Demand Response: What Is It?

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Overview

• Context and Disclaimers
• Amory Lovins and “Negawatts” (1984-1985)
• Along Comes “Demand Response” (2005?)
• Are “Negawatts” = “Demand Response”? 
• Are RTO DR Programs Producing “Negawatts”? 
• Does It Matter? 
• What Improvements/Reforms Are Necessary?
Context and Disclaimers

• **Timely**
  – Significant portion of capacity market reserve margin is from DR
  – Order 745 bringing more DR to energy markets
  – Texas and California looking at DR options

• **Many Important Wholesale Issues Besides DR**

• **Disclaimer** – Pending Federal DR Litigation
“Justice Scalia Meets Amory Lovins”

• What was the “original intent” of the Founding Father of “Negawatts”?
  – “Saving Gigabucks with Negawatts” (1985 PUF)
  – Interview with *Public Utilities Fortnightly* (2013)

• Key conclusion: “Negawatts” are inextricably linked to facilitating the deployment of more energy efficient technologies
By Contrast, Along Comes “Demand Response”

• Section 1252 of the Energy Policy Act of 2005
  – “time-based pricing and other forms of demand response...whereby electricity customers are provided with electricity price signals...”

• Section 529(a) of the Energy Independence and Security Act of 2007 (National Assessment)

• FERC Order 719 (2008)
Definition in DOE Report (February 2006)

• “Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.”

• Later reports pick up this expanded definition

• FERC Order 745 uses it plus DR “balancing” the same as generation
What Are We Getting In PJM Capacity Markets?

• **Demand Response** = “voluntary, temporary reduction in the use of electricity” and “a resource with a demonstrated capability to provide a reduction in demand or otherwise control load.”

• **Energy Efficiency** = “Typical EE projects are installation of lighting, refrigerators, air conditioners, motors, weatherization, and process improvements that exceed then current building codes, appliance standards, or relevant state or federal standards.” (Non-permanent measures do not count.)

• “Negawatts” = Energy Efficiency not Demand Response
May 2013 PJM RPM Auction

• Total Demand Response Cleared 12,408 MWs
  – 1/3 of the Reserve Margin (down from ½ in 2012)
  – Limited DR (10x6) = 9,850 MWs
  – Extended Summer = 2,470 MWs
  – Annual, Year Round Only = 88 MWs

• Year over Year Reductions Linked to Proposed Enhancements in DR Bidding Requirements

• Energy Efficiency “Negawatts” = 1,117 MWs
Does DR That Clears RPM Show Up?

- PJM Independent Market Monitor Report (December 2012)
  - DR clears base auction and then buys back in the supplemental auctions at a substantial discount
  - Raises the fundamental definitional question whether capacity markets produce physical delivery obligations or are merely financial transactions?
PJM Problem Statement (5/30/13 Meeting)

• “The combination of the growing amount of committed capacity resources being Demand Response and the increase in Generation retirements has resulted in a decrease in the installed generation reserve margin. As a result PJM expects more regular deployment of Demand Response in system operations.”

• Enhancements should be considered to make DR more like generation in dispatch, time requirements, and limits on Limited DR cleared.
Is This What Amory Lovins Had In Mind?
Back Up Diesel Generators As DR

• How much of DR is backed up with diesel or other “behind-the-meter” generators?
• EPA RICE NESHAP Final Rule (January 2013) effectively exempts BTM DR Generation
• Interaction between EPA and FERC rules will displace cleaner generation with Diesel DR
• “Rumford” ISO-NE FERC enforcement case shows interaction between back-up generation and baseline manipulation issues
How Best To Reform Wholesale DR? (assuming it is found to be wholesale)

• Best suited as an energy product, transition to Price Responsive DR (LMPs should reflect DR)
• To extent allowed in capacity markets:
  – should be single, annual unlimited product
  – “must-offer obligation” and comparable penalties
  – resource-specific offers, no hold-back
  – physical not merely financial commitments so must demonstrate ability and commitment to deliver
• Behind the Meter Generation Is Just That Generation, Not Demand Response
Others Have Raised Concerns/Issues

• Bipartisan Policy Center “Capitalizing on the Evolving Power Sector: Policies for a Modern and Reliable US Electric Grid” (February 2013)
• NERC’s Long-Term Reliability Assessments
• Issues Raised by Congress, Courts and State Commissioners (conflict between federal focus on DR and state focus on steel in the ground generation as in Maryland and Virginia cases)