



2019 Annual Report

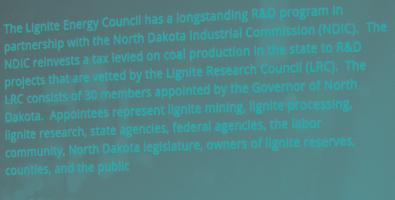
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Our Goals

- Support continuation
 fleet
- · Invest in transfe conversion syste
- · Focus on Carbo



MESSAGE FROM OUR PRESIDENT

2018

Transitioning to Achieve Results



Jason Bohrer, LEC President & CEO

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Customers want to know what you have done for them lately.

The hardest part about being successful is discovering ways to grow on that success.



North Dakota is a leader in energy development and production. Our success today is built upon the hard work of our predecessors. While the state is blessed with immense natural resources, such as water and coal, it was a combination of policymakers, utilities and mining companies that came together to build the current \$18 billion regional lignite industry in North Dakota. While the energy we produce is sold to consumers in the Upper Midwest, the mines and power plants reside in North Dakota—so does much of the workforce.

The last decade has been one of continual change. First came the over-regulation of our industry by the Obama Administration, which was followed by the Trump Administration and its pursuit of repealing and replacing many of the most onerous regulations. As we enter 2020, we see this new era as a time of renewed confidence for our industry—to lead again in providing affordable, reliable and resilient energy from a vast, domestic resource.

The current work force includes leaders who were mentored by the energy pioneers. They learned lessons such as—"Customers want to know what you have done for them lately." And "The hardest part about being successful is discovering ways to grow on that success."

The electricity market has people who not only oppose coal-based electricity, but would like to see our industry wither and die altogether. In spite of this attitude, the lignite industry continues to win over critics by being a reliable power provider when other sources simply cannot deliver. A case in point is the Polar Vortex of 2019. With frigid temperature causing renewable sources to largely shutdown to prevent major damage, the lignite industry provided the necessary electrons to keep the energy grids in the Upper Midwest operating and our homes comfortable.

So as we look back at 2019, we remember the successes in the North Dakota Legislature to secure more funding and legislation to help with carbon capture and sequestration. We look back at the research and development successes that position us better for existing plants to experiment with new carbon capture technologies. Another success was the gains we made in promoting electric vehicles as a prudent second vehicle for families in our region.

There are other successes that you will read about on succeeding pages, but rest assured that we won't rest on our laurels. We are preparing for the future to keep this industry alive. One way is by looking at emerging markets, another is by continuing to inform the public about the value of our industry to state and region.

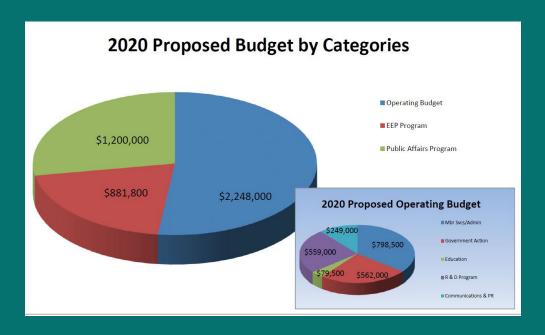
As members of the Lignite Energy Council, you share in the work and the rewards that are spearheaded by the Council and its major members. As you read the various reports for 2019, I believe you will agree that work accomplished last year positions us for even greater results in the future. There is more work to be done, and we're happy to see you are part of our team as we work together to form a stronger lignite industry.

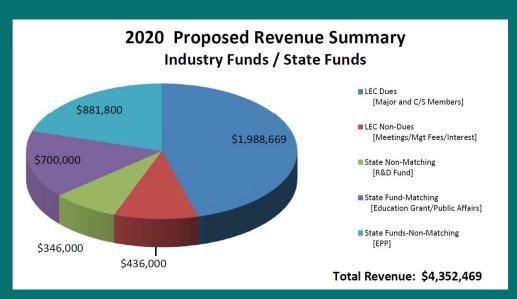
Jason Bohrer

LEC President and CEO

Jason B

2020 Proposed Budget Figures







2019 Government Affairs successes at state and federal level



In 2019, the Lignite Energy Council worked with federal and state governments to either support legislation that was helpful to the future of the industry or to defeat legislation that would hurt our ability to produce electricity and export it to other states. Here are the top legislative accomplishments for the year:



North Dakota's "Project Prairie Dog" included a provision that increased the Lignite Research Fund appropriation to \$10 million per biennium starting in FY19-21. The appropriation will help advance research and development projects that will focus on carbon capture use and sequestration and emerging markets for lignite.



A North Dakota tax exemption incentive for carbon capture projects that use carbon dioxide in enhanced oil recovery and geologic storage will help attract millions of dollars of capital from private investors for the construction of pipelines and other equipment.



The "Critical Infrastructure Protection Bill" increased criminal penalties for those who trespass and cause intentional damage to critical infrastructure. This includes the electrical power generating facilities and associated transmission facilities that provide both reliable and affordable baseload electricity to the Upper Midwest.



Electric Vehicle ownership is growing across the country and is projected to reach 50 percent of all vehicles on the road by 2050. As this transition takes place, the lignite industry will realize both overall demand growth and households that charge their vehicle overnight to reduce the cycling of lignite-based power plants. A legislative study was passed to identify what the state can do to help foster that growth for the future.



One of the successes in the 2019 North Dakota Legislature involved a tax incentive for enhanced oil recovery projects using carbon dioxide from the lignite industry. LEC's Government Affairs Director Jonathan Fortner poses with North Dakota Gov. Doug Burgum and Basin Electric Power Cooperative's Dale Niezwaag and Jean Schafer following the Governor signing the bill.



The 100 Percent Carbon Free by 2050 and Clean Energy First legislation in Minnesota would require all in-state utilities to produce electricity from only carbon free resources. This legislation passed the House of Representatives and is supported by the Governor; however, it was blocked by the Senate and did not pass in 2019 with the support of the LEC and our membership. This bill would have a disastrous effect on the lignite industry in North Dakota if signed into law.



The LEC continued to host Coal Country Tours for Minnesota Legislators to provide them with a first-hand experience of how the lignite industry operates. Senate Majority Leader Paul Gazelka and Senator Eric Pratt toured the Falkirk Mine and the Coal Creek Station to learn about how we surface mine with nation-leading reclamation and environmental practices.



LEC led the recruitment of 100 organizations and individuals to join in submitting public comments in support of the proposed Affordable Clean Energy (ACE) Rule, which replaced the costly one-size-fits-all emissions regulations for coal power plants issued by the previous administration. The previous rules unfairly targeted North Dakota and required a 45 percent reduction in the state's carbon dioxide (CO2) emissions, well above the national average of 32 percent. The ACE rule will ensure the vital role of states in developing their own plans for the best system of emission reductions for existing power plants. This effort follows the intent of the Clean Air Act by allowing states ample time to establish performance standards for existing sources, while giving states flexibility to establish guidelines particular to circumstances of each power plant.



The Lignite Energy Council has been representing the lignite industry and advocating for its members since 1974. This is accomplished through four programs—government action, research and development, public affairs and education. While separate, the programs are synergistically intertwined to where the whole is better than any of its parts.

For instance, government affairs relies on R&D for facts that can be shared with policy makers and regulators. R&D benefits from investments made by the North Dakota Legislature and federal sources. Public relations is supported by both the State of North Dakota and Lignite Energy Council members. It's mission is to gain support for the lignite industry by highlighting the attributes of the industry—such as affordable and reliable electricity. Education reaches out to students before they are voters informing them about job opportunities and the importance of environmental stewardship in the production of homegrown energy.

All four programs are also impacted by outside forces such as legislators, regulators and public opinion, to name a few. However, by working together—contractor/supplier companies and major members—have benefited from the Lignite Energy Council and its four-intertwined programs.



Rare Earth Elements targeted as emerging market for lignite



The diverse range of R&D projects under the Lignite Research Program includes investigations of emerging markets for our 800-year supply of North Dakota lignite. North Dakota has always been a leader in developing value-added uses for the lignite resource. Examples include three types of fertilizers at the Great Plains Synfuels Plant (among their many products), leonardite as a soil amendment and other applications and the activated carbon production that is proceeding toward commercial application at Valley City. One of the current emerging markets under investigation is extraction of rare earth elements (REEs) from lignite.



North Dakota has become engaged in a domestic effort to develop technologies focused on REEs from coal and coal-related materials, under a U.S. Department of Energy (DOE) program. The goal is technical and economic viability of domestic REE production. The group of elements known as REEs comprise strategic ingredients for a number of industries. They are important to a range of products including magnets, lasers, catalysts, computer components, cell phones, medical devices, a range of electronics and many other products. The U.S. currently imports nearly all of our REEs, and continued availability is critical to our economy and national security. China currently dominates the market. Coal and coal by-products have been identified as a source of REEs with good potential to provide a domestic supply that can be both technically and economically viable.

North Dakota is among a number of states playing a key role in this effort. The North Dakota Geologic Survey (NDGS) performed pioneering work to assess REE occurrence in the region. Technology developers and industry have partnered on a number of projects focused on commercially-viable production of REEs from North Dakota lignite and related materials. Early results show promise in terms of the amount of REEs in North Dakota lignite and the ease of recovering it.



The next step is to continue work in the pursuit of commercial viability. The best way to attain viability is to demonstrate readily recoverable sources of REEs, and integrate the REE recovery into existing mines and power plants to optimize the economics.

Focus on North Dakota geology for CO₂ storage is paying off

CO₂

R&D activities into the geologic storage of CO_2 in North Dakota has been ongoing for over a decade and a half under the Plains CO_2 Reduction Partnership (PCOR). The PCOR partnership is one of seven original partnerships funded by the DOE, with co-funding from the Lignite Research Program and over 100 regional partners. The PCOR program laid the groundwork to identify and address potential barriers to utilization and storage of CO_2 in North Dakota and the greater region. The Lignite Research Program also co-sponsored a complimentary project under the DOE's CarbonSAFE program to provide more detailed evaluation of CO_2 storage in saline formations at two North Dakota sites.



During these projects, many positive results have occurred helping to clear the path for CO_2 utilization and storage in North Dakota. These projects have demonstrated the technical, economic and social feasibility of commercial-scale CO_2 storage in North Dakota. The PCOR partnership is continuing as one of four new regional initiatives, with a new funding agreement and the CarbonSAFE project also working toward the next phase. These projects are targeting commercial-scale CO_2 capture and storage in North Dakota as industry works toward application for storage facility permits from the state's Department of Mineral Resources (DMR).

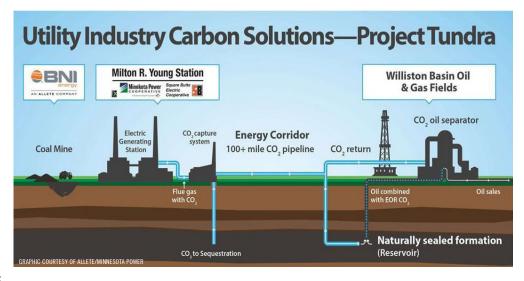
Did you know that North Dakota is the first state in the U.S. to receive primacy for CO₂ storage wells?

Carbon Capture Utilization and storage projects move forward



The investments in carbon capture, utilization, and storage (CCUS) technology developments have led to commercial interest in CO_2 capture from North Dakota power plants. The CO_2 will then be used for enhanced oil recovery in the Williston Basin. Commercial application of the technology in North Dakota would provide two major benefits to the State, including the critical value of extending the life of our plants and providing a source of CO_2 for producing additional oil from conventional wells that are nearing the end of economic viability without enhanced oil recovery with CO_2 .

In the past year, a project titled Project Carbon was completed, providing information on near-commercial carbon capture technologies for future CCUS projects in North Dakota. One such project, Project Tundra, was recently awarded \$15 million in funding from the Lignite Research Program (over \$30 million total project size) to perform an engineering study and evaluate the commercial viability of CCUS at the Milton R. Young Station. Similarly, Great River Energy was awarded \$4.2 million from the Lignite Research Program (\$8.4 million total project), to help initiate an effort to evaluate the viability of carbon management at the Coal Creek Energy Park. These investments in technology combined with the 45Q tax incentive for CO_2 storage (up to \$50 per ton), are helping to drive CCUS closer to commercial viability in North Dakota.



North Dakota lignite R&D continues to see growth

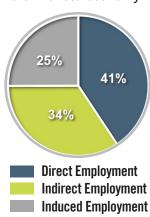
The Lignite Research, Development and Marketing Program ("LRP" or "Program") has continued to evolve from legislation passed in 1987. The Program remains a strong partnership between the private and public sectors as industry continues to make plant and mine improvements, addresses carbon management challenges and opportunities, and develops emerging markets for utilizing the State's vast coal reserves.

The LRP has seen continued growth through the years with the previously mentioned increase in funding under Project Prairie Dog (House Bill 1066), which provides up to \$10 million of additional funding per biennium, on top of the traditional base funding for the Program. This, and previous investments from the Strategic Investment and Improvements Fund (SIIF), have allowed funding of initial projects under the Advanced Energy Technology (AET) program. The AET program continues the focus on late-stage evaluation of technologies under consideration for commercial application in North Dakota. This growth has allowed nearly \$59 million in new projects, which include just under \$23 million approved from the LRP. The majority of these projects are pre-commercial evaluations, and include a focus on Carbon Capture, Utilization and Storage (CCUS).

Study shows CCUS would have a large economic impact

The lignite-fired power industry plays a critical role in the North Dakota economy.

Based on the most recent study performed by North Dakota State University (NDSU), the overall impact of the lignite coal industry in the State is \$5.7 billion in economic activity and 14,000 long-term jobs (including direct and indirect jobs). In addition, the reliable, clean, low-cost electricity made possible by North Dakota lignite is the cornerstone of the economy of the State and extended region. A study completed last year by the EERC and NDSU, showed that the addition of CCUS to the five largest power plants could create between 8,000 to 15,000 additional jobs, depending on the amount of the CO_2 that is utilized for enhanced oil recovery. More detail of the study results are available at **www.lignite.com**.



Public Affairs BY Numbers

videos produced promoting electric vehicles in North Dakota

podcasts produced in 2019 promoting emerging markets in the lignite industry



middle and high-schoolers completing the inaugural year of NextGen ND, a youth advisory council

infographics promoting the lignite industry published in the daily Bismarck Larks baseball programs

middle and high-schoolers recruited for second season of NextGen ND, a youth advisory council

media interviews with newspaper, magazine, radio and **TV** reporters



percent of North Dakotans who support the use of coal to generate electricity

cloth grocery bags given away at the North Dakota State Fair promoting the lignite industry

lunches served to the employees of the Leland Olds Station. **Coal Creek Station and Falkirk Mine for winning** the March Madness contest

LEC Facebook followers

miles driven in 2019 by LEC employees in the Tesla Model X

million dollars spent by the Lignite Energy Council promoting the lignite industry in 2019



Tesla Model X leads the statewide promotion of electric vehicles



The Lignite Energy Council led a comprehensive public relations effort in 2019 to promote electric vehicles and the needed infrastructure to help the industry grow. This campaign involved the formation of the DriveElectric ND Website and included a map that shows the various public charging stations in the state.



Electric vehicles normally charge at night, which helps the load profile of coal-based power plants. The more electric cars that are charging, the greater the chance that coal-based power plants don't have to back off generation as far as they might otherwise. The Lignite Energy Council also constructed a Level 2 charging station at the LEC's office building in Bismarck.

The LEC acquired a Tesla Model X in January of 2019. Throughout the year, the car was displayed at various events including the North Dakota State Fair and featured on social media advertising campaigns. Plus employees of the Lignite Energy Council shared their experiences of driving the car through a blog. Additionally, the car was featured prominently in a national E&E travelogue about how the country is accepting electric vehicles as a new form of transportation.



TV campaigns feature Project Tundra and Land Reclamation



How much land in North Dakota has been mined, reclaimed and bond released? How is the lignite industry working toward capturing carbon dioxide from an existing power plant? The answers were provided in television advertising that ran on social media as well as network and cable television channels in North Dakota and Minnesota.



Besides the TV ads, the Lignite Energy Council also produced several videos that appeared on social media channels including Facebook and Twitter. The results of the TV campaigns are partly why the public support of coal-based electricity in North Dakota is so high—75 percent of North Dakotans according to 2019 public opinion survey.

Guests on Energy Matters and Podcasts

For the third year in a row, employees and members of the Lignite Energy Council spoke on the popular radio show "Energy Matters" which runs on KFYR radio on Tuesday afternoons. The



show is hosted by Scott Hennen and is often guest-hosted by others. Members of the Lignite Energy Council are often asked to participate to provide listeners with a larger perspective of how the lignite industry also impacts Main Street businesses in the state. The LEC also began a podcast "Mined: Lignite Energy in America." Past episodes can be found on the LEC's Website. The first several podcasts focused on emerging markets impacting the lignite industry.

Employee Engagement



The Lignite Energy Council has also worked to engage more directly with members. There are several things we did toward that end. They include:



Producing and disseminating the monthly "Table Topics" where we remind or inform our members about issues we would like them to discuss with family and friends.



Featuring four employees at the Coyote Station and BNI's Center Coal Mine in videos that talked about how the lignite industry keeps the lights on and our homes comfortable even on the holidays.



Served 1,180 lunches for employees at the Leland Olds Station, Coal Creek Station and the Falkirk Mine as an award for their participation and winning the Lignite Energy Council's March Madness contest.



Youth Advisory Council



In its second year, the Lignite Energy Council has taken the lead with the Petroleum Council and the North Dakota Farm Bureau in developing a 15-member youth advisory council, known as NextGEN ND.



In the spring, students in North Dakota schools applied to be on the council and 15 were chosen from across the state. The students are in 7th through 11th grades. Their commitment includes a tour of various companies that represent the state's top five industries. This year's tour included stops at the Center Mine and the Young Station in July. They also meet by conference call about six times a year. During the year, they learn about public relations and work on a final project as a group.





The Voice for Energy and Agriculture







Plan to participate in our 2020 events:



ND CoalPAC Golf Tournament July 23





Coalition for A Secure Energy Future Golf Tournament August 13





ND CoalPAC Coal Classic Ride August 27





ND CoalPAC Sporting Clays Shoot September 11





LEC 2020 Fall Conference September 30/October 1





Lignite Research Council
Grant Deadline
October 1





Lignite Research Council Meeting November 12





Success in Education



Once again, the Lignite Energy Council hosted more than 100 teachers during the 34th annual Lignite Education Seminar, held June 10–13, 2019 at the National Energy Center of Excellence on the campus of Bismarck State College in Bismarck, ND.

Participants are asked a series of public opinion questions prior to and following the conclusion of the Seminar to gauge their opinion of the coal industry including the use of the fuel, its importance to the region's power supply and whether it should be part of the energy future.

Consistently, feedback has demonstrated an increase in favorability and support of the use of coal due to information presented and awareness of the industry through participation in the Seminar.

93.83%

respondents said that they favor the use of coal to produce electricity— a **16.05**% positive change.



77.92%

strongly agreed that coal energy is vitally important to our region's power supply—a **20.78**% positive change.

strongly disagreed that coal is a dirty form of energy and should not be part of our energy future—a 17.5% positive change.

3,500 teachers attended

years of Teachers Seminars

past attendees have indicated that they have incorporated Seminar information into their teaching plans.

73.53%

of past attendees say they have promoted the job opportunities in the lignite industry to their students.



Outreach Materials



The Lignite Energy Council has worked closely with other organizations such as the North Dakota Historical Society, Bismarck State College and KAT Marketing, as well as industry and education partners to produce materials that can be used in conjunction with the Seminar or as stand-alone instruction material made available to teachers across North Dakota and in other states.



One of the most noteable projects is an education video series. As part of our continual improvement efforts, we have been focusing more attention and resources to update and broaden our library of videos that showcase various aspects of the lignite industry.

Beginning with funding from the 2017 Lignite Research Council matching grant and continuing each year through 2020, the Lignite Energy Council continues the process to develop new education videos that would pair with the Lignite Education Seminar. As part of that process, the LEC has been



working with local media company KAT Marketing to draft and carry out a plan for a series of four 15-minute videos.

Two videos have been completed: with the final two installments finishing up in 2020. Work has also begun on the third video: Electricity Generation and Coal Conversion.







Lignite Geology, Mining and Reclamation

New study predicts 20-year growth period for electricity in western North Dakota



One of the studies released in 2019 that received a lot of attention concerned the electricity growth forecast associated with western North Dakota oil activity for the next 20 years. Power Forecast 19 (PF19), completed by Barr Engineering, predicts that electricity demand will rise by as much as 71 percent or more during the next two decades. That expansion is due to more drilling rigs, pipelines, refineries and other related facilities needed to produce and move oil and gas to markets. Population growth to staff those activities and associated services was also taken into account.



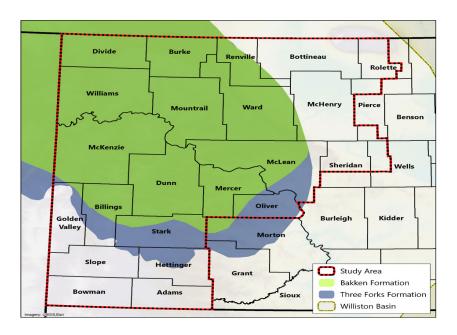
Commissioned by the North Dakota Transmission Authority, Barr Engineering provided members of the North Dakota Industrial Commission with a low and a consensus scenario regarding the need for more generation in the state to power the growing oil and gas industry. The scenarios are based on models, which include variations in commodity prices, regulations, technology advancements and other potential factors.



PF19 estimated additional electric consumption to increase by an overall growth rate of approximately 44 percent (low scenario) to 71 percent (consensus scenario) over the 20-year planning horizon. By 2038, PF19 predicted that total electric energy consumption would reach between 15,000 gigawatt-hours (GWh) and 18,000 GWh. Compared to the baseline, this represents an increase between 4,600 GWh and 7,500 GWh, annually.



North Dakota currently has a baseload generating capacity of 4,390 megawatts, not including the lignite-based Heskett Station, which is scheduled to close in 2021. The PF19 study predicts that somewhere between 670 and 1000 megawatts of new generating capacity will need to be built in the next 20 years to meet the oil and gas industry's growing consumption rate. The generating facilities will need to work together to meet a consistently high load from the production and processing activity in the Bakken. A megawatt of electric capacity is enough to serve approximately 800 residential customers.



While lignite-based power plants in North Dakota historically have produced baseload electricity, the study indicates that utilities will have some flexibility when it comes to meeting this growth in electricity consumption. First, existing coal-based plants could be shifted to appropriate markets. Also, natural gas-fired combined cycle plant(s) could also be built. Intermittent sources, such as wind and solar, can be combined with natural gas generation to provide additional electricity.

The Power Forecast was reviewed by members of the NDIC last spring. The North Dakota Industrial Commission consists of Gov. Doug Burgum as chairman, Attorney General Wayne Stenehjem, and Agriculture Commissioner Doug Goehring. The NDIC oversees the North Dakota Transmission Authority.

Members of the North Dakota Industrial Commission said, "The purpose of this study is to estimate future electrical consumption primarily within the oil-producing counties, and also to support utilities as their plans include generation sources that best match the types of loads and capacity factors involved in the production and transportation of oil and natural gas."

This new study supersedes a similar study that was completed in 2012. The data used in the 2019 study came from public sources including the North Dakota Pipeline Authority (NDPA) and North Dakota State University (NDSU). NDPA provided industry projections for oil and gas production, while NDSU provided projected population estimates.

Barr Engineering developed a model to predict the growth based on commodity production, commercial and industrial usage of electricity and population growth to make predictions throughout the 20-year planning horizon. Data for the study was collected from the oil and gas industry, regional utilities and other sources.

The study was commissioned by the North Dakota Transmission Authority, which was created by the North Dakota Legislative Assembly in 2005 at the request of the NDIC. John Weeda is the director of the NDTA, and he works closely with the Executive Director of the NDIC, Karlene Fine.

Interview with Glenn Baranko, President of Baranko Brothers





Glenn Baranko, President



There is strength in numbers and our membership in the association gives us the opportunity to give back to the lignite industry for the betterment of all members.



Baranko Brothers, Inc., began brothers Emil and Ernie, who were ranchers and farmers in western North Dakota. They were looking to diversify by getting into earth-moving and road construction. Their company started in 1967 with soil conservation projects but later moved into the oil and lignite industries. The Baranko Brothers have been members of the lignite industry since 1991. Nineteen years ago, they diversified further with the purchase of a small coal company near Center, North Dakota, that sells stoker and lump coal to schools, businesses and homes on a retail basis. The Center Coal Company, as it's now known, is the only retail coal business in the state.



Q: What LEC events do you or members of your company normally attend?

A: "We always attend the spring and fall meetings as well as the summer golf outings. It's always nice seeing all your customers in just one spot in the spring and the fall. You also see some of your customers that you might not have worked with recently and the meetings give you a chance to reconnect. After all the years we've been doing this, you become friends and it's nice to get together over a cup of coffee."

Q: Baranko Brothers has been a member of the LEC for a long time... what keeps you as a loyal member of the LEC?

A: "There is strength in numbers and our membership in the association gives us the opportunity to give back to the lignite industry for the betterment of all members."

Q: Is there anything in particular where you feel the LEC has had the best interest of your company at heart?

A: "We also own the Center Coal Company and a number of years ago there was some legislation presented for use of stoker coal in public institutions and the Lignite Energy Council was a great advocate for that legislation, which passed in the North Dakota Legislature."

Q: How much of your business is tied to the lignite industry?

A: "It can fluctuate greatly. There are some years when the lignite industry might account for 25 to 50 percent of our volume."

Q: Who else do you do work for?

A: "Besides the lignite industry, we do a lot of work for the North Dakota Department of Transportation, as well as counties in western North Dakota and the oil industry."

Q: Compared to other associations that you belong to, how do you feel the LEC stacks up?

A: "The Lignite Energy Council is definitely right on top. It's good to have strong advocacy especially when faced with the war on coal that we saw with the previous administration."

Q: Of the different program areas of the LEC – government action, research and development, public relations and education – is there one that you feel particularly proud of?

A: "I like the work of the teacher's education activities. Getting the teachers to understand is important so they can take back that knowledge to their classrooms and get the next generation to understand coal and what's going on in the industry."



www.lignite.com