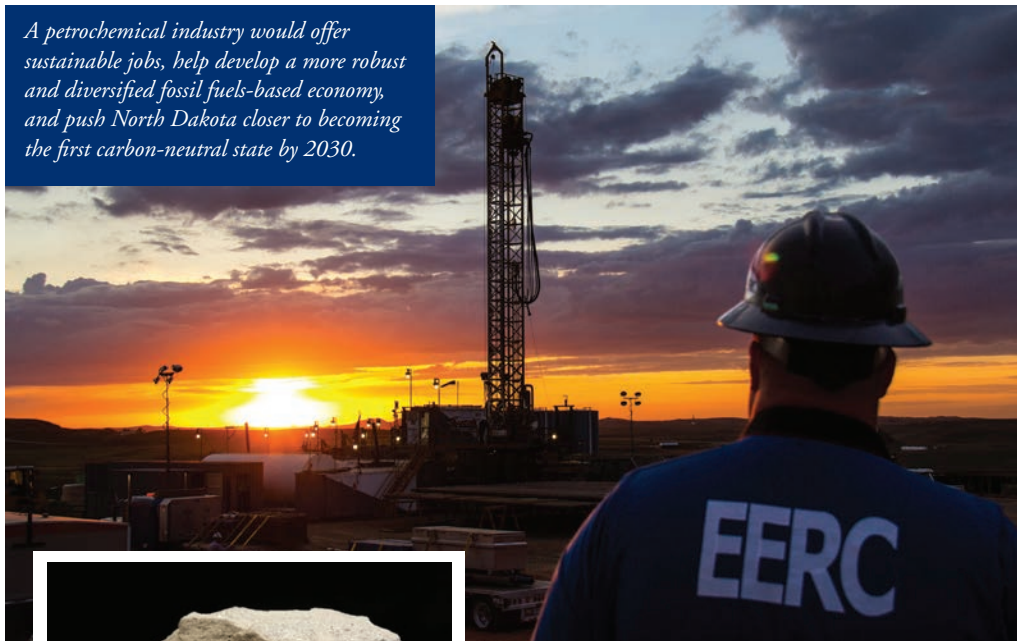
These findings led to additional action, while encouraging a North Dakota Industrial Commission review of guidelines surrounding salt cavern hydrocarbon storage, adding regulatory framework clarity and providing a pathway for future commercial consideration of the technology.

The study's goals are validation of the depth, thickness, composition of salt formations (North Dakota's are "bedded" rather than "domed," potentially thinner than in some other locations), and geomechanical stability of underlying and overlying formations. Core samples and on-site testing will provide valuable data on optimal cavern dimensions that can be realized, along with long-term stability requirements (30 years or more) and safe-operation conditions.

"Whether or not it's the right kind of salt, the right depth, and the right geology around it," Smith sums up succinctly.

Ethane, a common liquified natural gas, was specific to the study's origins, which, with a heightened interest from the governor's

A petrochemical industry would offer sustainable jobs, help develop a more robust and diversified fossil fuels-based economy, and push North Dakota closer to becoming the first carbon-neutral state by 2030.



Core samples and on-site testing will provide data on optimal cavern dimensions, long-term stability requirements, and safe-operation conditions.

office, has morphed to include emerging hydrogen technology.

"We will be investigating that as part of the study," confirms Beth Kurz, EERC's director of analytical solutions.

"Salt cavern storage potential would round out three major petrochemical industry requirements," says James Leiman, North Dakota's commerce commissioner, "namely feed stock (natural gas), ample water, and storage hubs. We have some geological jackpots, if you will."

The study's cost is tiny compared to the potential of helping attract petrochemical industry projects at \$8 billion to \$12 billion per build, Leiman adds.

The petrochemical industry would offer the types of jobs the state would love to create and sustain. In turn, this would help develop a much more robust and diversified fossil fuels-based economy, a resultant tripled or quadrupled value-added economic benefit multiplier when compared against simply shipping raw materials out-of-state. It would also push North Dakota closer to its goal of becoming the first carbon-neutral state by 2030.

"And we'll do it through innovation," says Leiman. "Not regulation."

There is industry money on the sidelines, he adds; however, it can be risk-averse early in a process. He anticipates this study and the related efforts as comparable to North Dakota's forward-thinking decision to invest in Bakken infrastructure in 2008.

"Which is probably the best investment the state has ever made," he says.

Lynn Helms, director of North Dakota's Department of Mineral Resources, has indicated salt cavern storage facilities can open up multiple opportunities associated with the goal of adding in-state value to North Dakotan commodities. In a three-part series published in *The Williston Herald*, Helms estimated the cost of one salt cavern at around \$50 million, with a tour of facilities in Alberta, Canada suggesting multiple caverns may be used. That tour also illustrated remote operation is possible, which is beneficial, in terms of enhanced safety.

NDIC OKAYS NEW EOR PROJECT

Liberty Resources plans to take another run at an enhanced oil recovery project east of Tioga, near Powers Lake. The ND Industrial Commission approved the company's application to use an injection well for EOR purposes.

Liberty's injection mix will include a bio-surfactant intended to improve the lubricity of underground oil. Creedence Energy is supplying its ag-based bio-surfactant for the project and Liberty is planning to do two injection cycles. The project will be reviewed again in a year.

SANFORD NAMED ENERGY AUTHORITY CHAIR

Lt. Governor Brent Sanford will serve a two-year term as chairman of the Clean Sustainable Energy Authority, which was created by the 2021 ND Legislature's enactment of HB 1452. The authority supports the research and development of large-scale projects that advance energy production, reduce environmental impacts, and diversify the state's economy. The initial meeting of the authority was held August 19, and more meetings are expected before the end of the year.

OUTDOOR HERITAGE GRANTS AWARDED

The North Dakota Industrial Commission approved \$5.8 million in Outdoor Heritage Fund matching grants for 16 conservation and recreation projects. Funding for the grants is generated from oil and gas production tax revenue. Some of the projects approved include:

1. \$591,200 – Audubon Dakota: Restore idle urban flood lands and riparian areas at 10 sites affecting 320 acres to create healthy habitat for birds and other wildlife, reduce public landowner maintenance output, and provide unique outdoor recreation and education opportunities.
2. \$69,115 – Bowman Parks & Recreation: Assist with outdoor aspects of a new shooting range in the Bowman and Rhame area.
3. \$10,000 – Center Park Board: Provide new playground equipment for Lehmkuhl Park in Center.
4. \$6,471 – Dunn County Park Board: Creating a nature play area in the county park located at the Lake Ilo National Wildlife Refuge.
5. \$25,370 – Mountrail County: Plant trees to shade gazebos to be constructed at Clear Lake Park.
6. \$196,356 – Little Missouri Grazing Association: Preserve livestock grazing, implement strategies to improve native grasses and forbs, enhance wildlife habitat, and improve water quality.
7. \$245,800 – Medora Grazing Association: Develop four partially plugged oil / gas wells in Billings County into water wells to preserve livestock grazing, enhance wildlife habitat, and improve water quality.



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SAVE THE DATE: WDEA'S ANNUAL MEETING

The Western Dakota Energy Association will hold its annual meeting October 13-14, 2021 at The ARC in Williston. The in-person event will begin Wednesday with a presentation by Lynn Helms, director of the Department of Mineral Resources, following opening remarks by WDEA President Shannon Holter and Williston dignitaries.

Speakers will update attendees on the pending sale of Coal Creek Station, the development of a hydrogen industry, efforts to develop in-state TENORM disposal options, career and technical education plans, and the ongoing debate over school funding. The meeting will conclude on Thursday with election of the WDEA Executive Committee.

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