

## ➤ Energy Management Systems

### A. Description

The Energy Management Systems (“EMS”) product offers customers rebates for installing systems that control and reduce a building’s energy usage **and demand**, both on- and off-peak. Electric and natural gas customers are eligible for participation.

An EMS is a computer system designed specifically for the automated, centralized control of electromechanical functions within a customer’s facility. Typically, the EMS controls a building’s heating, cooling, ventilation, or lighting. The system may be referred to as a building automation system (“BAS”) or the more general term of direct digital controls (“DDC”). EMS and DDC may sometimes refer to systems that control the customers’ process-related equipment for the purpose of energy reduction or demand management.

The product’s scope includes only existing buildings or process equipment. For such buildings or equipment, the product incentivizes a new EMS and the replacement of a non-functional or obsolete EMS. Adding functionality or control points for demand management to an existing system and software or programming will also yield incentives. The product is focused on reducing a building’s on and off-peak energy usage through sensors and controls that are centrally operated and optimized to save energy without compromising occupant comfort **through custom and prescriptive measures**. Through automation, the systems may control heating, cooling, **demand** or ventilation functions. The product includes lighting controls only when they are integrated with the control system. Examples of measures encouraged by the product are shown in the following table:

### EMS Control Strategies

<p><b>Resets</b></p> <ul style="list-style-type: none"> <li>• Supply air/discharge air temperature</li> <li>• Entering condenser water temperature</li> <li>• Chilled water supply temperature VAV fan duct pressure and flow</li> <li>• Chilled water pressure</li> <li>• Hot water supply temperature</li> </ul>	<p><b>Scheduling</b></p> <ul style="list-style-type: none"> <li>• Peak Coincident kW reduction</li> <li>• Holiday scheduling</li> <li>• Zonal scheduling</li> <li>• Override control and tenant billing</li> <li>• Night setup/setback</li> <li>• Optimum start/stop</li> <li>• Morning warm up/-cool-down</li> </ul>
<p><b>Ventilation Control</b></p> <ul style="list-style-type: none"> <li>• Occupancy Sensors</li> <li>• Supply air volume/outside/air damper compensation routines</li> <li>• Carbon dioxide sensing</li> <li>• Exhaust fans</li> <li>• Typical air-side</li> </ul>	<p><b>Lighting</b></p> <ul style="list-style-type: none"> <li>• Lighting controls only when they are integrated with the control system</li> </ul>
<p><b>Miscellaneous</b></p> <ul style="list-style-type: none"> <li>• Simultaneous heating/cooling control</li> <li>• Zone-based HVAC control</li> <li>• Variable Speed Drive (VSD) control</li> </ul>	<p><b>Demand Control/Load Shifting</b></p> <ul style="list-style-type: none"> <li>• Demand limiting or load shedding</li> <li>• Sequential startup of equipment</li> <li>• Duty cycling</li> <li>• Pre-cooling</li> <li>• Occupied setpoint setups</li> </ul>

Future opportunities in EMS exist due to building occupancy patterns becoming more variable and less predictable. A properly running control system is now more important in managing energy. In addition, when buildings have reduced capacity, demand control ventilation (“DCV”) can manage lower and varying occupancy rates, thus helping buildings that remain unoccupied.

## **B. Targets, Participants & Budgets**

### Targets and Participants

EMS savings and participation targets were established considering recent product trends, average project size, typical project costs, and the product’s historical performance. The resulting targeted participation has decreased significantly in the past three years due to the following:

- Trade partners have shifted their focus from system implementation to ongoing performance contracting;
- The COVID-19 pandemic has presented lingering challenges including low building occupancy, tighter budgets, reduced efficiency investments, and supply chain constraints; and
- **The complexity of controls has increased the incremental costs of projects and these costs have been difficult to separate in the cost-analysis.**

The target for EMS’s marketing activities includes the owners or managers of existing commercial or manufacturing business that:

- Has not installed or upgraded controls systems for at least 7-years;
- Has one entity that incurs the energy costs (without individually metered tenants);
- Are of sufficient size to likely have acceptable energy savings compared to costs, which tend to be buildings of at least 50,000 ft<sup>2</sup>; and
- Has load shifting opportunities to decrease energy usage during peak coincident hours.

The Company will implement only those adjustments that are designed to be cost-effective and meet established engineering standards.

### Budgets

Anticipated participation levels guided budget development. Historical costs were also considered, and promotional costs were minimized. The product’s budget is driven by two costs:

- Rebates – The budget for rebates is estimated using historical data and analyzing anticipated payouts per kWh, PCkW, and Dth; and
- Internal labor – EMS is a labor-intensive product due to the analysis components of the product. As the product includes demand control measures more analysis may be necessary to validate savings, thus requiring measurement and verification. **Prescriptive measures have been added to provide efficient processes for customers.**

## **C. Application Process**

The application process for the EMS product is the same as the Custom Efficiency product.

## **D. Marketing Objectives & Strategies**

Marketing is primarily conducted by Account Managers, leveraging their direct relationships with customers. In addition, the following strategies will help meet energy savings targets:

1. Trade Partner Communications – EMS is substantially marketed to and through trade partners, which primarily consists of equipment manufacturers and distributors; electrical contractors; and mechanical contractors. The Company provides training sessions for these trade partners. The Company has hired Trade Channel Managers who work closely with Trade Partners to inform them on products. The “Energy Exchange”, a quarterly email newsletter also goes out to all trade partners who have registered to be part of the Company’s trade ally network.

2. Collateral – Customers and trade partners can access material electronically on Xcel Energy’s website.<sup>1</sup> Marketing materials include:
  - *Product Information Sheet* – The primary tool for sales staff that helps describe the product to customers and vendors. It provides examples of qualifying projects, business reasons to participate, **improvements made to the product**, and a summary of procedures.
  - *Case studies - outlining specific savings and benefits achieved through EMS.*
  - *Product Application and Worksheet* – The document for customers to fill out to start the process of participation by gathering all of the necessary information about the project and the building.
3. Target Market – All commercial and industrial facilities within the Company’s service area are eligible to participate. The bulk of energy management systems are installed in commercial facilities (office buildings, schools, etc.). The product focus is on managed accounts and large unmanaged accounts. Approximately 80% of these customers are concentrated within the Denver metro area, thus marketing campaigns are focused in this area. Systems for new buildings are eligible only to the extent that they have extensive control strategies that exceed all codes and standards.

The primary targets for marketing activities are the owners or managers of existing commercial buildings that:

- Have not installed or upgraded controls systems for at least 7 years;
- Have one entity incurring the energy costs (no individually metered tenants); and
- Are of sufficient size to likely have acceptable energy savings compared to costs, which tend to be buildings of at least 100,000 ft<sup>2</sup>.
- Buildings or industries that have high load factors during the peak coincident time period.

## E. Product-Specific Policies

Information pertaining to minimum requirements **for custom EMS measures** is included on the application, **just as** with the Custom Efficiency product:

- Project pre-approvals follow the rules of the Custom Efficiency product. A cost-effective metric ratio equal to or greater than one; and
- A payback between one and fifteen years based on the analysis.

As part of our strategy to increase participation in demand response products, this product will work directly with the Demand Response programs to offer an incentive for demand response controls and collaborate more closely with the Peak Partner Rewards, Critical Peak Pricing, or other Demand Response products. Rebate amounts are based on the project performance and cost-effectiveness. Further details are provided in the technical assumptions.

## F. Stakeholder Involvement

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<sup>1</sup> <https://co.my.xcelenergy.com/s/business/lighting-equipment-rebates/energy-management-systems>

Customers, trade partners, and other stakeholders are currently engaged at the project level, and a product development team has been formed to improve the product. The Company has actively worked with stakeholders to identify product trends that may require changes to product design. The Company will also discuss potential changes with trade partners or third-party implementers.

## **G. Rebates & Incentives**

EMS offers rebates of up to \$700 per peak coincident kW saved, plus up to \$0.035 per annual kWh saved. EMS also offers Public Service natural gas customers up to \$4 per Dth saved. **In order to attract greater participation, the Company will reduce incremental project costs submitted in applications by 50% to exclude potential non-energy incremental costs associated with projects.**