

# Minnesota Power demonstrates the **power of one**<sup>®</sup> with *Energy-Efficient Upgrades*

Every business looks for ways to lower costs, increase productivity and improve their bottom lines. Minnesota Power is no different. Like many of its commercial and industrial customers, the utility has made a conscious choice to invest in facility upgrades that make efficient use of energy and control costs through the effective integration of people, products, and processes. In doing so, Minnesota Power demonstrates the philosophy behind its Power of One<sup>®</sup> conservation program strategy—that individual energy choices make a real difference.

One example is a major remodeling project underway at Minnesota Power's Cloquet Area Office. The building is being retrofitted with new energy-efficient lighting; an innovative **heating, ventilation and air-conditioning (HVAC)** system that is relatively new to cold-climate regions; and an energy-management system that will allow Minnesota Power to control and monitor building systems from a central location at its corporate headquarters in Duluth.

The Cloquet building is used intermittently for internal business functions and staging by line crews. New high efficiency, low wattage fluorescent lighting will meet the needs of employees, while using fewer lamps per fixture and far less energy than the original lighting system. Occupancy sensors also have been installed so lights turn off automatically when spaces are not being utilized.

A progressive HVAC system by Daikin, that which uses variable refrigerant volume (VRV) technology (also called variable refrigerant flow zoning, or VRFZ, by other manufacturers), has been installed in the building, replacing electric strip resistance as the primary heat source and eliminating forced air. VRV/VRFZ systems use localized heat exchangers to capture excess heat from areas of the building that are too warm and transfer it via thin tubes carrying refrigerant to zones that are too cold. This simultaneous heating and cooling is a highly efficient way to meet varying needs for temperature control within a building. The technology is a good option for retrofits because the thin tubes can be installed without heavy ductwork.

"We went with localized ventilation and heat recovery units that more closely match the occupancy and functions of different parts of the building," said Tim Gallagher, commercial energy efficiency lead for Minnesota Power. Indoor units are linked to a central control system

and outdoor unit with new heat pump and compression technology especially designed to perform in cold weather climates.

"One of our goals is to help bring energy-saving innovations into this market, but often new technologies are not installed in projects because it is easier and more comfortable for designers, builders and property owners to go with what is known to work," Gallagher said. "By installing VRV in one of our own buildings and studying how it performs in this cold climate, we take some of the risk away from our customers, who will be more likely to install a proven technology."

*"I think it's important to be open to new ideas and to be flexible to change. From a facility management standpoint we hope the performance of the new technology proves to be such that we are able to justify using it in future energy-efficient upgrades."*

**- Al Pettingill**

Energy-efficiency improvements have been made or are planned at numerous other Minnesota Power facilities as well. Not long ago, the utility transformed its Herbert Service Center in Duluth into a model site for **high performance fluorescent lighting, daylight harvesting technologies and resource-efficient heating and cooling**. The project included two unique technologies that harvest and bring natural light into dark or windowless parts of the building. More recently, holiday lighting at the Herbert Service Center was updated to LED and controls were added to make it more efficient and user-friendly. Minnesota Power also has upgraded lighting and HVAC in its Little Falls facility and plans to make similar advances in Eveleth. Minnesota Power's parent company, ALLETE, has converted to energy-efficient display lighting in its downtown Duluth headquarters and is switching to **light emitting diode (LED) exterior signage**.

On the generating side, Minnesota Power has invested hundreds of millions of dollars over the past few years upgrading its Boswell, Laskin and Taconite Harbor Energy Centers to improve efficiency, meet governmental mandates, and reduce emissions for a cleaner, healthier environment.

In 2010, it completed a major overhaul of Boswell Energy Center's Unit 4, investing more than \$120 million in efficiency, environmental control and reliability, plus maintenance and inspections. The centerpiece was installation of a more efficient steam turbine that increased generation capacity by 60 megawatts, without requiring additional fuel. Other equipment upgrades, including **high efficiency motors, fans with variable frequency drive controls, a "water cannon" boiler cleaning system, and energy-efficient induction lighting**, have further improved energy performance at the Boswell Energy Center in recent years.

*"One of our goals is to help bring energy-saving innovations into this market." - Tim Gallagher*

Minnesota Power distributes hundreds of thousands of dollars in PowerGrant rebates each year to commercial and industrial customers who install energy-saving equipment or implement conservation measures in their operations. Leading by example sends a powerful message to other area businesses that are considering energy-related facility improvements.

"We are striving to have demonstration projects within our facilities that would allow customers to see energy-efficiency technologies firsthand and that we invest in them ourselves," said Tina Koecher, Manager-Billing & Energy Efficiency, Minnesota Power.

The decision to invest in energy efficiency goes beyond energy savings. Minnesota Power considers many factors as it selects and prioritizes facility improvements. The bottom line is that energy conservation improvements must be approached in ways that make good business sense.

"Cost effective projects that improve energy efficiency in any part of our operations are important to us," said Brad Oachs, chief operating officer, Minnesota Power. "Where we can utilize technology concepts that can also help our customers, we serve as not only an example, but a demonstration of our Power of One® strategy."

In today's economy and political environment, more companies are looking at the bottom line benefits of energy conservation. Energy is a controllable expense for most businesses through operational and equipment decisions. Minnesota Power's conservation efforts help lower operating costs, increase productivity, reduce energy usage and ultimately get the most from its energy dollar so it can continue to provide customers reliable electricity at competitive rates.

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"We are prioritizing efficient, cost-effective, energy-saving options that can be transferred to our other buildings and applied to our customers' facilities, as well," Gallagher said. "We can learn from our customers' projects and share what we learn in our own facilities with them. It is another example of demonstrating the Power of One®."



**Signage (GOB)**

**HVAC (Cloquet)**

**Lighting (HSC)**

**Motors & Controls (Boswell)**