IssuesLetter

IRP and Competition

The passage of the Energy Policy Act of 1992 (EPAct), which embraces both increased competition and greater reliance on integrated resource planning (IRP), has fueled a discussion on whether IRP and competition are compatible. This question is not new. It has been before regulators and utility planners since Congress increased competition in the electric industry through passage of the Public Utility Regulatory Policies Act of 1978 (PURPA). In the fifteen years since PURPA was enacted, utilities across the country have lowered the cost of providing energy services by successfully combining the elements of IRP and competition. EPAct now codifies this synergy.

Where effectively pursued, IRP has provided the structure for considering the broadest range of energy resource alternatives and finding the least costly mix of options to meet energy service needs. Competition has provided the mechanism to ensure that the options considered in IRP are as inexpensive and varied as possible. This paper examines how IRP and competition have evolved in the wholesale competition arena, presents examples of existing retail competition and offers a framework for considering what some see as the next step for retail competition -- retail wheeling.

Putting the IRP Principle to Work

In exploring the relationship between IRP and competition, consider first that the fundamental principle of IRP is to identify, analyze and acquire cost-effective resources, namely resources which lower the long-term cost of energy services. The process is not simple. If it were, all that would be necessary would be to compare prices of different resources and to acquire those with the lowest price tag.

Prices, however, tell what a resource *costs,* not what it is worth. For example, compare a photovoltaic (PV) system that produces power at the cost of 10¢ per kWh to a coal plant that produces power for 5¢ per kWh. Clearly one source of power costs twice as much as the other, but given the operating characteristics of the two resources the 10¢ per kWh PV may be more valuable to the utility than the 5¢ per kWh coal plant. This could occur if the PV's output were largely on-peak or if installation of the PV also reduced transmission and distribution (T&D) costs. IRP is the analytical tool which can determine whether the advantages associated with the PV facility are sufficient to overcome the 5¢ price premium.

IRP, when properly implemented, identifies what a resource is worth and compares it to what it costs. A resource is desirable to acquire (build or buy) whenever its cost (or price) is less than it is worth to the utility. The worth of a particular resource is equal to the utility's avoided cost, taking the specific characteristics of the resource in question into account. IRP considers all feasible supply and demand-side resource options and selects a mix that minimizes overall costs.

The benefit of IRP is that it allows very different resources -- from lighting retrofits to photovoltaic units to a utility-owned and operated gas fired turbine to a non-utility biomass facility -- to be compared in order to decide which are most cost-effective for a given utility at a given time. Because of the disparate nature of these resources, an analysis must include all related costs for each potential alternative. When conducted in this manner, an IRP analysis reveals which resources offer the to greatest value, net of costs, to a utility and its customer.

Under current cost of service regulation, once a resource is acquired, consumers pay the cost of the resource which, if IRP is done right, should be less than the worth. Of course, even when IRP is done right if the future unfolds differently than expected, some resources may end up costing more, not less, than they are worth. To prepare for this possibility, good IRP should include a thorough risk analysis to try to minimize the likelihood and magnitude of such undesirable outcomes.

IRP and Utility Competition

Evaluating competing resources has always been at the heart of the IRP process. In the absence of broader market competition, the utility conducts an IRP analysis of the demand and supply resources it views as being available and produces a plan that optimizes those resources at the lowest total cost. Unfortunately, focusing only on those resources within the utility's control precludes other viable and potentially valuable resource options that may further reduce costs.

Adding Wholesale Competition

The addition of wholesale market competition then is quite compatible with the IRP framework. In fact, 36 states have already benefitted from the expanded number of resource options provided when market forces are brought into the IRP process.

When considering market competition, the utility first conducts its in-house analysis and develops an optimal mix of cost-effective, utility-initiated energy resources. However, instead of immediately acquiring those resources, the utility adds a step; it turns to the market and asks if anyone can offer a project that lowers the utility's costs. Here, using competitive bidding, negotiation, or both, the marketplace is used to see whether resources are available that can reduce costs. In other words, the market is used to see if anyone can beat the utility's avoided cost. A market system that offers resources more cheaply than the utility produces a lower overall cost which is then reflected in retail rates.

> Avoided cost analysis must be done carefully. Avoided cost does not mean the cost of the next utility plant or even a single figure such as 5¢ per kWh. Avoided cost, instead, reflects the cost savings associated with the specific characteristics of the resource being considered for acquisition.

Competition at the wholesale level was introduced into the electric industry at about the same time as IRP when it became clear that economies of scale no longer favored utility construction and environmental impacts of large, centralized plants. Non-utility

generators (NUGs) have offered economic and environmental alternatives to large, centralized facilities as well as a keen interest in participating in the competitive process. Utilities have frequently been overwhelmed by the response they have received to their solicitations. It has not been unusual for a utility to issue a request for proposals and receive bids for projects totalling 10--20 times the needed resources. Competition has brought more players into the energy service business and in doing this, has tapped both expertise and capital. It has driven innovation and increased diversity into an industry that was ripe for it, while offering consumers and utilities new ways to spread the risks inherent in resource acquisition.

States which have successfully incorporated this wholesale competition have seen:

- Lower utility and consumer costs
- Greater diversity of resources
- Reduced consumer risk

EPAct attempts to expand upon this successful experience. This is done by giving wholesale power providers broad access to the transmission grid and, in effect, designating the Federal Energy Regulatory Commission (FERC) as the enforcement agency for open transmission.

Market Competition at the Retail Level

Retail competition already exists. Electricity directly competes with natural gas, oil and other fuels for a broad variety of customer end uses. Customers will and do switch from one fuel source to another for heating or cooking to lower their energy bills. Utilitysupplied electricity also competes with power produced directly by customers on site. Industrial customers and even some commercial customers have long had the choice of meeting all or some of their electrical needs through selfgeneration at power plants, large and small, that they own and operate themselves. Electricity supply also competes with energy efficiency on the customer's side of the meter. Customers can and do choose to conserve electricity by installing their own, more efficient office or production equipment or by improving the efficiency of their buildings. Most of these retail choices have existed for a long time, but in an increasingly competitive economy customers have become more aware and willing to act on these choices.

Using Rate Design to Encourage Economic Resource Decisions

It is important to understand that these forms of retail competition are very much influenced by utility and regulatory ratesetting policy. Retail rates that are "too high" will encourage consumers to invest in too much energy efficiency, fuel switching or cogeneration. Conversely, retail rates that are "too low" will result in too little consumer investment in alternatives to utility controlled energy supplies. IRP tells us that utilities minimize costs by using longrun avoided costs as the touchstone of value. Similarly, regulatory policy can be crafted to encourage consumers to invest in cost competitive alternatives but discourage investment in noncosteffective options, by tying rates more closely to these same longrun avoided costs. In some cases, the ability to set all rates at avoided costs will be limited. If so, then particular attention should be paid to those

components of rates which most affect customer decisions. These include timeofuse rates, inclining block rate structures and cogeneration deferral rates.

Retail Competition through Retail Wheeling

Retail wheeling is a form of retail competition which has received increased attention. Under retail wheeling, rather than pay the existing retail prices for electricity, customers have the option of shopping around for the best deal for themselves. In doing this, they pay the local utility a retail wheeling rate for T&D services and buy unbundled electricity generation service (capacity and energy) from a different supplier. The supplier could be a neighboring electric utility, a NUG, an electricity broker or an industrial firm's own cogeneration facility located at a different site.

The clamor for retail wheeling is driven by retail rates, not marginal supply costs. As a result, retail wheeling discussions are most heated in regions where retail power costs are high and the market costs of wholesale power are low. This situation has occurred in many parts of the country for a variety of reasons. Chiefly:

- cost overruns at utility-constructed (generally nuclear) plants
- costs associated with abandoned plants (again generally nuclear)
- excess capacity caused by the recession and lower than expected demand for power
- low oil and natural gas prices, resulting in low wholesale market prices

While these are the cost conditions that frequently make retail wheeling attractive to large customers, they are the same conditions that often make retail wheeling economically undesirable.

If wholesale competition is functioning well, the utility will already be acquiring all cost effective supplies, and there is very little chance that retail customers will find resources that offer additional system cost savings under a retail wheeling framework. If the utility is taking advantage of wholesale competition for new resources, then it is unlikely that new supplies identified by customers will beat the utility's marginal supply costs very often or by very much, and as a result retail wheeling will yield little, if any, economic benefit.

Retail wheeling has raised a number of concerns, one of the most prominent being that it is a pretext to shift costs from large electricity customers to smaller users, without producing any benefit to customers as a whole. Given that large electricity users have generally been the primary proponent of

Additional Problems with Retail Wheeling

Policy makers considering retail wheeling need also to resolve the following issues and questions:
1. The conflict between retail wheeling and good environmental policy.
2. The conflict between retail wheeling and utility investments in DSM.
3. How will cost recovery be configured?
4. Will retail wheeling really broaden resources choices?
5. Can the local utility avoid an obligation to serve a customer who returns to the system. If not, will other customers bear this cost?

retail wheeling, this concern is a reasonable one. Retail wheeling is clearly undesirable unless it is structured in a way that reduces, not simply shifts, costs. Cost reductions can only occur when the wheeling customer is able to acquire power more cheaply than the utility could acquire it.

One key to constructing a rational retail wheeling framework that is consistent with IRP lies with the retail wheeling rate (RWR). Too often, retail wheeling discussions assume that the charges for the retail wheeling services are set by looking only at the cost of the unbundled T&D services and do not consider other unavoidable utility costs. Limiting wheeling costs to the cost of T&D services almost always leads to retail wheeling charges that are quite low relative to the overall retail rate. Typically, these rates encourage uneconomical power-purchase decisions because the combination of these low wheeling rates and short-term market prices for electricity will probably be less than either retail rates or long-term avoided costs of electricity.

Instead retail wheeling rates should be priced to encourage wise economic decisions and discourage poor ones by including all of the unavoidable utility costs. As has already been discussed, this is the same rationale used when setting cogeneration deferral rates. To do this, the RWR should equal the prevailing retail rate (RR) minus the utility's relevant marginal supply costs (MSC), as follows:
RWR = RR - MSC Relevant marginal supply costs are the incremental, out-of-pocket costs needed to provide energy and capacity to a particular customer over the time period that the customer seeks retail wheeling services.

The purpose of this approach is to encourage retail wheeling when it lowers total costs and to discourage it when it merely reduces the customer's current rate but does not lower total system costs. In setting the retail wheeling rate in this manner, the customer faces two separate charges. The local distribution utility charges the RWR described above, and the new supplier of kilowatts and kilowatt hours imposes separate charges for their services (SSC). The customer's new retail rates (NRR) can be expressed in the following formula:
NRR = RWR + SSC

The question becomes, under what conditions will the customer's NRR be less than his original retail rate? After all, it is only when the new rate is less than the old rate that the customer would have a financial interest in pursuing retail wheeling options.

Rearranging the formulas shows that NRR is less than old retail rate *only* when SSC is less than MSC. In other words, using this retail wheeling framework results in an economic benefit to customers engaging in retail wheeling services if, *and only if,* their new supply-side cost is less than the local utility's marginal supply cost.

Conclusion

Competition at the wholesale level has already proven to be a powerful and efficient way of lowering energy service costs. Expanding wholesale competition with well thought out systems can continue to provide substantial benefits to consumers and should eliminate most of the need to consider retail wheeling. IRP offers a dynamic and economically sound means of adapting to these changes in a way that assures a viable, competitive industry and protects the interests of customers.

Useful Reading

The following papers can be obtained through The Regulatory Assistance Project by calling 207-582-1135:

Cavanagh, Ralph. 1993. "The Great 'Retail Wheeling' Illusion -- and More Productive Energy Futures." Prepared by the Natural Resources Defense Council.

Cohen, Armond. 1993. "Retail Wheeling and Rhode Island's Energy Future: Issues, Problems, and Lessons from Europe." Remarks Presented to the Retail Wheeling Subcommittee of the Rhode Island Energy Coordinating Council.

Moskovitz, David et al. 1993. "Future Utility and Regulatory Structures: If You Don't Know Where You Are Going Any Road Will Get You There." Prepared by The Regulatory Assistance Project.

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