Holy Cross Energy

Staff Recommendation on New PURPA Standards

Introduction

The Energy Independence and Security Act of 2007 (EISA) amended section 111(d) of the Public Utilities Regulatory Policies Act of 1978 (PURPA) by adding four new federal standards. The EISA requires state commissions and unregulated utilities with annual sales exceeding 500 GWH annually to consider adopting these standards. It does not require the adoption of these standards. A covered utility or regulatory body must consider these standards through a process open to public comment and make a determination based on the evidence introduced through this process. The standards may be accepted, rejected, modified or deferred by the utility or regulatory body.

Holy Cross Energy (HCE) is a cooperative electric association based in Glenwood Springs, Colorado which provides electric distribution services to more than 54,000 meters in portions of Eagle, Garfield, Gunnison, Mesa and Pitkin counties. Since HCE is not rate-regulated by the Colorado Public Utilities Commission (CPUC) and since it has sales in excess of 500 GWH annually, it must consider the four new PURPA standards and make a determination.

HCE purchases the majority of its power from Xcel Energy's subsidiary, Public Service Company of Colorado (PSCo), under a Full-Requirements Power Supply Agreement (PSA). Under this contract, HCE is allowed to purchase power from the Western Area Power Administration (WAPA), PURPA Qualifying Facilities (QFs), and other economy energy sources. HCE's current allocation of federally administered hydropower was about 3.5% of total purchases in 2008 and has not increased significantly in a number of years. There are three hydroelectric generators within HCE's service territory that qualify as QFs, but none has a capacity greater than 200 kW. The PSA could expire as early as 2020, unless HCE opts to ramp out of the contract with appropriate notice.

In late 2009, a new coal-fired power plant (Comanche 3) will begin commercial operations at Comanche station near Pueblo, CO. This 750 MW super-critical unit is jointly owned by PSCo, Intermountain Rural Electric Association, and HCE. The purchase of an 8% share in this unit was intended as a hedge against the potential expiration of the PSA. In addition, it will reduce HCE's exposure to rising and increasingly volatile electricity prices.

Standard 1: *Integrated Resource Planning* – Each electric utility shall –

(A) Integrate energy efficiency resources into utility, State, and regional plans; and

(B) Adopt policies establishing cost-effective energy efficiency as a priority resource.

Integrated resource planning (IRP) is a process by which an electric utility evaluates energy resources to meet the electricity requirements of its customers. A forecast of the electricity demand for the near future is conducted, and various resources to meet that demand are evaluated. Both supply-side and demand-side resources are considered, including power purchases, new generating capacity (both fossil-fueled and renewable resources), and energy conservation and efficiency. HCE goes through an IRP process at least every five years under the IRP rules specified by WAPA[1]. Utilities must demonstrate that they have considered and evaluated all of these resources before an IRP is approved by WAPA.

[1] Information about WAPA's IRP process and rules is available at http://www.wapa.gov/es/irp/default.htm.

In addition, PSCo is required to submit a resource plan for approval by the CPUC at least every four years with annual updates. This process incorporates public comments and aims to develop a cost-effective resource mix to meet PSCo's wholesale and retail obligation loads. In order to meet recent legislative directives, the CPUC's focus on the integration of renewable resources, energy efficiency and conservation has become increasingly more important in these plans and is encouraged by the CPUC.

Staff recommendation: Staff believes that HCE is already practicing the standard on its own and through its purchase of wholesale power supply from PSCo. The formal planning process already evaluates efficiency and other demand-side resources on the basis of their cost-effectiveness alongside other resources. HCE established the 'WE CARE' program in 2004 to encourage customers to use electricity more efficiently. The program uses two percent of gross revenues to encourage energy efficiency and renewable energy generation through rebates and free audits. In addition, HCE is working to install software that will allow a better understanding of customers' consumption to aid in development of new efficiency programs. This software will also allow consumers to access more information about their usage and hopefully will encourage them to increase the implementation of energy efficiency measures. Funds are also set aside to evaluate and form plans around conservation and energy efficiency measures.

Standard 2: *Rate Design Modifications to Promote Energy-Efficiency Investments*

(A) In general. -- The rates allowed to be charged by any electric utility shall --
  (i) align utility incentives with the delivery of cost-effective energy efficiency; and
  (ii) promote energy efficiency investments.

(B) Policy options. -- In complying with subparagraph (A), each State regulatory authority and each non-regulated utility shall consider --
  (i) removing the throughput incentive and other regulatory and management disincentives to energy efficiency;
  (ii) providing utility incentives for the successful management of energy efficiency programs;
  (iii) including the impact on adoption of energy efficiency as one of the goals of retail rate design, recognizing that energy efficiency must be balanced with other objectives;
  (iv) adopting rate designs that encourage energy efficiency for each customer class;
  (v) allowing timely recovery of energy efficiency-related costs;
  (vi) offering home energy audits, offering demand response programs, publicizing the financial and environmental benefits associated with making home energy efficiency improvements, and educating homeowners about all existing Federal and State incentives, including the availability of low-cost loans, that make energy efficiency improvements more affordable.

The costs incurred by electric utilities in providing electric service can generally be divided into fixed and variable components. The largest portion of fixed costs is usually the physical plant (i.e. power plants, substations, transformers, poles and wires) used to generate and deliver power to homes and businesses. The largest variable costs are usually fuel, maintenance, and purchased power costs. Traditional ratemaking commonly recovers the majority of both fixed and variable costs through the volumetric component of customers' bills. Only a small portion of a utility's fixed costs are recovered through a customer charge every billing period. This provides the utility with a throughput incentive to maximize kWh sales in order to ensure full recovery of fixed costs and operating margins.

Decoupling a utility's margins from its sales volume is the most common method to eliminate the throughput incentive. An example of such a structure would be recovering fixed costs and operating

margins on a per-customer basis (i.e. a monthly customer charge) and recovering only variable costs through the volumetric portion of a customer's bill. Margins are unaffected by the decline in sales associated with successful energy efficiency programs and a utility maintains its financial health. However, this tends to discourage energy efficiency measures, as they become less cost-effective since the price of a kilowatt-hour tends to be less than it would otherwise be using traditional ratemaking.

Holy Cross' current rate structure is based on traditional cost-of-service methods that allocate revenue requirements to customer classes based on their consumption patterns. This allows customers to make energy efficiency improvements that are appropriate to their particular load pattern and situation. For example, a large commercial customer has a bill consisting of a customer charge, a peak demand charge, and an energy charge. For this customer, a reduction in their peak demand could yield a significant savings to both themselves and the utility. HCE has worked with a number of large customers to reduce their contribution to the system billing peak. By reducing this peak, the cost of supplying power to the system as a whole is reduced and benefits all customers.

Residential rates are currently split into three categories. The majority of HCE's residential customers are billed a small monthly customer charge and a volumetric charge based on their monthly energy usage. A small group of large customers is billed on a demand basis as well, similar to the commercial structure described above. There are also a small number of customers that purchase electricity under a time-of-day rate. They are charged at a higher rate during peak usage hours and a lower rate during other hours. This rate provides an incentive to minimize usage during the hours for which a billing peak is likely to occur, yielding a lower wholesale power bill and reducing costs for all customers.

Staff is examining other rate structures that might expand the penetration of energy efficiency measures by reducing their payback time. For example, a tiered residential rate in which a customer pays a higher price based on higher use is currently under consideration. This type of structure rewards customers who use less electricity with a lower bill, providing an incentive to implement additional efficiency measures and making them more cost effective.

The 'WE CARE' program provides incentives and rebates for energy efficiency measures and renewable energy generation installed by all customers. HCE also provides energy audits free of charge and publishes tips for conserving energy in the customer newsletter.

Staff recommendation: Adopt the standard. HCE is already addressing this standard through a variety of means, including new rate structures, rebates, free audits, and the promotion of efficiency measures.

Standard 3: *Consideration of Smart Grid Investments*

(A) In General. -- Each state shall consider requiring that, prior to undertaking investments in non-advanced grid technologies, an electric utility of the State demonstrate to the State that the electric utility considered an investment in a qualified smart grid system based on appropriate factors, including --

(i) total costs;
(ii) cost-effectiveness;
(iii) improved reliability;
(iv) security;
(v) system performance; and
(vi) societal benefit.

The EISA (Section 1306) defines qualifying smart grid systems as equipment that can fulfill any of the following functions:

- The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
- The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
- The ability to measure or monitor electricity use as a function of time of day, power quality characteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.
- The ability to sense and localize disruptions or changes in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.
- The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.
- The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.
- The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.
- The ability to use digital controls to manage and modify electricity demand, enable congestion management, assist in voltage control, provide operating reserves, and provide frequency regulation.
- Such other functions as the Secretary may identify as being necessary or useful to the operation of a Smart Grid.

HCE has already begun to invest in technologies that fulfill a number of these functions and further evaluation is ongoing. A Supervisory Control and Data Acquisition (SCADA) system relays information from all the substations serving HCE load and is being expanded to include equipment on a number of feeders. HCE can monitor the status of each feeder at the substation, including total usage and faults. New equipment will allow a number of reclosers on several feeders to communicate with each other and HCE's dispatch center to allow remote switching and monitoring. Deployment of this equipment will continue through the next few months and next summer HCE expects to begin to integrate a number of voltage regulators with similar communication systems.

A new Geographic Information System (GIS) is currently being configured so that HCE personnel will be able to more accurately track billing and other service issues to support improved customer service. Next year, HCE plans to examine various Outage Management Systems (OMS) that will integrate with the GIS to more quickly resolve outages and other disturbances on the system.

Staff is examining the various Advanced Metering Interface (AMI) technologies currently available to determine which, if any, are appropriate to install. A new metering system will involve significant investment in expanded communications systems and integration with existing infrastructure to ensure that the full range of benefits is provided to staff and customers. HCE is talking with vendors and other utilities to find out what changes have been made in their businesses and how effectively their AMI systems have performed at tasks such as meter reading and outage management. The progress of Xcel Energy's experiment with the Smart Grid City project in Boulder is being carefully watched to see how effective the Smart Grid is at increasing reliability and encouraging efficiency.

Staff recommendation: Do not adopt standard at this time. Staff believes that previous and ongoing studies and efforts show that HCE is already seriously considering and deploying elements of the Smart Grid.

Standard 4: *Smart Grid Information*

(A) Standard. -- All electricity purchasers shall be provided direct access, in written or electronic machine-readable form as appropriate, to information from their electricity provider as provided in subparagraph (B)

(B) Information. -- Information provided under this section, to the extent practicable, shall include:

(i) Prices. -- Purchasers and other interested persons shall be provided with information on --

(I) time-based electricity prices in the wholesale electricity market; and

(II) time-based electricity retail prices or rates that are available to purchasers.

(ii) Usage. - Purchasers shall be provided with the number of electricity units, expressed in kWh, purchased by them.

(iii) Intervals and Projections. -- Updates of information on prices and usage shall be offered on not less than a daily basis, shall include hourly price and use information, where available, and shall include a day-ahead projection of such price information to the extent available.

(iv) Sources. -- Purchasers and other interested persons shall be provided annually with written information on the sources of power provided by the utility, to the extent it can be determined, by type of generation, including greenhouse gas emissions associated with each type of generation, for intervals during which such information is available on a cost-effective basis.

This standard requires that end-use customers be provided with their usage, all retail prices, and wholesale prices on a daily basis, along with projections for the next days' energy use and cost. On an annual basis, a report on power generation or purchases by fuel type and an estimate of the associated emissions would be made available to consumers through a similar method.

HCE purchases the majority of its power from PSCo under a Full-Requirements PSA. Electricity provided under this contract is billed at a flat rate for electricity purchases (kWh) and for peak electricity demand (kW) for each calendar month, with a rider (adjusted monthly) to allow PSCo to recover the variable costs associated with fuel expenditures. This rate structure is not time-differentiated, and all power purchases for each month are at a single rate. The flat rate wholesale price limits the utility most customers would reap from this data. HCE does offer a residential time-of-use rate with higher prices during the normal peak period and lower prices during off-peak hours, however interest has been limited and participation is less than 1% of residential meters.

Currently the information to make day-ahead projections of hourly energy prices is not available to HCE. HCE receives data on a monthly basis to support the fuel-cost rider, but on a delayed basis, making hourly projections impossible.

HCE will continue to watch the development of the Smart Grid City by Xcel Energy to see if providing this information to customers results in increased or decreased energy usage. HCE Staff will evaluate the results of this experiment to estimate its effectiveness in increasing energy efficiency and savings.

HCE already makes an estimate of the sources of its power purchases by generation type on an annual basis for internal purposes. This estimate is based on data from power suppliers, the U.S. Energy Information Agency and the U.S. Environmental Protection Agency.

Staff recommendation: Do not adopt standards (B)(i)-(iii) at this time, but continue to evaluate as more information becomes available. HCE does not have access to the necessary information to implement standards (i)-(iii) at this time. When information from power suppliers is available more quickly, these standards should be reconsidered. Adopt standard (B)(iv), reported on annual basis via HCE's website. HCE already estimates generation by type for internal reports. It is not difficult to post this information on HCE's website on an annual basis, and there is significant interest from the community in this data.