SAVING ENERGY IS SMART BUSINESS
Agenda

Energy Efficiency in Minnesota
Legislation & Energy Smart Program Overview

Energy Efficiency for Business
Why It Makes Sense and How to Make the Case for an Upgrade

Business Success Stories
Learn from the leaders

Technology and Tools to Measure Energy Use
What’s new, what works well and why

Utility Conservation Improvement Programs
Rebates and Incentives

Next Steps & Networking
Learning Objectives

• Describe the Energy Smart program and its connection to the Next Generation Energy Act of 2007

• Implement an energy analysis process at your business

• Know financial incentives for energy efficiency upgrades

• Make the case for energy efficiency upgrades

• Describe tools and technology for measuring energy use

• Explain utility CIP programs
Energy Efficiency in Minnesota
Energy Smart Mission

To help Minnesota businesses achieve cost savings through energy efficiency by connecting them to existing utility Conservation Improvement Programs.
Energy Smart Can Help Your Business

- Identify energy savings opportunities
- Evaluate upgrade options
- Find financial incentives
- Be recognized for energy efficiency successes
Energy Efficiency: Conservation Improvement Programs (CIP)

- 2010 annual energy savings goal for utility: 1.5%
- Goals: promote awareness, reduce utility bills for customers, generate innovations, provide upgrade incentives, promote resources
Energy Smart: An Alternative CIP

• Program goal: Help utilities meet conservation goals while helping businesses save money

• Program of Minnesota Waste Wise, an affiliate program of the Minnesota Chamber of Commerce

• Approved by the Minnesota Office of Energy Security as an Alternative Conservation Improvement Program (CIP)

• Funded by four major investor-owned electric utilities
Energy Efficiency Facts

• 30% of energy used in commercial, industrial, and institutional buildings is used inefficiently or unnecessarily

• $20 billion would be saved if commercial, industrial, and institutional facilities improved the efficiency of their buildings by 10%

• $30 or more in energy costs can be saved over the lifetime of one compact fluorescent bulb

Source: http://www.energystar.gov
Energy Efficiency for Business
Efficiency: Typical CIP Programs

<table>
<thead>
<tr>
<th>Utility Program</th>
<th>Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lighting</strong></td>
<td>• $ rebate per unit to replace T12 (4’x4 lamp) fluorescents with T8 (4’x4 lamp) fluorescents</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>• $ rebate for PTAC units (hotel room air conditioners) rated at high efficiency</td>
</tr>
<tr>
<td><strong>Motors</strong></td>
<td>• $ rebate per horsepower if a motor is NEMA Premium rated (1 – 500 horsepower motors eligible)</td>
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</tbody>
</table>

* Talk to your own utility this afternoon about these or other specific programs that apply to your business.
Energy: Where is it all going?

Knowing how your business uses energy is the first step in saving energy costs.
Assessing Energy Use

• **On-line** energy assessments
• On-site energy assessment
• Monitor energy use
• Energy Smart site visit
Energy Management

www.energystar.gov

Guidelines for Energy Management
Overview

EPA offers a proven strategy for superior energy management with tools and resources to help each step of the way. Based on the successful practices of ENERGY STAR partners, these guidelines for energy management can assist your organization in improving its energy and financial performance while distinguishing your organization as an environmental leader.

The steps:
- STEP 1: Make Commitment
- STEP 2: Assess Performance
- STEP 3: Set Goals
- STEP 4: Create Action Plan
Justifying Upgrade Costs

Energy efficiency upgrades could be one of the best investments you make in your company.
Questions to Ask Yourself

- Who makes capital expenditure decisions?
- What proof would the decision maker require?
- What capital funds are available now?
- What payback times are acceptable?
- What is the budget cycle?
- What project would I like to take on in the next two years?
- What contractors can I ask for bids?
Budget Considerations

- Financial Incentives
- Return on Investment
- Short Term vs. Long Term Costs
Financial Incentives for Energy Efficiency

- Utility Rebates
- Database of State Incentives for Renewables
- Federal Tax Credit
- Minnesota Office of Energy Security
- Energy Star
Lighting Upgrades – Return on Investment

4-lamp Fixture: T8 Bulbs with Electronic Ballast
Watts per Fixture: 113
Energy Cost over One Year: $29

4-lamp Fixture: T12 Bulbs with Magnetic Ballast
Watts per Fixture: 148
Energy Cost over One Year: $38

Using one 4-lamp fixture with T12 bulbs wastes $9 in energy costs per year.

* Statistics and dollar amounts approximate
Dero Bike: A Payback Case Study

Monthly loan payment $294.88
Estimated monthly savings $286.22

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### One-Stop Efficiency Shop
Summary of Recommended Lighting Upgrades

<table>
<thead>
<tr>
<th>Lighting Upgrades</th>
<th>Estimated Costs</th>
<th>Estimated Annual Savings</th>
<th>Payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Installed Cost</td>
<td>$12,222.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One-Stop Efficiency Shop Rebate</td>
<td>$6,219.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your Final Cost</td>
<td>$6,002.51</td>
<td>$3,434.62$^{(*)}</td>
<td>1.7 years</td>
</tr>
</tbody>
</table>

$^{(*)}$ Rebate equals 51% of installed cost. (Including special orders)

Images from Dero Bike Rack Co., a program participant that you will hear from later this afternoon.

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The project cost is based on current equipment prices and rebate levels. This offer is valid for a period of 45 days from the date presented.
Payback vs. Annual Return on Investment

Businesses tend to use a different ROI standard for energy efficiency investments than they do for other investments.

<table>
<thead>
<tr>
<th>Payback</th>
<th>Annual Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>100%</td>
</tr>
<tr>
<td>2-3 years</td>
<td>30-50%</td>
</tr>
<tr>
<td>6 years</td>
<td>17%</td>
</tr>
</tbody>
</table>
Calculating Simple Payback

Step 1: Find your blended utility rate.

Step 2: Calculate annual operating hours of equipment.

Step 3: Calculate energy that will be saved.

Step 4: Calculate potential annual dollar savings.

Step 5: Calculate project costs, parts and labor.

Step 6: Find available rebates.

Step 7: Calculate years to payback.
Long-Term vs. Short-Term Costs

Example: Choosing Which Brand of Motor to Install

Installation cost parts & labor, in thousands of dollars

Option A  Option B  Option C

This example taken from a U.S. Department of Energy BestPractices Training Presentation.
Long-Term vs. Short-Term Costs

Example: Choosing Which Brand of Motor to Install

This example taken from a U.S. Department of Energy Best Practices Training Presentation.
Change Is Easier Than You Think

Even if no capital money is available for equipment upgrades, your business can still save money through no-cost energy conservation strategies.
No-Cost Conservation Strategies

- Perform regular maintenance
- Institute written policies
- Set thermostats
- Use standby mode
- Set up employee incentives or competitions
Conservation

Dial thermostat back in winter
Set computer to energy saving mode
Turn lights off

Efficiency

Install programmable thermostat
Utilize ASDs/VFDs to manage motors
Install motion sensors
Right-size HVAC unit
Fix leak in an air compressor line
Use CFL bulbs
Business Success Stories

Hear from Dero Bike Rack Company and Crystal Cabinet Works about ways their businesses saved money through energy efficiency.
Short Break

Enjoy refreshments and networking time.
Please return by 3:15.

Coming up: Emerging Technology, Utility Rebates
What We’ve Covered So Far

- Energy Smart and 2007 Next Generation Energy Act
- Energy Analysis
- Upgrades: Making the Business Case
  - Financial incentives
  - Return on Investment
  - Long-term costs prediction
Emerging Strategies and Technologies
SAVING ENERGY IS SMART BUSINESS

Strategy: Utility Billing

Last Month Neighborhood Comparison

<table>
<thead>
<tr>
<th>EFFICIENT NEIGHBORS</th>
<th>ALL NEIGHBORS</th>
<th>YOU</th>
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<tbody>
<tr>
<td>352 kWh*</td>
<td>744</td>
<td>2,304</td>
</tr>
</tbody>
</table>

* A 100-Watt bulb burning for 10 hours uses 1 kilowatt-hour (kWh).
Strategy: 4-day Work Week

- State of Utah
- Starting in July 2008
- Employees work 4 10-hour days
- State offices closed Fridays – will close 1,000 of 3,000 government buildings
- Between lights, heat, and air conditioning, state will save about $3 million a year out of a state budget of $11 billion
- U.S. Postal Service also considering a 4-day week
Strategy/Technology: Energy Monitoring

Hear about one example of an energy monitoring tool using the U.S. Department of Energy “Energy Expert.”
Strategy: U.S. Department of Energy
“Save Energy Now” Tools for Industry

- Steam
- Process heating
- Motor-driven systems
  - Air Master Tool
  - Fan System Assessment Tool (pictured at right)
  - Motor Master Tool

FIND THESE TOOLS AT: http://www1.eere.energy.gov/industry/saveenergynow/
Technology: LED Lights

- Light-emitting diodes
- First known discovery: 1907
- Efficient: fewer Watts needed per lumen
- Cambridge University recently discovered $3 LED bulb - lasts 60 years
- Applications commonly rebated by utility: LED exit signs, LED holiday lights
LEDs at the Super Bowl

• Super Bowl display designed by Infinite Scale Design

• Accentuate the stadium's exterior with colorful lighting

• 290 W per fixture

• By comparison, the traditional metal halide fixtures typically used in exterior projects consume 1600 W each and require gels to produce colored lighting
LEDs Light the New 35W Bridge

- More than five times the life of traditional 250-Watt high-pressure sodium lamps
- Significantly reduces maintenance costs such as relamping and replacement
- Officials also expect to gain an annual energy savings of approximately 15 percent from the luminaries
Technology: Office Data Centers and Computers

- Energy manager software for computer data centers
  - Released by Sentilla

- Energy efficient hard drives
  - “Caviar Green” released by Western Digital (2tb)
  - Finds hard drive’s optimal speed at any given time
Renewable Energy Resources at CERTs Conference

- University of Minnesota Initiative for Renewable Energy and the Environment
- Great River Energy (ask them about their wind turbine)
- Biomass Magazine
- ECONAR GeoSystems (geothermal)
- Minnesota Renewable Energy Society
- Midwest Renewable Energy Association
- Rural Renewable Energy Alliance
- Windlogics, Inc.
- Windustry
- National Wind
- Entegrity Wind Systems, Inc.
- OwnEnergy, Inc.
Utility Conservation Improvement Programs (CIPs)

Hear from utility representatives and learn about your CIP programs.
Next Steps

What can you do tomorrow to save money and energy at your business?
Energy Smart Can Help Your Business

- Identify energy savings opportunities
- Evaluate upgrade options
- Find financial incentives
- Be recognized for energy efficiency successes
Energy Smart Outreach

• Personalized assistance
• e-Newsletter
• Workshops
• Website

http://www.mnenergysmart.com
Questions?
Contact Us!

www.mnenergysmart.com

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