Electricity Markets Q&A

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In a market where consumers are able to choose between different retail suppliers, if the consumers can change the next day, month, or year, how are suppliers going to contract the generation capacity to meet such changing demand?

This question assumes that retail suppliers only have long term power contracts, which gives them no flexibility to serve a changing demand. In reality, retail suppliers have a portfolio of contracts that give them much flexibility.

In addition, retail suppliers offer a variety of contracts to customers, including variable rate and fixed rate contracts, which allow them to pass on to customers the cost of their long term wholesale contracts and the risks of buying from the spot market.

I will review first the different types of contracts offered to customers. Next I will briefly discuss the power trading strategies available to a retail supplier to optimize his portfolio and reduce his risk exposure.

What are the new risks for the retail supplier in a deregulated market?

The main risk is the volatility of wholesale market prices and fuel prices that affect energy prices. To hedge this risk, the retail supplier will acquire a portfolio of contracts with different durations.

If the retail supplier has a surplus of contracted capacity, he can sell the power that is not needed to serve his customers demand in the spot market or real time in the balancing market. The price at the time of the sale may be lower or higher than the price he paid. If lower, he will have a loss. If higher, he will have a gain.

If the retail supplier has a shortage of contracted capacity, he can buy the power he needs in the spot market or real time in the balancing energy market. Here again, there is a possibility of loss or gain.

A retail supplier that relies too much on spot purchases or balancing energy purchases runs a high risk, as those prices can be very volatile and spike to very high levels that could drive a retailer to bankrupcy in one day.

The different types of contracts offered to residential customers

Duration: The retail supplier can offer variable rate contracts (day to day) and fixed rate contracts with different durations (3 to 24 months)

The variable rate contracts have lower cost per kWh ($.08 to $.09/kWh), but the cost may change from one day to the next to reflect changes in wholesale market prices. The retail supplier buys power in the spot market to serve these customers, and the customer bears the risk of spot market price volatility.

The fixed rate contracts have different durations, from 3 months to 24 months. There is a penalty to the customer for terminating the contract early.

The longer the contract, the higher the cost per kWh ($0.11 to $0.14/kWh): the customer pays a premium for price certainty. The supplier bears more price risk, that's why he charges more. However, the supplier has tools available to manage such risks.

The different types of contracts offered to residential customers

Time of Day: the retailer can offer different prices corresponding to different times of the day. Under this scheme, energy consumed at night is cheaper, and energy consumed during the peak hours can be very expensive.

The different types of contracts offered to Industrial customers

Interruptible contracts: The retailer can offer a lower price in exchange for the right to interrupt the customer when real time prices in the balancing energy market peak.

Indexed or market based pricing: The retail supplier can offer rates that are indexed to spot or balancing energy prices

Buy-back rates: the customer agrees to sell its contracted energy back to the retailer, who can in turn sell it in the Balancing market when there is a price spike. The customer and the retailer split the profit.

If the consumers are able to choose between different suppliers, the signal to attract large and efficient power plants seems to go away. For example, if the supplier contracts with a 1 MW plant, it will be less efficient than if he contacts with a 100 MW plant.

Answer:

The question assumes that the retail supplier contracts with a power plant for the total amount of power he needs to serve his load, and the power plant has to sell all its output to that supplier. In reality, the retail supplier has a portfolio of power contracts, he can negotiate contracts with a variety of Power Marketers or Generators who also sell to other retail suppliers. Therefore the size of a power plant is not an issue.

Typically, the Power Marketer (wholesaler) will have a portfolio of power contracts with different generators. The retail supplier will shop around with different Power Marketers to construct a diversified portfolio of contracts that reflects the preferences of its customers: he will have 3-month contracts, 6-month contracts, 12-month contracts, etc. and he will also buy on the spot market. With a well diversified portfolio of contracts, the retail supplier is able to serve a changing customer load and manage his risk.

Trading Strategies for Portfolio Optimization

Assume a retail supplier who has a diversified portfolio of contracts to serve a changing customer load. He can further increase his flexibility and reduce his risk by using a number of short term trading strategies.

These strategies are possible because in most electricity markets, a day ahead market and a real time market have been formed, and there is a difference between the day ahead market price and the real time market price.

For example, assume that a retail supplier has over-contracted. Option 1: He can sell the difference between the contract amount and his customer load in the balancing market in real time. Option 2: he can estimate the load he will have to sell the next day, and sell the difference between the excess contracted amount and the estimated load in the day ahead market. If he waits until real time, he is exposed to price risk, as there is much more volatility in real time prices than in day ahead prices. If he sells in the day ahead, the risk is that the actual load may be higher than the estimated load, in which case he will have to buy in real time in the balancing market to serve the actual load. Some studies have shown that Option 2 is a better strategy to minimize risk.

Is there a possibility that the Transmission and Distribution company (owner of the wires) faces competition, or is there only one company that provides wire service?

Answer:
In Texas, the Transmission and Distribution companies are large companies that have a monopoly in their service areas, and as a result they continue to be regulated utilities whose tariffs are subject to review and must be approved by the Public Utility Commission.

It is possible to de-regulate a transmission company, but this would require that the transmission customers have a choice of transmission options. In most cases it is difficult to imagine having a choice of transmission options, since it would mean duplication of the transmission system. However, it is possible that in some circumstances, a Power Marketer could have a choice of buying from one location that would require using transmission service from Company A, or from an alternative location using transmission services from Company B, or that Distributed Generation might increase the competition for wire services. Thus, in some cases where transmission congestion is severe, the regulator may allow a transmission company to charge market rates as a way to encourage the building of new transmission lines. This is the case in New York City.

Questions?