

Can Smart Grid Technology Fix the Disconnect Between Wholesale and Retail Pricing?

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I. Introduction

While the past 20 years have seen the rapid development of wholesale electricity markets, sophisticated wholesale pricing has largely failed to be replicated in state retail markets. While wholesale market pricing has increasingly reflected real-time costs, retail markets continue to be characterized by the prevalence of blended, average-cost rates, which offered limited opportunity for effective demand-side response.

The effect was that, even with approximately half of state retail markets opened to competition, many of the changes realized in retail markets were not as deep as the changes in wholesale markets. In short, states fell into two broad categories: one characterized by preservation of the monopoly, and a second that featured the somewhat superficial enabling of competition without fully empowering consumers to make the choices that are generally associated with

competitive markets, most notably to reduce demand in response to meaningful price signals.

There are a variety of reasons for this disconnect between wholesale and retail pricing. They include political concerns about passing on price spikes to customers, lack of technology, notably metering, that would allow real-time information to flow to customers and enable billing to reflect that reality, and economic disincentives inherent in the regulatory regimes in most states for incumbent utilities to invest in “smart” technology and/or demand-side activities.

The emergence of Smart Grid technology, including metering and use of the Internet, has the very real potential to reduce, if not entirely remove, the disconnect between wholesale and retail markets, and enhance overall economic and energy efficiency. Providing end users with real-time, actionable information on prices and market conditions and new ancillary service markets that value consumer action and incentivize efficiency can enable meaningful demand response. Smart switches, smart distribution devices, automation, communications, and selective redundancy, of course, can also dramatically improve reliability and power quality.

Incumbent¹ utilities in both restructured and non-restructured states have incentives and disincentives to

make Smart Grid technology investments. Whether they are the appropriate vehicle for implementing and managing the implementation of smart devices or technology to achieve greater demand-side participation in the marketplace is a critical question that needs thorough examination. What follows is a discussion of that question in a regulatory, behavioral, and economic context.

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II. Traditional Utility Ratemaking Incentives

Smart Grid offers significant efficiency gains on both the utility and customer sides of the meter. On the supply side, utilities already have economic incentives to invest in smart grid technology in order to make investments that increase productivity on their side of the meter, absent certain risks that are discussed below. For Smart Grid potential to be fully realized, however, utilities will also need to make Smart Grid technology investment decisions that are consistent with energy efficiency by end users. Such end

use efficiency gains, however, are often seen as problematic by utilities because their profitability is linked to energy sales under traditional ratemaking methodology, and increasing energy efficiency means reducing kWh sales and, therefore, profits. Thus, absent ratemaking that reflects that reality, utilities have an economic incentive to resist aggressive demand-side management programs and may well be inclined to resist accommodating innovation – the products and services that would have the effect of reducing their sales. For regulators and policymakers promoting the deployment of Smart Grid technology, and demand-side programs in general, that is an important consideration because there are two fundamentally different, yet not mutually exclusive, regulatory paths available for deploying both Smart Grid and demand-side programs. The first is to rely on the incumbent utilities and provide them the appropriate incentives. The second alternative is to reduce the role of the incumbent monopoly provider and open the market up to new, more entrepreneurial entrants.

A. Return on capital investment

The most basic incentive for utilities, of course, stems from the traditional utility ratemaking incentive to invest capital in order to earn a return. That incentive is not specifically targeted at Smart

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