New England Demand Response Initiative:
An Adventurous Journey with Lessons
Enabling Distributed Resources in the Mid Atlantic
Richard Sedano, The Regulatory Assistance Project
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Introduction

Regulatory Assistance Project

RAP is a non-profit organization, formed in 1992, that provides workshops and education assistance to state government officials on electric utility regulation. RAP is funded by the Energy Foundation, the US EPA and the US DOE.

Richard Sedano was Commissioner of the Vermont Department of Public Service, 1991-2001, and presently serves on the Montpelier Planning Commission

Working Wholesale Markets

An Electric Restructuring Objective:

- Demand and Supply working in sync

But demand side nearly absent in New England in 2001

- Price Spikes
- Market Power Threat
- Regional and Localized Load Growth
- Price Stability Concerns
- Resource Adequacy Concerns
- Stability Concerns
- Environmental Concerns

Big Idea for this meeting

- Incorporating demand resources is complicated, has practical challenges, is valuable
- This meeting is a good first step for PJM
- Remember to consider all this from the customer's point of view

The New England Demand Response Initiative

- PJM will follow its own path
- NEDRI and its lessons may be instructive

Roles in the NEDRI Process

A collaborative process

- Facilitated
- Technical Team
- Stakeholders

Facilitator and Technical Team

- Steering Committee Overseers
  - Regulators, utilities, ISO-NE, and…
- Facilitator
  - Raab Associates
- Technical Team:
  - The Regulatory Assistance Project

- Richard Cowart, Technical Director of NEDRI
- Lawrence Berkeley Lab
- Oak Ridge Lab

Stakeholders (30+)

- State PUCs
- System Operators
- State Environmental Regulators
- State Energy Offices
- State Consumer Advocates
- Non-Government Advocates
- Utility, Demand Response, Market Participants
- Federal Agencies

Process

- Discussion and Public Meetings
  - Plenary Meetings monthly
  - Sub-groups met as needed by phone
  - Public meeting with display opportunities to promote and educate prospective customers
- Framing Papers
  - Web site with everything available
  - http://nedri.raabassociates.org/
- More Discussion
- Draft Recommendations
  - Framing papers developed into report chapters
- Voting on each recommendation
  - Particular position of some state participants
- Objective: Consensus
- Minority views recorded

Budget

Cost: around $450,000
Time: around 16 months (significant time spent at beginning getting participants up to speed and at end resolving last issues)
Funders:

- ISO-New England
- US DOE
- US EPA
- NY ISO
- FERC

NEDRI Scope

- Address market barriers to all customer resources
- Propose coordinated policies and programs for retail, wholesale, transmission
- Raise awareness of demand response: its potential and its methods

Four Key NEDRI Themes

1. Broad View of Demand Response

- Short term (load management)
- Long term (energy efficiency)
- Pricing (influences customer actions)
- Distributed Generation (other longer term decisions)

2. Examine Links in the Market Chain (values ≠ compensation)

- *Wholesale* market rules
- *Transmission* tariffs
- *Retail* rate design

3. Identify and Mitigate Barriers

- Reveal value of DR to *customers*
- Align *utility* profits with cost-effective actions
- Support viable business model of *DR providers*

4. Challenge ISO-New England, FERC and the states

- Eliminate barriers to DR in every market venue
- Coordinate to link retail and wholesale incentives and price signals (and remember to consider the customers' perspective)
- Be creative – we have unraveled the historic franchise, we need new approaches to efficiency and reliability

NEDRI's Broad View of Demand Response Resources

"DR resources include all … modifications to the electric consumption patterns of end-use customers that are intended to modify the timing or quantity of customer demand on the power system in total or at specific time periods." *NEDRI Report pg. 6*

- Includes responses to reduce **capacity** and/or **energy** required to serve load plus ancillary services
- Main types: Short-term load response, Long term energy efficiency, On-site generation and CHP
- Promoted by FERC during the process

Restructuring does not resolve barriers to DR resources, and has not

- Breakup of the franchise:
  - Who is responsible for efficiency and load management?
  - DR provides several values at once – how can these fragmented values be assembled in the market, or by regulation?
- Historic market barriers to efficiency remain
- Supply-only bidding at wholesale
- Default service plans blunt cost and value signals to customers
  - And are supplied with short term contracts without much risk management
- Load profiling blunts incentives to retailers
- Reliability rules and ancillary service markets are not open to DR
- Distribution companies retail throughput incentive (barred from delivering efficiency and load management?)

Recommendations

- 38 Recommendations
  - Nearly all by consensus
- Options for transmission expansion and non-transmission alternatives remained contentious
- Five categories

1. Regional Demand Response Programs
2. Energy Efficiency as a DR Resource
3. Pricing, Metering and Default Service Reform
4. DR for Contingency Reserves
5. DR and Power Delivery (T&D)

Implementing NEDRI:

One estimate

- Energy efficiency could offset 30-50% of incremental load growth
- And DR and pricing can provide 300-1800 MW of resources
- Signals to build new generation are more value-accurate and stabilizing for the generation market if they reflect full participation from the demand side

LBNL estimate based on 2003 NEDRI report, not reviewed by NEDRI participants

	Mid-term (2007)	***Long-Term (2015)***
ISO-NE Peak Demand Forecast (MW)	***26,258***	***29,768***
Energy Efficiency Total	***500***	***2,450***
Building Codes	*0*	*700*
Appliance Standards	*500*	*1,750*
Enhanced SBC Funding	*?*	*?*
Short-Term DR Total	***220-440***	***440-1,100***
Emergency Programs	*200-400*	*400-900*
Market Programs	*20-40*	*40-200*
Load as Contingency Reserve	***10-25***	***60-300***
Dynamic Pricing	***50-200***	***200-750***

The Air Quality Story

- Environmental Regulators concerns
  - Demand response would activate uncontrolled emergency generators more often
  - Demand response would reduce the need for intermediate to run in spin-no load condition
  - Supported “short term” “long term” distinction

Selected NEDRI Recommendations:

Regional Emergency and Day-ahead/Price-based DR Programs

- Higher minimum payments; capacity payments to enrolled resources
- Lower entry barriers; greater bid flexibility
- Longer term commitments (up to 3 years)
- Address ease of consumers to participate

Many recommendations adopted or ordered by FERC

- Demand Response Working Group

Enrollment doubled 2002 to 2003 (to +400 MW)

Power Delivery

- Key Point: Strategic investments in DR can improve reliability and defer T&D upgrades
- Planning: Evaluate "on an even-handed basis" all reasonable solutions to grid needs: transmission, generation, and DR options
  - Look for ways to pilot this idea
- Investment: 2 views, plus news
  - Majority: "Efficient Reliability Rule" – only least cost reliable solution is eligible for regional funding support (all solutions considered)
  - Minority: Regional funding available for transmission only
  - We are in the midst of a transition from rolling costs of grid improvements into general transmission rates to allocating costs to more direct beneficiaries
  - News: SW Connecticut all-resource bid for 5 years

Pricing and Metering

- PUCs should investigate time sensitive pricing for default service customers
  - PUCs should bite the bullet, even though there will be winners and losers
  - Pricing may vary by customer size and meter availability
  - Options: real time, critical peak, inverted block
- Target efficiency to peak load uses
- Remove distribution company disincentives
  - Incentives, lost revenue adjustments, rev. capped PBR

Energy Efficiency

- Ratepayer support for Energy Efficiency
  - "to capture all cost-effective energy efficiency"
- Regional appliance/equipment energy standards
  - (could displace 25% of 2020 load growth)
- Update building energy codes and implementation
  - (could displace 10% of 2020 load growth)
- Regional coordinating council for EE design, cooperation and assessment (RSC?)

Outcomes

- Programs proved valuable restoring power after the August 2003 blackout; up to 130 MW load reduction, 90 MW average over 10 hour period
- Programs also valuable in January 2004 emergency situation (gas-fired units with interruptible fuel supply unavailable)
- SW CT all resource bid
  - Demand response and energy efficiency bids accepted
  - A one-time event for an emergency, or a pilot to be expanded in the future?

- Sixth sector in ISO-NE Governance structure for Alternative Energy

Lessons

- Reliability is critical
- Markets are important
- Those entrusted with reliability responsibility want control of their resources
- Markets and Reliability can work at cross purposes, at least in presence of imperfect rules
- Generators have little to like about demand resources
  - Though market stability might help them on Wall Street
- State and federal government engagement was very important
  - Assured a public policy overlay
  - Well-timed government direction very helpful to industry (avoid vacuum)
  - Included air quality regulators
- Demand response and demand resources are poised to make a significant contribution to reliability if the rules are reasonably fair simple, and stable
  - Alternative resource providers valued a venue that was not the ISO/NEPOOL committee process
  - Are wires companies not sufficiently motivated to use demand resources for system benefits?
- More longer term commitments would help
- Experiences from "away" provide useful perspective
- It is hard to think outside the box of our current market system
  - A special collaborative helps focus attention

Conclusions

- NEDRI effort successfully studied and addressed a broad range of DR resources and policy issues
- 38 recommendations directed at utilities, ISO, legislators, regulators
- Immediate Opportunities
- Improve DR programs
- Support energy efficiency
  - Consumer funded programs
  - Codes and Standards
  - Resource value driven procurement
- Improve rate design for regulated services
  - Matching prices to costs
- Reform regional transmission expansion policy
- Reform state electric tariffs
- Adopting NEDRI recommendations, 80% of 2012 load growth can be met with high reliability and low cost