Energy Efficiency Guide

Tips to make you even smarter about saving energy

for Minnesota Colleges and Universities
Building on strong energy knowledge

Along with technologies and scientific breakthroughs to make college students brighter, colleges and universities are constantly seeking effective ways to reduce expenses. After all, finding savings allows your school to reinvest in student programs, facility improvements and other initiatives that benefit your campus community. Energy efficiencies can be a key contributor to money savings, and we would like to provide you with ideas to find energy improvements that offer savings today and in the long term.

So how much do energy savings equate to money savings? Since the average higher-education building size is around 50,000 sq. ft. and consumes more than $100,000 worth of energy each year, a 10 percent energy goal could yield $10,000 in savings per building annually.¹

Not unlike a little city, a campus can have a variety of buildings — from century old to modern — which may require unique energy efficiency approaches.

This guide can help campus energy managers think about energy savings and ways to lower the costs for energy improvement projects with rebates and incentives.

In this guide:

- Affordable energy-saving ideas
- Campus-wide energy-savings opportunities and rebates
- Renewable energy path to sustainability
- Resources to make the case for energy improvements
- Get an advanced education on energy

To paint the picture where the average educational facility spends its energy dollars, here is a snapshot of the national average for all fuel types.

Energy efficiencies benefit your campus

- Reduces energy bills — improves profit margins
- Minimizes equipment maintenance costs
- Improves environmental impacts
- Helps you earn energy efficient, green building awards
Affordable energy-saving ideas

With tight facility budgets, it’s especially important to find low- and no-cost ways that can help lower your energy bill. Here are several ideas to enhance your energy-conservation efforts:

- In residence units, add smart power strips with built-in occupancy sensors to shut off plugged-in devices like printers and monitors when not in use.
- Train staff to turn off lights in rooms and buildings when not in use and install occupancy sensors.
- Turn down temperatures of water heaters in buildings that do not have laboratories or kitchens.
- Set back the HVAC temperature in winter months during closed hours and areas such as auditoriums, gymnasiums and cafeterias used only at specific times.
- Reduce temperatures on water fountains rather than keeping them ice cold 24 hours a day.
- Request vending machines with LED lighting.
Campus-wide energy-savings opportunities

Assessing and prioritizing

Identifying key energy improvement projects may not be as apparent as you think. An energy assessment or engineering study can help put your energy puzzle pieces together and put you on a faster track to prioritizing — whether equipment is in need of tune-up or repair or simply recalibration or thermostat resetting.

We subsidize several energy studies and assessment programs so we can offer them at a low cost to help you kick off your energy projects. Consider these incentivized assessment approaches:

- **Recommissioning whole-building study** to identify and solve mechanical systems.
- **Engineering studies for lighting, heating, cooling** or more to help you explore more efficiency options or build a solid business case for specific projects.
- **Turn-Key assessment** to identify energy saving opportunities and offer implementation guidance.

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**University of St. Thomas**

**Project: Building recommissioning**

Estimated energy savings: 284,991 kWh and 19,810 therms

Xcel Energy rebate: $2,790

Estimated cost savings: $27,000
Controlling and monitoring

New technologies in efficiency control systems — such as intelligent building monitoring, lighting, cooling, space heating and ventilation systems — save on maintenance efforts and staff time. Sophisticated efficiency control systems modify sequences, set points and schedules and also issue live commands — reducing energy waste and alerting equipment issues for many equipment operations. Ask how you can save up-front costs with significant rebates by implementing these additional energy-saving measures:

- Efficiency control systems to integrate equipment monitoring and control, centralize building system operations and improve temperature comforts throughout building.
- Lighting occupancy sensors to reduce electric waste in unoccupied areas.
- Space heating and water heating controls to automatically set back warm temperatures in unoccupied areas, weekends, evenings and holidays.
- HVAC controls to automatically reduce cool temperatures in unoccupied areas before warm summer months.
**Illuminating on a budget**

Whether your campus is large or small, you can benefit from the latest developments in advanced lighting technologies. Replacing inefficient fluorescent or high intensity discharge (HID) lighting with LEDs, and adding motion sensors or photocells, help campuses improve light quality and save energy and costs.

LED fixtures have decreased in cost in recent years, making the payback very attractive while offering long-term savings.

Interior lighting upgrades for classrooms, labs, auditoriums and residential halls can improve quality of living and learning. And by investing in outdoor LED upgrades, you’ll improve campus safety with better lit perimeters and parking lots.

With our expansive portfolio of lighting rebates, you can significantly offset your initial cost for retrofits and upgrades of lighting throughout your campus for:

- **Large-room buildings**: High-bay LED fixtures and retrofit kits for auditoriums, indoor athletic centers and large lecture halls.
- **Mid- to small-scale rooms and buildings**: LED troffers, LED tube retrofits, down lights and occupancy sensors for classrooms, common areas, libraries, retail, cafeterias and hallways.
- **Outdoor areas**: LED area lighting for parking lots, walkways and parks and athletic fields and LED fixtures for parking garages.

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**Century College**

**Project: Lighting upgrade**

Estimated energy savings: 212,000 kWh

Xcel Energy rebate: $7,500

Estimated cost savings: $19,400
Keep warm air inside

In Minnesota, heating systems are among the largest energy users on college campuses. Facility and plant managers are finding creative ways to invest in boiler efficiencies and take advantage of new technologies and HVAC control systems to reduce your energy bill as much as possible.

Properly calibrating boilers and taking advantage of set-back options are small, yet impactful measures. If a large boiler is not ready to be replaced or the payback exceeds a set amount of time, then take advantage of our rebated maintenance measures to minimize energy waste, reduce maintenance and improve air quality. Ideas to help you save on your heating bill:

- Upgrade to a high efficiency boiler or water heater.
- Upgrade to high efficiency furnaces or add electronically commutated motors.
- Add on auxiliary equipment to your boiler such as stack dampers, outdoor air reset controls, modulator burners, turbulators and O₂ trim controls.
- Replace and repair steam traps.
- Add or replace pipe insulation.
- Schedule boiler tune ups.

Keep warm air outside

As year-round use of school buildings has grown, so has the need for efficient air conditioning equipment. HVAC systems can run hard all year long when you consider the need to keep buildings comfortable. When coupled with proper ventilation, cooling technology and equipment maintenance is essential for air quality, student comfort and energy savings for the long term. Here are approaches that campuses are adopting to making cooling buildings more efficient:

- Install cooling systems such as high-efficiency DX units or chillers to gain the most savings. With rebates and short pay backs, they can offer the return on investment you need in your energy-improvement proposals.
- To attain comfort, commercial cooling systems work extra hard to achieve proper ventilation. Adding energy recovery ventilators (ERVs) so that your units will run more efficiently in recycling exhaust air streams to precondition the outdoor air.
- Maintain your equipment to ensure quality air flow: Clean condenser coils, fill refrigerant, set fan settings to “auto” and hire a licensed technician to maintain or calibrate existing economizers.

Winona State University
Project: Steam trap replacement
Estimated energy savings: 69,592 therms
Xcel Energy rebate: $2,340
Estimated cost savings: $2,900
Finding savings with energyCOMMANDING computing

Colleges and universities are seeing a growing demand of energy for computers in nearly every building. Many are adding their own data centers rather than outsourcing, and they all present unique energy-saving opportunities. Planning for smart computing takes collaboration between IT and facility management to ensure the equipment is performing at peak efficiency. If expanding or adapting existing spaces to make room for more IT centers, it pays to find energy saving approaches for your IT needs with our resources, rebates, expertise, and even a free engineering walk through upon request.

Consider these tools to achieve more efficient data centers and data closets:

• An Xcel Energy-funded Data Center Efficiency study to uncover energy savings.
• Implement energy-efficiency improvements such as adding waterside economizers, cooling systems, humidification and other upgrades that become cost effective with a rebate.
• If expanding or building new data centers, you may be eligible for our free Data Center Design Assistance services.

More computing efficiency opportunities

From classrooms to dorm rooms, save with our rebates when you apply these energy-saving measures:

• Install a virtual desktop infrastructure (VDI), which centralizes the desktop operating systems and can significantly improve energy efficiencies.
• Add PC Power Management software as a cost-effective solution to making banks of computers more efficient.
• Add smart power strips with built-in occupancy sensors that shut off plugged-in devices when users are not present.

For data centers or server centers, let us help you identify low- and no-cost energy saving opportunities:

• Xcel Energy-funded Data Center Efficiency Study
• Data Center rebates for individual improvements
• Discounted computer equipment purchased through Dell, Lenovo and HP dealers, and software rebates for virtual desktop infrastructure (thin client, zero client) and PC power management software.
Minneapolis Community Technical College

Project: Parking ramp exhaust fan controls

Estimated energy savings: $72,211 kWh
Xcel Energy Rebate: $3,297
Estimated cost savings: $7,080

Design for savings from the start

Colleges and universities are in constant building expansion mode — with either new construction or renovations to existing buildings. During the planning stages, designing for energy efficiency can prevent the time and expense to retrofit for energy savings later. To help you evaluate and incorporate potential energy efficiency during construction planning, our new construction programs offer energy modeling, consulting support and rebates to offset the cost of the more efficiency equipment and systems:

- Energy Design Assistance
- Energy Efficiency Buildings
- Data Center Design Assistance

Uncover custom savings

The unique aspects of your campus may call for innovative ways to save money and meet student needs. While modernizing your buildings and energy equipment, energy savings are achievable. Submit your project for preapproval, and we may be able to engineer a custom rebate option to support your unique energy-saving opportunities.

We have provided custom rebates on a wide variety of projects — from custom lighting to fume hood controls and heat recovery projects. Individualized rebates can reduce your costs for unique improvements.

Consult your account manager to help you identify custom projects.
Efficient food preparation and storage

Sustainability practices have extended into college dining halls as eco-friendly, farm-to-table approaches are growing. Adding energy efficiency efforts is a natural fit to avoiding waste. High-efficiency commercial kitchen equipment can reduce energy use by as much as 10–30 percent while achieving additional non-energy benefits, including improved operating performance and increased kitchen staff comfort.3

Here are the top few steps you can make to reduce energy in your commercial kitchens:

- Upgrade to high-efficiency refrigerators and freezers, including display coolers and commercial kitchen food storage equipment.
- Install anti-sweat heater controls, motors, zero loss energy doors and close-the-case type which offer big improvements on a little budget.
- Upgrade electric and gas food prep equipment to high efficiency models.

3E Source: U.S. Energy Information Administration
Renewable energy path to sustainability

Forward-thinking campuses are exploring renewable energy options as a way to promote sustainability, reduce carbon emissions and achieve LEED certification. These renewable energy efforts have a positive effect on the student and staff community, which in turn positions you as an environmentally conscious campus where individuals can learn and thrive.

There are several ways campuses are working toward achieving a goal of 100-percent renewable energy. You can invest in solar, wind, thermal or other high-tech renewable approaches with your capital budgets. Or, as a more affordable option, subscribe to renewable energy to augment your sustainability efforts.

Take advantage of our subscription-based renewable options that are low-cost, local and easy to access. With these programs, we retire the Green-e Energy certified Renewable Energy Credits on your behalf, ensuring your buildings are powered by clean energy. Ask your account manager about availability of our low-cost renewable options, such as:

• **Windsor®** Choose the amount of blocks of wind you want to power your campus.
• **Renewable*Connect®** Subscribe to a blend of wind and solar with flexible terms.
Resources to make the case for energy improvements

Understanding your campus energy usage patterns can help you determine where to focus on controlling costs. Consult your Xcel Energy account manager who can offer guidance on energy priorities to achieve the most energy savings.

Explore our free resource tools to aid you in making the case for energy investments and as you kick-off your planning:

• **Energy Benchmarking** — Get a direct feed of your energy usage data into ENERGYSTAR® Portfolio Manager to compare and contrast your campus buildings against similar building types.

• **Energy-at-Risk Financial Analysis** — Use this sophisticated financial modeling tool to provides a summary document of inputs comparing potential savings against your financial performance targets.

• **InfoWise** — Leverage this data-driven cloud-service tool to help manage the day-to-day gas and electric use for each building.

• **Online Energy Assessment** — Online assessment tool that evaluates your equipment and operating conditions to uncover energy and cost savings opportunities.
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Note: Rebates are subject to full program eligibility, participation requirements and restrictions available at [xcelenergy.com/Rebates](http://xcelenergy.com/Rebates).
Get an advanced education on energy

As you’re prioritizing and evaluating your energy projects, consider adding your Xcel Energy account manager to your sustainability team to help you bring cost-saving solutions to your discussions. Your account manager is acquainted with your energy challenges and can provide solutions — from rebate savings options to funding resources and alternative energy solutions.

We’re here to help you take advantage of our rebates to their full extent to save you money and reduce your energy upgrade costs.

Start saving today

Contact your account manager to get started. If you do not have an account manager, contact our energy efficiency specialists at 855.839.8862
Contact us today to start your savings plan

If you’re interested in making energy-saving improvements on your campus, contact your account manager or an energy efficiency specialist at 855.839.8862.