



2010 PROFILE

# CONNECTED





When 2010 began, ALLETE's Minnesota Power division was **connected** to a rich potential source of renewable wind energy when it closed the purchase of a 465-mile direct current transmission line between northern Minnesota and central North Dakota.

To secure this strategic asset, and to achieve all the successful outcomes that make a publicly traded energy company succeed and grow, ALLETE has to be connected.

ALLETE has developed and strengthened **its electrical connection** to individual people, homes and businesses since Minnesota Power's predecessor company was incorporated more than 100 years ago. Today it serves 144,000 residential energy customers in northern and central Minnesota as well as 16 municipalities and some of the nation's largest industrial power customers. Superior Water, Light & Power, BNI Coal and ALLETE Properties are other businesses under the ALLETE umbrella.

# Our business is more than staying in touch.





As an energy company with a defined service territory, Minnesota Power is literally wired to its customers. But the **human connection** is every bit as important. We must constantly engage the people we serve about topics as widespread as safety, rates, conservation and that sponsorship for the Pewee hockey tournament. Our employees are encouraged to make personal commitments through involvement with city councils, scout troops and other community organizations.

We must constantly interact with local, state and federal officials, from elected representatives to utility commission staff. Our company's potential effects on business and household budgets, the environment, rights-of-way and the national energy grid all demand a **connection to government**.

ALLETE's longstanding connection to investors is spelled out clearly in corporate strategy: *"ALLETE is an energy company committed to earning a financial return that rewards our shareholders, allows for reinvestment in our businesses and sustains growth."*

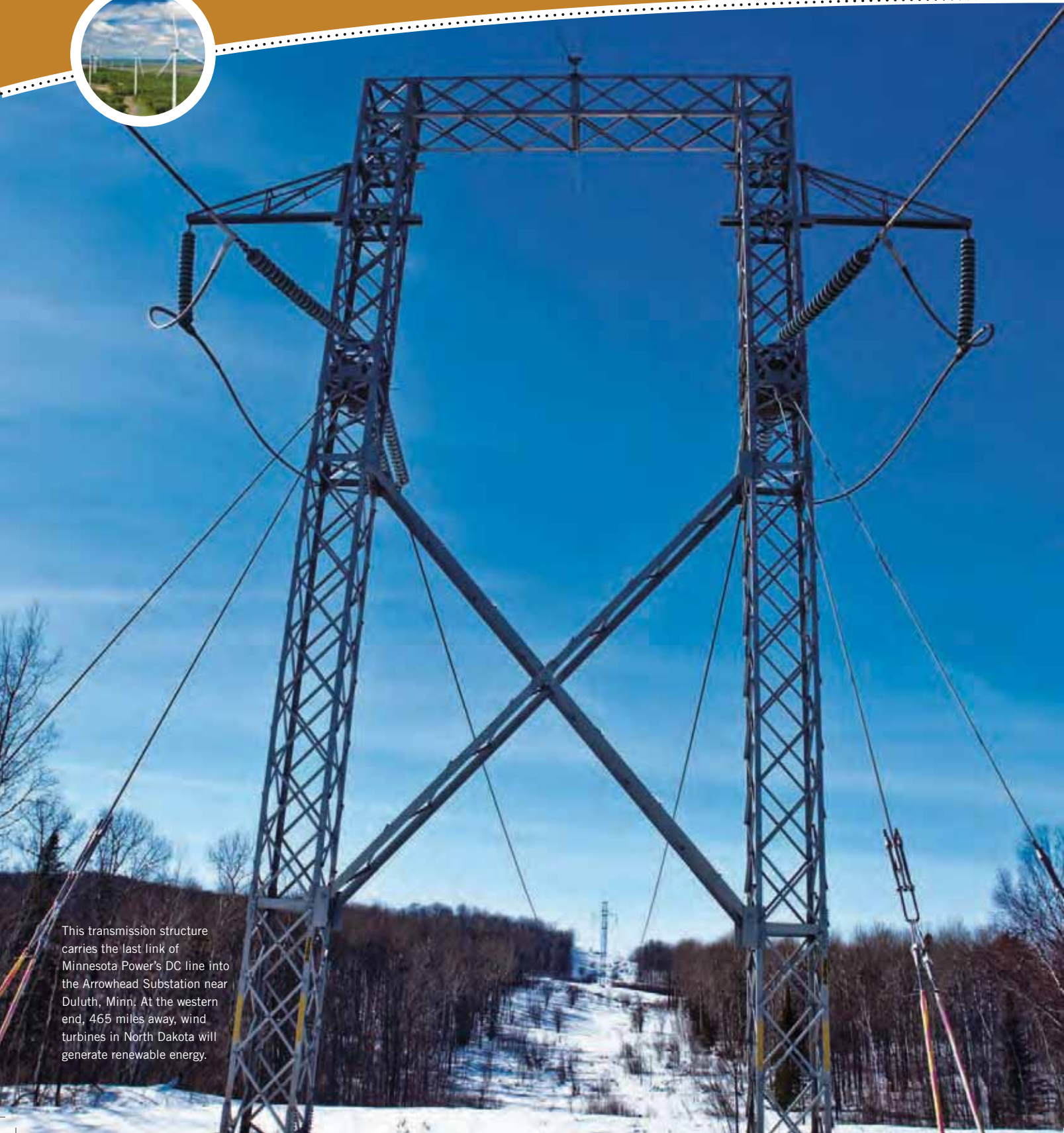
It's staying  
**connected.**

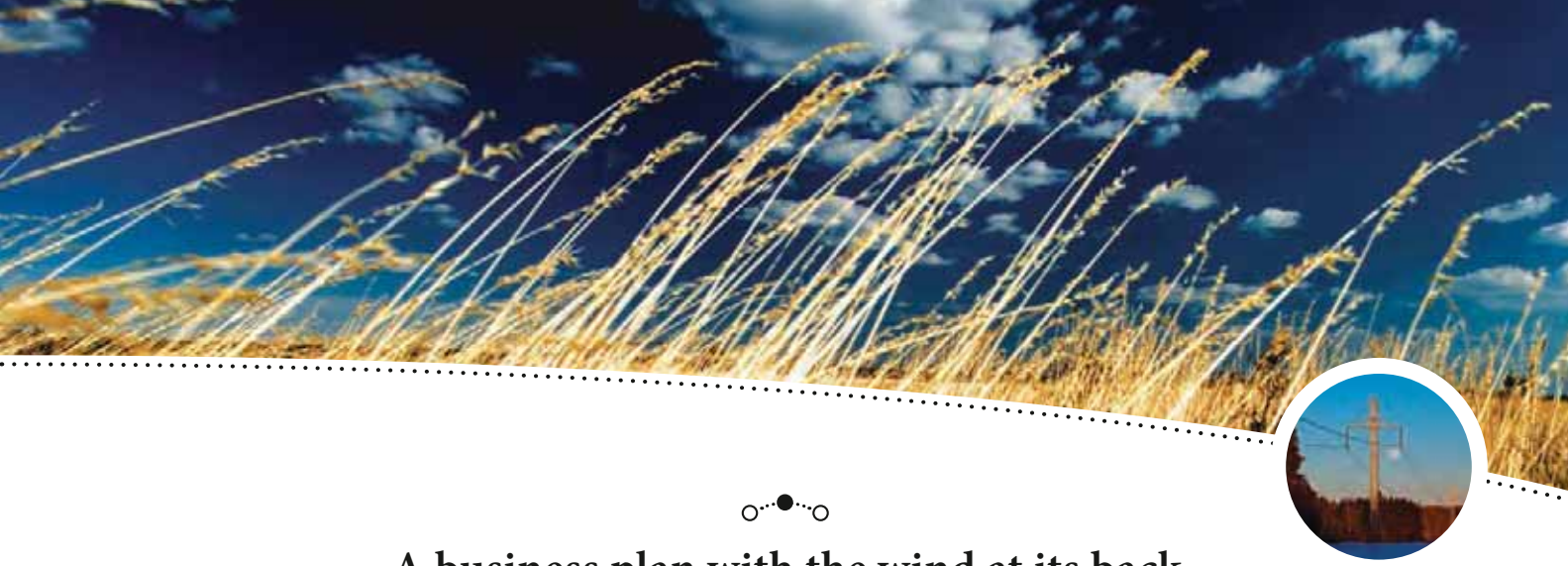


When the DC line was built in the late 1970s, it was designed to carry electricity generated at a fossil-fueled facility 465 miles away. In the future, under ALLETE ownership, it will import renewable wind energy harnessed from the wind-rich North Dakota plains.



This transmission structure carries the last link of Minnesota Power's DC line into the Arrowhead Substation near Duluth, Minn. At the western end, 465 miles away, wind turbines in North Dakota will generate renewable energy.





## A business plan with the wind at its back

The first order of business for ALLETE in 2010 was to take ownership of an interstate transmission line that connected electric customers in Minnesota and perhaps the rest of the Upper Midwest to the renewable energy potential blowing across the central North Dakota landscape.

ALLETE announced plans to buy the +/-250-kilovolt line from the Square Butte Electric Cooperative in May of 2008. The \$70 million transaction closed Dec. 31, 2009.

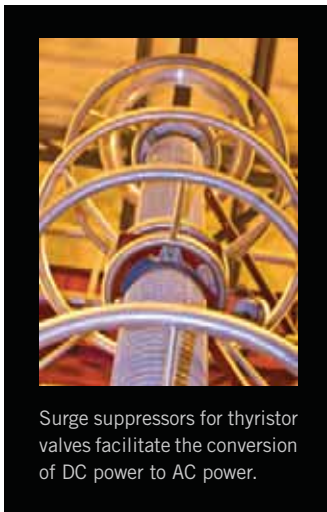
Purchase of the line will enable Minnesota Power to phase out a long-term contract to buy electricity generated from coal at the Milton R. Young Station in Center, N.D. and replace it with renewable wind energy.

Federal and state regulators approved the purchase and associated interconnection agreements in late 2009.

The 465-mile DC line, which transmits by direct current rather than the more typical alternating current, connects an electric substation near Center, N.D. with a Minnesota Power substation near Duluth.

Direct current is a more economical way to transmit power over long distances than by alternating current. When Square Butte built the DC line in the late 1970s, it was designed to move large quantities of electricity from the coal-fired Young Station to supply Minnesota Power's taconite customers on northeast Minnesota's Iron Range.

Electricity generated at the Young Station is now shared by Minnesota Power and Minnkota Power Cooperative, an affiliate of Square Butte. Over the next several years, Minnesota Power will phase out its generation rights at the Young Station, allowing Minnkota to eventually take all of the coal-based electricity it once shared. Minnesota Power plans to construct several hundred megawatts of new wind generation in the vicinity of Center, N.D. and transmit the renewable energy over its DC Line as its coal-based power purchases are phased out.



Surge suppressors for thyristor valves facilitate the conversion of DC power to AC power.

### A history in North Dakota

ALLETE's connections in central North Dakota were instrumental in the company's decision to pursue the commercial development of renewable wind energy in the area. ALLETE's partnership with the Minnkota electric cooperative and its agreement to purchase power from the Young Generating Station predated by about a decade ALLETE's 1988 purchase of BNI Coal, a lignite coal producer that sells fuel to the Young Station.

Employees of ALLETE and BNI have spent decades forging strong relationships with landowners in the area. While engaging residents in discussions about

employment opportunities, coal leases and reclamation, we gained a fuller appreciation of what the local population had known for generations: North Dakota is windy.

### Tenth in capacity, first in potential

The American Wind Energy Association ranks the state of North Dakota tenth in the nation for present wind energy capacity, with 1,203 megawatts in operation. As for potential wind capacity, the wind energy trade association ranks North Dakota number one.

Portions of central North Dakota are ranked among the nation's premier sites for wind energy. As wind turbine technology has advanced in recent years, so has the ability to monitor and map meteorological data.

All markets for wind turbines require an estimate of how much wind energy is available at potential development sites. Correct estimation of the energy available in the wind can make or break the economics of wind farm development, according to the National Renewable Energy Laboratory.

ALLETE's first direct experience in harnessing wind power came in 2006, with the construction and

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deployment of Oliver Wind I, a 22-turbine wind farm near Center built by an affiliate of FPL Energy. Minnesota Power contracted to purchase all the energy output from Oliver Wind I, and all the output from the adjacent Oliver Wind II wind energy center, constructed in 2007. The 54 wind turbines that make up Oliver I and II generate a maximum of 98 megawatts (MW) of energy.

### **Proximity to transmission is integral**

One factor integral to the Oliver Wind project was its relative proximity to the DC transmission line linking Center and Duluth. Now that ALLETE owns the line, the company has a dedicated connection between plentiful reserves of wind energy in North Dakota and more populated areas to the east. Limited transmission has stymied more than one project in the region.

ALLETE gained experience in developing its own wind farm when it conceived and built the 25-MW Taconite Ridge Energy Center near Virginia, Minn. The facility, located on bluffs along the Laurentian Divide, began producing energy in the spring of 2008 with a “capacity factor” of about 30 percent.

While the company built on its wind experience in two states, ALLETE management was retooled to incorporate a bigger place at the table for North Dakota operations. In September of 2009, Dave Schmitz, a North Dakota native with decades of electric utility experience, joined

the company as general manager of Minnesota Power renewable operations in North Dakota. Schmitz was charged with building a world class team to operate and maintain the Bison I Wind Energy Center, the first of several wind projects ALLETE is planning.

ALLETE representatives have been working for years to secure options and easements for property on which to build. Besides the excellent quality of the wind resource in the region, the large tracts of land under single ownership have also proved advantageous to developing renewable power generation.

The erection of wind turbines disturbs relatively little agricultural production in the area, which includes small grain farming, pasture land and cattle operations. The vast tracts of open prairie accommodate large setbacks from dwellings and better spacing between transmission and turbine structures. In pursuit of its renewable energy goals, ALLETE has secured options or leases on 60,000 acres of North Dakota land, enough to support 300-400 wind turbines.

The Bison I wind project, estimated to cost \$180 million, will be built in two phases: construction of the first 16 turbines is scheduled to take place later this year and be operational by the end of 2010. Phase two will involve the construction of 17 more turbines, expected to be generating electricity a year later.

### **New blades designed for efficiency**

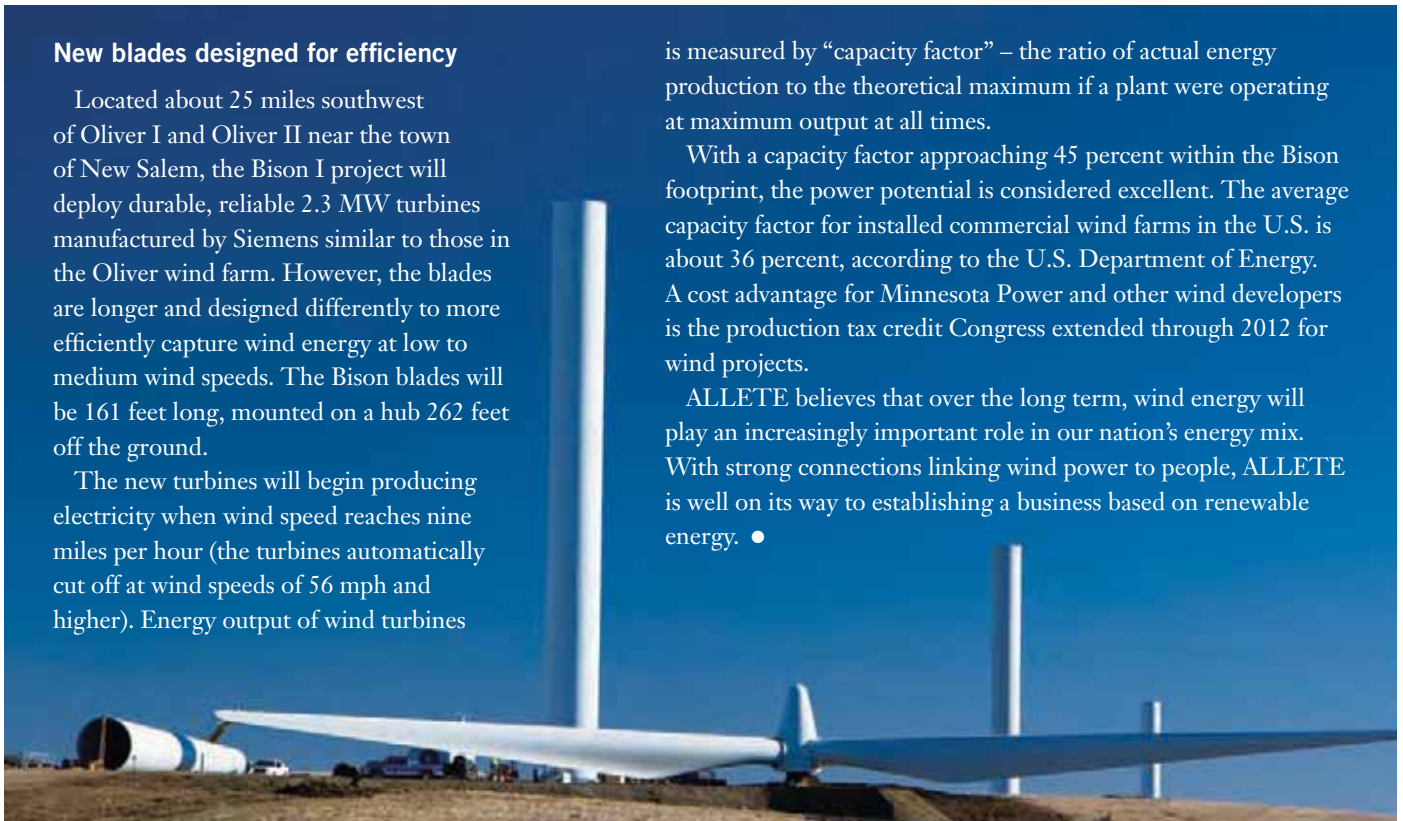
Located about 25 miles southwest of Oliver I and Oliver II near the town of New Salem, the Bison I project will deploy durable, reliable 2.3 MW turbines manufactured by Siemens similar to those in the Oliver wind farm. However, the blades are longer and designed differently to more efficiently capture wind energy at low to medium wind speeds. The Bison blades will be 161 feet long, mounted on a hub 262 feet off the ground.

The new turbines will begin producing electricity when wind speed reaches nine miles per hour (the turbines automatically cut off at wind speeds of 56 mph and higher). Energy output of wind turbines

is measured by “capacity factor” – the ratio of actual energy production to the theoretical maximum if a plant were operating at maximum output at all times.

With a capacity factor approaching 45 percent within the Bison footprint, the power potential is considered excellent. The average capacity factor for installed commercial wind farms in the U.S. is about 36 percent, according to the U.S. Department of Energy. A cost advantage for Minnesota Power and other wind developers is the production tax credit Congress extended through 2012 for wind projects.

ALLETE believes that over the long term, wind energy will play an increasingly important role in our nation’s energy mix. With strong connections linking wind power to people, ALLETE is well on its way to establishing a business based on renewable energy. ●



This photo, taken in 2006, shows the Oliver Wind I installation under construction. It made use of the same sturdy Siemens-manufactured 2.3 MW turbines that will be deployed in the Bison wind farm, but the Bison project’s longer blades will add capacity and efficiency.

Minnesota Power Strategic Accounts Manager Mike Perala, left, stands with Mesabi Nugget Project Manager Steve Rutherford at the new facility's electric substation near Hoyt Lakes, Minn.



## Excitement surrounds new customer producing iron nuggets

Minnesota Power's newest industrial customer is using electricity in a brand new way to shape a natural resource that's been driving the northern Minnesota economy for more than a century.

Up to 15 megawatts of electric power is now flowing to Mesabi Nugget, a brand new \$260 million facility near Hoyt Lakes, Minn. that is the world's first commercial iron nugget plant. After more than a decade of testing and years of construction, the first nuggets of nearly-pure iron emerged from a huge rotary hearth furnace at the plant on Jan. 12, 2010.

"Everyone gathered around the conveyor belt," recalled Steve Rutherford, Mesabi Nugget's project manager. "We got some champagne and popped a few corks later that evening."

Development of iron nuggets – which contain 96 percent iron compared with the 66 percent iron content of taconite pellets – introduces a new kind of feedstock to steel production. Iron-bearing taconite is abundantly available in northern Minnesota as an important domestic source of raw material for steel.



Steve Rutherford holds one of the first iron nuggets ever commercially produced.

Taconite processing plants use large quantities of electric power to grind the iron-bearing rock, and form the iron particles into taconite pellets. Approximately 60 percent of the iron ore consumed by integrated steel facilities in the U.S. originates from six taconite customers of Minnesota Power.

The new nugget plant takes its name from the Mesabi Iron Range, a vast deposit of iron ore in northern Minnesota. Steel Dynamics Inc. owns 81 percent of Mesabi Nugget. The other 19 percent is owned by Kobe Steel Ltd. of Japan, which developed and patented the Itmk3 process that transforms iron ore and pulverized coal into iron nuggets similar in quality to blast furnace pig iron.

Along with other partners, SDI invested in a pilot demonstration plant that successfully produced the first Mesabi iron nuggets in 2004. The nearly pure iron nuggets

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## PolyMet awaiting permits for non-ferrous mine

Another potential new industrial customer of Minnesota Power plans to launch a non-ferrous mining operation to extract copper, nickel and precious metals from the Mesabi Range.

PolyMet Mining, Inc., in the final stage of a lengthy environmental permitting process, proposes to develop an open pit mine and to modify a former taconite plant to process the minerals.

Minnesota Power has executed a long-term contract with PolyMet to supply approximately 70 megawatts of electric power through at least 2018.

PolyMet's environmental review, which began in February of 2004, has reached the point at which the Minnesota Department of Natural Resources and the U.S. Army Corps of Engineers, as lead agencies, are evaluating public comments on the project's Draft Environmental Impact Statement.

Assuming that the statement is judged to be complete, the state and federal agencies could issue a Statement of Adequacy by mid-year 2010, with issuance of environmental permitting to follow. Should these events occur, operations could begin in late 2011.

PolyMet Mining is a publicly-traded mine development company (AMEX: PLM) that controls the NorthMet ore body through a long-term lease. The company also owns the former LTV processing facility located approximately six miles from the ore body. Using open pit mining techniques, PolyMet plans to mine ore containing copper, nickel, cobalt, platinum, palladium and gold. These substances are used in everyday products like wiring, automobile emission controls, medical applications, and are considered critical to a "green economy." ●

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from the pilot plant were tested at a Steel Dynamics mill in Indiana, where they were found to have characteristics ideal for mini-mill steelmaking. Nuggets can also be used as a feedstock in steel blast furnaces.

In certain types of steel products, including flat rolled steel and railroad rail, iron is needed in mini-mill steelmaking to supplement scrap steel. Most mini mills meet their need for iron by relying on pig iron ingots imported from South America or other parts of the world. Steel Dynamics has sought to develop an internal supply of iron units to reduce its dependence on foreign sources.

Initially, Mesabi Nugget will use taconite concentrate from Northshore Mining in Silver Bay, Minn. and hematite from reclaimed natural ore mine tailings to make nuggets in the new plant.

Most of the iron nuggets produced at the new Minnesota facility will be shipped to three Steel Dynamics mills. Rutherford said workers at the new plant are now evaluating and testing equipment and producing the slurry that's processed, filtered and dried into green balls. He said "hot commissioning" of the 60-meter diameter rotary furnace is well underway.

"There's no manual," Rutherford said, underscoring the fact that the process is brand new. Full production levels are expected to be reached later in 2010. The plant is expected to produce 500,000 metric tons of iron nuggets annually, with a workforce of about 70 people.

Mesabi Nugget is pursuing permits for taconite mining activities on previously mined land near the new Hoyt Lakes facility. Assuming receipt of environmental permits, mining could begin in 2011, which would allow Mesabi Nugget to provide its own taconite concentrates and would result in increased electrical loads for Minnesota Power.

Mesabi Nugget was designed to eventually triple in size if demand for the iron nuggets develops. During peak construction at the plant in the summer of 2009, about 1,000 contract workers were on site. A permanent workforce of about 70 employees will operate the plant, Rutherford said. ●

## Transmission investments include ATC and CapX2020

ALLETE's investment in the American Transmission Company continues to grow, reaching \$88.4 million at the end of 2009 and expected to increase by approximately \$5 million in 2010. The investment represents an equity ownership interest of about eight percent in ATC, a Wisconsin-based utility that owns and maintains electric transmission assets in four states. ALLETE's earnings grow as its investment in ATC increases.

ATC began operations in 2001 as the first multi-state electric transmission-only utility. It provides transmission service across 9,400 circuit miles of transmission line in parts of Wisconsin, Michigan, Minnesota and Illinois.

Minnesota Power, as a participant in the CapX2020 initiative to improve transmission reliability in the Upper Midwest, intends to invest in two new lines, one between Fargo, N.D. and Monticello, Minn. and a second between Bemidji and Grand Rapids in Minnesota. ALLETE's total investment in these transmission lines is expected to be approximately \$100 million. ●



David Pessenda Jr., left, explains to Minnesota State Rep. Roger Reinert how wood waste is used as fuel at the Hibbard Energy Center in West Duluth. Pessenda is renewable business operations manager at the Minnesota Power facility. Reinert authored a bill enacted in 2009 modifying a state statute so that the change in ownership of the Hibbard boilers would not affect their production of steam for the nearby NewPage paper facility.



## Purchase of steam district tied to the production of more renewable energy

Although ALLETE's mission to expand renewable energy has been focused primarily on wind energy, the company is also working on developing another renewable source native to the upper Midwest – wood waste biomass.

The state of Minnesota enacted one of the nation's most stringent renewable energy standards in 2007, requiring that 25 percent of Minnesota Power's total retail energy sales come from renewable energy sources by 2025. As a step toward that goal, in 2009 Minnesota Power purchased boilers and associated systems from the city of Duluth that will lead to increased biomass energy generation.

Assets purchased Sept. 30, 2009 included two boilers, wood handling systems, and other equipment used to generate steam for the NewPage paper mill and Minnesota Power's Hibbard Energy Center in West Duluth. The Hibbard facility, built as a Minnesota Power coal-fired generating plant, has seen many changes over the decades. In the 1970s it was converted to run on fuel oil, only to be closed in 1982.



Duluth Steam District #2 is located at the Hibbard Energy Center in Duluth, Minn.

After the facility was retrofitted to burn wood along with coal to facilitate economic development, Duluth Steam District No. 2 came into service in 1987, when the City of Duluth, Minnesota Power and Pentair, Inc. teamed up to construct Lake Superior Paper Industries. Minnesota Power bought out the city's ownership portion in 2009.

The Minnesota Public Service Commission in 2009 approved the \$2.5 million purchase and authorized the investment of another \$22 million for upgrades that will eventually triple the amount of electricity produced at the facility from wood waste biomass fuel. A primary source of the fuel will continue to be wood waste from the nearby paper mill, now owned by NewPage. The paper company also utilizes steam from the plant in its papermaking operation. ●

## Major environmental retrofit completed at Boswell Unit 3

After undergoing a \$240 million environmental retrofit project that took three years to complete, Minnesota Power's Boswell Unit 3 came back on line in November of 2009 as a much cleaner and more efficient electric generating unit.

The investment in pollution control reduced in a major way emissions of sulfur dioxide, oxides of nitrogen and particulates. Boswell Unit 3 is the second-largest generating unit on the Minnesota Power system.

Boswell Unit 3 returned to service 80 days after it went off-line so that workers could finish retrofit construction and install new burners, upgrade the turbine and finalize the complex transition to a more efficient and cleaner-burning generator. The turbine upgrade improved output with no additional carbon emissions. The Unit 3 emission control project started in 2006, employed several hundred workers, and utilized some of the most advanced equipment, including selective catalytic reduction and one of the world's largest construction cranes. ●



ALLETE President Al Hodnik, left, and others check out improvements at Boswell Unit 3, a major environmental retrofit completed in November of 2009.



Left to right are Investor Relations VP Tim Thorp, CFO Mark Schober, John Merrell of the NYSE, President Al Hodnik, Chairman and CEO Don Shippard, Lead Director Bruce Stender and Controller Steve DeVinck.

## ALLETE celebrates 60 years on the New York Stock Exchange

ALLETE, listed on the New York Stock Exchange for 60 years, remains in close contact with its thousands of investors through a Duluth-based shareholder services staff, participation at investor meetings and face-to-face visits with analysts, brokers and the public.

On March 3, 2010, at the invitation of the NYSE, six ALLETE executives rang the closing bell at the stock exchange in honor of the company's 60th anniversary of being listed on "the Big Board." When the company was first listed on the exchange, it traded under the symbol MPL, an abbreviation of ALLETE's previous name, Minnesota Power and Light.

ALLETE has been listed as ALE since the company changed its name in 2000. It has paid common stock dividends without interruption since 1948. ●

## BNI sold about 4.2 million tons of lignite coal in 2009

BNI Coal, a wholly owned subsidiary of ALLETE, sold approximately 4.2 million tons of lignite coal in 2009, and anticipates a similar sales level in 2010.

Located near Center, N.D., BNI's open pit mine produces fuel for two electric generating cooperatives, Minnkota Power and Square Butte. These two customers presently consume virtually all of BNI Coal's production of lignite under coal supply agreements that extend through 2026.

The mining process disturbs and reclaims between 200 and 250 acres of land per year. Laws require that reclaimed land be at least as productive as it was prior to mining. With lignite reserves of an estimated 600 million tons, BNI Coal has ample capacity to expand production. ●

ALLETE Vice President of Marketing, Regulatory and Public Affairs Dave McMillan discusses regulatory issues with Robert S. Lee in his Minneapolis office. Lee, an attorney, has represented the interests of large industrial customers before the Minnesota Public Utilities Commission for more than 30 years.



## Minnesota Power requests rate increase of \$81 million per year

Minnesota Power filed a retail rate increase request with the Minnesota Public Utilities Commission (MPUC) in November of 2009, seeking an \$81 million annualized net increase in electric retail revenue and a return on equity of 11.50 percent.

The company requested a capital structure of 54.29 percent equity and 45.71 percent debt.

While Minnesota law allows the collection of interim rates while the Commission processes the rate filing, on Dec. 30, 2009, the MPUC issued an order authorizing \$48.5 million of Minnesota Power's interim rate increase request of \$73 million.

The MPUC cited "exigent circumstances" in reducing Minnesota Power's interim rate request.

Minnesota's rate case process requires public



Dave McMillan and Bob Lee connect with a handshake.

hearings and an evidentiary hearing before an administrative law judge, both of which are scheduled for the second quarter of 2010. A final decision on the company's rate request is expected in the fourth quarter.

Minnesota Power announced early in the fall of 2009 its intent to file for additional revenues to recover the costs of significant investments designed to insure system reliability and enhance environmental performance while bringing new renewable energy to northeastern Minnesota. ●



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