Part 1 of a 3-Part Series

Deregulated Retail Power Pricing: What Are The Options?

Lindsay Audin, President, Energywiz, Inc.

ABSTRACT—PART 1

Deregulation of electricity has opened the door to a variety of new retail power pricing options which could impact the payback periods of both energy efficiency and distributed generation options. To maximize benefits while minimizing cost risks, professionals designing (or upgrading) a physical plant should build operational flexibility (e.g., fuel switching capability and real-time operational control) into their plans.

Energy managers also need to watch how they integrate power procurement with equipment-based efforts to cut energy costs. Failure to do so could mean higher total cost (operation plus installation) than if either effort had been pursued solely on its own.

Part 2 will cover "7 Energy Efficiency Options." Part 3 will cover "Other Power Purchasing Options."

Most of us are well acquainted with typical commercial and industrial (C&I) electricity tariffs. Generation charges for peak demand (kW) and consumption (kWh) are either handled under separate schedules, or the price per kWh varies significantly across the time of day to account for the higher cost of peaking power generation.

A few utilities offer real time pricing, under which customers are told a day in advance what the hourly pricing will be for the next 24 hours. In most cases, delivery (i.e., transmission, distribution, and stranded cost collections) is charged separately from generation. Many utilities also levy a fuel adjustment charge to cover variations in their

costs for fuel used to make power.

The advent of competition, wherein power providers offer their own forms of pricing via bilateral contracts with end users, has fostered new options for the generation portion of power pricing. Under deregulation, a customer may receive one bill from his power provider for generation, and a second bill from his local distribution company (LDC) for delivery of the power.

The LDC is typically the same utility that previously supplied all power services under a legalized monopoly. Its delivery charges generally remain regulated and covered by the utility's tariff, and stranded costs are typically collected in those delivery charges. In most parts of the United States, the delivery portion of an electric bill is now 25 to 40% of the total, with the lion's share of costs being related to generation of the power. This first article examines the generation portion the electric bill since that is what has been most impacted by competition. In a few cases, offerings that also include delivery charges are reviewed.

SORTING OUT THE CHARGES

Regulated electric rates for commercial and industrial customers usually have separate charges for energy and peak demand, each of which is shown as a different line item on monthly bills. Not so for electric bills from deregulated power suppliers: a customer may receive a bill in which a flat rate is charged for the generation portion of all power consumed, regardless of the time of day (though some charge different rates for summer and winter periods).

In essence, the usual peak demand charge has been "folded" into the overall energy charge, making on-peak and off-peak power cost the same, regardless of the peak demand incurred (within contracted limits). In some cases, that flat price may vary from season to season, or a portion of it may be allowed to "float" with pricing seen in wholesale power markets.

Rarely, however, is demand charged separately in the generation portion of a deregulated electric bill.

To be clear, that same customer probably also receives a second bill from his utility covering the still-regulated delivery charges (i.e., transmission and distribution) levied by the utility. That second bill may still show separate consumption and demand charges for delivery. If

monthly peak demand drops or rises (but consumption remains basically the same), charges for delivery may follow suit, but the bill from the unregulated supplier remains essentially unchanged.

REVIEW OF PRICING OFFERINGS

Such flat pricing (individuated by customer according to his specific load profile, or that of his rate class) is probably the least imaginative form of competitive power pricing. Many customers new to deregulation were surprised by such simplicity.

Power suppliers indicate that it stems from limited customer usage data and the lack of metering/billing sophistication in the vast majority of commercial/industrial power accounts. Only customers with peak demands exceeding about 1 MW typically have the interval metering that allows more complicated time-based billing.

To minimize setup costs in any market, many suppliers use the consumption data from the LDC's delivery bill as their sole source of information. Doing so avoids any need to install the expensive interval meters (which determine usage in 15-minute periods) or the phone lines used to communicate with them.

At the other extreme, some offerings (especially when the California market was active) were based on the conversion of hourly wholesale pricing seen at a Power Exchange (PX) or Independent System Operator (ISO) into a form of real time retail pricing that varied from hour to hour. Determination of the customer's charge under that regime required an interval meter to log hourly consumption and the time it occurred. Power contracts typically involved adjustments to those hourly wholesale prices in the form of flat discounts (i.e., either a defined percentage or $/kWhr), or daily average on-peak or off-peak market pricing, instead of individual hourly prices.

Between those extremes, one finds many other variations such as those covered below. Each should be seen more as a component in an offering (potentially bundled with others) rather than as a completely separate pricing regime. Many other variations are being seen as competitive markets gradually mature (e.g., indexing a flat price to the cost of natural gas). Each offering carries with it both opportunities and risks. **In many cases, the problems that are discussed may be avoided or reduced through careful plant design and crafting of one's power contract.**

PROBLEMS THAT COULD AFFECT ENERGY EFFICIENCY OPPORTUNITIES

While a variety of problems may occur when energy procurement and efficiency are not coordinated, most fall into one of these six categories:

a) volatile volume/demand commitment—Unlike regulated utility tariffs, most energy contracts involve a commitment for usage within a defined bandwidth (e.g., +/- 10% of an agreed-upon profile). Greater (and possibly lesser) usage may result in a penalty.

b) loss of a revenue-generating price differential at certain times could reduce savings from this otherwise desirable upgrade—Most of us are accustomed to dealing with a differential cost of power between summer and winter, and between on- and off-peak hours. When the differential disappears, the savings expected from some energy systems may be reduced or also disappear.

c) increased equipment investment risk—When we consider investing in an efficiency upgrade, there is an expectation that it will return savings over time. The payback analysis for an upgrade needs to consider the potential for it to fail to yield the expected level of savings.

d) reduced load factor may impact future/present pricing—When a flat price is first developed for a customer, it is typically based on a known load profile and load factor (LF). A price indexed to LF may rise when LF drops. The addition and/or operation of some devices that reduce consumption significantly more than they reduce peak demand will result in a lower LF and thus a potentially higher unit power price.

e) consumes available upgrade capital—While use of green (i.e., renewable) power may result in a net reduction of pollution and greenhouse gases, it typically costs more. Unless one has sufficient capital to pursue both upgrades and pay extra for power, it is necessary to consider how the funds allocated to a voluntary price increase might instead be used to reduce overall on-site energy use. A strong case could be made for first doing all reasonable upgrades to reduce energy use, and later pursuing green power to operate what remains.

f) increased price risk—Some price offerings involve market price fluctuations unrelated to how the customer uses power. Projecting the savings (or losses) that could occur for new energy systems operating under these regimes is difficult, to say the least. Probabilistic risk analysis becomes necessary, the data for which may be insufficient to create confidence in the results. When energy systems are, however, specifically chosen and designed to take advantage of unpredictable price variations, new and often potent opportunities may be secured.

PART 2

Part 2 of Lindsay Audin's series of articles on "Retail Power Pricing and What It Will Mean To You", scheduled for the Fall 2002 issue of this journal, describes how different pricing structures can affect seven widely used energy efficiency options.

PART 3

In the final section of this major 3-part series, planned for the Winter 2002-2003 issue of SPEE, Mr. Audin discusses other power purchasing options and how they also can impact your plans. He concludes by recommending ways that proper coordination can lead to the most efficient energy usage and energy purchasing.

Mr. Audin's series of articles on "What Deregulated Retail Power Pricing Can Mean To You" has been abstracted from a report he gave at the Association of Energy Engineers "World Energy Engineering Congress," October 26, 2001. Each of these articles will appear on AEE's On-Line Journal Access—www.aeecenter.org/journalsonline (see box below.)