

Summary and Highlights
ISO/RTO Council (IRC) DR Technical Conference
April 21 2008

This one-day conference was sponsored by the IRC and comprised two parts: a morning session focused on the joint IRC/North American Energy Standards Boards (NAESB) efforts to develop consensus standards and protocols related to DR; and an afternoon session focused on configuring small DR resources for energy and ancillary services markets.

Keynote Address

Commissioner Wellinghoff spoke about the vulnerabilities of a DR industry that is still fragile and dependent on system operators, LSEs and regulators for a stable enabling environment. He noted both what the industry needs and what it doesn't need. It needs: (i) Standardization and protocols that build confidence and reduce barriers to entering new regional markets; and (ii) Emerging technologies that open up new applications, such as plug-in hybrids that can provide real-time regulation services

What DR doesn't need is stories in the trade and general press about market manipulation and participant gaming. Commr. Wellinghoff suggested the FERC would be a better place to come with such allegations than the news media.

The Commissioner commended IRC and NAESB efforts to develop M&V standards, as they build confidence in the DR brand and product quality. He suggested that M&V needs to go forward at two levels – the traditional customer level, for verification and settlement reasons; and the system and network level, in terms of potential benefits (or impacts) of DR impacts on system requirements (LMP, reactive power requirements, frequency response). Towards this end he suggested a more comprehensive approach - MV&V, or Measurement, Verification, and Valuation, which would seek to maximize the revenues streams of a DR product based on network and system value-added as well as energy and resource adequacy value-added.

Morning Session Highlights

This session mainly served to present the early results of the collaboration between IRC members and NAESB. Rae McQuade introduced NAESB, which is an entirely voluntary organization devoted to developing a range of consensus standards covering the four quadrants of the energy industry (retail-wholesale; gas and electric). Based on interest and requests, NAESB has established a task force whose goals are to standardize DR vocabulary and concepts to enable easier regional market entry for DR providers and to lead initiative on DR measurement & verification standards for wholesale markets.

Eric Winkler (ISO-New England) and Paul Wattles described the DR M&V effort, which is developing a suite of M&V protocols appropriate to the requirements of each wholesale market in which DR seeks entry (e.g., energy, capacity, reserves and regulation). Efforts so far have focused on terminology and stock-taking of M&V

protocols already in use; however, draft standards have been promised by the end of the third quarter 2008.¹ The overall M&V development effort including the NAESB consensus process will take a full two years. The next meeting of IRC-NAESB collaborative group is late May in Holyoke, MA.

The morning concluded with a discussion of wholesale DR M&V issues by a panel that included Robert Bress (Comverge), Mike Gordon (ConsumerPowerline), Ruth Kiselewich (BG&E), and David Pickles (ICF). All the panelists stressed the need for M&V and other standards that are consistent across regional markets and across retail and wholesale DR programs. Some panelists also stressed the need for M&V consistency for DR and EE programs, especially now that ISO-New England allows EE to be bid into its forward markets. BG&E is particularly keen on retail-wholesale consistency due to their Smart Energy Savers Program, which starting in 2008 will install control switches, thermostats and smart meters on 450,000 households (50% saturation) across the BG&E service territory. BG&E may not rate base or expense this program if they are able to offset program costs by bidding the aggregated demand into PJM capacity, energy and AS markets. Ruth also mentioned the EmPOWER Maryland program, signed into law April 7 2008, which calls for 15 percent reductions in per-capita peak demand and energy use by 2015.

There was considerable discussion of which attributes of the ideal customer baseline are most important given the recent concerns about customer gaming and market manipulation. The standard list as presented by Eric and Paul (Comprehensible, Accurate, Flexible, and Reproducible) should be reformulated to include Integrity. This would recognize the reality that although the pecuniary impact of gaming is negligible, the political volatility and reputational risk is high. The issue of AMI and its potential M&V benefits was raised. The answer depends on the load impact of the DR product and whether a 15-minute premise-level meter was sufficient to accurately measure it. Several panelists expected the advent of AMI to open up mass market opportunities for DR and change the way that M&V is conducted on these market segments.

Afternoon Session Highlights

The afternoon session was focused on telemetry and communication schemes for small DR resources that would enable them to participate directly in wholesale markets. The motivators for this work are FERC Order 693 and EPAct 2005, which direct ISOs and RTOs to reduce unnecessary barriers to DR participation in Energy, Capacity, and Ancillary Service markets and to deploy technologies that enable broader participation by customers in wholesale markets.

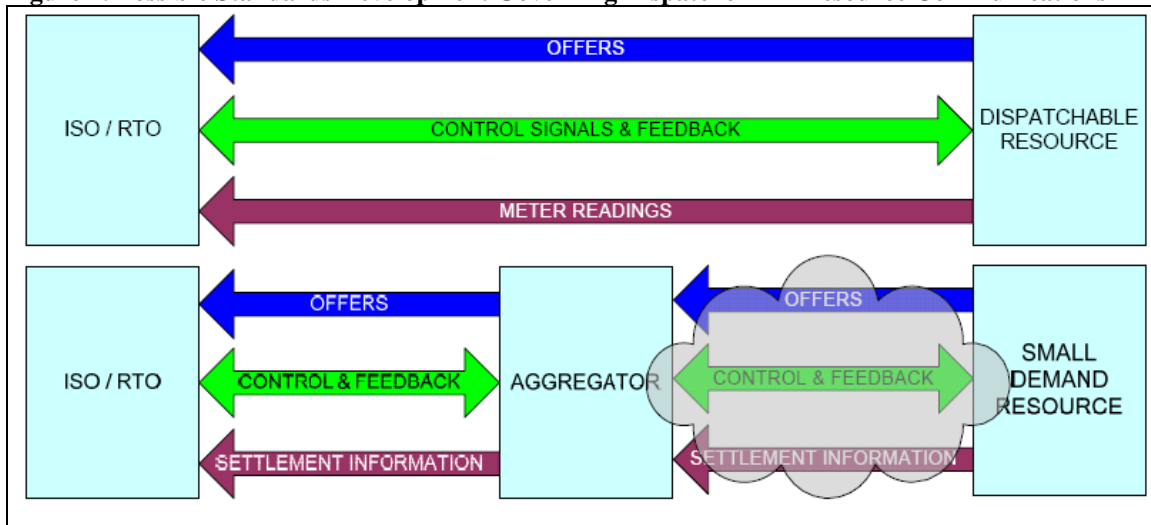
Walter Johnson of CAISO presented early results of an IRC effort to develop technical standards for low-cost, real-time two-way operationally-focused communications

¹ See: <http://www.isorto.org/atf/cf/%7B5B4E85C6-7EAC-40A0-8DC3-003829518EBD%7D/IRC-DR%20Technical%20Conference%20-%20Panel%201%20-%20M&V%20Standards.pdf>

between ISO/RTO control rooms and small resources.² To appreciate the issues a generalized model was developed for how dispatchers communicate with distributed resources of any type (loads or distributed generation). The model differentiates between autonomous DR (resources that sense the need for action and respond automatically), Auto-DR (resource polls a system bulletin board and undertakes action based on pre-programmed menu of responses), bulk-dispatched DR (operator broadcasts instructions to a class of resources), and precision-dispatched DR (two-way communications of status, instructions, and results).

The area of potential standards development would address the communications requirements between the dispatcher and aggregators and possibly include requirements for communications between the aggregator and the individual customers (See Figure 1). This work has not progressed beyond an appreciation of the technical issues and the standards development opportunities. Next steps would be determining the correct scope of standardization and exploring different standards-making strategies.

Figure 1: Possible Standards Development Governing Dispatcher-DR Resource Communications



The balance of the afternoon was a panel discussion of small DR telemetry and communications issues by Angela Beehler (Wal-Mart), Heidi Caroline (BPL Global), Chris Hickman (Site Controls), David Brewster (EnerNOC), and Kevin Wood (SCE). Angela Beehler described Wal-Mart’s long-standing DR efforts, which began in 2003 in response to their skyrocketing energy bill (\$2 billion). Wal-Mart installed “shadow meters” plus submeters on major loads (lighting, HVAC) and a controls system hooked up to a central dispatcher. Wal-Mart participates in 15 major wholesale DR programs. Their favorite is ERCOT’s ELIS program, which includes different load blocks that a customer can specify for bidding in load or responding to curtailment requests. Angela cited some particularly vexing retail-wholesale seams and discontinuities, including:

² His presentation may be found at: <http://www.isorto.org/atf/cf/%7B5B4E85C6-7EAC-40A0-8DC3-003829518EBD%7D/IRC-DR%20Technical%20Conference%20-%20Panel%20%20-%20Lowering%20Barriers.pdf>

- Recovery from a dispatched DR operation sometimes creates a new maximum or ratcheted demand, causing their retail bill to go up
- Meter pulse rates that vary from one jurisdiction to another
- Some LSEs (Michigan, NJ, MA) charging extra (\$60 per month plus a \$300 website access fee) for accessing the customer's own interval data.

As the panelists were drawn from the DR industry, they had concerns about standards that were overly prescriptive. Standards shouldn't negate product differentiation, or mask the fact that different DR resources have different capabilities. DR owners, like owners of generation assets, should have access to all available revenue streams; therefore, resources should not be restricted to only one user or application (e.g., they should be dispatchable for system emergencies, local congestion, and high prices, by different entities). Setting standards for communications between aggregator and end-user was particularly unpopular among these panelists.

Research Opportunities

The presentations and panel discussions suggest several possible research avenues that might add value to wholesale M&V and DR telemetry needs:

- Characterizing the parameters of DR program exposure to market manipulations and participant gaming, and recommending mitigation measures;
- Applications of different types of AMI designs for M&V, including how to maximize M&V opportunities when specifying the AMI system;
- Survey of the DR industry to identify retail-wholesale seams problems that affect DR participation, followed by efforts to remediate identified problems working with regional DR initiatives or NARUC
- Survey of communications and M&V approaches between aggregators and their customers.