

---

---

# **Update on New England's Demand Response Programs**

---

**Presentation to EUEC  
Tucson, AZ  
January 2006**

**Doug Hurley  
Synapse Energy Economics  
22 Pearl Street, Cambridge, MA 02139  
[www.synapse-energy.com](http://www.synapse-energy.com)**

---

# Agenda

---

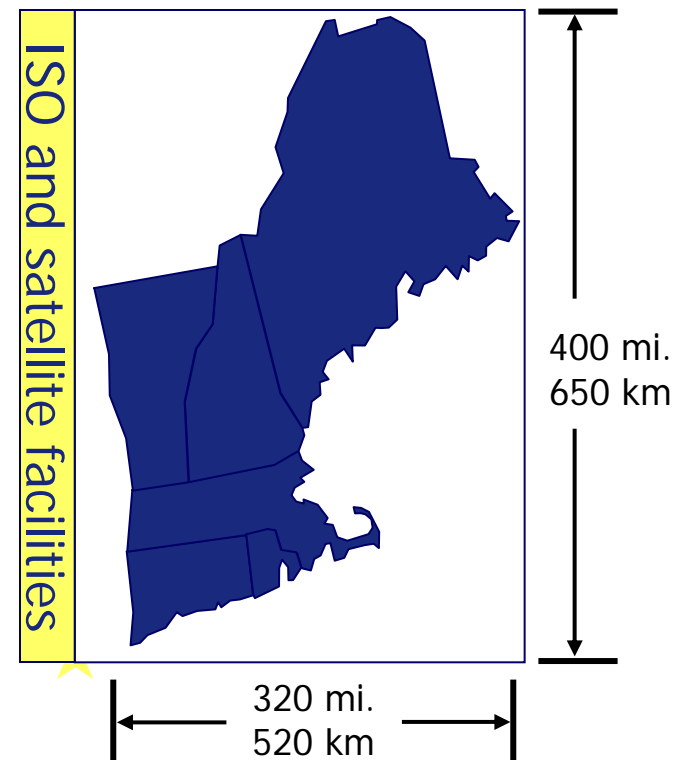
- New England Demand Response Overview
- Demand Response in NEPOOL
- Ongoing Programs
  - Reliability Programs
  - Price Programs
- SWCT Gap RFP
- DR Reserves Pilot Project
- DA LRP
- Winter Supplemental Program
- CT Energy Independence Act

---

# New England's Electric Power System

---

- 14 million people
- 350+ generators
- 8,000+ miles of transmission lines
- 4 satellite control centers
- Interconnections to 3 neighboring systems
- 30,000 MW of installed generating capacity
- 27,000 MW peak load (27 July 2005)

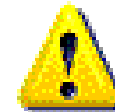


---

## Two Types of Demand Response

---

- **Reliability (Demand) Programs:**



- Customers respond to **System Reliability Conditions** as determined by the ISO New England Control Room

- **Price Programs:**

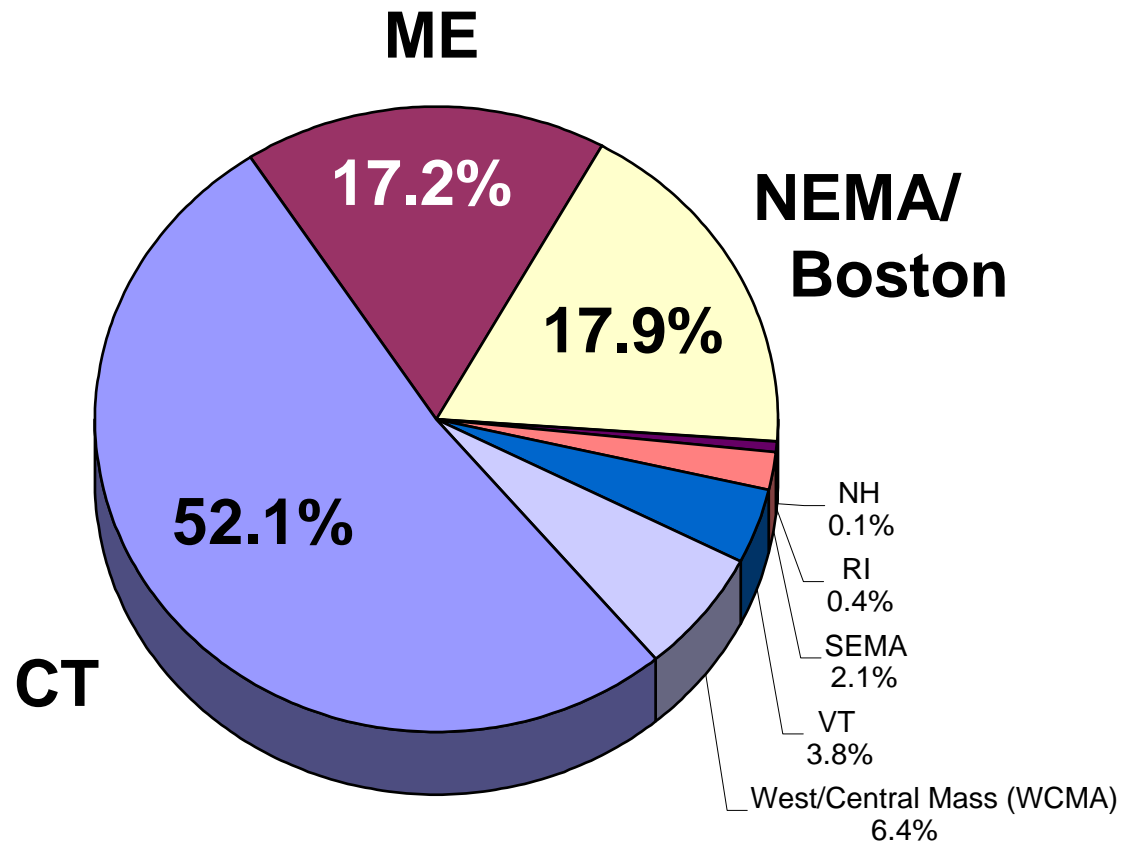


- Customers respond to **Wholesale Spot Prices** as determined by the Market.

---

# Where is Demand Response?

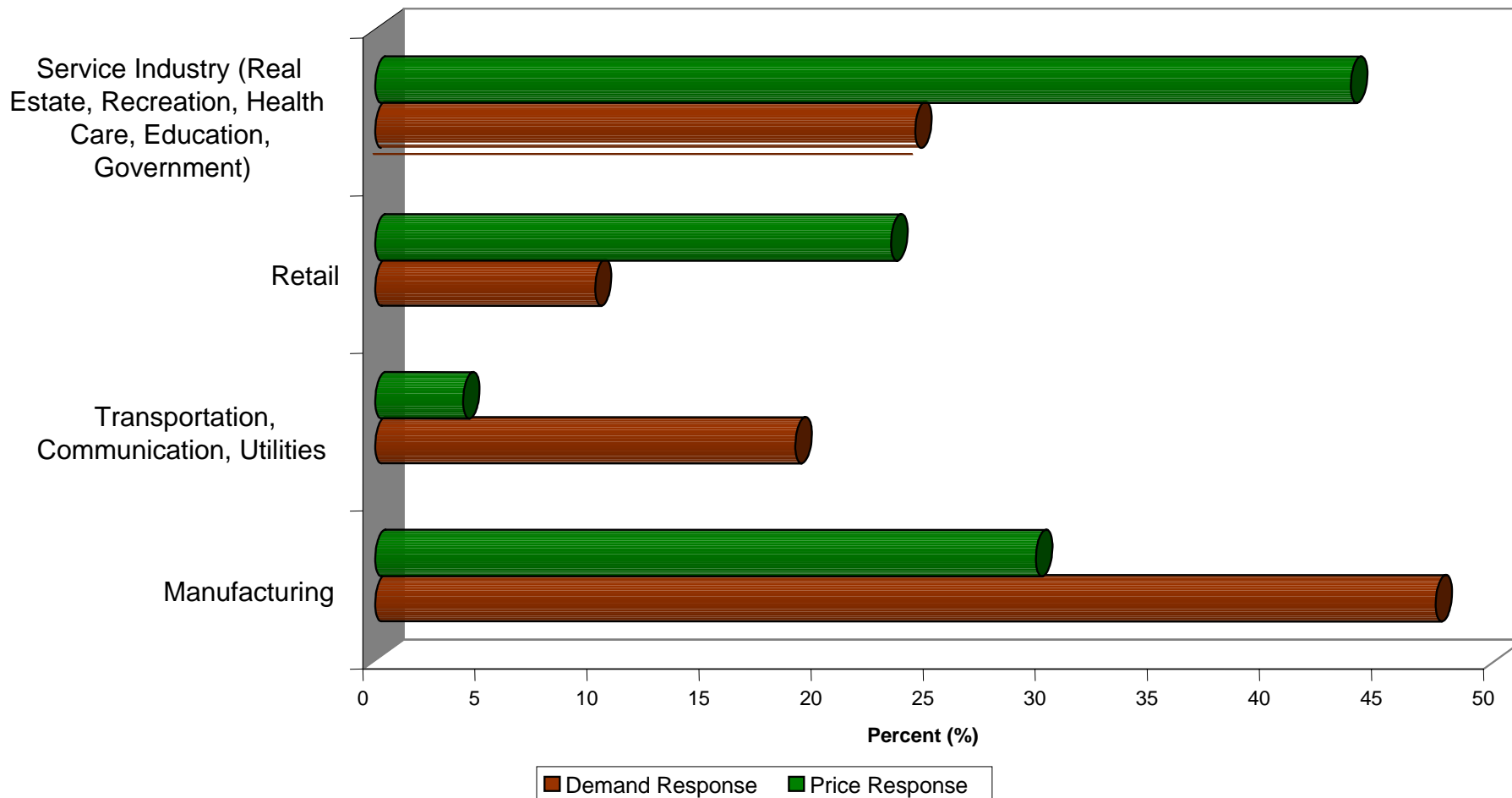
---



---

# Who Is Demand Response?

---



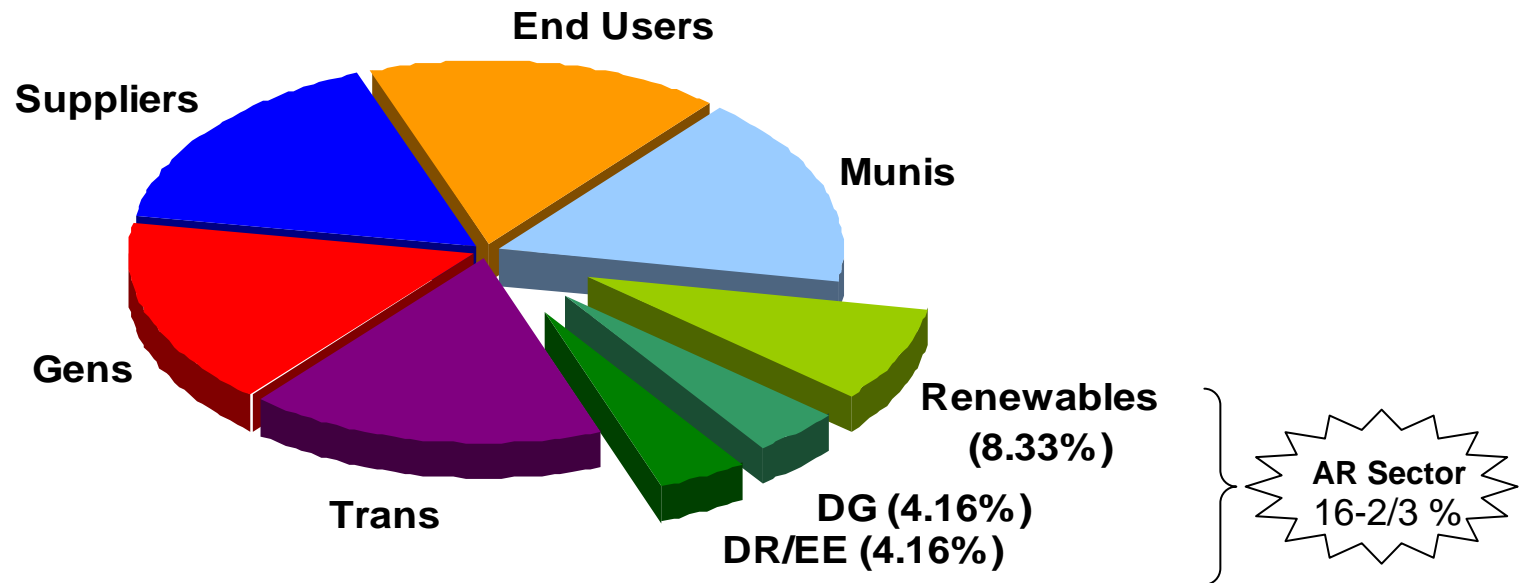
## How Much Demand Response?\*

Ready To Respond:			Approved:	
Zone	Assets	Total MW	Assets	Total MW
CT	345	224.6	2	2.1
ME	7	49.5	0	0.0
NEMA	111	47.8	1	24.0
NH	7	18.1	0	0.0
RI	93	12.8	0	0.0
SEMA	102	10.9	1	0.1
VT	18	13.6	0	0.0
WCMA	124	31.3	0	0.0
Total	807	408.4	4	26.2

---

# Demand Response in NEPOOL

---





# SWCT Gap RFP

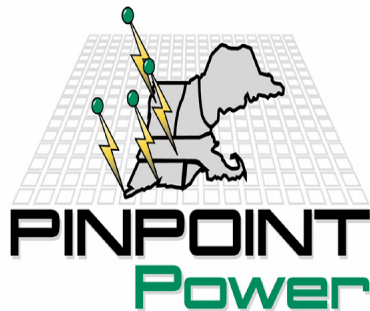
## Summary of Selected Demand Response and C&LM Resources

<i>Resource Type</i>	<i>Customer Type</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>
C&LM	Commercial	0.7	4.3	5.0	5.3
<b>C&amp;LM Total</b>		<b>0.7</b>	<b>4.3</b>	<b>5.0</b>	<b>5.3</b>
Emergency Generation	Commercial	13.9	43.7	49.3	51.8
	Education	2.0	2.8	2.8	2.8
	Healthcare	0.0	9.7	9.7	9.7
	Municipal	10.2	33.5	33.5	33.5
	Other	69.3	69.3	69.3	69.3
<b>Emergency Generation Total</b>		<b>95.4</b>	<b>158.9</b>	<b>164.5</b>	<b>167.0</b>
Load Reduction	Commercial	16.6	26.1	31.1	33.6
	Healthcare	0.0	0.3	0.3	0.3
	Municipal	3.1	3.4	3.4	3.4
	Residential	0.9	19.1	39.7	40.2
	Small Commercial	2.5	10.0	10.0	10.0
<b>Load Reduction Total</b>		<b>23.1</b>	<b>58.9</b>	<b>84.5</b>	<b>87.4</b>
<b>Grand Total</b>		<b>119.2</b>	<b>222.1</b>	<b>254.0</b>	<b>259.8</b>

---

## SWCT DR Suppliers

---



## Conservation Services Group

---

## Very Successful because ...

---

- **Location, Location, and Location**

- Resources located in the load pockets
- No interconnection issues

- **Price**

- Mostly incremental investments in metering, communications and controls.

- **Permitting**

- Not an issue for load reduction
- Pending changes (Section 42) will make it easier for emergency generators to participate.

---

# Demand Response Reserves Pilot Project

---

- Test Demand Response as 30-min Operating Reserves
  - Control Room operators
  - 5-minute IBCS vs. 5-second RIG boxes
- Why do we care?
  - In New England, can offset spinning reserves
  - Lower emissions
  - Even if DR using diesel emergency generators

---

## Demand Response Reserves Pilot Project (con't)

---

- Pilot Program
  - Limited to 50MW of DR, DG, or Settlement Only generators
  - One year, with possible one-year extension until LFRM
  - Units selected based on seasonal load and backup generation
- Payments
  - Availability: based on seasonal LFRM clearing price
  - Performance: based on larger of LFRM strike price or RT LMP
- Penalties for non-Performance
  - Loss of availability payment
  - Replacement energy cost
- Dispatched during Shared Activation of Reserve events.
  - Existing NY-NE arrangement
  - Loss of at least 500 MW
  - Limited to 50 events and 100 hours

---

## DA LRP

---

- Started June 1, 2005
- 0 MWs enrolled currently
  - Maximum offer of 1 MW so far
- Allows DR to bid into Day-Ahead Market
  - Similar to Price Response program
  - Customer sets their own price
  - Available 7:00 AM until 6:00 PM
- Sequential Market Clearing until LFRM is implemented. Integrated Market Clearing thereafter.
- 50 MW threshold to evaluate Integrated Market Clearing

---

# Winter Supplemental Program

---

- New England is now heavily dependent on oil and natural gas for generation of electricity
  - During cold winters, competes with home heating
  - LDCs have obligation to serve
  - High gas and oil prices expected to increase demand from electric space heaters (ISO-NE estimates 400 MW under 90/10 conditions)
- One of a number of responses to possible fuel shortage from Katrina & Rita
- Up to 600MW of DR, priced by entry date
  - 450MW plus 150MW
- Payments are on top of existing programs.
- Over 100MW signed up so far
- Still awaiting FERC approval

<b>\$/kW-month</b>	<b>Entry Date</b>
\$14	1 Dec
\$12	1 Jan
\$10	1 Feb
\$8	1 Mar

---

## Connecticut's Energy Independence Act

---

- Designed to reduce congestion charges during the period from 2006 to 2010
- Connecticut expects major new transmission lines to be in service by 2010
- Requires the electric utilities and competitive suppliers to acquire 1% of their supply from distributed resources starting in 2007. This grows to 4% in 2010
- With DPUC approval
  - Mandatory daily rates for C&I customers by June 2006
  - Voluntary daily rates for all other customers by June 2006
  - Mandatory seasonal rates for all customers by January 2007
- Phases in a Floor on utility C&LM expenditures



---

# Questions

---

???