Demand Response Resource Providers Should be Allowed Participation in the Energy Markets as Price Takers

Position Paper
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Principles

- **Demand Response Resource (DRR) markets should be designed to foster entry and eliminate barriers.**
- **DRR should be allowed participation in energy and ancillary service markets on an equal footing with generators.**
- **Payments to DRR must compensate for the value provided in the energy marketplaces. This includes:**
    1. Locational value
    2. Planning value
    3. Energy value- Reduces clearing prices
    4. Capacity value
    5. DRR displaces the need for much more expensive transmission and generation
    6. Reliability and dispatch value
    7. Relieve congestion
    8. Reduces: market power, need for mitigation, need for price caps-makes markets more competitive with less onerous rules
    9. Decreased system losses-increases transmission and distribution efficiency

DRR Participation in Energy Markets as Price Takers

The current ISONE Load Response Program allows DRR, on a voluntary basis, to curtail when ISONE forecast prices to be $100/MWh or higher (class 2). Such DRR providers are paid the clearing price (ECP) and allowed to keep energy savings from the curtailment. This program, therefore, allows DRR to be price takers for the times when the program is called. This program was designed to help prevent price spikes.

The industry is considering how best to evolve DRR participation to optimize the value DRR can bring to the energy, capacity and ancillary services markets. DRR should evolve from emergency response and price spike insurance, its first applications, to full and equal participants in all electric marketplaces. The discussion below on the value of DRR fully supports this conclusion.

As a first step toward this goal, and particularly applicable in New England because DRR can already be price takers part of the time, it is recommended that DRR be allowed to be price takers in the energy market at any time. This recommendation applies to NYISO, ISONE and PJM as well as the northeast RTO. This will remove barriers to entry that exist in current ISONE DRR programs, particularly for distributed generation (DG) applications, and is justified by the extraordinary value DRR can have in electric markets.

Perhaps as important as value are the issues of fairness, removal of barriers and "mainstreaming" a fledgling DRR industry that many industry analysts say is vital for the survival of competitive energy markets. Right now the energy markets of all three northeastern ISOs allow generators to be price takers at any time. Generators do not have to bid in and be accepted but are allowed to start and be paid the clearing price for their generation.

For this reason alone, DRR should be allowed to be price takers at any time and especially if market design is to incorporate DRR into markets in competition with generators as is currently done in NY. DRR can and should be incorporated into the markets on an equal footing with generation.

This feature is not a new program or new market design but is a simple measure of including DRR as participants that can be easily and quickly implemented for 2002. Incorporating DRR in this manner eliminates many barriers to entry for small players who might otherwise not have the expertise to make bids or not want to develop in-house experts on energy markets. It is anticipated that companies might enter this type of market to see what it is like and then move over to the more secure bid-based markets for most of their resources.

Value of DRR

Locational Value

Distributed generation and demand response can very easily be located at load sites, in major urban centers, downstream of congestion and in locations that minimize losses. It can be located at major new load centers or possibly used to delay or eliminate the need for new distribution substations, distribution and sub-transmission facilities that would normally be required to serve growing urban load. Traditional major generating resources cannot provide this flexibility and value because they are difficult to site near load and because they exert a strain on transmission systems rather than provide relief as DRR can do (the clear example is new generation planned to be added in New York City that will cause significant transmission upgrades to ameliorate short circuit duty that traditional generating resources will impose on the transmission system).

An example of a practical application of distributed generation will be in lower Manhattan when the World Trade Center begins its re-build. There are many possibilities for this application of distributed generation that can minimize the extent and capital expenditures that Con Edison and its customers would otherwise have to make on substation, distribution and transmission facilities.

Planning Value

Power systems, even in the competitive era, must be planned to ensure that load growth can be reliably accommodated and to ensure that distribution and transmission facilities are adequate for delivery of energy to load. With markets designed to assure entry and access by DRR providers, planning engineers can assess DRR resources being planned and added to the system alongside traditional generating resources to determine if supply is adequate to meet load and if transmission and distributions systems are adequate for delivery of energy to load. The planning value of DRR amounts to an ability to "count" on the availability and performance of DRR similar to how generators are counted on.

Energy Value- Reduces Clearing Prices

DRR will reduce the clearing price for energy in the markets that it competes in or the markets where its resources offset the need for additional more expensive generation, or the need, in emergencies, to buy expensive external resources.

Preliminary results of price analyses in New York indicate that emergency demand response of about 3.5% of total load produces a 30% reduction in clearing prices in the real time market in one New York load zone. The amount paid to emergency demand response providers amounted to about $900,000 (based on a price of $500/MWh) while the savings to all customers in that zone based on reduced real time prices was $3.5 million. The payback is more than three times the price of the program and belies arguments that payment for this service is too high.

Capacity Value

As with energy, the presence of DRR resources in the auctions for installed capacity or the provision of installed capacity to meet reliability requirements will reduce the cost of the installed capacity product. Moreover, it will improve the competitiveness of ICAP markets thereby reducing the possibility of the exercise of market power.

DRR will provide ICAP in locations where shortages are more critical and where it is difficult to install traditional generating resources such as New York City and other major urban centers. With more control areas requiring that ICAP be deliverable, the locational nature of DRR provides extra value by ensuring that the resource is installed where it can easily be delivered either directly to load on the distribution system or where it can be easily delivered to major nodes on the transmission system.

DRR Displaces Expensive Transmission and Generation

New and viable DRR markets that induce entry should result in hundreds and even thousands of megawatts of DRR participating in those markets. Because DRR can locate easily just about anywhere, and given the proper markets and market price signals, DRR will locate near load on the downstream side of congestion and inside city load areas where traditional generation cannot. This optimizes the value of new resources whether or not it is demand response or demand resources such as distributed generation.

To illustrate, let us take the example of 1000 MW of new traditional generation in New York City versus 1000 MW of new DRR. The traditional large generator will need exceedingly difficult to get siting permits, will have to meet exceedingly difficult environmental restrictions, could be subject to restricted output based on emissions and

might induce the need for major transmission upgrades or, may require an entire new transmission line. On the other hand, DRR can be sited in many different locations, can be connected to either the distribution or the transmission system, will not require transmission upgrades or new transmission lines and generally lowers overall emissions compared with traditional generating resources.

Therefore, the capital expenditure for new traditional generation is much greater and the need for transmission upgrades is much greater than for DRR. The conclusion is that 1 MW of DRR is worth more than 1 MW of traditional generation.

Reliability and Dispatch Value

The reliability value for DRR is greater than for new traditional generation because it can be located downstream of congestion, it is dispersed throughout the distribution and transmission system, and it is located closer to load. In other respects, its reliability benefit is equal to traditional generation. It can provide ICAP as mentioned before. It can provide operating reserves, regulation, voltage support and it can be dispatched.

DRR Relieves Congestion

DRR, given proper market and pricing signals, will locate in most instances downstream of congestion. Further, DRR can be located in city urban load centers nearest to load and not only relieve congestion but create more room on the transmission system for imports. This provides much greater value than traditional generation that cannot locate in-city. Indeed, in some cases and in sufficient quantity, it will allow generation to be built remotely and its power imported over existing transmission lines without any need for upgrades.

DRR Reduces Market Power

The entry into energy markets and the development of significant DRR is critical to the development of workably competitive markets. DRR has more value in reducing the possible exercise of market power than the addition of new traditional generation or the addition of another traditional generation owner. First, DRR can be scattered across many hundreds and even thousands of customers whereby no one entity can exercise control. With traditional resources that is not true since multiple owners can act in collusion and new generators can act in concert with other generators to game the system for profit.

Second, most competitive markets rely not only on consumer choice in making purchase decisions, but also on the consumer ability not to buy at all. If the product is not good, does not work well, is made poorly, consumers buy competitor's products. If all products are priced too high, the consumer simply elects not to purchase at all. That is what DRR provides in an otherwise captive market for a product that is required in everyday life. DRR entities will carve out a niche of demand that will be elastic in real time where high prices can be avoided all together. This will check possible market power exercise by generators to a greater extent than the simple addition of more generators and more owners.

With more comfort in the competitiveness and stability of markets where DRR thwarts price spikes, more onerous controls on generators can be relaxed. For instance,

price caps and bid restrictions and New York's automated mitigation procedure (AMP) can be terminated. In turn, this promotes full generator participation in the energy markets since risk is reduced, and promotes new generator entry.

Decreased System Losses

DRR is the most efficient resource to add to reduce losses that occur on the distribution and transmission system when delivering electricity from generating stations that, more often than not, are located far away from load centers. DRR can be located nearby load, and, if priced correctly, can be targeted in areas to optimize distribution and transmission flows, reduce losses and increase interface transfer limits into and out of congested areas such as New York City.

Decreased and More Disperse Emissions

The extra value provided by DRR in this category is rather obvious. Demand response reduces overall emissions because it reduces the need for generation, and distributed generation, fueled by gas or clean technologies such as fuel cells, very likely will displace older, more expensive and more polluting generation. Moreover, DRR entry will be scattered over many customers and a wide geography. Its siting is not tied to major water resources or major fuel resources or major transmission lines or gas pipelines. The scattered nature of DRR will provide more disperse emissions overall compared to large single point emissions typical of medium and large generators.