

The Potential for Energy Conservation in Xcel Energy's Minnesota Service Area

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Study Objective and Approach

The study's objective was to develop a rigorous 15-year DSM potential forecast for use in the Company's 2002 integrated resource plan. This was done by collecting on-site and attitudinal data from over 500 commercial and industrial customers and a similar number of residential customers. These data are being used as inputs to a simulation model to forecast DSM potentials for the Company's service area.

Commercial, Industrial, and Institutional Results Highlights

Notable results from the on-site surveys include:

1. The saturation of T8 lamps and electronic ballasts is about 70%, while the saturation of CFLs is about 38%. Saturations of occupancy sensors and other control are less than 1%. Customer awareness of lighting ECMs varies widely, from 20% for newer measures such as T5 fluorescent systems, to about two-thirds for mature measures such as CFLs.
2. The saturations of efficient HVAC conservation measures were considerably lower than those of efficient lighting systems. Current saturations of efficient centrifugal chillers are about 15%, while saturations of efficient reciprocating chillers and efficient packaged rooftop units are both about 1%. The low saturations of these measures are likely due to the fact that these units are generally only replaced on burnout, and the relatively short Minnesota cooling season results in relatively long paybacks for these measures. Customer awareness of HVAC conservation measures varies from about 20% for niche systems like ice storage up to about 60% for efficient rooftop air conditioners.
3. The current saturations of energy efficient process motors vary widely, from 1% for small motors, up to 22% for very large motors. The current saturations of adjustable speed drives (ASDs) also vary widely, from 2%-3% for small motors, up to 10% to 14% for very large motors. Customer awareness of efficient motors is high, with about two-thirds of customers aware of this measure, and slightly more than half of all customers are aware of ASDs.

Conclusions

The total 15-year estimated C&I electric conservation potential is 578 MW and 2,439 GWh. The Company cost to achieve this potential is estimated to be \$390 million. The largest energy conservation potentials by end use are lighting, at about 40% of the total, process-oriented measures, at about 25% of the total, air conditioning measures at 9% of the total, and refrigeration measures at about 8% of the total.

