SEE Action
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Utility-Manufacturing Workshop Primer 1: Policy Framework

Introduction to Utility Regulatory and Policy Frameworks

Industrial energy efficiency offers a variety of benefits to utilities and the manufacturing industry.[1] Efficiency benefits utilities by offering an affordable source of additional energy to serve growth and by: (1) providing economic and environmental benefits for the utility's surrounding economy, (2) allowing utilities the opportunity to assist industry in addressing energy needs, and (3) replacing the need for costly retrofits or retiring older power plants to meet energy demand. At the same time, industrial energy efficiency provides greater energy security, economic benefits (job creation from increased efficiency efforts and increased global competitiveness), and environmental benefits (zero carbon emissions, enhanced environmental surroundings, and reduced energy waste) for the United States.

Utilities operate under a multi-level regulatory umbrella that determines the manner in which they approach programs and services and what they're able to offer. The types of industrial energy efficiency programs offered by utilities are directly impacted by the regulation and policy frameworks of state legislatures, public utility commissions (PUCs), and the utilities themselves. An overview of some of the key policies affecting industrial energy efficiency and combined heat and power (CHP) is provided below:

State-Level Policies: In recent decades, a majority of states have adopted two types of policies mandating greater energy efficiency: Energy Efficiency Resource Standards (EERS) and Public Benefit Funds (PBFs). An EERS policy establishes long-term energy-saving targets that require utilities to reduce their energy usage by a specified percentage on an increasing basis over a defined period of time. Twenty-six states currently have mandatory EERS policies in place, while four states have voluntary energy efficiency goals in place.[2] PBFs are used to support investments in energy efficiency and are typically funded through small charges on the bills of utility customers based on energy usage or through a flat fee. Thirty states currently have a PBF policy in place.[3]

Public Utility/Regulatory Commission Policies: PUCs have an obligation to ensure the establishment and maintenance of utility and electric cooperative services as required by law and to ensure that such services are provided at rates and conditions that are fair, reasonable, and nondiscriminatory for all consumers.[4]

Utility CHP Interconnection Policies: In combination with PUCs, utilities establish the parameters and processes for connecting CHP and distributed generation (DG) technologies to the grid.[5] Installers of CHP and DG technologies depend upon the ability to purchase power from the grid as needed and to sell excess power they generate back to utilities. Interconnection standards are designed to provide industrial customers with a clear set of rules for connecting these technologies to the grid.

Key Points

- Industrial energy efficiency can provide a variety of energy and non-energy benefits to utilities and the manufacturing industry.
- Utility-offered industrial energy efficiency incentive programs are important to increased energy efficiency implementation in the U.S. manufacturing sector.
- The types of industrial energy efficiency programs offered by utilities are directly impacted by public utility commission (PUC) regulatory frameworks and state policy and legislation.
- Utilities face a variety of challenges to industrial energy efficiency program implementation, including: conflicting energy savings goals, program cost recovery considerations, a lack of policies to support CHP, and conflicting project schedules and utility rate cycles.

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.

Regulatory & Policy Barriers to Successful Utility Energy Efficiency Programs

Despite the existence of state-level energy efficiency policies and utility regulatory structures to support development of energy efficiency programs, hundreds of utilities in the United States don't yet offer industrial efficiency incentive programs.[6] The availability of utility-offered technical and financial assistance and incentive programs for industry is significantly influenced by several policy and regulatory issues:

A lack of direct policies for industrial sector energy efficiency at the state level is a commonly cited policy barrier to successful energy efficiency program implementation.[7] In addition to the industrial market barriers described in the McKinsey report on energy efficiency[8], the absence of clear and supportive energy efficiency policies creates a barrier that makes utilities less likely to develop industrial energy efficiency programs out of concern that the utilities will not be able to recover program operation costs.[9]

"Opt-out" and self-direct provisions[10] within regulations and policies have, in some cases, limited the ability of utilities to meet their efficiency mandates with fewer high-impact participants. These provisions also result in industry losing the opportunity to have utilities help identify and fund energy efficiency projects that can reduce their energy consumption and operating costs.[11]

Utility rate structures can serve to incentivize energy usage rather than energy conservation. While energy efficiency cost recovery rates remove the utility disincentive to support efficiency, they can eventually result in lower unit prices for energy, which can diminish industry's interest in investing in efficiency. Conversely, where rates are designed to recover utility investments on a per-unit basis, customers have a stronger incentive to pursue energy efficiency, but doing so can ultimately reduce the utility's net income.[12] The set of rate structures related to CHP and DG technologies can also discourage energy conservation. Sometimes the standby rates[13], exit fees[14], and lower buyback rates[15] approved by PUCs can unintentionally create barriers to the economic viability of CHP and DG technologies, depending on how they are structured.

Lack of standardization across utility interconnection standards for linking CHP technology to the grid creates uncertainty among industrial customers and reduces the likelihood of uptake of CHP[16] and other DG technologies.[17] Some existing utility interconnection standards require fees and financial costs that impede full capture of the benefits of CHP and DG technologies.[18]

Potential Regulatory Frameworks to Address Barriers and Increase Energy Efficiency Implementation in the Industrial Sector

Under current utility regulatory frameworks, utilities face a variety of challenges, including conflicting energy saving goals [1], a need to recover the costs of efficiency programs, a lack of appropriate policies to support CHP, and a lack of synchronization between projects and utility rate cycles. Industry and utilities can overcome these challenges by addressing long-term energy savings goals, cost recovery options, CHP policy options, and project timing and utility rate cycles.

Long-Term Energy Savings Goals

In addition to the energy savings goals established by energy efficiency resource standards and environmental policies, many utilities must formally outline their energy savings goals through resource plans. Resource plans define the process by which utilities project future resource mixes (a combination of traditional energy, renewable energy, and energy efficiency), resource needs, and proposed programs and actions. These plans typically are updated every two to three years.[19] Resource planning horizons are typically specified as part of state regulatory rules and the planning horizons vary considerably in length—anywhere from 10 to 20 or more years.[20] However, the economic lifetimes of energy efficiency technologies vary considerably and, depending upon the time of implementation and program length, can exceed the time horizon of utility resource plans.

The SEE Action Utility Motivation and Energy Efficiency Working Group is developing resources and offering recommendations to regulators on the role of integrated resource planning and similar planning processes in promoting demand side resources[21].

Utility Cost Recovery and Program Performance Incentives

Utilities are more likely to offer efficiency programs if legislators and PUCs enact policies that support utility cost recovery of any lost sales margins that result[2], or

[1] Utilities can face conflicting energy savings goals in regard to differing efficiency standards established in resource plans, EERS policies, environmental policies, and resource planning horizons.

[2] For more information on cost recovery options, please see Chapter 4 in: U.S. Environmental Protection Agency, Aligning Utility Incentives with Investment in Energy Efficiency, 2007. Available: www.epa.gov/cleanenergy/documents/suca/incentives.pdf; and National Action Plan for Energy Efficiency, *Vision for 2025: A Framework for Change*, November 2008. Available: www.epa.gov/cleanenergy/documents/suca/vision.pdf

offer an inducement for strong utility incentive program performance.

Energy Efficiency Cost Recovery (EECR) Charge Riders

EECR charges, such as those utilized by Austin Energy[22] and Entergy Arkansas[23], allow utilities to charge customer classes at different rates to recover the costs of delivering energy efficiency programs. The use of EECR charges helps utilities overcome "free rider" issues by charging customer classes based on the energy efficiency expenditures for each class. Benefits to utilities from the use of cost recovery charge riders include quick recovery of programs costs, a reduced recovery risk, and the ability to exclude customer classes with a low need for efficiency programs from recovery costs.[24] However, a significant drawback of cost recovery charge riders is the occasional need to charge upfront costs of implementation to all classes.[25]

Decoupling

Revenue decoupling ensures that a utility's sales margins are not affected by a reduced sales volume due to increased industrial energy efficiency.[26] Decoupling allows utilities to recover their costs for implementing industrial energy efficiency measures and programs through the use of automatic rate adjustment formulas.

Lost Revenue Adjustment Mechanism (LRAM)

An LRAM is a partial decoupling mechanism that permits a utility to recover the lost sales margin that results from energy efficiency programs by ensuring that the profitability of the utility is not adversely affected. The declines in revenue directly attributed to utility-sponsored energy efficiency programs are recovered by utilities in between rate cases.

Straight Fixed-Variable (SFV)

SFV rates are a form of rate design that separates all utility fixed costs as a fixed charge and all variable costs as a volumetric charge on customer bills. SFV rates identify the specific utility costs that drive the customer rate. While acknowledgement of the costs can serve to increase energy efficiency, it may also reduce the drive for customers to invest in energy efficiency given that energy use changes will impact only the variable cost portion of their bills.

Shared Savings

Shared savings mechanisms allow the utility to receive a portion of the cost savings that result from energy efficiency investments. These mechanisms can be structured so that the utility profitability is enhanced, rather than harmed, by energy efficiency programs.

Rate of Return Adder

Another option for cost recovery is for PUCs to provide utilities with compensation for the implementation of efficiency investments that provide utility system benefits.[27] A rate of return adder allows utilities to earn a profit on energy efficiency investments in the same manner as other capital investments.

> *Example: In 1980, Washington became the first state to allow utilities to earn a higher rate of return on energy efficiency investments than they would for capital investments.[28] Under this new Washington Utilities and Transportation Commission policy, investments in energy efficiency became regulatory assets that earned a return of up to 2% more than traditional supply-side investments. A similar measure was adopted by Nevada in 2004–2007.[29]*

These approaches have been short-lived, as the financial community does not recognize investments in energy efficiency at customer facilities as utility assets.

Policies to Support CHP[30]

CHP technologies often face considerable barriers that prevent greater adoption and implementation. Three policies in particular can help address these barriers[31]:

Utility Standby Charges

Standby charges are the regulatory rates utilities charge CHP users for providing standby power to a facility when the CHP system is down for maintenance or other planned outages. While standby rates are a reasonable part of utility billing, rates should be set at levels that more accurately reflect system down time. One option is for PUCs to waive fees for systems that meet reliability and efficiency standards.[32] A second option mirrors the decision of the Oregon Public Utilities Commission to allow CHP systems to contract for a lower backup of CHP capacity equal to those required for traditional power plants.[33]

CHP as a Portfolio Resource

The EERS standards adopted by states offer additional opportunities for increasing the implementation of CHP technologies.[34] The electricity saved from captured excess heat and the mitigation of additional fuel or emissions from CHP technologies align with the goals of EERS policies, and CHP technologies should have the opportunity to receive credit for their contributions.

Output-Based Emission Standards

Output-based air emission standards take a CHP system's increased efficiency into consideration and provide a level playing field for CHP technologies to compete with other types of emission reduction

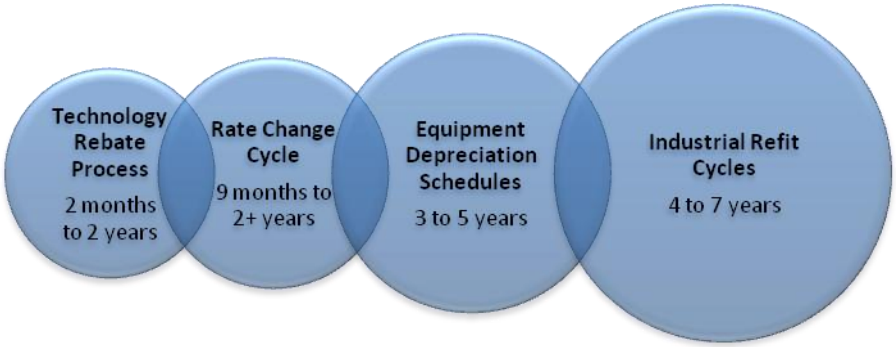

Figure 1. Project Timing and Utility Rate Cycles

measures. Instead of measuring emissions based on how much fuel is put into a system, output-based standards measure the emissions according to how much electricity or total useful energy is actually produced, allowing efficiency to be considered.[35]

Project Timing and Utility Rate Cycles

Currently, utilities and industry are challenged due to the lack of harmonization between technology rebate cycles, utility rate change cycles, equipment depreciation cycles, and industrial refit cycles as shown in Figure 1.

The varying lengths of these four cycles results in an accumulation of missed opportunities to address industrial energy efficiency needs. During the refit cycle, companies are less likely to upgrade equipment between the beginning and the end of a cycle due to the additional costs and risks associated with stopping processes to install new efficient technologies. However, equipment failures that occur between refit cycles provide opportunities for efficiency improvements. These opportunities can be capitalized upon by replacing failed equipment with a compatible, energy efficient piece of equipment. New regulatory frameworks can address timing challenges by assisting utilities and industry in becoming more aware of the efficiency opportunities within these various cycles and to consider these opportunities when engaged in resource planning. Early planning and coordination with the utility can identify opportunities and secure information and equipment procurement in advance of equipment failure and refit cycles.

Endnotes

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[4] National Association of Regulatory Utility Commissioners, About NARUC, no date. www.naruc.org/about.cfm, accessed September 2011.

[5] U.S. Environmental Protection Agency, *Interconnection Standards Fact Sheet*, July 2007. www.epa.gov/chp/state-policy/interconnection_fs.html

[6] Industrial programs are those that offer technical and/or financial resources specifically for an industrial or large commercial customer (small commercial programs are not included as those entities do not often have the same large, energy-consuming equipment beyond building usages). Using the definitions of the Energy Information Administration, The State Energy Efficiency Action Network defines the industrial sector as “all facilities and equipments used for producing, processing, or assembling goods”, while the commercial sector is defined more broadly and includes “service-providing facilities and equipment of businesses.”

[7] U.S. Environmental Protection Agency, *Clean-Energy Guide to Action: Policies, Best Practices, and Action Steps for States,* April 2006. www.epa.gov/statelocalclimate/resources/action-guide.html

[8] McKinsey & Company, *Unlocking Energy Efficiency in the U.S. Economy,* July 2009. www.mckinsey.com/Client_Service/Electric_Power_and_Natural_Gas/Latest_thinking/Unlocking_energy_efficiency_in_the_US_economy.aspx

[9]American Council for an Energy-Efficient Economy, Utility Regulation and Policy, no date. www.aceee.org/topics/utility-regulation-and-policy, accessed September 2011.

[10] "Opt-out" provisions allow large utility customers to elect not to participate in a utility program and avoid paying program costs.

[11] U.S. Environmental Protection Agency, *Aligning Utility Incentives with Investment in Energy Efficiency*, 2007. www.epa.gov/cleanenergy/documents/suca/incentives.pdf

[12] American Council for an Energy-Efficient Economy, *Carrots for Utilities: Providing Financial Returns for Utility Investments in Energy Efficiency*, January 2011. www.aceee.org/research-report/u111

[13] *Standby rates:* Rates charged when facilities with CHP or DG consume additional grid power due to outages from DG equipment, maintenance, or other planned outages.

[14]*Exit fees:* Fees charged to CHP or DG users for reducing or ending their use of electricity from the utility.

[15]U.S. Environmental Protection Agency, *Clean Energy-Environment Guide to Action: Policies, Best Practices, and Action Steps for States*, April 2006. www.epa.gov/statelocalclimate/resources/action-guide.html

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[25] U.S. Environmental Protection Agency, *Aligning Utility Incentives with Investment in Energy Efficiency*, 2007. www.epa.gov/cleanenergy/documents/suca/incentives.pdf

[26] Western Governors Association, *Industrial Energy Efficiency: Improving competitiveness, reducing emissions*, June 2011. www.westgov.org/reports

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[32] Western Governors Association, *Industrial Energy Efficiency: Improving competitiveness, reducing emissions*, June 2011. www.westgov.org/reports

[33]Environmental Protection Agency Combined Heat and Power Partnership, State Examples, October 2010. http://www.epa.gov/chp/state-policy/utility.html, accessed September 2011.

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