Synapse Energy Economics, Inc.

History of EE in the FCM

Presented to ACEEE

1 October 2007

Presented by Doug Hurley

Energy System modeling, analysis, expert testimony, and stakeholder representation for…

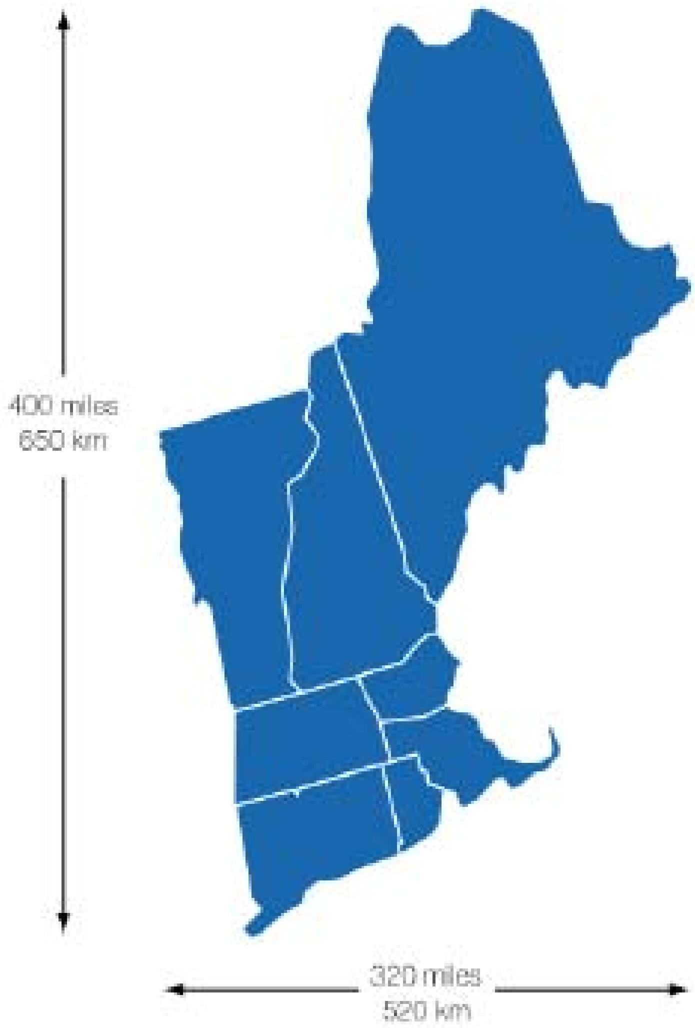
- Consumer Advocates and Public Interest Groups in more than 25 states
- More than 20 PUCs and Attorneys General
- Over 40 Environmental Groups and Foundations
- Energy efficiency and demand response providers

Overview

- History of Locational Installed Capacity (LICAP)
- Description of the Agreement on a Forward Capacity Market
- Energy Efficiency as a Capacity Resource
- Why This Matters

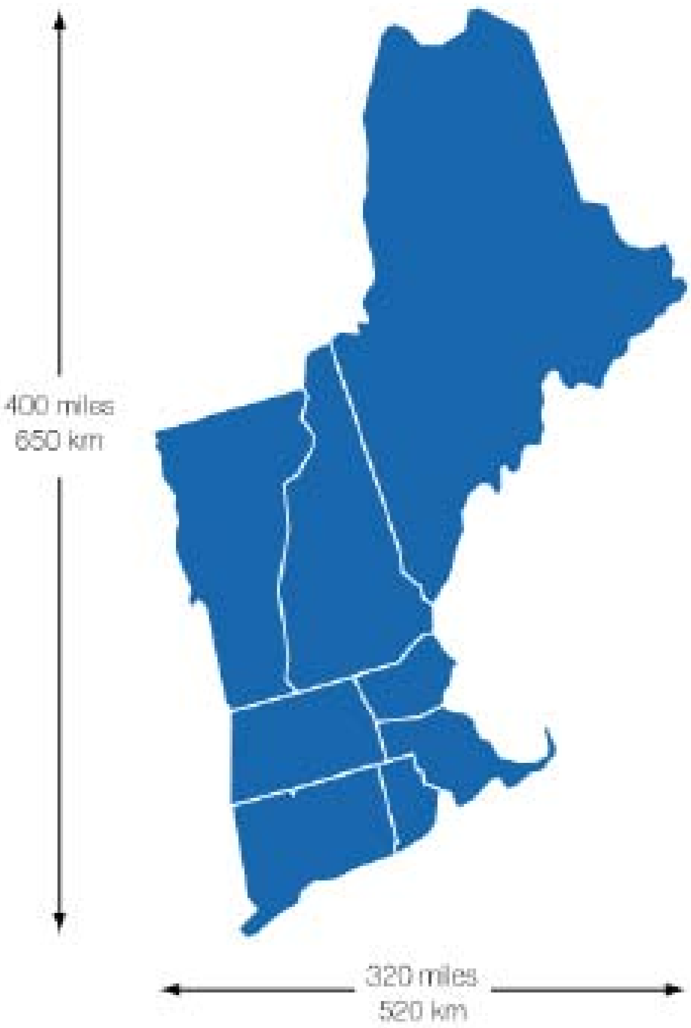
"This [is] groundbreaking work."
- Steve Cowell

New England



- 14 million people and 6.5 million electric customers
- 8,000 miles of transmission, with 12 ties to NY, NB, and Quebec
- 350+ generators
- 33,000+ MW of supply, including over 1,000 MW of Demand Response and over 1,500 MW of Energy Efficiency
- Peak Demand of 28,130 MW
- $11.2b energy market

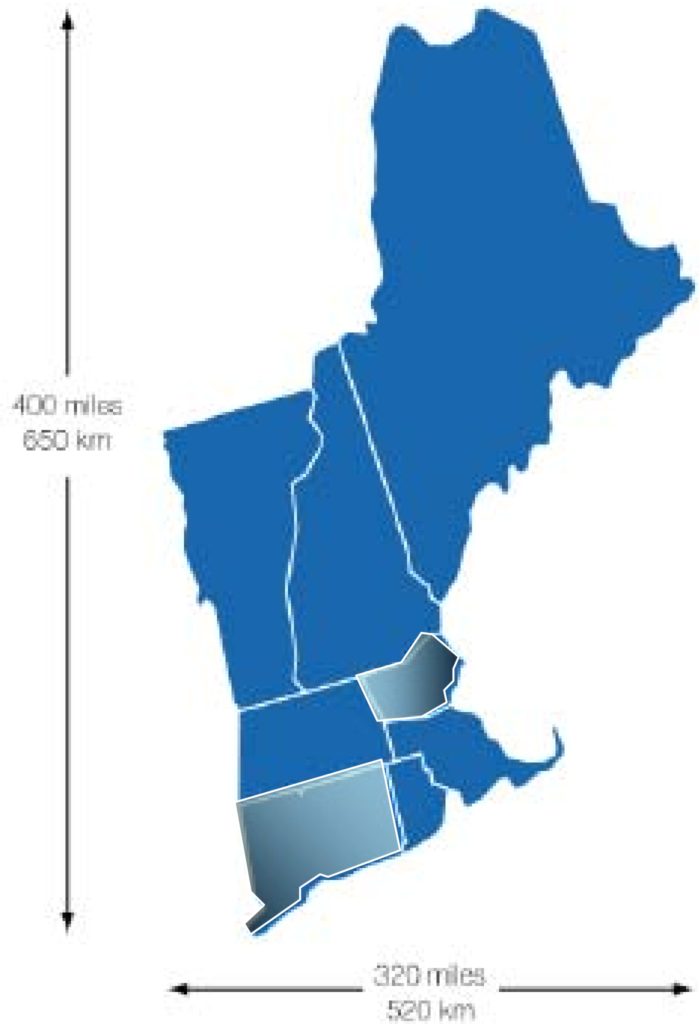
- RTO is ISO New England
- NEPOOL are market participants and stakeholders



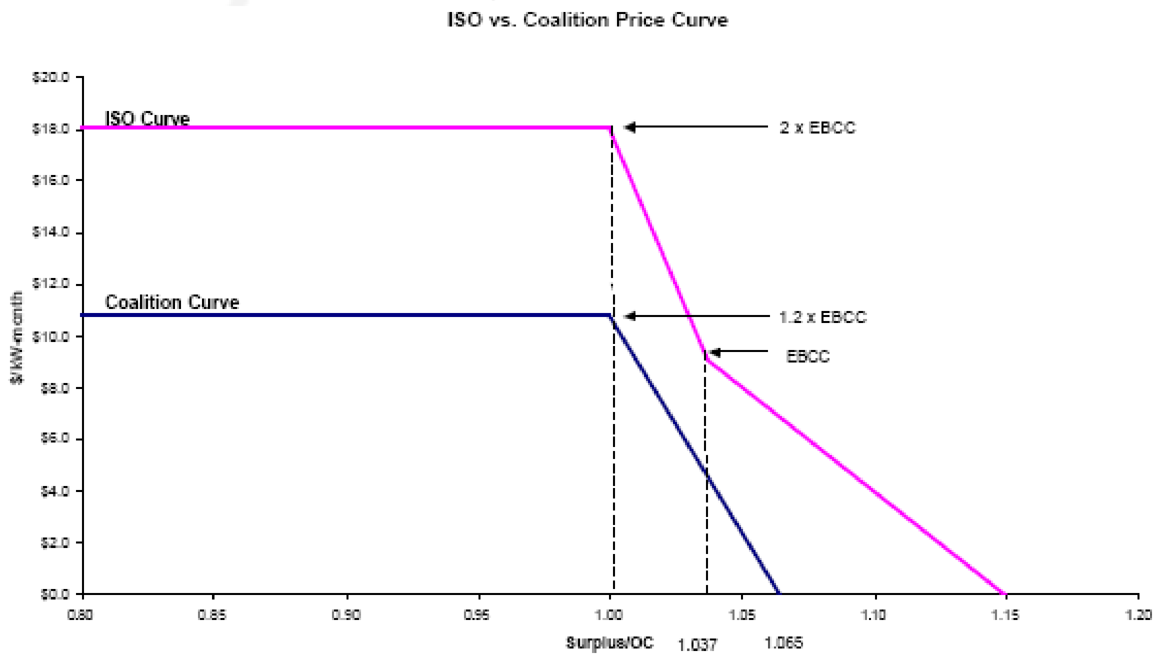
- Single region-wide market
- Monthly auction
  - 28,000 summer
  - ~22,000 winter
  - Lower in shoulder months
- Region long on capacity, prices very low (50 cents-$1/kW-month)
- Problem: RMR contracts

LICAP Proposal

- Long contested process
  - 2003 Devon Power RMR contracts
  - FERC directive to ISO New England (April 2003)
  - First LICAP filing in March 2004
  - Contested before a FERC ALJ
  - June 2005 decision supporting ISO New England and generators
  - FERC Oral argument September 2005
- Demand Response only
  - No Energy Efficiency
  - No Distributed Generation



- Annual market
- Demand Curve
  - Administrative price
  - Easier to game



- Settlement Judge appointed November 2005
- Settlement discussions November 2005 through February 2006
- Settlement Agreement March 2006
- Demand **Resources**
  - Demand Response
  - Energy Efficiency
  - Distributed Generation

Why Does This Matter?

- Additional Revenue for State Funded and Merchant Projects
- Demand Resources Save Money in the Wholesale Market
- Need to Meet Climate Change Goals

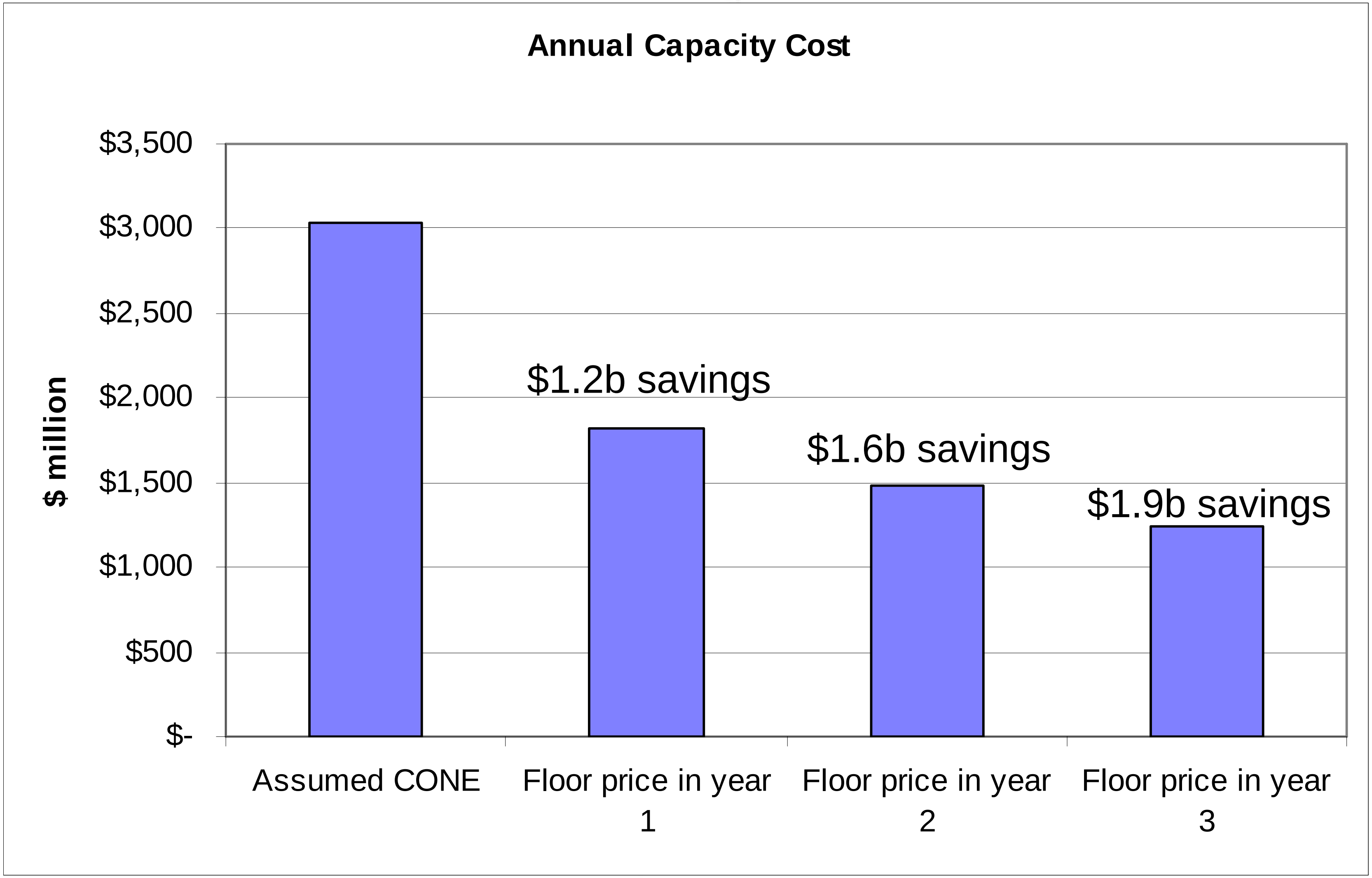
Potential Revenue

Hypothetical program with 10-year measure life

	Year	Size (MW)	Price	Revenue
Transition	06/07	5	$ 3.05	$ 106,750
Transition	07/08	5	$ 3.05	$ 183,000
Transition	08/09	5	$ 3.75	$ 225,000
Transition	09/10	5	$ 4.10	$ 246,000
FCM - 1	10/11	5	$ 4.50	$ 270,000
FCM - 2	11/12	5	$ 3.60	$ 216,000
FCM - 3	12/13	5	$ 2.95	$ 177,000
FCM - 4	13/14	5	$ 7.50	$ 450,000
FCM - 5	14/15	5	$ 7.50	$ 450,000
FCM - 6	15/16	5	$ 7.50	$ 450,000
		10-year Revenue		$ 2,773,750

Funds can supplement state-funded programs, enable merchant projects, …

Potential Market Effect



ISO-NE Scenario Analysis

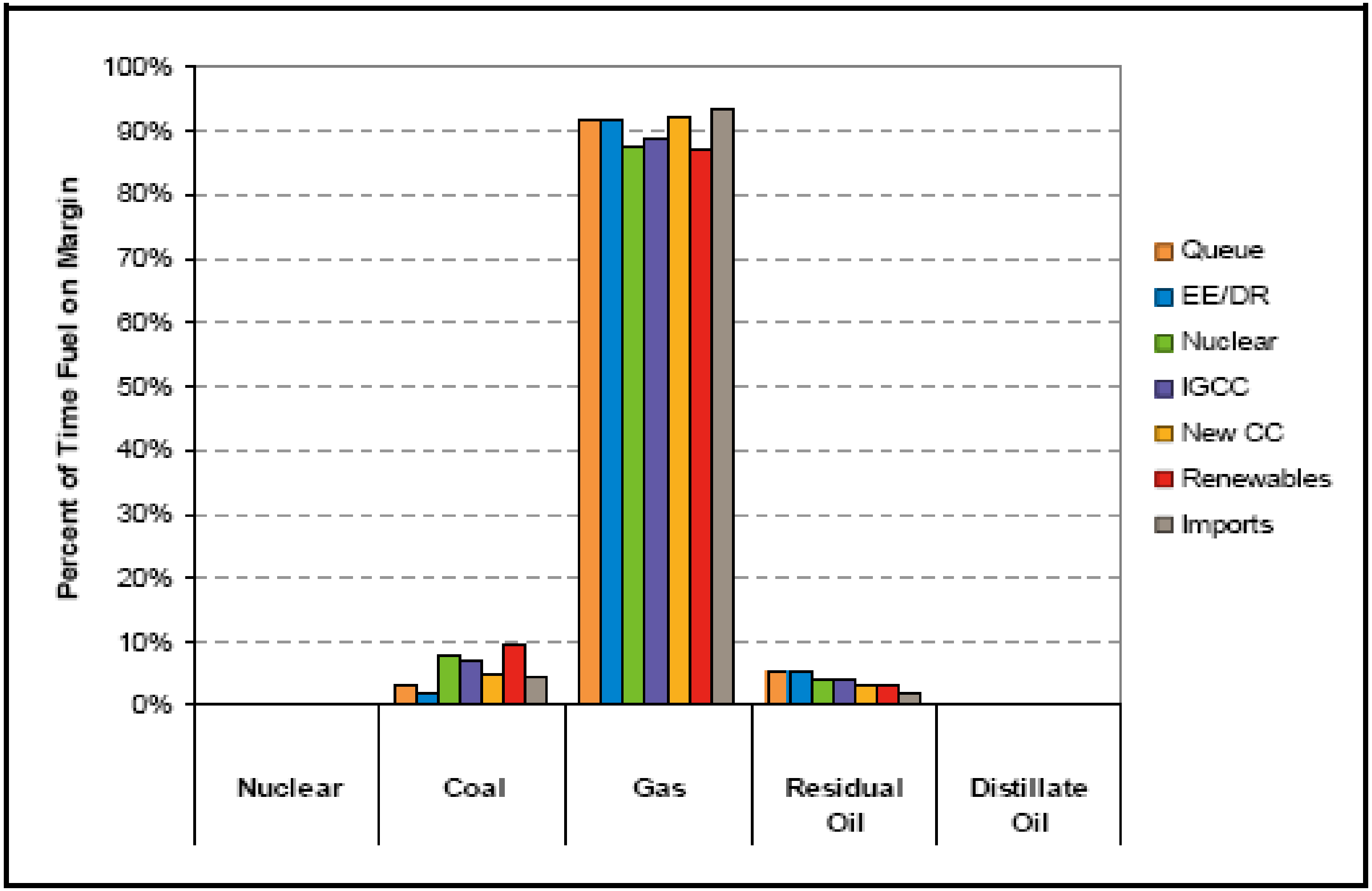


Figure 5-2: Percent of time fuel is on the margin.

Source: New England Electricity Scenario Analysis. 2 August 2007. ISO New England.

- Forward Capacity Auction
  - Three years forward
  - Existing capacity gets one year commitment
  - New capacity to select 1 to 5 year commitment
  - Opportunities to de-list or retire at a price
- Imports, Exports, Intermittent and Demand Resources have modified treatments
- Self supply option to avoid market risks

Settlement Agreement

- Availability requirements that penalize resources unavailable in shortage hours
- Caps on penalties (monthly and annual)
- Opportunity for well-performing units to earn bonuses
- Peak Energy Rents (PER) reduce energy market revenues
- Intermittent and demand resources have different availability terms

Auction Mechanics

- Pre-qualification of all bids
- Market Monitor review/rejection of bids
- First auction will have a Cost of New Entry (CONE) estimate of $7.50/kw-month; auction starts at 2xCONE
- Descending clock auction takes successively lower bids until quantity bid matches capacity need (ICR)
- Unaccepted bids mean resources are uncommitted
- Multiple reconfiguration auctions in interim years

Auction Mechanics

- Capacity zones determined in advance of each FCA – Geography can be Important
- Auction safety valves for insufficient supply and inadequate competition
- Until five auctions or three successful auctions, capacity clearing price has a:
  - Floor of 0.6 CONE
  - Ceiling of 1.4 CONE
- CONE adjusted annually with exponential smoothing
  - 70% of prior year CONE value
  - 30% of prior year Capacity Clearing Price

Capacity Payments

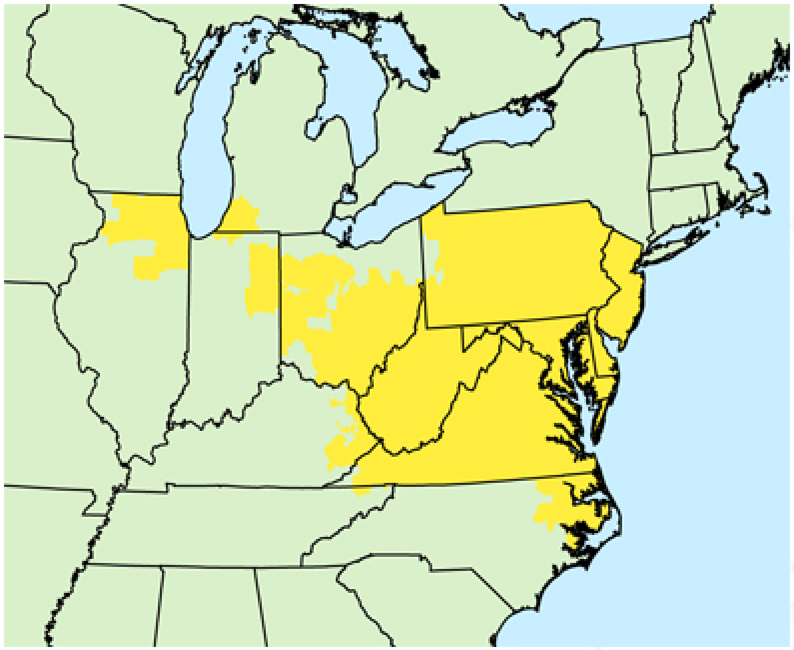
- Once selected, resources must perform in shortage hours
- Listed resources must bid into DA & RT Energy Markets
  - Demand Resources cannot participate in energy market
- Penalties are assessed against non-performing resources and paid to performing resources
- Monthly penalty cannot exceed 2.5 times monthly payment
- Annual penalties cannot exceed annual payment
- Peak Energy Rents (PER) based on a proxy peaker are deducted from monthly capacity payments
  - Demand Resources not assessed PER deduction

Transition Period

- Fixed payments for all qualifying resources
  - – Dec. 1 2006-May 31, 2007 $3.05/kW-month
  - – June 1, 2007-May 31, 2008 $3.05/kW-month
  - – June 1, 2008-May 31, 2009 $3.75/kW-month
  - – June 1, 2009-May 31, 2010 $4.10/kW-month
- No cap on resource quantity!
- No PER adjustments to transition payments
- **New** Demand Resources qualify during transition with state-approved M&V

Upcoming Issues

- First Auction in February
- Seasonal Resources
- Reconstitution for Cost Allocation
- M&V Experience
- Potential Market Rule Changes



Coming Soon?

- Reliabililty Pricing Model (RPM)
  - Uses a Demand Curve (called VRR)
  - First three auctions have already occurred
  - Next available delivery year is 2010-2011 (auction held Jan 2008)
  - No Transition Period

Relevant Synapse Reports

- Capacity for the Future – Kinky Curves and Other Reliability Options (December 2004)
- ISO New England Scenario Analysis Companion Report – Constructing a Future that Meets Regional Goals (August 2007)
- Incorporating Energy Efficiency into the ISO New England Forward Capacity Market (June 2006)
- Avoided Energy Supply Cost (AESC) Study (August 2007)

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