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# **Demand Response National Trends: Implications for the West?**

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**Committee on Regional Electric Power Cooperation  
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**Energy Analysis Department**

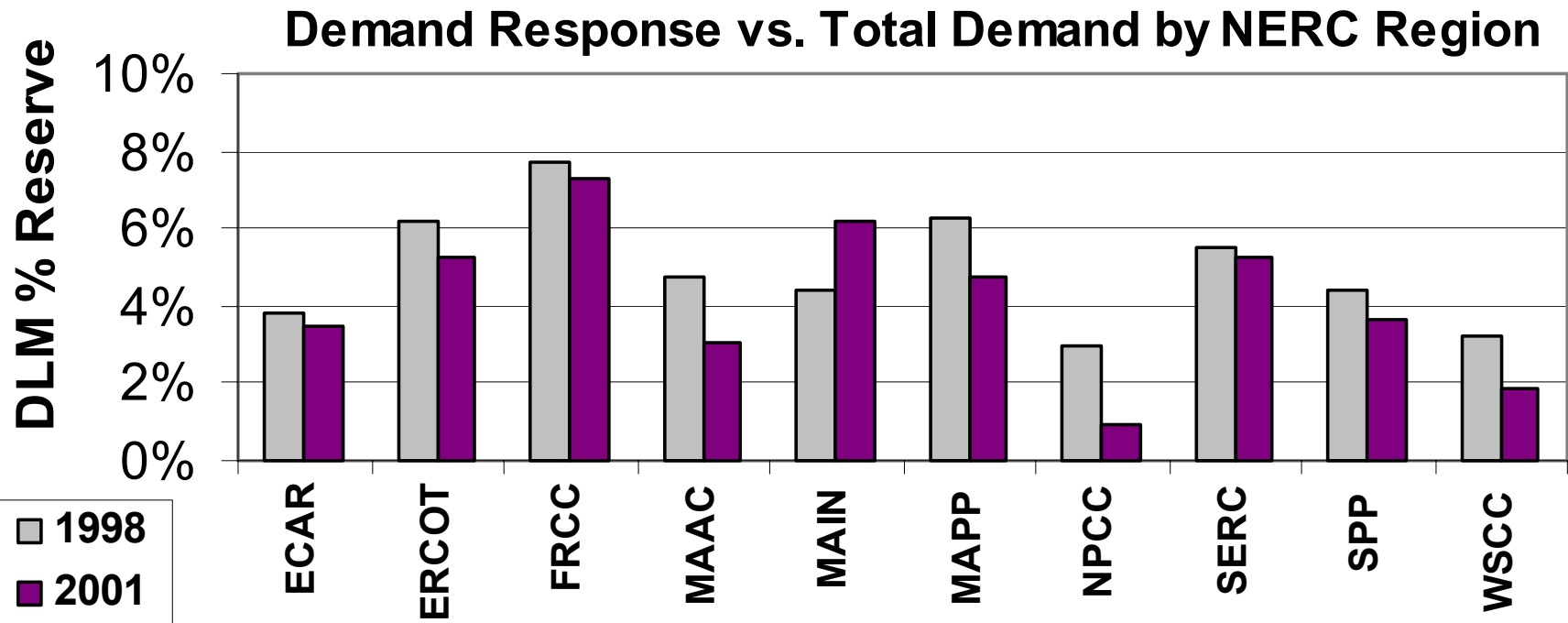


# Overview of Presentation

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- **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

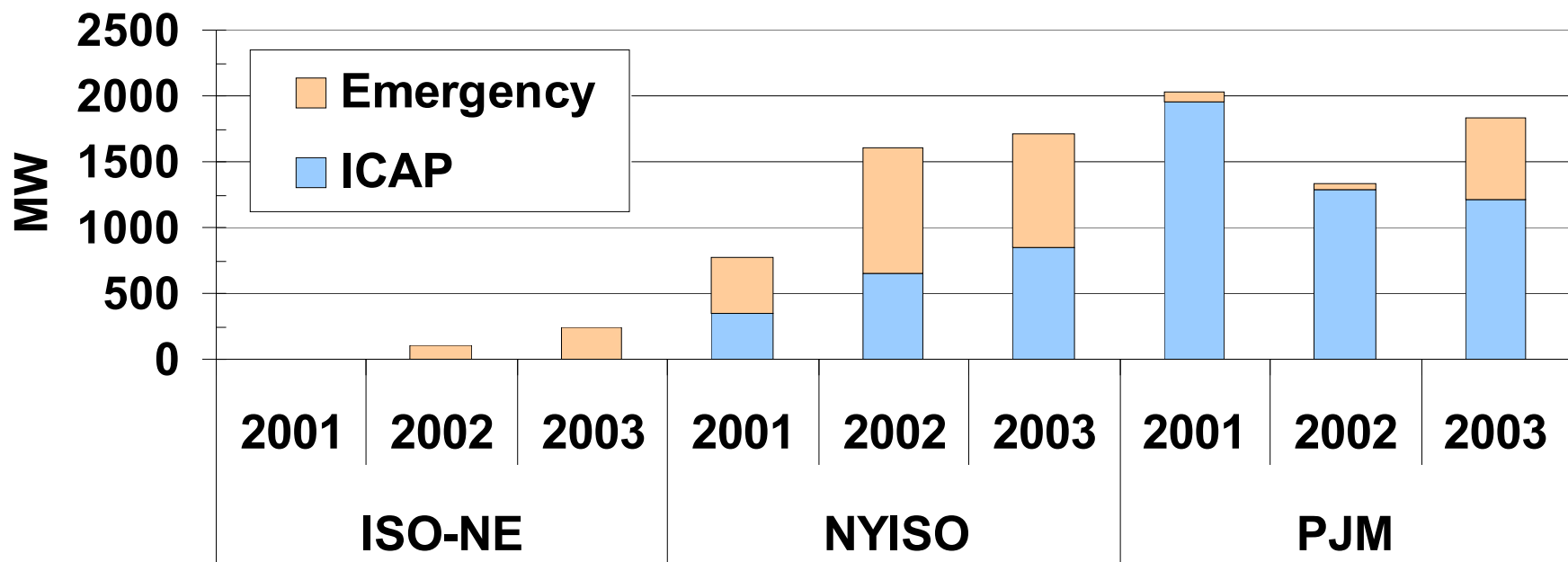
# Increasing Policy Support from FERC and DOE

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- **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

MW Enrolled:  
Emergency and ICAP Programs

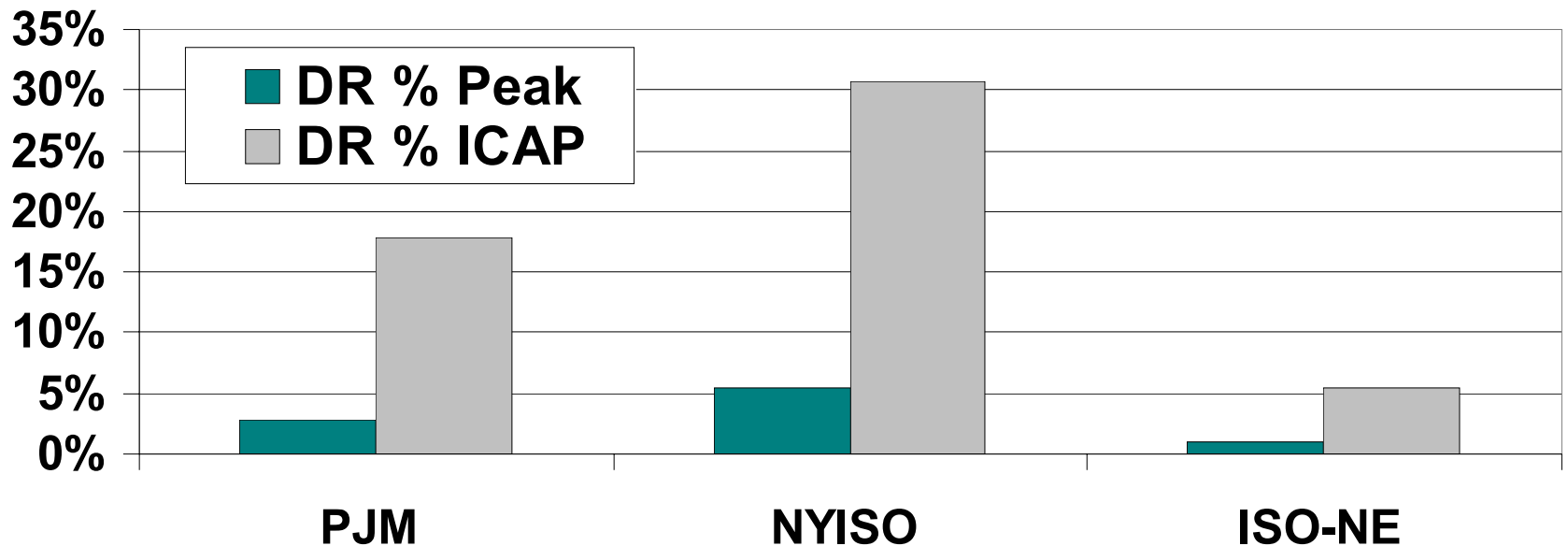


Source: Neenan Assoc.

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

# DR Resource Targets: How much is enough??

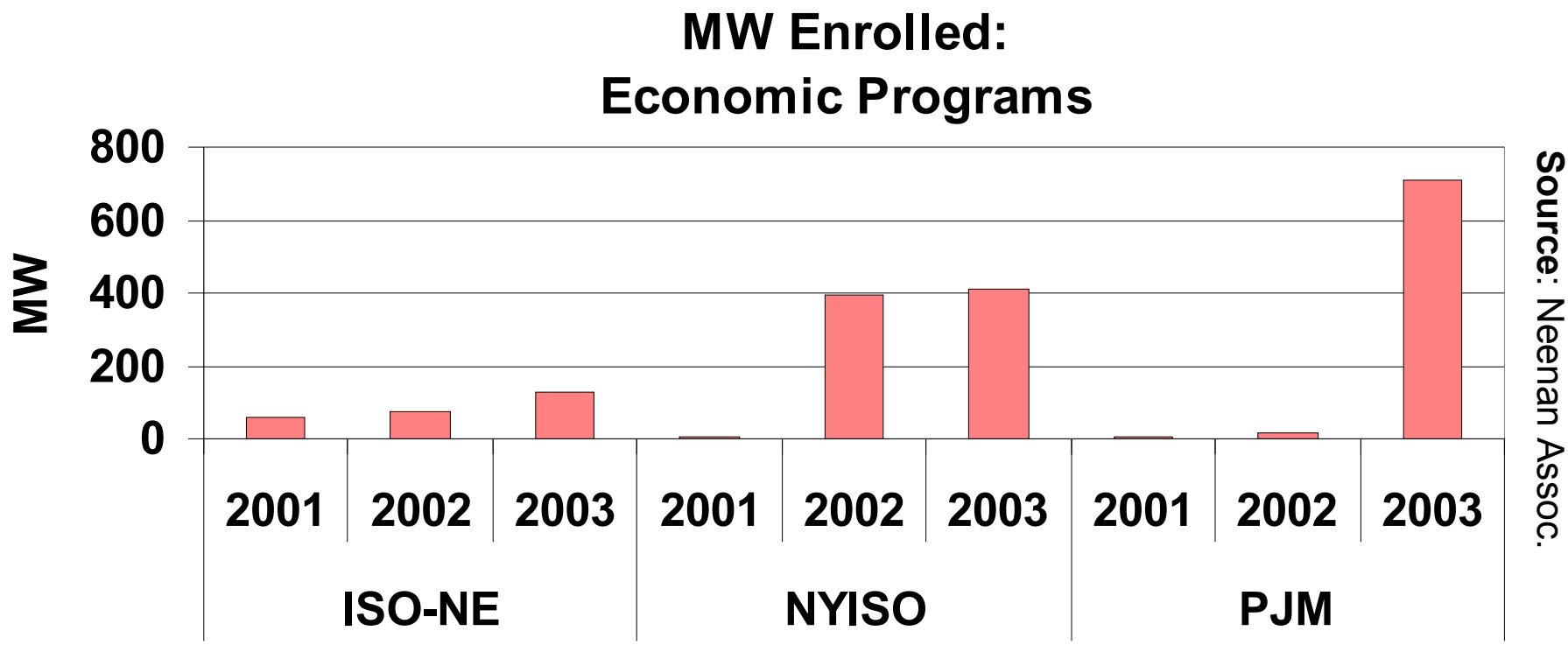
DR as % of 2003 Peak System Load  
and ICAP Requirement



Source: Neenan Assoc.

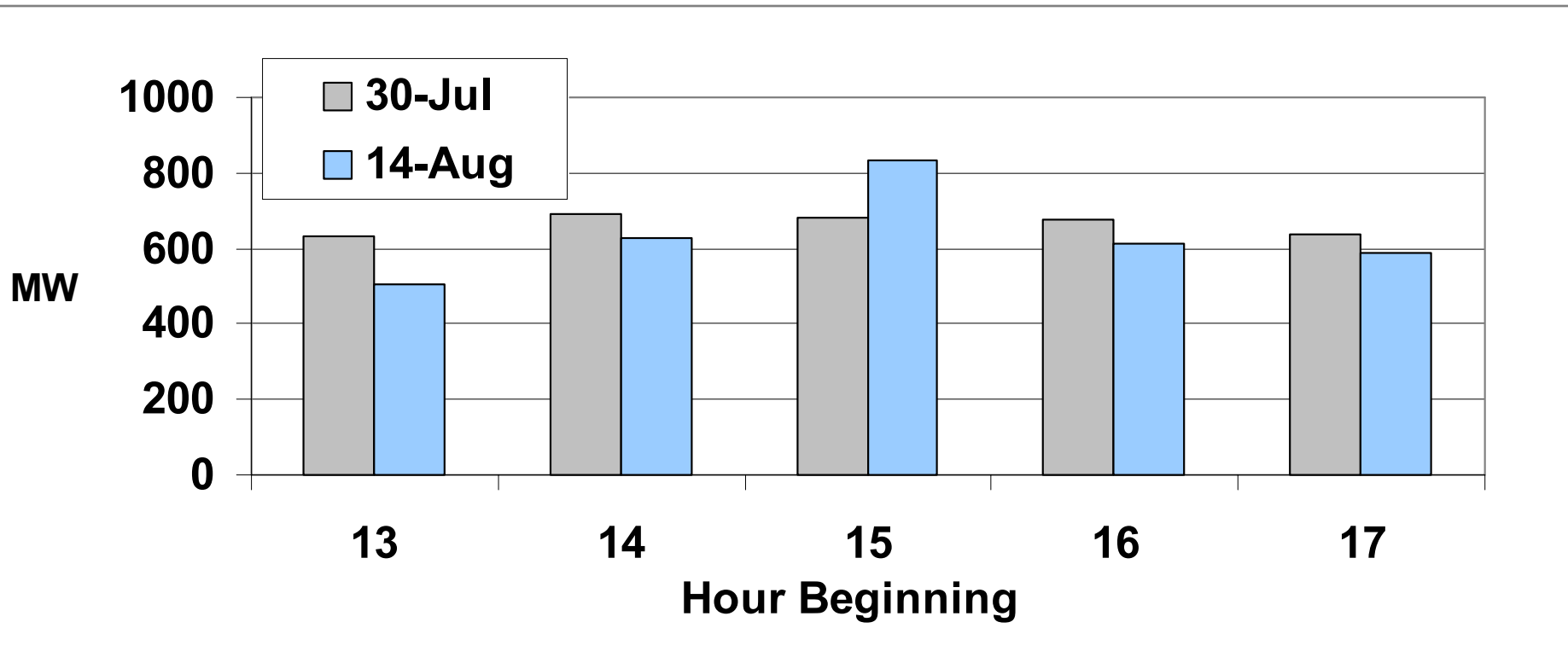
- ISOs don't have explicit targets
- NYISO DR program exemplifies "best practice"
- ISO-NE needs more DR, particularly in congested areas (SW CT)

# 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

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- 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

<i>Outage cost = \$5,000/MW</i>				
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

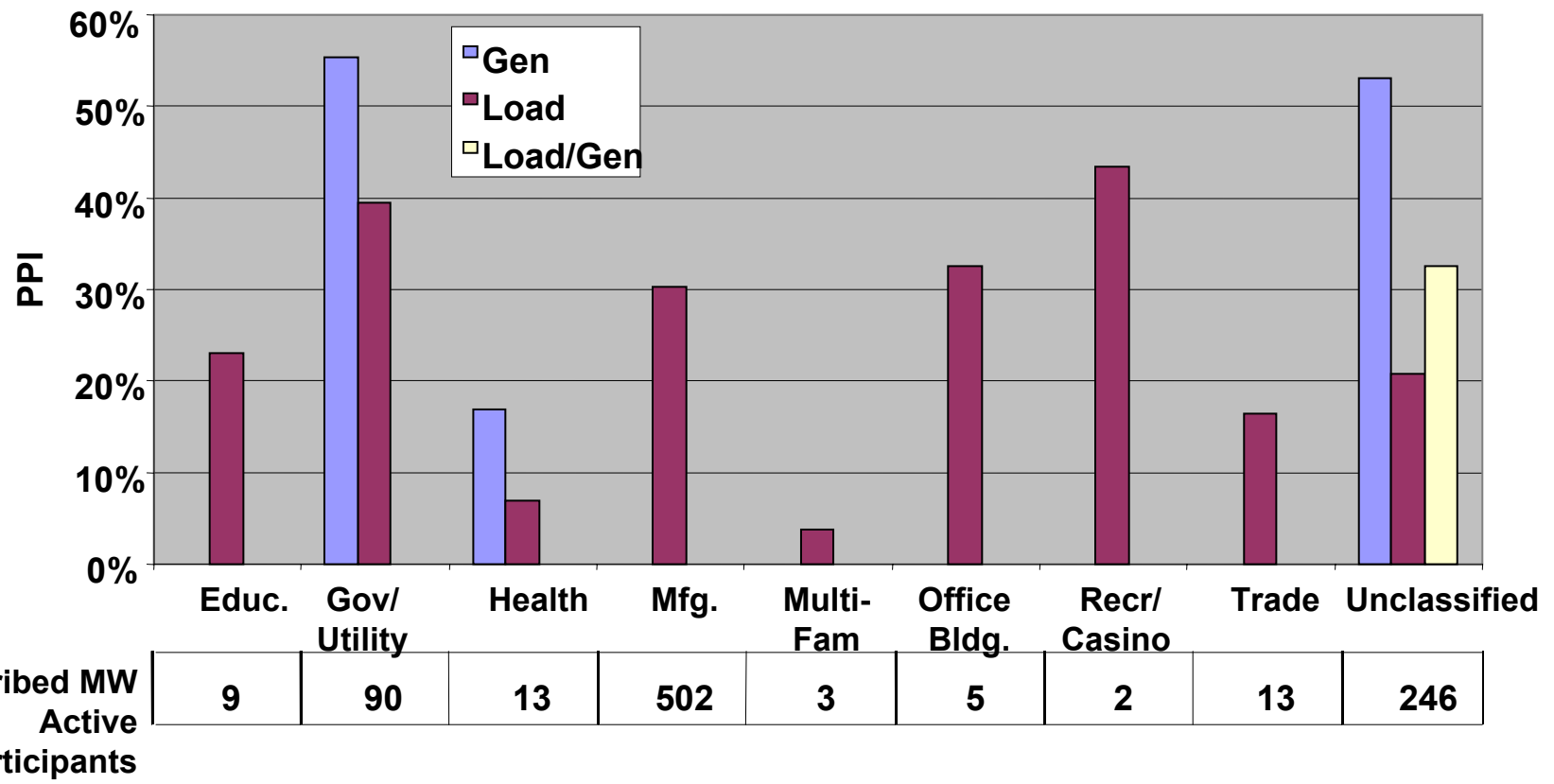
Source: NYISO 2003 PRL Program Evaluation Summary

# Understanding Customer Response: Performance Metrics

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- **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



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



# RTP as Default Service in States with Retail Competition

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- **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

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- **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

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- **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.)**

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- **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**