



# Demand-Side Management Programs

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By Xcel Energy

## **Conservation Programs Background**

- **Programs were authorized as a result of a settlement agreement regarding Xcel Energy's least cost plan**
- **Programs will run from 2006 through 2013**
- **Overall goals are 320 MW and 800,000 MWH (Previously only kW reductions)**
- **Authorized to spend up to \$196 million**
- **Annually: 40 MW, 100,000 MWH, \$25M**

# Conservation Programs for Businesses

- **Available Jan. 1, 2006**
  - Lighting Efficiency
  - Motor Efficiency
  - Cooling Efficiency
  - Recommissioning
  - Energy Design Assistance
- **Available Feb. 15, 2006**
  - Custom Efficiency
- **Additional programs by year end**
  - Energy Management Systems

## **Program Overview**

- **Cash rebates – checks sent, not credits**
- **Available for existing facilities or new construction Weekday on-peak operation**
- **Purchased and installed after 12/31/05**
- **Prescriptive Rebates offer pre defined rebate amount for type of equipment**
- **Custom Rebates offer up to \$200/kW**
- **Maximum rebate 50% of cost**

## **Rebate Process**

- **Must be Xcel Energy Electric customer**
- **Submit application**
- **Enclose itemized invoice**
- **Within 12 months of the invoice purchase date (24 months for motors)**
- **Mail or fax information to Account Manager**
- **\*Custom Rebates require pre-approval**

# Measurement and Verification

- **Random verification audits**
  - **Fixture counts**
  - **Verification of nameplate information**
  - **Monitoring on large Custom projects**
  - **Inconsistencies can delay or reduce rebate**

# Program Overview



## Lighting Efficiency

## Sample Rebates

- T12s → T8s
- T12s → Super T8s
- T12s → T5s
- 400W HID → 6 or 8 lamp T8 or T5 HO
- CFLs
- Inc Exit sign → LED Exit sign
- Reflectors
- Occupancy Sensors

# Program Overview

## Motor Efficiency





## Rebate Requirements

- **New motors from 1-200 horsepower**
  - No rewind or repaired motors
- **Must meet or exceed National Electrical Manufacturers Association (NEMA) Premium® motor efficiency standards**

## Rebate Amounts

• 1 HP	\$10	• 25 HP	\$125
• 1.5 HP	\$15	• 30 HP	\$150
• 2 HP	\$20	• 40 HP	\$200
• 3 HP	\$25	• 50 HP	\$250
• 5 HP	\$35	• 60 HP	\$300
• 7.5 HP	\$50	• 75 HP	\$350
• 10 HP	\$65	• 100 HP	\$450
• 15 HP	\$75	• 125 HP	\$500
• 20 HP	\$100	• 150 HP	\$550
		• 200 HP	\$600

# Variable Frequency Drive (VFD) Rebate Requirements

- **New VFDs only**
  - **Prescriptive rebates for 1-200 horsepower**
    - **At least 4,000 hrs. per year**
    - **Two or more operating points < 55% loaded, 75% of the time**
    - **Automated control system**
  - **True PF  $\geq$  .90**

## VFD Rebates – Qualifying Equipment

- **VFDs included**
  - HVAC fans
  - Pumps
  - Cooling towers
  - Process equipment
  - Industrial fans
- **VFDs not included**
  - Chillers
  - Refrigeration compressors
  - Air compressors

**Non-included VFDs may qualify for  
Custom Efficiency rebates  
(available starting Feb. 2006)**

## VFD Rebate Levels

- **\$30/HP for all qualifying VFDs between 1-200 HP**
- **Examples:**
  - **20 HP VFD \* \$30 = \$600 cash rebate**
  - **125 HP VFD \* \$30 = \$3,750 cash rebate**

# Program Overview



## Cooling Efficiency

# Qualifying Technologies

- **Packaged Terminal Air Conditioners (PTACs)**
- **Water source heat pumps**
- **Rooftop A/C units**
- **Condensing units**
- **Split systems**
- **Variable air volume (VAV) boxes**
- **Cooling towers**
- **Chillers**

## Rebate Structures

- **All rebates are based on the same formula**
  - \$/ton
  - Plus \$/ton for incremental efficiency
- **Encourages customer to buy higher efficiencies**

## Sample Rebate Calculations

- **Scroll chiller example**
  - **\$10/ton**
  - **\$3/ton for each increment below base**
    - **Assume 75 ton scroll chiller at 0.61 kW/ton**
    - **75 ton x \$10/ton = \$750**
    - **$(0.65-0.61)/0.01 = 4$**
    - **75 ton x 4 x \$3/ton = \$900**
    - **Total: \$750 + \$900 = \$1650**

# Program Overview



# Recommissioning

## Recommissioning Objectives

- **Fix what is there**
- **Make what is there operate better**
- **Give the building a tune-up**
  
- **\*Buildings must be >50,000 square feet**

# Process – Standard Recommissioning Incentives

- **Three phases**
  1. **Preapproval**
  2. **Investigation**
  3. **Implementation**
    - **Verification**
    - **Incentive**

## **Diagnosis/Engineering Study**

- **Thorough assessment of customer's existing equipment in their facility**
  - **Customer chooses Recommissioning service provider**
  - **P.E. or provide acceptable qualifications**
- **Funding**
  - **We pay a portion of the study cost, up to 50%, not to exceed \$15,000**
  - **Funding based on study cost and estimated savings**

# Systems Assessed

- Existing systems
  - **Central heating/cooling**
  - **Air handling units**
  - **Heat pumps/rooftop units**
  - **Pumping**
  - **Outside air**
  - **Central chilled water loop**
  - **Economizers**

# Controls Assessed

- Existing controls
  - **Sequence of operations**
  - **Resets**
  - **Start/stop times**

## Sample Measures

Recommissioning Measures	Non-Recommissioning Measures
Damper Modifications	Equipment replacement*
VFD Optimization	Load Management
Lighting Scheduling	Fuel Switching
Pnematic to DDC changes	Duty Cycling
Improvements to temperature control	Demand limiting
Economizer optimization	
Outside air optimization	
Prevention of Simultaneous Heating and Cooling	

\*Equipment replacement may be recommended by the study, however is not considered Recommissioning

## Implementation

- **Customer decides what to implement**
- **Incentives calculated for kW and kWh savings**
  - **\$200/kW or \$0.0175/kWh**
  - **If both kW and kWh savings, rebate for highest**
- **Limitations**
  - **Maximum 50% of implementation cost**
  - **Within 1-15 year simple payback**
    - **We track even if outside these parameters**

# Program Overview

## Energy Design Assistance



# Energy Design Assistance Overview

- **We work with commercial building owners, architects and engineers**
- **Evaluate potential energy-efficiency improvements**
- **For new construction, major renovations or additions**
- **Start when designing plans**

# Requirements

- **>50,000 sq. ft. for commercial facilities**
- **>150,000 sq. ft. for housing**
- **Early enough to influence decision-making**
  - **Schematic design or design development Stages**

# Features

- **Free energy modeling and verification**
- **Owner incentives for implementation**
  - **Based on performance better than International Energy Conservation Code (IECC) 2003**
  - **Paid on a sliding scale from \$175/kW to \$275/kW**
  - **As the building becomes more efficient, the \$/kW saved increases**
  - **Incentive increases in \$/kW from 27% up to 50% better than code**
- **Payment to architectural and engineering team**

# Program Overview



**Custom Efficiency**

## **Custom Efficiency Requirements**

- **Pre-approval required prior to purchase**
- **Simple paybacks between 1-15 years**
- **Rebate amount offered valid for 1 year from pre-approval date**
- **Rebates cannot exceed 50% of the project cost**
- **Rebates apply to new equipment**
  - **Leased equipment may qualify**
  - **Used equipment does not qualify**

# Custom Efficiency Project Examples

- **Lighting**
  - Retrofits or replacements that are not one-to-one
- **Cooling**
  - Economizers
- **Motors/Drives**
  - Individual motors greater than 200 HP
  - VFDs greater than 200 HP
- **Compressed Air**
  - Reduce HP of compressors
- **Custom Examples**
  - Elevator modernization
  - Window Film

## **Custom Efficiency Application Process**

- **Customer submits Custom Efficiency Application to Xcel Energy**
- **Xcel Energy reviews the project and performs energy-savings and cost effectiveness calculations**
- **If approved, Xcel Energy send a pre-approval letter to customer detailing the expected incentive amount**
- **Customer orders and installs new equipment**

## **Custom Efficiency Application Process**

- **Once project is complete, customer contacts Xcel Energy**
- **Xcel Energy performs verification and energy-savings monitoring, if necessary**
- **If project scope has not changed and savings is close to expected, then incentive is paid**
- **If costs or savings vary by more than 10%, then incentive may be recalculated (could go up or down)**

# Contact Information

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The Business Solutions Center

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## Program Information on [Xcelenergy.com](http://Xcelenergy.com)

- Enter your CO zip code
- Press GO
- In the search box enter the program name:
  - Lighting Efficiency
  - Cooling Efficiency
  - Motor Efficiency
  - Recommissioning
  - Energy Design Assistance
- Click GO

QUESTIONS?