



Minnesota Air National Guard PROFILE

Business Energy Audits • Project Design Assistance • Conservation Rebates • Grants

Energy-Efficient Outdoor Lighting Inducted into Duluth Base

Exterior lighting is extremely important at the Minnesota Air National Guard base in Duluth, Minn. As home to the 148th Fighter Wing and its fleet of F-16C Fighting Falcon aircraft, the base requires round-the-clock security with well-lit roads, parking lots, walkways and building entrances. A recent outdoor lighting project is meeting those intense security needs, while cutting energy usage in half. Even more impressive, utility rebates and energy savings from other conservation improvements paid for the upgrades, requiring no additional taxpayer money.

The project replaced more than 70 high-pressure sodium streetlights, parking lot lights and wall packs with energy-efficient induction lamps and fixtures. Minnesota Power was a key partner in the upgrade, encouraging base decision makers to choose induction lighting rather than the light emitting diode (LED) lamps and fixtures originally planned. While induction lighting has been around for more than a century, it recently has gained momentum as a cost-effective, energy-saving option for commercial and industrial uses.



Exterior induction lighting at the base (left) was purchased using \$32,000 in Minnesota Power **POWERGrant** rebates, earned through a 2008 base-wide upgrade to energy-efficient interior lighting and other conservation projects (right).



Minnesota Power is interested in learning how well it performs for customers in northern Minnesota's climate.

It appears to have great potential. Essentially, induction lights are fluorescent lamps without electrodes or filaments, components that frequently cause traditional bulbs to burn out. They are known for having an extremely long life, lasting 60,000 to 100,000 hours, or around 20 years with consistent daily use. This makes induction lighting a perfect choice for streetlights and other applications where bulb replacement is difficult or expensive.

In addition to virtually maintenance-free operation, induction lighting is brighter and whiter than high-pressure sodium or metal halide lighting, turns on instantly without flickering, and operates in low temperature conditions. Because there are no electrodes or filaments, it also is resistant to vibration, a critical quality at the Duluth base, where supersonic fighter jets take off and land with earth-shaking frequency.

Learn more about **POWERGrant**.

Minnesota Power's Conservation Improvement Program
218-722-5642 or toll-free at 800-228-4966, ext. 2909

www.mnpower.com/powergrant/



POWER *Grants*

“Energizing Our Region” through Conservation Improvement



Minnesota Power’s Conservation Improvement Program (CIP) works with local leaders, businesses, community groups, other energy providers and government entities to help customers reap the economic and environmental benefits of sustainable energy savings. Minnesota Power and its partners accomplish this through research, education, evaluation and direct impact initiatives.

Find out how **POWERGrant** can help you.

Minnesota Power awards grants to commercial/industrial customers who use innovative technologies, improve manufacturing processes, undertake renewable electric energy projects, or who need project design assistance. **POWERGrant** is available for a wide variety of projects employing diverse technologies.

Here are some examples of activities or products that could qualify for Minnesota Power funding under the **POWERGrant** Program:

- New electro-technologies that lower energy costs per unit of production in a manufacturing process
- Innovative technologies that are new and underutilized in our regional marketplace
- Inclusion of energy-efficient options in the design phase of a project

Maximum annual grants are determined by a customer’s average billing demand:

Customer Demand	Maximum Grant
Less than 100 kW	\$10,000
100 to 300 kW	\$25,000
Over 300 kW	\$50,000

Minnesota Power may consider higher rebate levels.

Other Minnesota Power Products and Services

In addition to **POWERGrants**, Minnesota Power offers commercial, industrial and agricultural customers other energy efficiency products and services. These include energy audits, rebates, dual fuel, storage/off-peak services, outdoor and area lighting, and economic development assistance.



(left) Minnesota Power Energy Consultant Gary Olson and Chief Master Sergeant Mark Rukavina with an induction street light fixture; (right) Rukavina checks out induction lighting wall unit with motion sensors.

All of these characteristics were attractive to Minnesota Air National Guard decision makers, but cost, potential energy savings and the opportunity to reinvest **POWERGrant** rebates from Minnesota Power really drove the project.

“We are mandated to reduce our annual energy consumption by three percent so we are always looking for new energy-saving technologies,” said Chief Master Sergeant Mark Rukavina, facility manager. That is 30 percent over 10 years.

Numerous energy related projects, including a base-wide lighting retrofit, have been completed in recent years, cutting energy usage at the base by 491,965 kWh and cutting monthly demand by 145 kW. They also qualified for nearly \$32,000 in **POWERGrant** rebates, funds that literally paid for the new exterior induction lighting. The latter will bring additional savings of 45,280 kWh and 11.3 kW. Combined, they could reduce annual electricity bills by about \$29,000.

The upfront cost of induction lighting proved significantly less than LED. A handful of LED streetlights installed at the project’s onset will remain, providing an opportunity for side-by-side comparison.

“We’re getting more value for the money.”

Chief Master Sergeant Mark Rukavina, Facility Manager

“Minnesota Power has been excellent at identifying creative ways to cut energy and reduce costs,” Rukavina said. “The ability to reinvest **POWERGrant** rebates into new conservation efforts helped win support for this project and moved it forward quickly.”

“This is one of the first examples of outdoor induction lighting being used on such a large scale in our region,” said Gary Olson of Energy Management Solutions, a commercial energy consultant for Minnesota Power. “We’re watching results very closely to see if other customers could benefit, as well.”