



**FERC/RTO Training Session  
Institute for Policy Integrity  
New York University School of Law  
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N. Jonathan Peress  
Conservation Law Foundation  
Clean Energy and Climate Change Program



**“It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be....” Isaac Asimov**

June 8, 2011

# NTA's – What Are They and Why Do We Care

- NTA's are alternatives to regulated transmission solutions for reliability challenges
  - Include both demand side and supply side market resources
- RTOs favor transmission solutions
  - Like distribution utility (poles and wires) culture; suited to system planning paradigm
  - Least risky option
  - Security of relying on regulated utilities for solutions
  - Aversion to LCIRP – leave capacity decisions to market
  - Cost allocation and socialization
  - Lack of experience with demand side measures
  - NTA's not able to satisfy all system needs
  - Longevity of NTA solutions?

# Overreliance on Transmission Solutions Creates Problems

- Replacing at-risk generation with transmission may seem cost effective now, but may not be on the long run
  - diminish desirability of needed transmission as we add more wind and renewables
- Well placed NTA's are often more cost effective
- Rate-based transmission solutions diminish market effectiveness
- Environmental Impacts - EE and DR reduce impacts

# What Are Demand Resources (DR)

- Installed measures resulting in additional and verifiable reductions in end-use demand on the electricity network
  - Energy efficiency
  - Load management (e.g., HVAC)
  - Distributed generation
- Compensates electricity users for reducing use when reliability is at risk
- Serve to reduce the peak demand in the system and maintain operating reserves

# Demand Resources (DR) cont.

- Displace load permanently, over pre-defined hours or in real time when dispatched by the ISO

# Economic Case - Why Should Demand Resources Participate in Market

- A small amount of demand participation in markets can go a long way in mitigating peaks, lowering costs, and ultimately lowering electricity prices to final consumers
- For less than 60 hours per year, New England needs an additional 2,500 MWs of capacity to serve load; the highest cost hours
- 2009 Synapse Modeling - When demand participates in the market during hours with top 5% of clearing prices, reductions of more than 50%

Actual June 24, 2010 – Activation of Real Time DR ~670 MW contributed to a drop in energy prices from \$270/Mwh to \$65/Mwh - in one hour

DR provides operational flexibility enhancing economic efficiency

# Environmental Case for Demand Resources

- Highest cost resources are generally the highest emitting resources
  - Peak hour decrement analysis - Top 500 MWs increase emissions (as compared to marginal emission rate) by 1.4 lbs/Mwh to as high as 4 lbs/Mwh
  - These are the least efficient units; safe assumption is they emit high rates of CO<sub>2</sub>.
- Decreased fossil fuel use
- 14,000 MWs at risk; they will be replaced by?
- Expansion of EE programs using market revenue

# DR in the ISO-NE FCM

- **Forward Capacity Market Background**

The Forward Capacity Market (FCM) is used to procure capacity to meet New England's forecasted demand and reserve requirements three years into the future

- The design of the FCM resulted from a Settlement Agreement signed on March 6, 2006 and approved by FERC June 16, 2006
- First FCA in 2008

- Generation ***and Demand Resources may participate in*** the FCM; Minimum size for FCM=100kW

# DR in FCM cont.

- **Measurement and Verification Plan** prior to auction
  - Collect, verify, report, store and audit data for each type of measure included in project description
  - Differs by DR type; must comply with market rules
- Adds complexity to system: 350 generators vs. 6000 DR providers

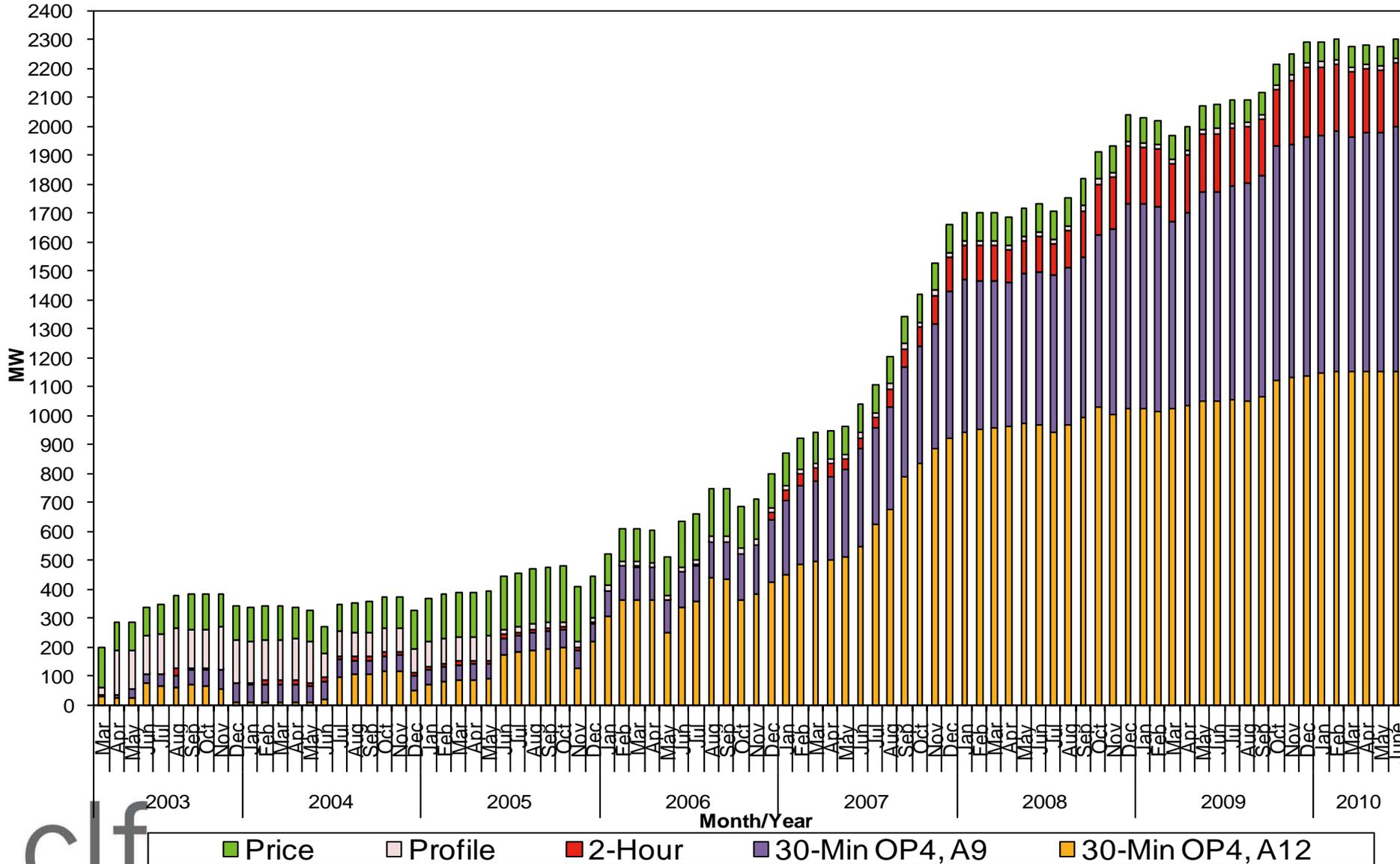
# ISO-NE FCM

- **FCA Requires 12-Month Capacity**
  - Can present challenge to **Seasonal Demand Resources (Seasonal DR) with seasonal** capability (i.e., higher capability in the summer than winter)

FCA allows such resources to

- Make a Combined Offer consisting of multiple Demand and/or Generation resources,
  - Participate in the monthly and seasonal Re-Configuration Auctions, or
  - Participate in a Bi-Lateral Agreement with another Project Sponsor
- **Thus far, approximately 80% of the DR MWs are from non-utility suppliers** such as energy services companies, third-party energy suppliers, equipment vendors and retail customers

# ISO-NE-- how far we've come.....



# What Do the Generators Think About DR

- Lower cost capacity – decreasing demand suppresses price
- ISO-NE FCM – Empire Strikes Back
  - Filed 2009 FERC protest claiming rates are not just and reasonable
  - Price effect of Out of Market (OOM) Resources
  - Risk: Offer floor price mitigation to prevent state supported resources from setting price or clearing per FERC's April Order
  - Solution: exempt certain resource categories from mitigation

# DR - FERC Perspective and Order 745 (March 15)

Compensation for DR resources at the LMP; appropriate when:

- 1) The DR response resource is able to displace a generation resource which assists the ISO/RTO in balancing supply and demand; and
  - 2) Payment of LMP for the DR resource service is cost-effective, as determined by the net benefits test.
- **Net Benefits Test:** Dispatching DR resources reduces the overall LMP because it displaces the need of alternative generation resources to meet demand. Therefore, dispatching DR is cost-effective when:  
the “**overall benefit of the reduced LMP that results from dispatching demand response resources exceeds the cost of dispatching and paying LMP to [DR] resources.**”

**Filings due September 2012 re: analysis of requirements and impacts of integrating DR**

# FERC Order 745 and FCM in ISO-NE

- ISO-NE anticipates that the solution to fully integrate demand response into the Energy Markets could be effective by June 1, 2014 – for the 2014-2015 Capacity Commitment Period (FCA #5)
- This is likely to require that all Real Time Demand Response Resources that clear in the Fifth Forward Capacity Auction (FCA 2014-15) submit daily offers into the energy market
- Under the solution, Real-Time Demand Response Resources will likely be dispatched differently than the dispatch in the current Market Rule – (tbd)

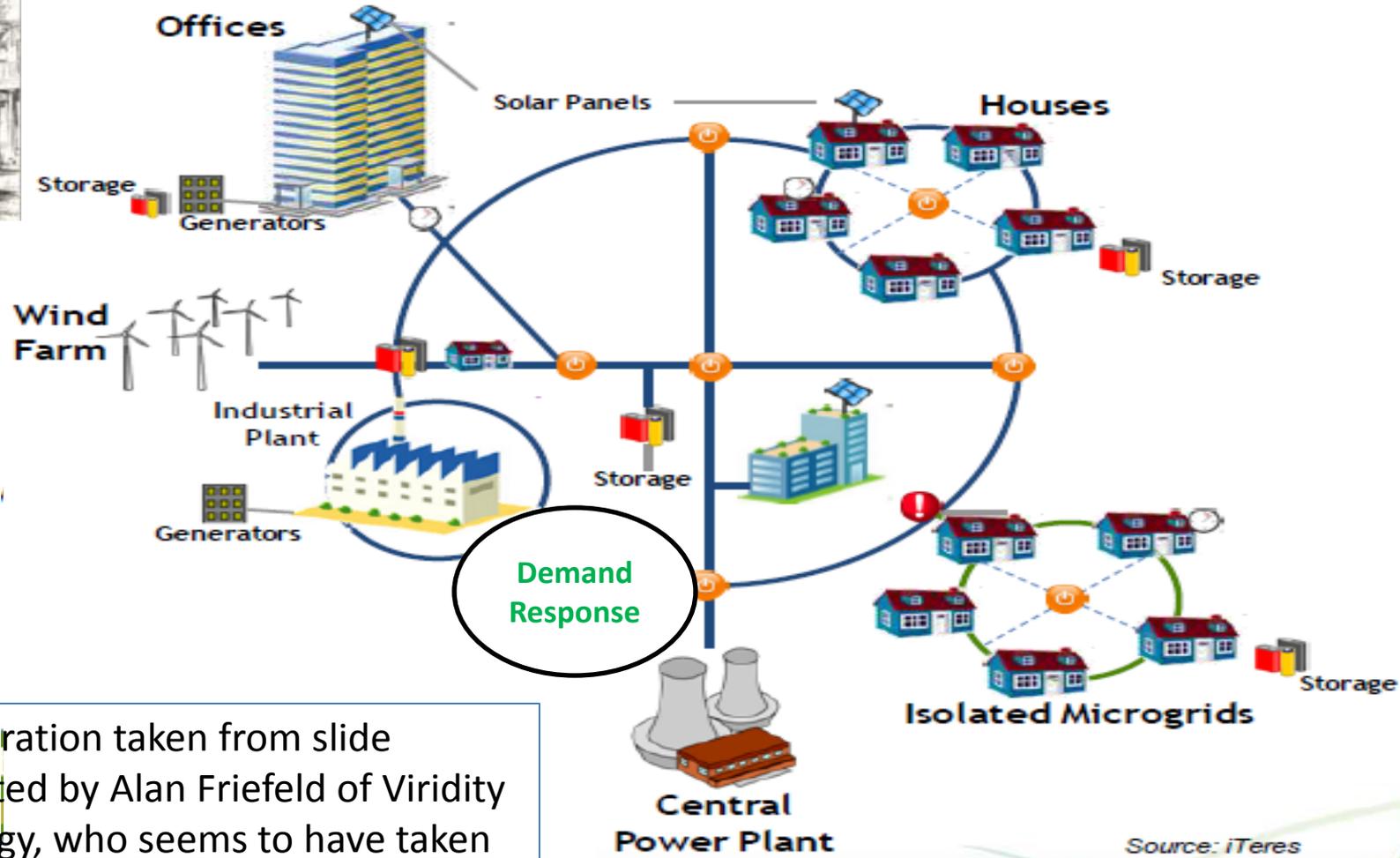
# Final Thoughts re: RTOs

- Rise of Demand Resources (Efficiency and Demand Response) and Distributed Gen (esp. CHP) in the markets is a powerful trend in the right direction
  - New markets: e.g., energy sales by efficiency, “frequency regulation” continue to appear
- Find your allies and develop coalitions to support expanded DR in markets:
  - States, and Consumer Advocates: on our side
  - Utilities: like lower capacity prices; not fond of NTA’s
  - Generators: fond of NTA’s; want higher capacity prices and less competition
  - Alternative Resources and Competitive Suppliers: May support increasing market prospects for DR

# Planning for a very different future . . .



## Future Power Grid



Source: iTeres

A sketch of the exterior of Edison's Pearl Street station.

Courtesy: Photographic Services of the Consolidated Edison Company of New York, Inc.  
[http://www.ieseeghn.org/wiki/index.php/Pearl\\_Street\\_Station](http://www.ieseeghn.org/wiki/index.php/Pearl_Street_Station)

Illustration taken from slide created by Alan Friefeld of Viridity Energy, who seems to have taken it from iTeres