



SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Utility-Manufacturing Workshop Primer 2: Program Design

Introduction to Utility Energy Efficiency Program Design

Utilities are often the first line of contact on matters related to energy and therefore are well positioned to share information, provide technical assistance, and offer financial incentives that support energy efficiency. With more than 2,000 electric utilities¹ serving industrial customers in the United States, these entities can play a significant role in identifying and deploying model energy efficiency programs in order to meet the large savings opportunity represented by industrial energy efficiency. While some utilities are recognizing the value of industrial energy efficiency, others have not yet established efficiency programs targeting this sector.

Utility Role in Energy Efficiency

Utility funding of energy efficiency financial incentive and technical assistance programs is often the result of state public utility commission (PUC) or state policy requirements. Utility-operated energy efficiency mechanisms, where industry needs are considered, have the potential to drive implementation of energy efficiency within the industrial sector. Ensuring utilities have sufficient funds to support industrial energy efficiency programs is essential to securing significant savings from this sector.

The purpose of an energy efficiency program is to reduce the amount of customers' energy use [sometimes with the assistance of third parties, such as energy service companies (ESCOs); evaluation, measurement and verification (EM&V) professionals; and various trade allies]. In meeting policy goals or PUC mandates, utilities will seek to recover the cost of their investments in energy efficiency programs. Funding for utility energy efficiency programs most commonly comes from ratepayers.

Ratepayer-funded programs are financed by adjusting customer energy rates to cover program expenses. Utilities meld energy efficiency program costs into their overall expenses and include them in ratepayer calculations or as separate charges.² **Public benefits funds** (PBFs) are funded through the collection of a small charge on the bill of every electricity customer or through specified contributions from utilities. The pooled funds are then used by states to finance energy efficiency programs administered by local utilities or other entities. Depending on a state's policies governing its PBF, industrial firms may be able to "opt out" of paying into these programs or choose to self-direct those funds.³

The cost of these industrial programs is increasingly competitive with the cost of other residential and commercial programs offered, and many utilities are realizing the attractiveness of offering an industrial program as part of an integrated resource management approach. Many utilities, such as Puget Sound Energy, are already offering industrial energy efficiency programs that are experiencing an increase in participation.⁴ Unfortunately, enhanced data collection needs still exist surrounding industrial programs; a lack of data is hindering the ability of both utility program managers and third parties in fully understanding the cost per saved kWh of industrial programs, as well as the percentage of energy savings from the industrial sector compared to other utility programs. The IEE/CHP Working Group is coordinating with other SEE Action Working Groups, including the EM&V Working Group, and Working Group stakeholders in order to address this barrier and enhance data collection.

Key Points

- Utilities offer industrial energy efficiency programs to help industrial customers reduce their energy use and remain competitive.
- Most utility energy efficiency programs for industry provide informational, technical or financial resources.
- Utility programs must overcome the challenge of meeting the unique needs of industrial customers, address capital constraints, and increase information awareness.
- Key features of successful efficiency programs discussed can be incorporated into the design of new programs and result in significant savings in the sector.

About SEE Action

The State and Local Energy Efficiency Action Network (SEE Action) is a state and local effort facilitated by the federal government that helps states, utilities, and other local stakeholders take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020.

About the Working Group

The working group is comprised of representatives from a diverse set of stakeholders; its members are provided at www.seeaction.energy.gov.

Common Types of Utility Energy Efficiency Programs for Industry⁵

Most utility energy efficiency programs are informational, technical, or financial.

- **Informational Programs** aim to inform customers about energy efficiency. Program elements may include websites, online resource libraries, calculator tools, brochures, or booklets. Information programs generally offer energy advice that is not customer specific.
Example: Upper Peninsula Power Co.'s Business Advice Library (www.uppco.com/business/bsa.aspx)
- **Technical Assistance Programs** address the technical barriers faced by customers that may understand the benefits of energy efficiency but lack the technical skills to implement change.
 - **Training Programs** offer customers educational courses, seminars, or classes on various energy efficiency and energy technology topics. *Example:* Pacific Gas & Electric's Energy Training Center (www.pge.com/stockton/)
 - **Energy Analyses** provide customer-specific energy profiles based on actual usage information using tools that monitor or project a facility's energy use. *Example:* Arizona Public Service's Energy Information Services (<http://profiles.automatedenergy.com/custom/aps/>)
 - **Energy Audits** identify opportunities for energy savings within the building envelope and manufacturing equipment in customer facilities. In addition to the technical benefits, energy audits help to establish the utility as a trusted resource for energy expertise.⁵ *Example:* Garland Power and Light's Energy Audit Program (www.garlandpower-light.org/utillaudits.html)
- **Financial Assistance Programs** offer customers financial support for implementing energy efficiency measures. Financial assistance may be provided in the form of loans, grants, or rebates (cash back or bill credit after the purchase of energy efficient equipment or the completion of an efficiency project).
 - **Prescriptive Incentive Programs** provide customers with predetermined financial incentives for purchasing specific equipment or technology that meets defined energy efficiency standards, such as National Electrical Manufacturers Association (NEMA) premium motors. *Example:* Tampa Electric's Water Heating Program (www.tampaelectric.com/business/saveenergy/waterheating/)
 - **Custom Incentive Programs** provide customers with financial incentives for retrofitting, replacing, or renovating a production line or production process equipment. Incentives usually are based on energy saved or a percentage of the project cost. Often, a program will require third-party verification of the estimated energy savings. *Example:* Salt River Project's Custom Business Solutions Rebate (www.srpnet.com/energy/powerwise/business/customrebate.aspx)
 - **New Construction Programs** provide financial incentives to support the construction of new, energy efficient industrial buildings. *Example:* National Grid's New Construction Incentives (www.nationalgridus.com/masselectric/business/energyeff/4_new.asp)
 - **Standard Performance Contracts** offer funding for projects that will save a certain amount of energy (kW or kWh). A typical energy performance contract is delivered by a third-party ESCO, which usually can provide all of the services required to design and implement a comprehensive project at a customer facility. The program administrator (utility) will provide financial incentives based on the amount of energy actually saved through the project. Long-term monitoring and verification by a third party is often a condition of standard performance contracts. *Example:* AEP's Commercial and Industrial Standard Offer Program (www.aepefficiency.com/arkansas/CI/intro/index.htm)
- **Self-Directed Programs** allow some customers to direct a portion of money that would have otherwise gone toward a PBF program toward energy efficiency investments made at their discretion. Self-directed programs are not available in all states with PBFs. Depending on the structure of the self-directed program, participants may or may not be required to demonstrate savings from energy efficiency investments made at their own facilities.⁶ *Example:* Xcel Energy's Self-Direct Custom Efficiency Program for Colorado (www.xcelenergy.com/Save_Money_&_Energy/Find_a_Rebate/Self_Direct_-_CO)

Barriers to Successful Industrial Energy Efficiency Program Design

Even though utility energy efficiency programs for the industrial sector can produce significant energy and cost savings, designing programs that achieve the desired results for the utility and its customers requires coordination. A number of barriers can hinder optimal program design and discourage industrial customers from participating.

Meeting the unique needs of industrial customers has been a challenge for utilities designing energy efficiency programs. “The sector is a large, heterogeneous, and complex one. For these reasons, encouraging energy efficiency in the sector has been difficult historically.”⁵ Furthermore, program designers often lump commercial and industrial customers together. But significant differences in business demands and efficiency potential between the two sectors can contribute to missed opportunities to reduce energy consumption.⁶ Energy efficiency programs that are designed to meet the unique needs of the industrial sector are more likely to offer measures that are appealing to those customers and maximize the return from energy efficiency investments.⁷

Capital constraints can be a significant barrier for industrial customers. In the industrial sector, the return on investment (ROI) factor is much more stringent than in the commercial, residential, or institutional sectors. High-efficiency equipment is often more expensive than standard machinery, and the payback period frequently is longer than the industry standard ROI of 18 months or less.⁸ Thus, the initial cost of equipment may deter industrial customers from investing in energy efficiency upgrades. Furthermore, corporate approval for energy efficiency expenditures is often in competition with other capital expenditures for use of internal resources. Capital constraints within industry make the design of utility energy efficiency programs especially complicated for this sector.

Lack of awareness and information among industry poses a challenge to the successful implementation of utility energy efficiency programs. Industrial firms may not be focused on energy efficiency, as it is often seen as peripheral to their primary business. The business case for energy efficiency is not widely known among industrial companies, and even plant decision makers may not be aware of the technical and financial benefits presented by energy efficiency solutions. Furthermore, industrial firms that are interested in energy efficiency may not know how to access financial incentives that can help to overcome the internal project hurdle rate.

Stakeholder Perspectives:

- **Utilities** implement industrial energy efficiency programs for different reasons. Some are required by state law, some are motivated to improve customer service offerings, and others recognize that energy efficiency is a least-cost resource for meeting energy demand.⁷ However, utilities may be reluctant to implement energy efficiency programs without an assurance of full and timely cost recovery.⁸
- **Regulators** are motivated to support utility energy efficiency programs that serve to meet local, state, or national policy objectives; maximize customer welfare; conserve energy resources; and reduce environmental degradation.⁹ These objectives can range from energy efficiency resource standards (EERS) to greenhouse gas emissions reduction targets. However, the overarching goal for regulators is to ensure that reliable utility service is provided to consumers at fair and reasonable rates.
- **Industrial Customers** are first and foremost concerned with running their businesses; energy use and efficiency are a secondary consideration, if identified as a priority at all. For an industrial customer, a successful energy efficiency incentive program is one that identifies near-term ROI projects and supports their implementation with least-cost impact.

Features of Effective Industrial Energy Efficiency Programs¹

Significant energy efficiency gains in the industrial sector can be realized through utility energy efficiency programs that specifically target industrial customers.

An effective energy efficiency program will provide *industrial customers* with the following benefits:

- Reduce / stabilize costs
- Improve value of service
- Maintain/improve productivity⁹
- Offer products and services that compliment plant operating schedules and internal decision-making activities.

An effective energy efficiency program can provide a *utility* with the following benefits:

- Energy savings from the industrial sector
- Lower cost of service
- Improved operating efficiency, flexibility
- Reduced capital needs
- Improved customer service.¹⁰

Utility program administrators can engage in the following practices to facilitate effective communication with industrial customers, provide offerings that meet their needs, and encourage their participation in energy efficiency programs.

Partnerships and Administration:

- Maximize resources by partnering with other utilities, a joint action agency, or trade allies.¹¹
- Develop a realistic budget for the overall energy efficiency program portfolio and be willing to move money between programs as necessary and as allowed by the state PUC.¹²
- Establish a single point of contact across the program portfolio or for specific programs to ensure that customers only have to make one phone call for energy services information.¹³

Customer Relations:

- Work with industrial customers to find out what they need and to help them understand the energy and non-energy benefits of efficiency investments.¹⁴
- Use a separate marketing approach for large companies and small/medium-sized customers.

- Provide follow-through implementation assistance for identified energy savings opportunities.¹⁵
- Build one-on-one relationships with customers and creatively communicate through a variety of industry-trusted channels to build awareness. Communication methods may include holding regular meetings, putting on energy efficiency exhibitions, and working with local businesses to promote programs and services.¹⁶

Program Design Considerations

While industrial energy efficiency programs are not as common as residential or commercial incentives, many existing utility approaches to programs for this sector have yielded positive results. Successful programs frequently incorporate many of the following elements of program design, which can ensure that programs meet industry needs and result in significant energy savings from that sector.

- Provide a suite of integrated program offerings to reach more customers. Coordinated programs enable customers to smoothly transition from one service to another.¹⁷
- By offering industrial energy efficiency programs, a utility gains respect from its customers as a trusted energy efficiency resource.
- Determine appropriate incentive structures and custom-incentive rates (as a percentage of energy efficiency project costs).
 - Incentives should be substantial enough to overcome unique, sector-defined hurdle rates.
 - Offer more custom incentives for energy saving measures (in addition to prescriptive incentives). These programs provide industrial customers with the flexibility to implement energy efficiency projects that best meet their needs, while still achieving the utility's energy savings goals.
- Offer guidance on selecting external contractors and vendors.
- Establish the customer's baseline for energy consumption before implementing projects, so that savings can be more easily and accurately calculated. This may involve installing submeters within a facility and/or providing energy management and tracking software.
- Develop an approach to energy efficiency program design that captures operational and behavioral impacts within an industrial firm. This may require establishing an EM&V plan

¹ Model industrial energy efficiency program elements identified are not intended to be a comprehensive inventory, but rather a catalog of some program features that have been identified as being impactful by the State and Local Energy Efficiency Action Network (SEE Action) Industrial Energy Efficiency and Combined Heat and Power Working Group.

that incorporates specific energy use measurements or surveys designed to capture these impacts.

- Recognize the need for longer timelines and flexible services.¹⁸ Firms often need significant time to plan and make capital investments. A large project may require phases for opportunity assessment, bidding, and deciding on financing mechanisms, all before actual project deployment. Furthermore, energy efficiency investments are subject to an individual plant's operational cycles, which could mean that major capital investments only occur every four to seven years. Successful industrial energy efficiency programs allow for flexible timelines in order to accommodate the unique circumstances of the industrial sector.¹⁹
- Make sure the rebate eligibility window accounts for the project completion time periods, in particular the available period for reporting savings after project completion.
- Design and implement a marketing strategy. Create effective communication and marketing tools to help explain the benefits of energy efficiency programs to industrial customers.
- Maintain consistent program offerings, where possible, for at least four years; this consistency is valued by the customer.

Successful Energy Efficiency Program Examples

1. *PacifiCorp Energy FinAnswer Program*: PacifiCorp is an investor-owned electric utility serving customers in the West. It operates as Pacific Power (PP) in Oregon, Washington, and California and as Rocky Mountain Power (RMP) in Utah, Wyoming, and Idaho. RMP and PP offer the Energy FinAnswer program in all states of operation except for Oregon. Energy FinAnswer provides industrial and large commercial customers with technical expertise and financial incentives for proven technologies that meet minimum equipment efficiency standards.²⁰ Between the five states, the program achieved more than 68,000 megawatt-hours (MWh) of energy savings in 2008.²¹ Within the state of Washington, the program was responsible for 78% of the savings that the utility realized from commercial and industrial programs that year.²²

Why this program works:

- Provides industrial customers with the **flexibility** to implement custom projects that meet their needs.

- Provides customers with **energy analysis** reports detailing specific project recommendations and refined estimates of costs and savings. Studies are paid for by RMP/PP.
 - Requires that RMP/PP signs an **incentive agreement** before the customer makes any financial commitments or proceeds with project implementation. The incentive amount is based on an estimate from the energy analysis.
 - Projects must have a **simple payback of at least one year**. This encourages projects with longer payback periods that may be less likely to be implemented without a financial incentive.
 - Requires that RMP/PP conduct a **post-installation inspection** to verify final project costs and energy savings. The actual incentive payment is based on the inspection results. Incentives are \$0.12 per kilowatt-hour (kWh) for annual energy savings (\$0.15 per kWh in Washington) and \$50 per kW for annual monthly demand savings.
2. *Rochester Public Utilities (RPU) suite of programs*: RPU in Rochester, Minnesota, offers a variety of energy efficiency programs for industrial customers through the municipal utility's Conserve and Save and Partnering in Energy Solutions programs. In 2009, RPU achieved 57% of its total energy savings from its key account customers, which include medical, industrial, large retail, government facilities, and educational facilities.²³ The average cost of this program in 2010 was \$0.14 per kWh saved.²⁴

Why this suite of programs works:

- Utilizes **partnerships** to engage with customers and provide solutions. RPU partners with local trade allies to connect with industrial customers. In addition, RPU partners with local ESCOs to implement energy saving projects at customer facilities.
- Offers a **wide variety of rebate programs**, including rebates for cooling equipment, motors, lighting, and variable speed drives.
- Offers a **custom rebate** (\$0.045 per kWh saved) for projects that show adequate kWh savings (calculations are based on the annualized first-year savings).
- Provides **zero-interest project financing** for qualifying industrial customers. RPU will finance up to \$25,000 per project for up to 24

months. Qualifying projects must be completed by one of RPU's ESCO partners.

3. *Puget Sound Energy (PSE) Large Power User Self-Directed Program*: PSE provides energy and natural gas services in the Puget Sound region of the Pacific Northwest. PSE is obligated to meet annual efficiency targets set by the Washington Utilities Transportation Commission. The utility's energy efficiency programs are funded through an "energy conservation service" tariff on all customer bills.²⁵ PSE offers a Self-Directed Program for large industrial customers that want to self-direct their conservation funds. From 2006–2009, this program supported the completion of 108 energy efficiency projects for 42 customers and realized energy savings of 34,371 MWh per year.²⁶ As of March 2008, the cost per saved kWh for that 4-year program cycle was \$0.20/kWh.²⁷ PSE expects this figure to lower as the program cycle ends.²⁸

Why this program works:

- Aggregates funds that a company would have paid into the conservation fund into a dedicated pool that **can cover up to 100% of the costs** of an energy efficiency project.
- Pools unused funds after two years and distributes them via a **competitive bid process**. This system creates a strong incentive for customers to "use or lose" available funding.
- Gives industrial customers the **flexibility** to invest funds as they see fit, making use of PSE resources when appropriate.²⁹

Endnotes

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¹³ Ibid.

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¹⁵ Ibid.

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¹⁷ Chittum, Anna K., Elliott, R. Neal, and Nate Kaufman, American Council for an Energy-Efficiency Economy, *Trends in Industrial Energy Efficiency Programs: Today's Leaders and Directions for the Future*, September 2009, pg. 16. www.aceee.org/sites/default/files/publications/researchreports/ie091.pdf.

¹⁸ Ibid, p 15.

¹⁹ Elliott, Neal R., Shipley, Anna Monis, and Vanessa McKinney, American Council for an Energy-Efficiency Economy, *Trends in Industrial Investment Decision Making*, September 2008. www.aceee.org/sites/default/files/publications/researchreports/IE081.pdf.

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²² Ibid.

²³ Information provided by email from Dirk Bierbaum, Key Account Representative at Rochester Public Utilities, on September 22, 2011.

²⁴ Ibid.

²⁵ Puget Sound Energy, *Summary of Total Current Prices – Electric*, April 2010.

http://pse.com/aboutpse/Rates/Documents/summ_elec_prices_2010_04_08.pdf.

²⁶ Montgomery, Dave, *PSE Schedule 258: Large Power User Self-Directed Electricity Conservation Program* [PowerPoint Slides], December 2010.

www.encyconnections.com/uploads/06_EE-Programs-for-Industrial-Customers_1Dec2010.pdf.

²⁷ Landers, David and Montgomery, Dave, "Large Power User Self-Directed Electricity Conservation Program," December 2010, slide 36,

http://www.encyconnections.com/uploads/06_EE-Programs-for-Industrial-Customers_1Dec2010.pdf.

²⁸ Energy savings are typically achieved later in each 4-year program cycle as projects are completed and savings captured, meaning that attempts to measure cost per saved kWh before the program ends will give an artificially high figure. Additionally, energy savings are realized in the years following the program cycle as well, indicating the actual program cost would lower further in the following years.

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