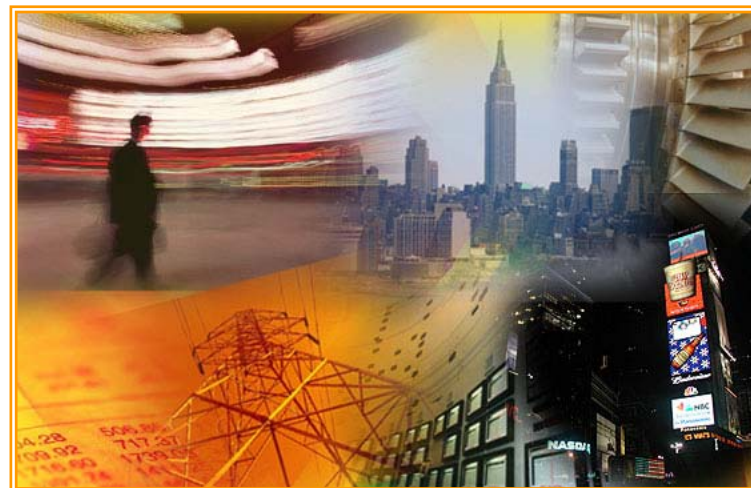


Demand Response Programs in New York's Wholesale Electricity Market



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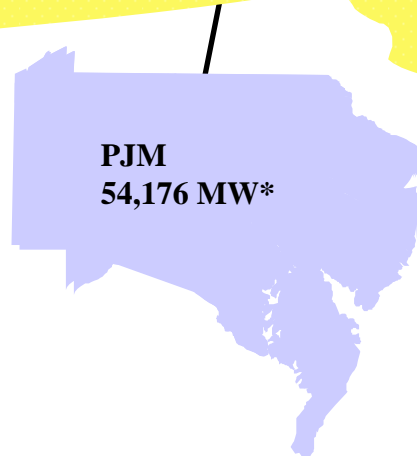
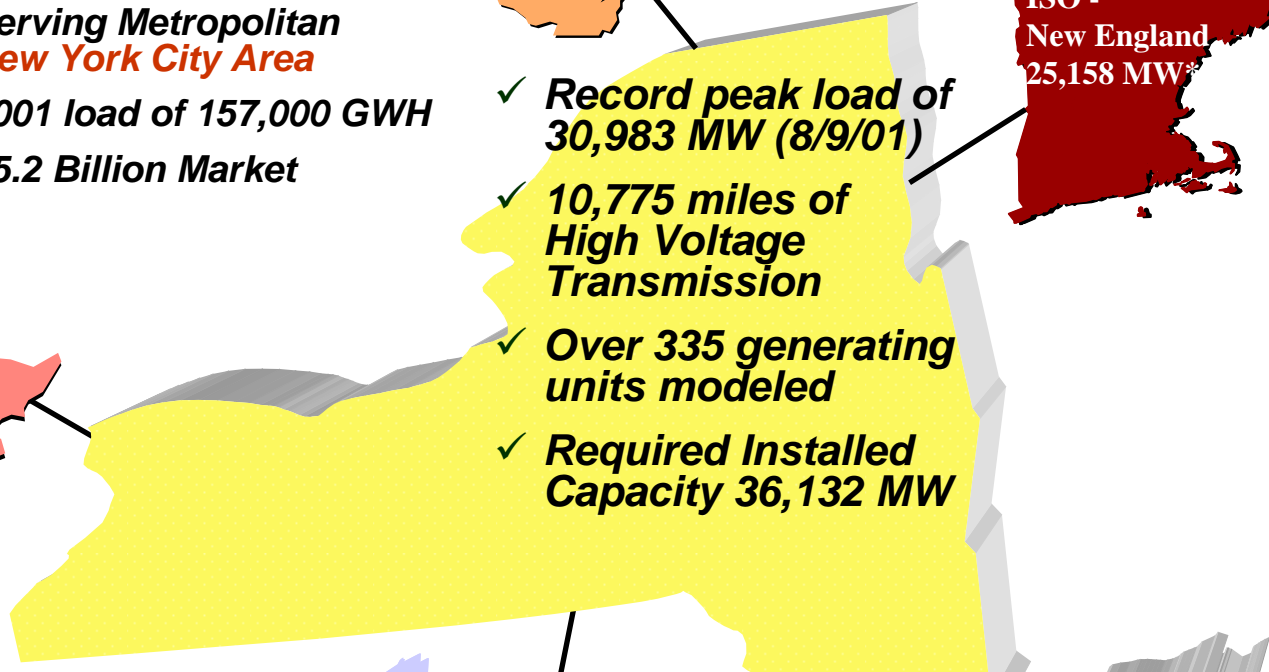
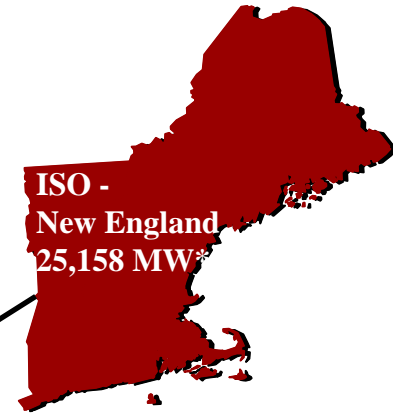
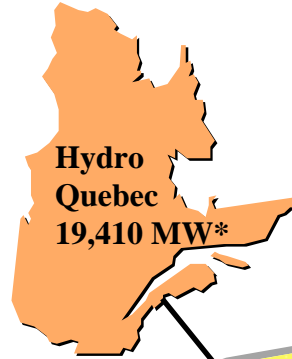
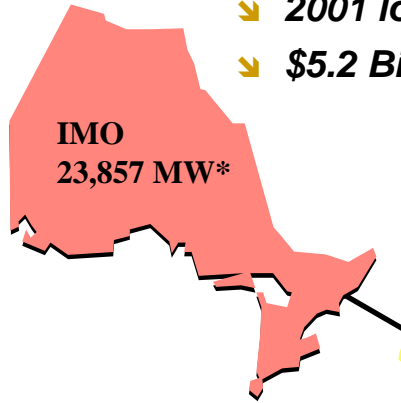
What is the NYISO?



- ✓ An independent, not-for-profit organization
 - *Ensure safe and reliable operation of the New York bulk power transmission system*
 - *Administer New York's wholesale electricity markets*
- ✓ Assumed some duties formerly conducted by the New York Power Pool.
- ✓ Established under a mandate of and regulated by the Federal Energy Regulatory Commission (FERC).

NYISO Overview

- **New York State:**
18.9 Million People
- **Serving Metropolitan**
New York City Area
- **2001 load of 157,000 GWH**
- **\$5.2 Billion Market**



Available Programs

- ✓ Emergency Demand Response Program
- ✓ ICAP Special Case Resources Program
- ✓ Day-Ahead Demand Response Program

Emergency Demand Response Program

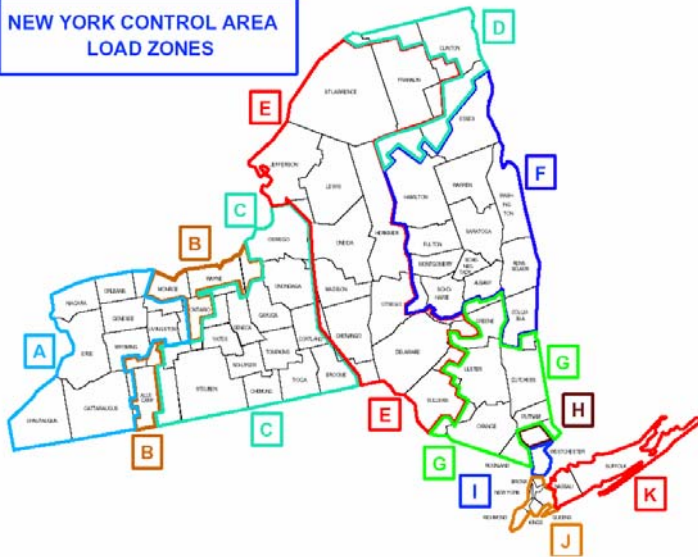
- ✓ Activated in-day during Operating Reserve deficiency
 - *Greater than 100 kW, may aggregate*
 - *Paid the greater of real-time marginal price or \$500/MWh & guaranteed 4 hour minimum*
 - *May set real-time marginal price at \$500*
- ✓ Available to interruptible load & emergency backup generation
- ✓ Open to Load Serving Entities (LSEs), Direct Customers, and Aggregators

ICAP Special Case Resources (SCR) Program

- ✓ Loads/Distributed Generation \geq 100 kW capable of demand interruption
- ✓ Can supply Installed Capacity (ICAP)
- ✓ LSE advised in Day-Ahead market - 2 hour in-day notification
- ✓ Paid for energy reduction: real-time marginal price or Strike Price Maximum \$500/MWh, whichever is greater - 4-hour minimum call
- ✓ May set real time marginal price under scarcity pricing rules
- ✓ Activated prior to Emergency Demand Response resources

EDRP/SCR Registration by Zone

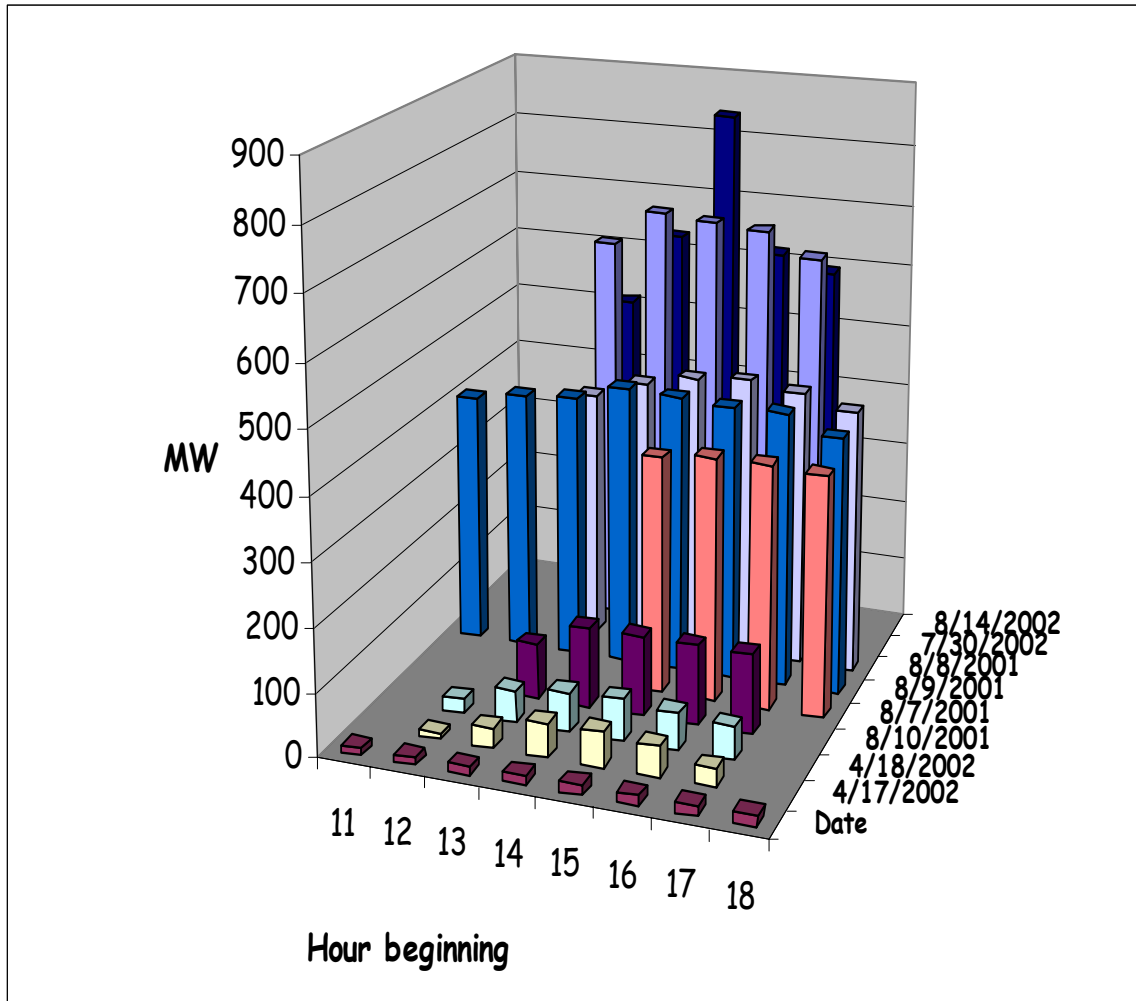
NEW YORK CONTROL AREA
LOAD ZONES



EDRP/SCR Registration as of 8/05/2003

Zone	SCR Registration		EDRP Registration	
	MW Registered	# Customers Registered	MW Registered	# Customers Registered
A	333	33	100.6	48
B	30.2	13	32.8	16
C	75.6	30	26.9	82
D	3.8	5	219.4	9
E	12	8	60	41
F	53.5	12	68.3	58
G	0	0	55	36
H	2.4	4	5.7	6
I	8	8	17.6	31
J	126.7	64	112.7	100
K	7.1	11	179.7	804
TOTAL	652.3	188	878.7	1231
TOTAL EDRP & SCR	1531 MW		1419 Customers	

EDRP Event Performance

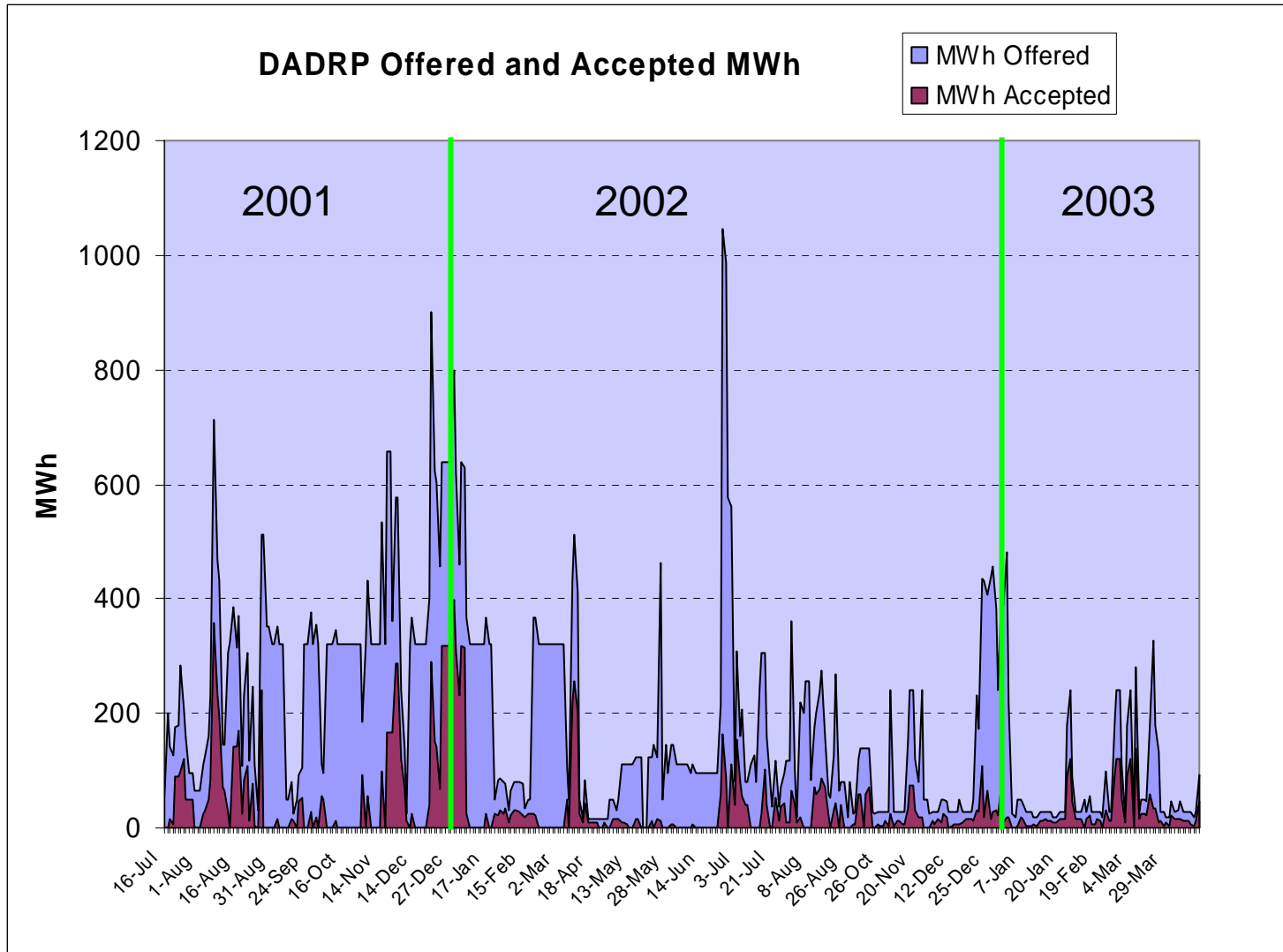


Comments:

- 4/17/02, 4/18/02 - no advanced notice
- 4/17/02 - Zones G-K
- 4/18/02 - Zones G-K, B
- 8/10/01 - Zones F-K
- 7/30/02, 8/14/02 - called statewide

Day-Ahead Demand Response Program

- ✓ Load bids interruption in Day-Ahead Market - if chosen, can set marginal price
- ✓ Multi-hour strips allowed
- ✓ Third-party providers allowed as of July 1, 2003
- ✓ Parties submitting accepted bids get:
 - *incentive credit (fixed load bid reduced by amount of curtailment provided)*
 - *paid greater of marginal price or bid for actual interruption*
 - *penalized for buy-through at Day-Ahead or Real-Time marginal price, whichever is greater*



Lesson #1 - Opportunities for Demand Response Should Mirror Those for Suppliers

- ✓ Use existing markets where possible
- ✓ Counterbalanced by different business drivers for power suppliers and demand response:
 - *Energy reduction is not the DR's principal business; supplier energy production is*
 - *DR economics favor shift in energy consumption*

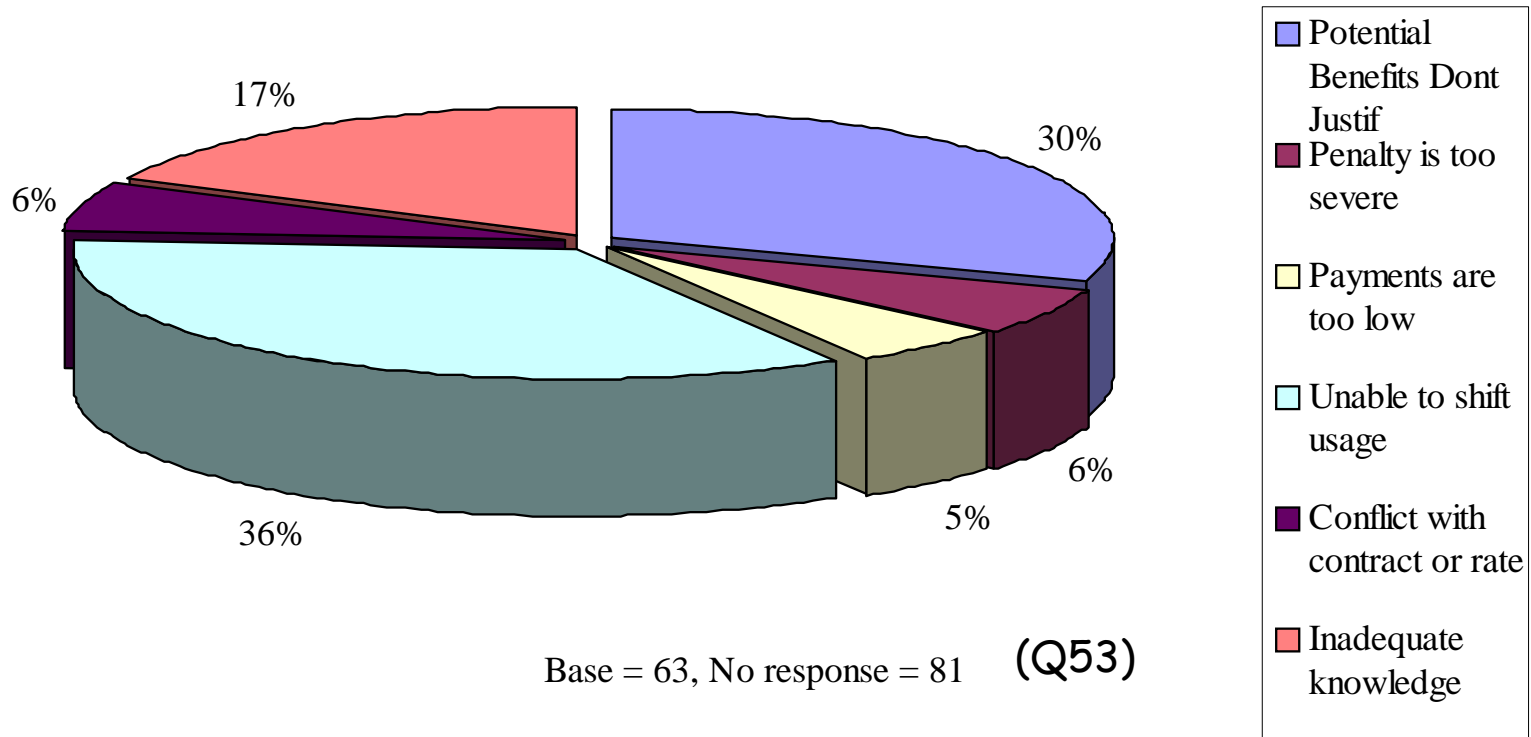
Lesson #2 - Continuity and Simplicity are Critical

- ✓ Annual program changes should be kept to a minimum
- ✓ Programs should run for at least 2-3 years (permanent is better)
- ✓ Coordination with environmental agencies, state regulators is needed

Lesson #3 - Participation Requires Education

- ✓ Potential customers can develop curtailment plan - developing a bidding strategy is more difficult
- ✓ ISOs can teach mechanics - third party organizations should handle bid strategy training

Primary Reason for Not Participating in DADRP



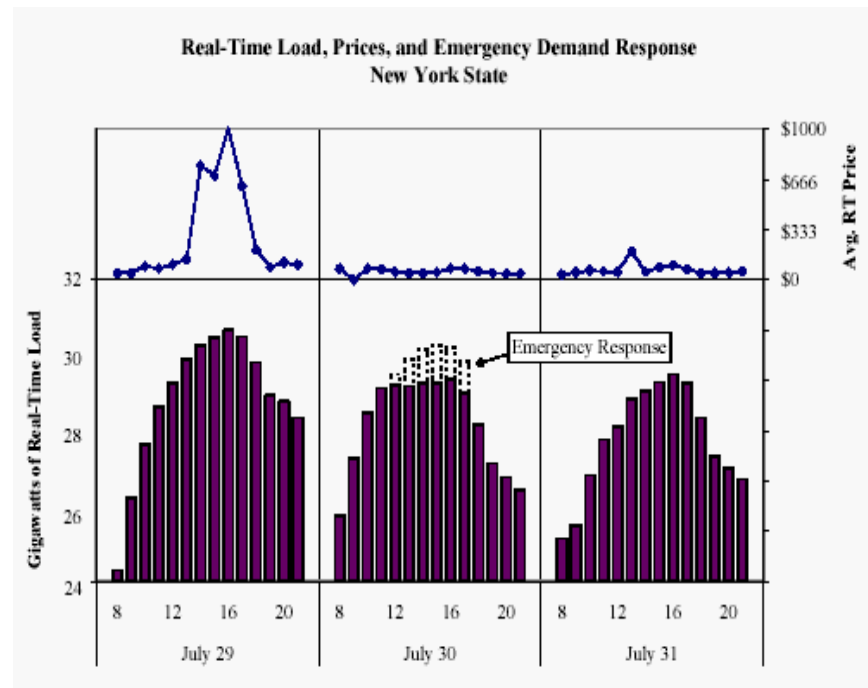
- ✓ Potential benefits don't justify risks (30%), inability to shift usage (36%) and inadequate knowledge of program requirements (17%) given as primary reason for not participating in DADRP

Lesson #4 - Customers Need to be Paid to Participate

- ✓ ...at least in the beginning
- ✓ Customers on flat retail tariffs have no incentive to participate
- ✓ Wholesale market dynamics are barrier to many organizations, even those on real-time tariffs
- ✓ Initial incentive payments can condition behavior, remove barriers to wholesale market bidding

Lesson #5 - Demand Side Resources Should be Capable of Setting Marginal Price

- ✓ 2002 summer experience showed lack of scarcity pricing
- ✓ Marginal prices should reflect the value of resources on the margin



Source: Independent Market Advisor
review of NYISO summer 2002
performance

Lesson #6 - Customers Need to See and React to Real-Time Prices

- ✓ Greatest benefit comes from adoption of RTP
- ✓ Retail demand charges complicate behavior
- ✓ Technology solutions needed to allow customers to see real time price and consumption
- ✓ Adoption level doesn't need to be high to achieve significant marginal price impact

Questions?

