

# DATA CENTER EFFICIENCY

## IMPROVE THE EFFICIENCY OF YOUR DATA CENTER

INFORMATION SHEET  
COLORADO | MINNESOTA



Running a data center requires a tremendous amount of energy, and usage is on the rise. If your business is running a data center, this presents a substantial opportunity to align business and environmental interests by making energy efficiency a priority in your technology management strategy.

The good news for all businesses is that adopting energy-saving data center practices can be both financially attractive and easy to implement. Xcel Energy is offering attractive cash rebates to offset the cost of putting your business on the path to improving energy efficiency.

### Examples of energy-efficient improvements

As companies are facing huge growth rates in data storage, energy efficiency has become more important than ever.

There are many steps you can take to lower the energy consumption of your data center—and Xcel Energy can help. Take advantage of our rebates to reduce your costs of making the following types of improvements:

- **Airflow improvements** – Efficiently manage the proper amount of air needed to cool the servers in your data center. Strategies include: optimizing air inlet and return, minimizing the mixing of hot and cold air, and directing air only to where it is needed. All will improve the efficiency of air flow, which has a significant impact on the amount of fan energy needed to direct cooled air to the appropriate equipment.
- **Electrical equipment** – Savings are available for higher efficiency batteries, transformers and inverters, high efficiency power supplies in IT cabinets, and high efficiency storage devices.
- **High-efficiency cooling equipment** – Besides high efficiency chillers and roof top units, technology can raise the supply air temp to the racks by improving distribution of the air. This allows greater use of air side and water side economizers, which reduce the need for central plant cooling.
- **CRAC units** – Install energy-efficient computer room air conditioning (CRAC) units that exceed federal efficiency standards.
- **Humidification** – Best practices for data center operation have relaxed humidity controls to a range of 25–60%. Also, more efficient methods of humidifying include evaporative and ultrasonic mechanisms.
- **Power systems** – There are opportunities to improve efficiency using systems ranging from transformer to UPS (uninterruptible power supply) to high-efficiency power supply.
- **High-efficiency lighting equipment** – Although generally a small portion of the total energy usage in the data center (around five percent), there is opportunity to install higher-efficiency lighting when retrofitting existing or designing new data centers.



### Achieve business sustainability

The Data Center Efficiency program is designed to help Xcel Energy customers address energy conservation opportunities in both new and existing data centers.

Data Center Efficiency improvements deliver energy savings and help you:

- Improve ROI of data management
- Manage energy costs
- Improve reliability of data center performance

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- **Plate and frame heat exchangers** – Plate and frame heat exchangers save money by using outside air to cool the chilled water, instead of your chiller. When operating with a cooling tower, a plate and frame heat exchanger (sometimes called a flat-plate heat exchanger) is a type of water-side economizer that uses metal plates to transfer heat between two fluids. It’s well suited for transferring heat between medium- and low-pressure fluids.
- **High-efficiency servers** – Invest in high-efficiency servers that are ENERGY-STAR®-rated to reduce energy use.

**How to evaluate your data center and earn rebates**

Whether you are building a new data center, or looking to make energy efficiency improvements to an existing data center, Xcel Energy can help. We offer study rebates which can cover up to 75 percent of your study cost (up to \$25,000), prescriptive rebates for equipment such as CRAC units, plate and frame heat exchangers, virtual desktop infrastructure (VDI), as well as custom rebates for energy saving measures not covered by the prescriptive rebates. A study is a good place to start and can help you:

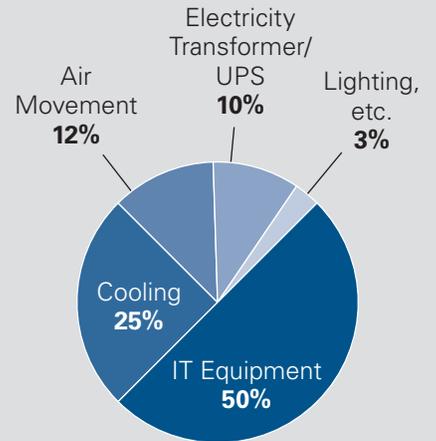
- Build a business case for project approval
- Detail how to best run your data center at peak efficiency
- Identify energy savings, cost estimates and rebate amounts for individual energy conservation opportunities

Contact your Xcel Energy account manager, or call our energy advisors at 855-839-8862 for details. For more information and to download applications, visit [xcelenergy.com/DataCenters](http://xcelenergy.com/DataCenters).

**Data Center Loads**

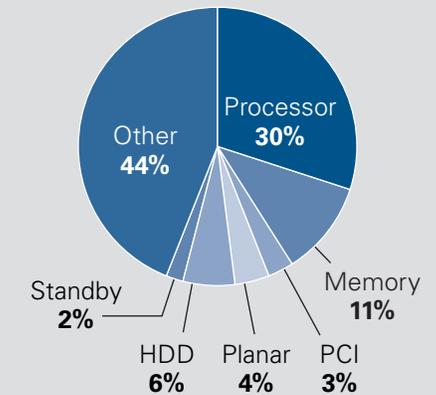
While servers and other IT equipment are the main power users, half the energy consumed is used to simply cool the equipment—which amounts to about 25% of a typical data center’s energy consumption. Xcel Energy can help you find the right ways to reduce your consumption, and your energy bill.

**Data Center Energy Usage**



Source: EYP Mission Critical Facilities Inc., New York

**IT Equipment Energy Usage**



Source: IBM, US EPA CSC Data Center Seminar, December 2007

