Demand Response National Trends: Implications for the West?

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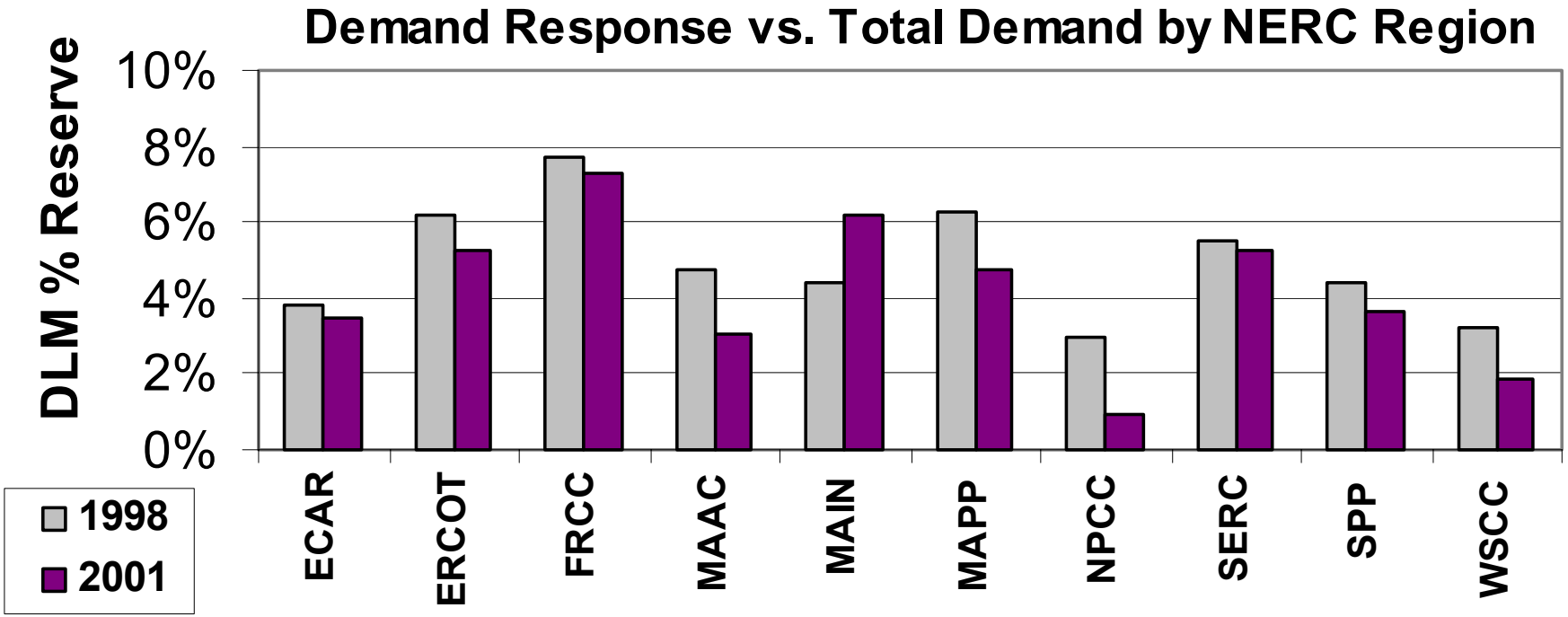
Overview of Presentation

- National Trends in Demand Response
- Integrating Demand Response into IRP Plans – Some Technical issues
- Incorporating DR as part of Utility Resource Portfolio: Policy Issues

Declining Load Mgmt Resources in most U.S. regions

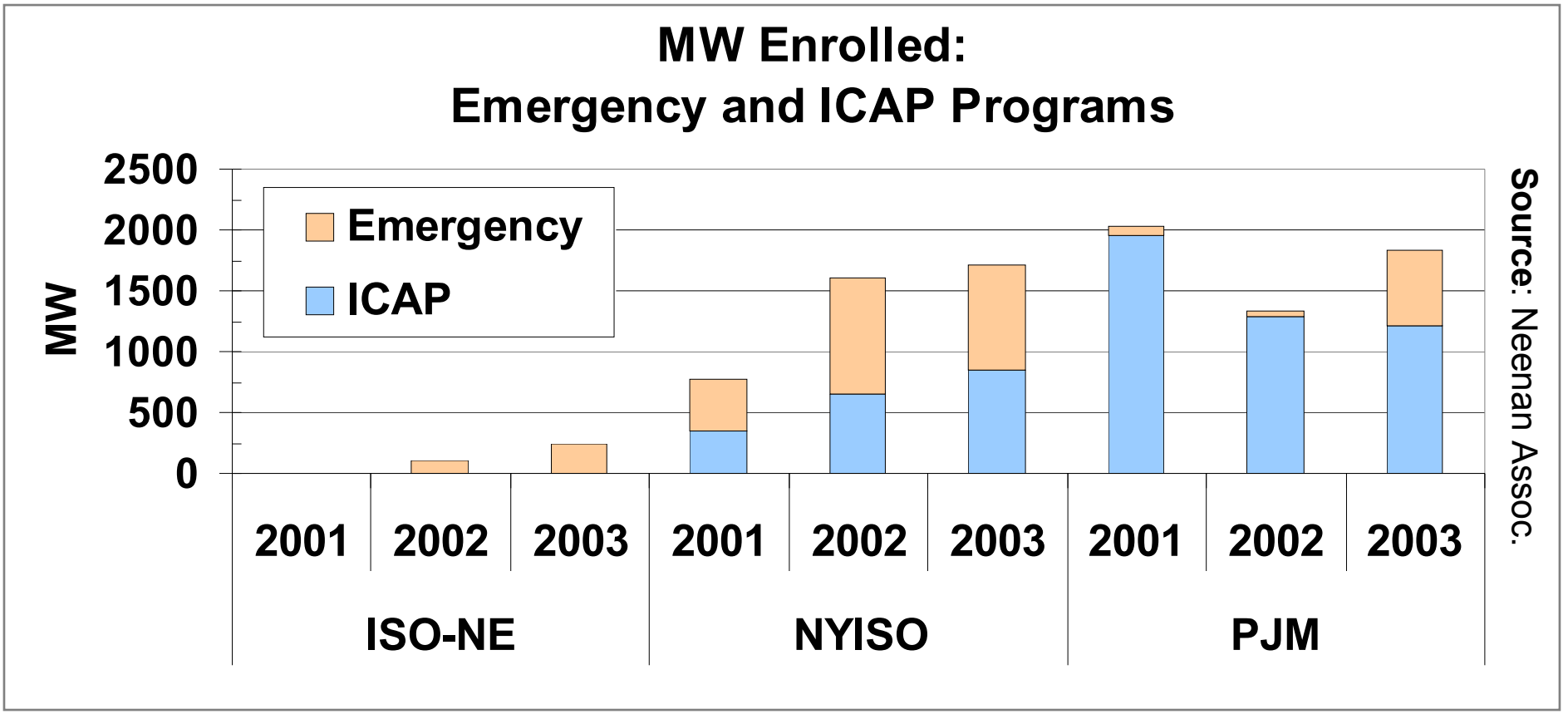


- Uncertainties surrounding electricity restructuring
- Changing load resource balance

Increasing Policy Support from FERC and DOE

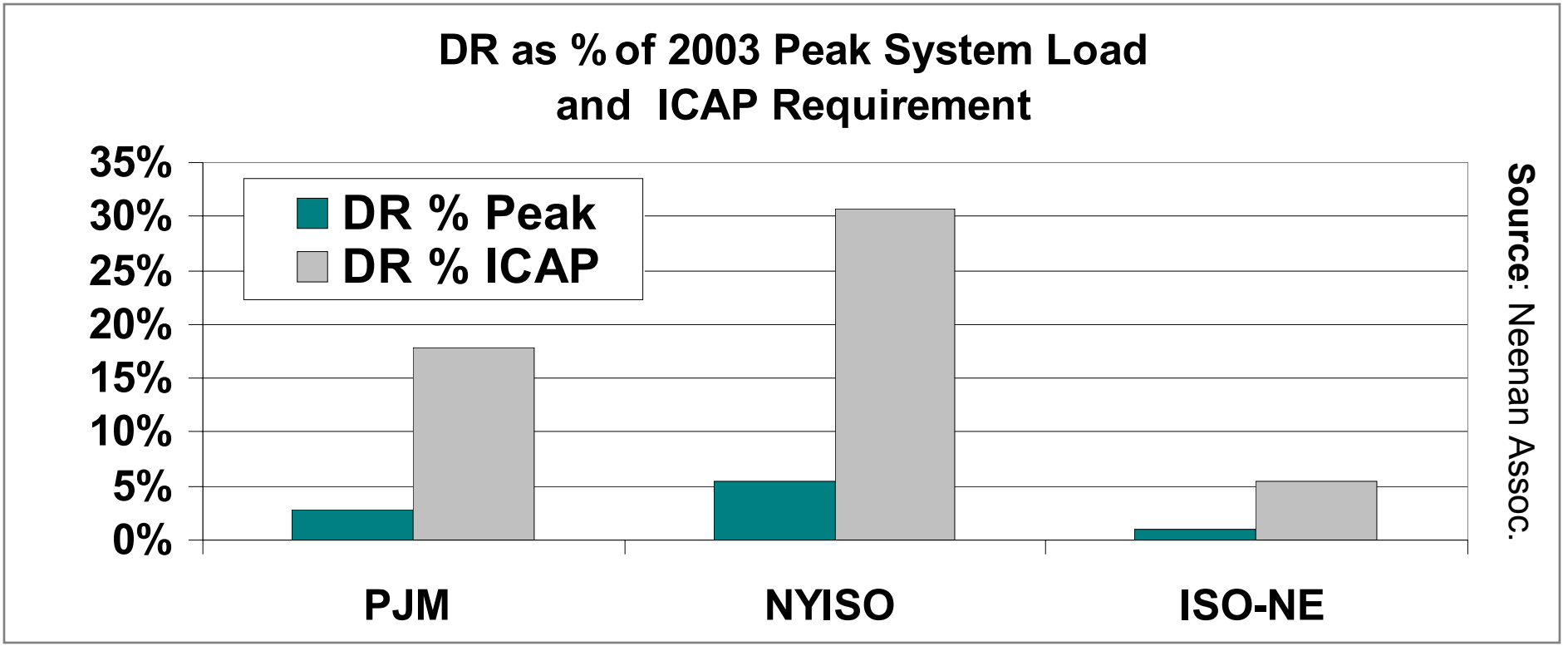
- **National Transmission Grid Study Recommendations**
- **At a December 16, 2003, meeting of the PJM Demand Side Response Working Group, Alison Silverstein, Advisor to FERC Chairman Pat Wood, advised:**
  - FERC wants demand response, “no matter what”
  - FERC is not kidding: prefer that we design and send up good programs and strong filings, instead of making them do it
  - FERC expects credible, quality programs that yield “big time” results
- **DOE designated as lead for IEA study on Demand Response Resources**

ISO "Emergency" DR Programs: Enrollment is increasing



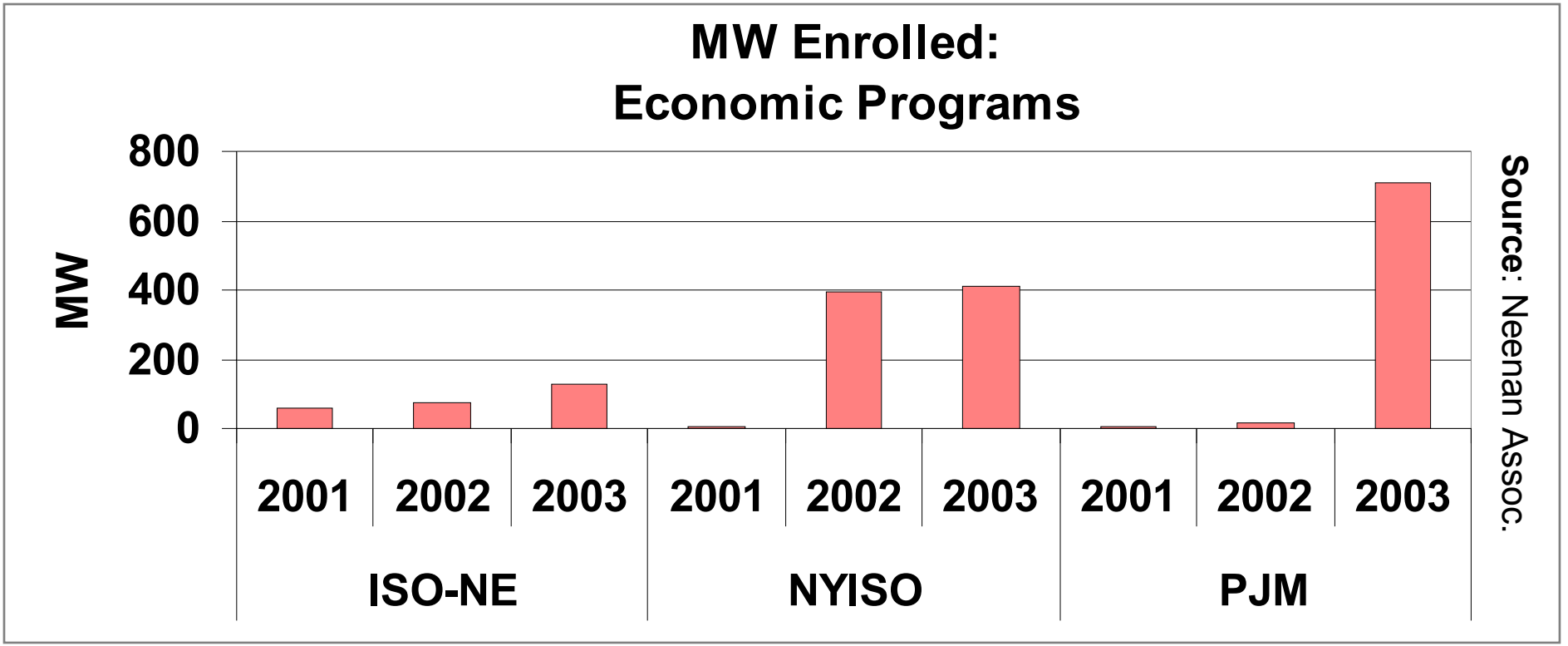
- Steady growth in subscribed load, except for Active Load Mgmt in PJM.

DR Resource Targets: How much is enough??



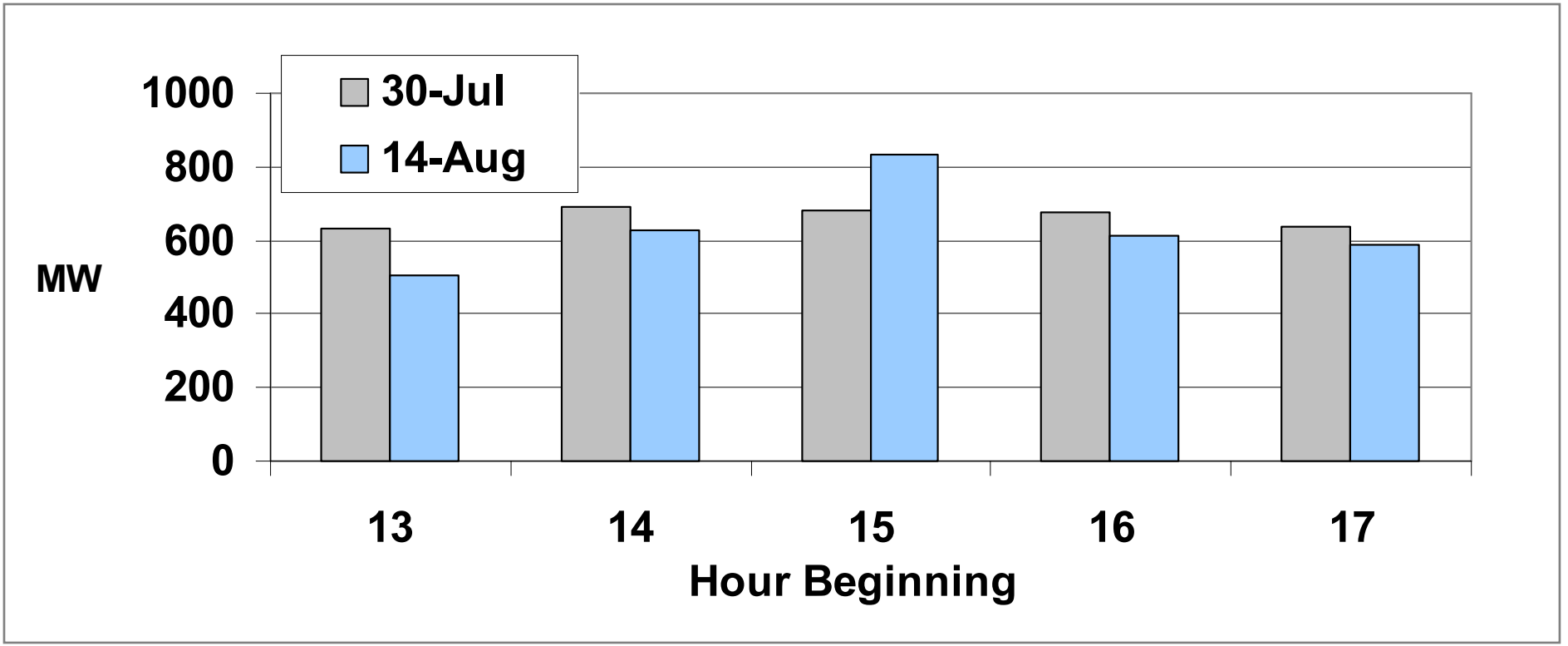
- ISOs don't have explicit targets
- NYISO DR program exemplifies "best practice"
- ISO-NE needs more DR, particularly in congested areas (SW CT)

ISO "Economic" DR Programs: Enrollment is increasing, but performance lags



- Subscribed load increasing, particularly in PJM
- However, scheduled load curtailments are ~10-15 MW in NYISO day-ahead market

NYISO EDRP Program: Customer curtailments had significant impact on system reliability



- 1,711 enrolled participants in 2002 (1,481 MW)
- ~75% load curtailment: Onsite generation ~20%

ISO Payments for DR Programs

Year		Emergency Payments	Economic Payments
2001	ISO-NE	$380	$226,100
	NYISO	$4,200,000	$200,000
	PJM	$287,500	$14,000
2002	ISO-NE	$1,800,900	$172,000
	NYISO	$3,300,000	$100,000
	PJM	$282,800	$762,000
2003	ISO-NE	$497,100	$212,000
	NYISO	$3,900,000	$121,300
	PJM	$26,600	$678,200

Source: Neenan Assoc.

DR programs used during August 2003 Blackout Recovery Process

- NYISO called emergency DR programs on Aug. 15 and 16
  - Every MW of load taken off system allowed another MW to come up faster during rebuilding

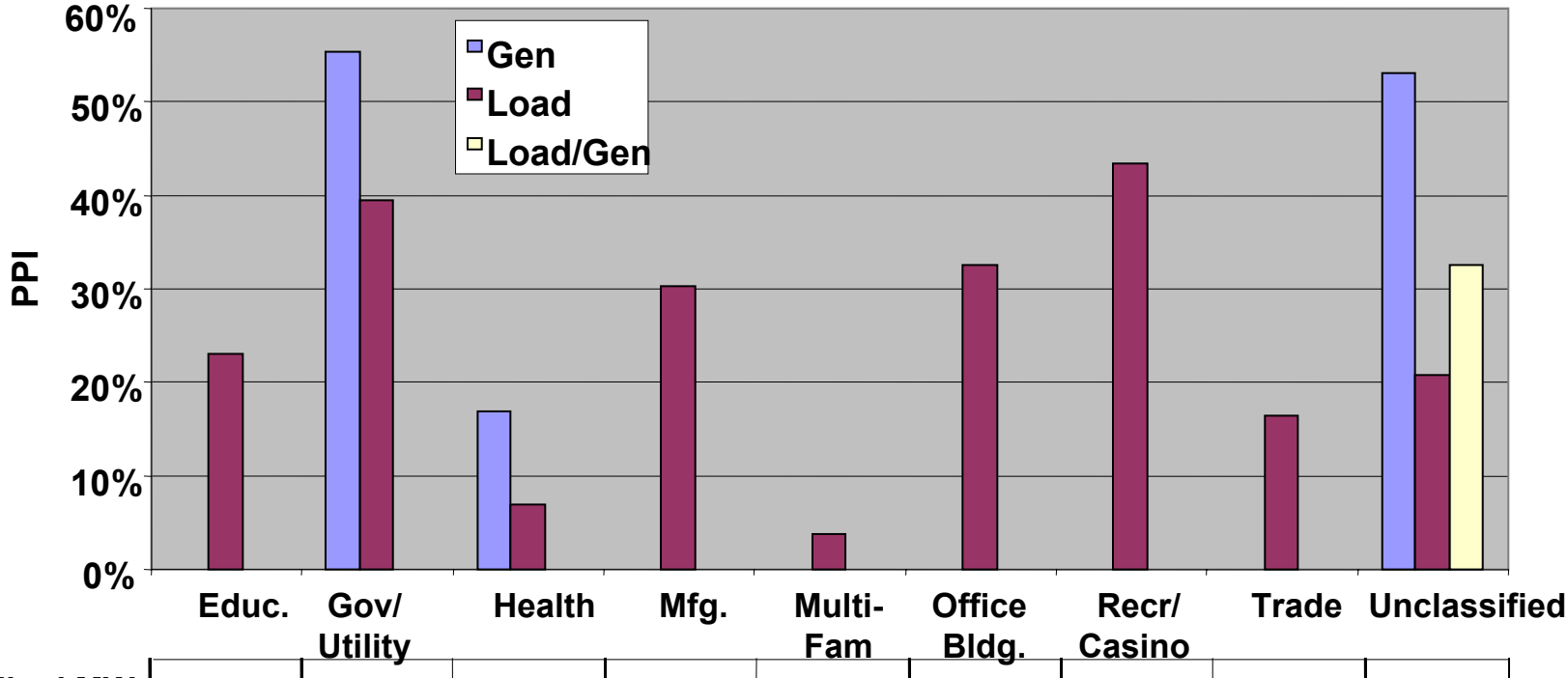
Outage cost = $5,000/MW				
Date	**System State**	**Benefit**	**Cost**	**B/C ratio**
August 15	**Recovering**	**$50.8 million**	**$5.9 million**	**8.6**
August 16	**Fully recovered**	**$3.5 million**	**$1.7 million**	**2.1**

Source: NYISO 2003 PRL Program Evaluation Summary

Understanding Customer Response: Performance Metrics

- **Subscribed Performance Index (SPI): ratio of customer's *actual* average hourly load reduction to their *subscribed* load reduction**
  - Indicates customer's actual performance relative to their commitment
- **Peak Performance Index (PPI): ratio of customer's *actual* average hourly load reduction to their non-coincident peak demand**
  - Characterizes customer's relative technical potential when compared to similar facilities
- **Implications for system operators – how reliable a resource?**

NYISO: Customer Curtailment Potential is significant



	Educ.	Gov/ Utility	Health	Mfg.	Multi-Fam	Office Bldg.	Recr/ Casino	Trade	Unclassified
Subscribed MW	9	90	13	502	3	5	2	13	246
Active Participants									

- **Mfg & Govt. Customers can curtail 30-40% of peak demand during emergencies**

RTP as Default Service in States with Retail Competition

- Growing interest in RTP for large customers as default service tariff option in some states with retail competition:
  - NJ, MD, NY (Niagara Mohawk), OH, OR
- Migration to competitive suppliers with flat rate options
- Purchase of risk management products

Integrating DR into IRP plans: Some issues

- Defining resource potential: applicability of concepts and tools from EE technical and market potential studies?
- Typology of DR resources
- Scarcity of load data on which to estimate DR potential
- Limited experience on which to predict price response and customer risk preferences
- Lead times for new DR resources
- Model capabilities for integrating price response into resource portfolio evaluation?

Incorporating DR as part of Utility Resource Portfolio: Policy & Program Issues

- Role and responsibility of utility in current market setting vs. RTO environment
- Establishing incentive payment levels without a transparent wholesale market
  - ICAP markets (NY) vs. interruptible rate
- Capturing locational value of DR
- Coordinating delivery & implementation of DR and EE programs
  - EIS systems offer common platform for DR and EE
  - Portion of DR "savings" are operational & controls improvements

Incorporating DR as part of Utility Resource Portfolio: Policy & Program Issues (cont.)

- Environmental impacts of onsite generators
  - Coordination with local air quality regulators
  - Limits on use of emergency generators in DR programs ("emergency" vs. economic pgms)
- Recovery of program costs
  - Are incentive payments coming from retail or wholesale market customers?
  - Treatment of utility & non-utility entities