

## Exploring the Arguments for Real-time Pricing

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### Introduction

Economists and energy experts agree that real-time pricing is an essential long-term solution to balancing the hourly supply and demand for power in California. The two basic components to real-time pricing are:

- A meter that records a customer's electricity consumption at hourly intervals, and
- A pricing system based on multiplying each hour's consumption by an amount based on the wholesale cost of electricity during that hour.

Real-time meters on electricity use would allow utilities to charge more during the times of the day when demand is greatest – and less when demand is lower. This would give consumers an incentive to use less energy during times of peak use. Consumers could obtain the maximum financial benefit possible under this system by shifting consumption from hours with high wholesale prices to hours with low wholesale prices.

Governor Gray Davis launched a project on June 7, 2001, funded by AB 29X-Kehoe (Chapter 8/statutes of 2001-02, first extraordinary session) to install "real-time" electricity meters in Los Angeles in an effort to reduce peak use of electricity. However, the PUC has not approved a real-time pricing scheme, an essential step in carrying out such a program.

A lack of real-time pricing, according to many energy experts and economists, has been an obstacle in developing an electricity market that functions with true supply-and-demand pressures. Some believe real-time pricing should be mandatory, beginning with California's 50,000 largest energy customers. (See an op-ed piece by Stanford University Professor Frank Wolak in the *San Jose Mercury News*, May 4, 2001.)

### The Arguments Made for Real-time Pricing

The advantage of real-time pricing is that it sends an economic signal about the value of conservation and then lets a customer decide which measures, if any, they wish to take.

All California customers are, in effect, paying real-time prices in their electricity bills each year. This is because their payments must cover the costs to generators to provide power plus the transmission and distribution charges. Although paying the real-time price, a consumer has no ability to benefit from reducing consumption in hours when the wholesale price is especially high because he or she is paying the same price for power at all times of the day, month and year.

Professor Severin Borenstein, director of the Energy Institute at the University of California, Berkeley, has made a number of arguments in favor of real-time pricing in his paper, *Frequently Asked Questions about Implementing Real-Time Electricity Pricing in California for Summer 2001*. He contends:

- Real-time pricing would not necessarily mean an increase in electricity bills.
- The primary advantage of real-time pricing is that it would induce more conservation at peak use and price times.
- The energy and economic savings from real-time pricing would be significant.
- Instituting real-time pricing for large commercial and industrial users would cost about \$30 million but result in savings that would outweigh the cost in the first week or two of the program.

- The main effect of real-time pricing would be to reduce the total payments to generators in the wholesale- electricity market.
- The absence of a system with economic incentives to foster conservation has created a system that is more costly for *all* consumers.
- The biggest effect of real-time pricing would be to reduce the risk of rolling blackouts and reduce the wholesale price of power, which ultimately is paid by all customers in the system.

## Numbers and Costs

To implement real-time pricing for all customers in the areas affected by electricity deregulation in California would require installation of 10 million meters.

However, only 18,000 new meters would be needed if this approach were confined to major industrial and commercial users – those consuming at least 200 kilowatts in the peak months of summer.

Installing meters costs between \$200 and \$1,000 per meter, depending upon the technologies used. This means that real-time metering would be less cost-effective for smaller users.

Perhaps installing real-time meters at residences could be a long-term rather than short-term goal in the state. The experience with the "20/20" program indicates that real-time pricing, if expanded to the residential sector, would have huge benefits and that major reductions in peak demand and electricity bills would result from it.

It also should be noted that Californians responded to a threat of rolling blackouts and the inducement of rebates for conservation by voluntarily using far less energy than had been anticipated this summer.

## Conclusion

Almost all empirical evidence shows that commercial and industrial customers would respond to energy prices based on hourly use. Even a modest response could significantly reduce wholesale energy prices at times of capacity constraints.

Spot power markets will continue to operate in some form in California. Prices will vary on a daily and hourly basis, and occasionally supplies will tighten in the face of strong demand. Substantial evidence indicates that prices are the most efficient method for rationing resources under such market conditions.

Real-time electricity pricing would signal customers when power is costly. It would provide incentives to use power only for its most valuable applications during those times. In so doing, it would free up resources and reduce pressures on wholesale prices.

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