

Overview of Demand Response PJM

Integrations completed as of May 1st, 2005

PJM Mid-Atlantic

Current PJM RTO Statistics

Generating Units	1,200 +
Generation Capacity	165,000 MW
Peak Load	144,644 MW
Transmission Miles	56,070
Area (Square Miles)	164,250
Members	500 +
Population Served	51 Million
Area Served	13 States and DC

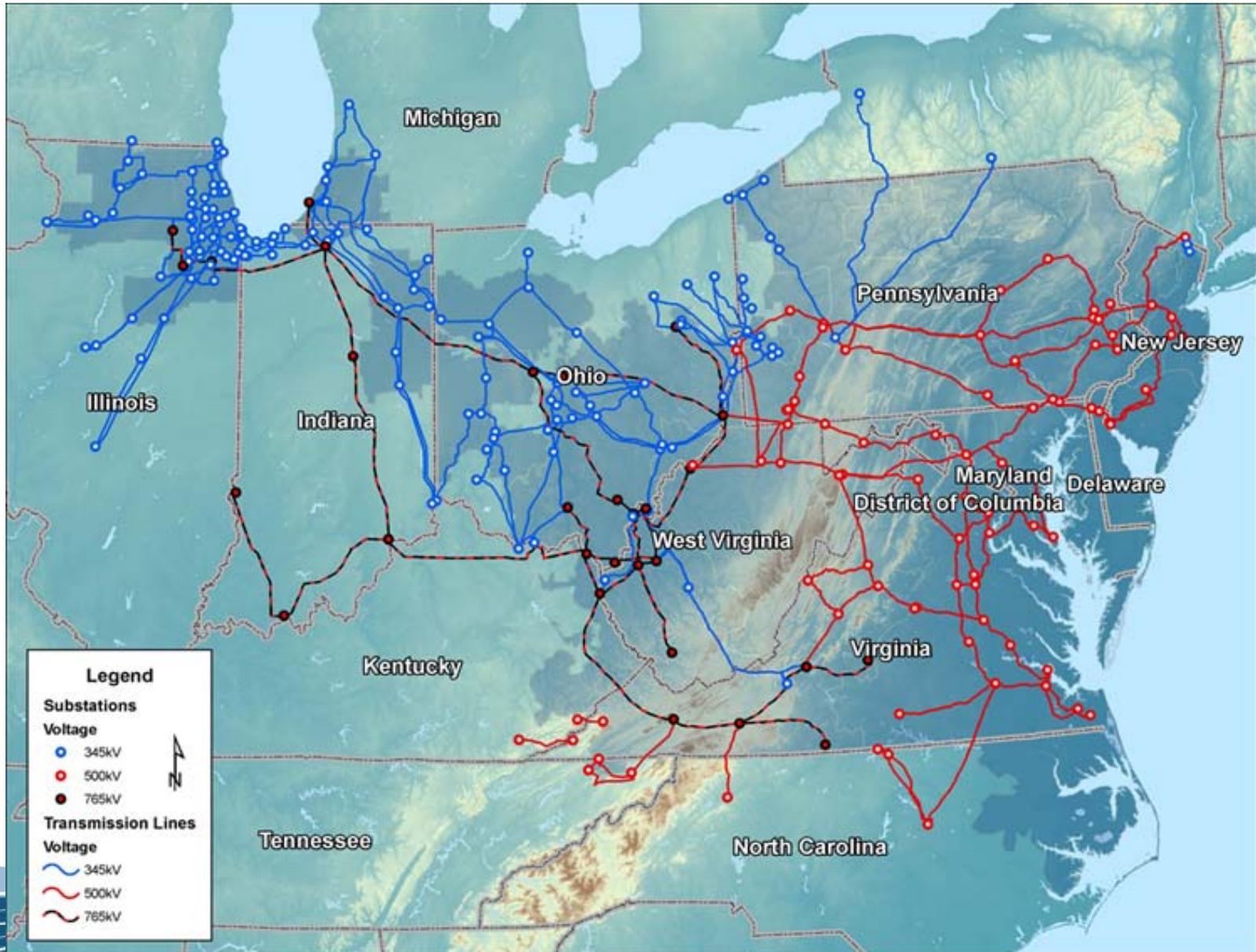
AEP, Dayton, ComEd, & DUQ

Dominion

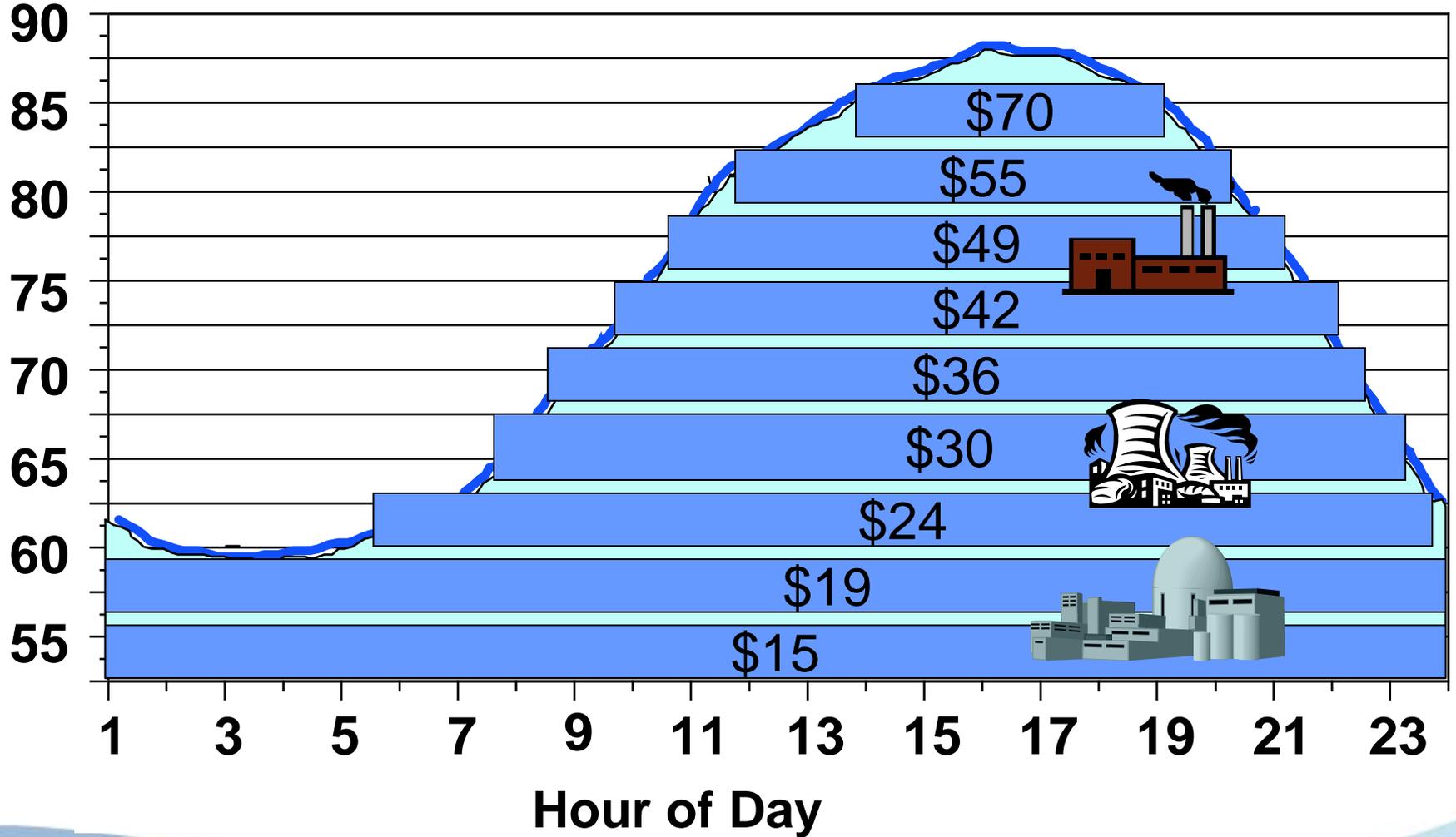
How is PJM Different Than My Local Utility?

- PJM does not own any transmission or generation assets
- PJM does not take ownership of the energy on the system
- PJM is not responsible for the actual maintenance on generators or transmission systems (PJM coordinates maintenance)
- PJM does not directly serve any end use (retail) customers

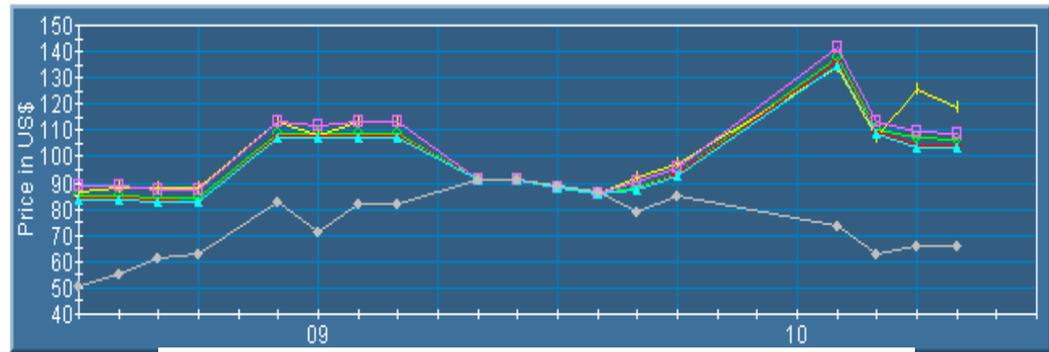
- PJM maintains the “big picture” of the transmission system regardless of ownership
- PJM by agreement has operational control of the transmission system
- PJM is operated as “profit neutral”
- PJM is not a publicly traded company
- PJM remains totally independent of all PJM members



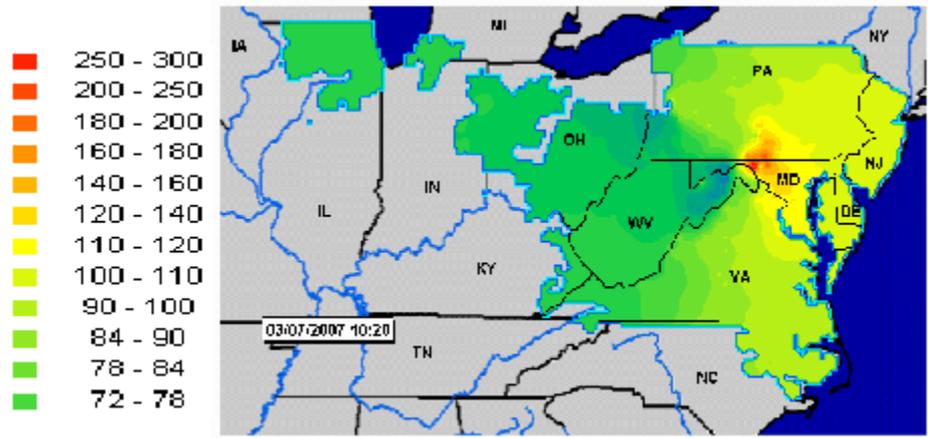
Load (MW x 1000)



- Day-Ahead Energy Market
- Real-Time Energy Market
- Reliability Pricing Model
 - Capacity construct effective June 2007
- Financial Transmission Rights
 - Auction Options
- Ancillary Services Markets
 - Regulation Market
 - Synchronized Reserve Market
 - Day Ahead Scheduling Reserve Market
 - Black Start Services
 - Reactive Services

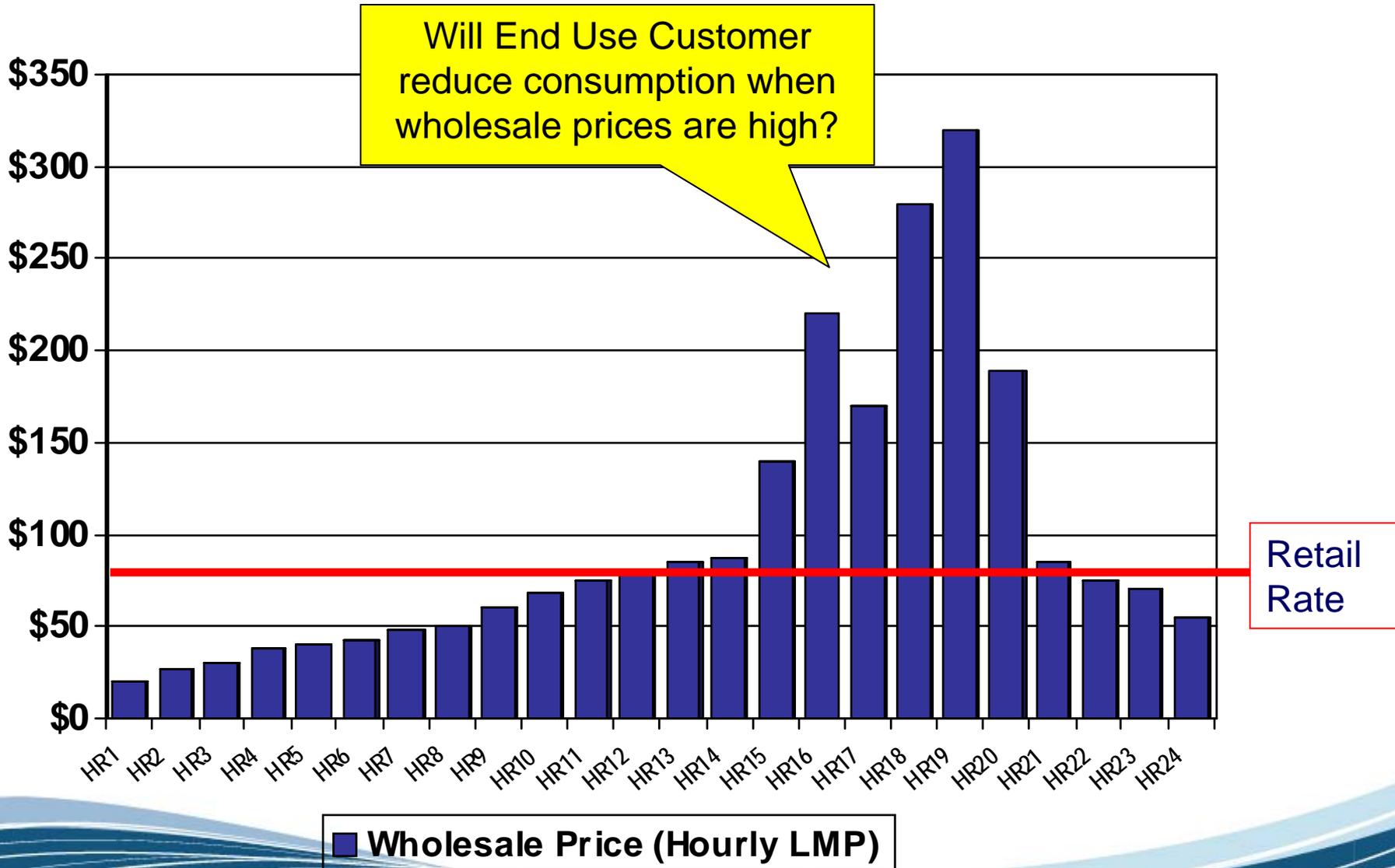


	LMP	Cur	Avg	Min	Max
AE (Zone)		106.4	98.55	83.96	137.4
JC (Zone)		104.2	97.62	83.03	136.0
PS (Zone)		103.4	97.16	82.62	134.8



PJM

Demand Side Response



EMERGENCY

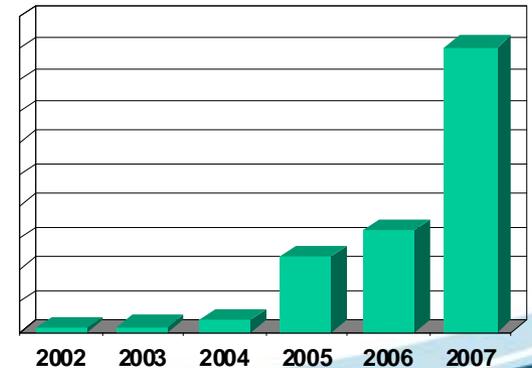
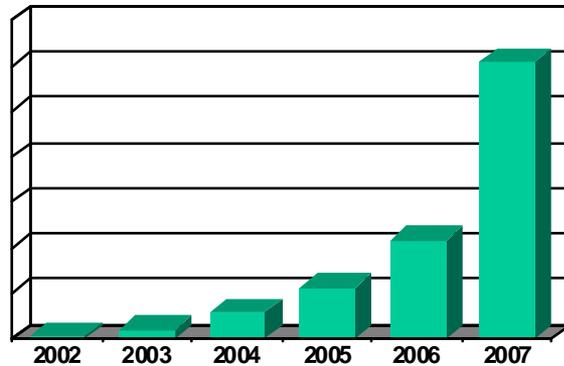
Designed to provide a method by which end-use customers may be compensated by PJM for reducing load during an emergency event.

ECONOMIC

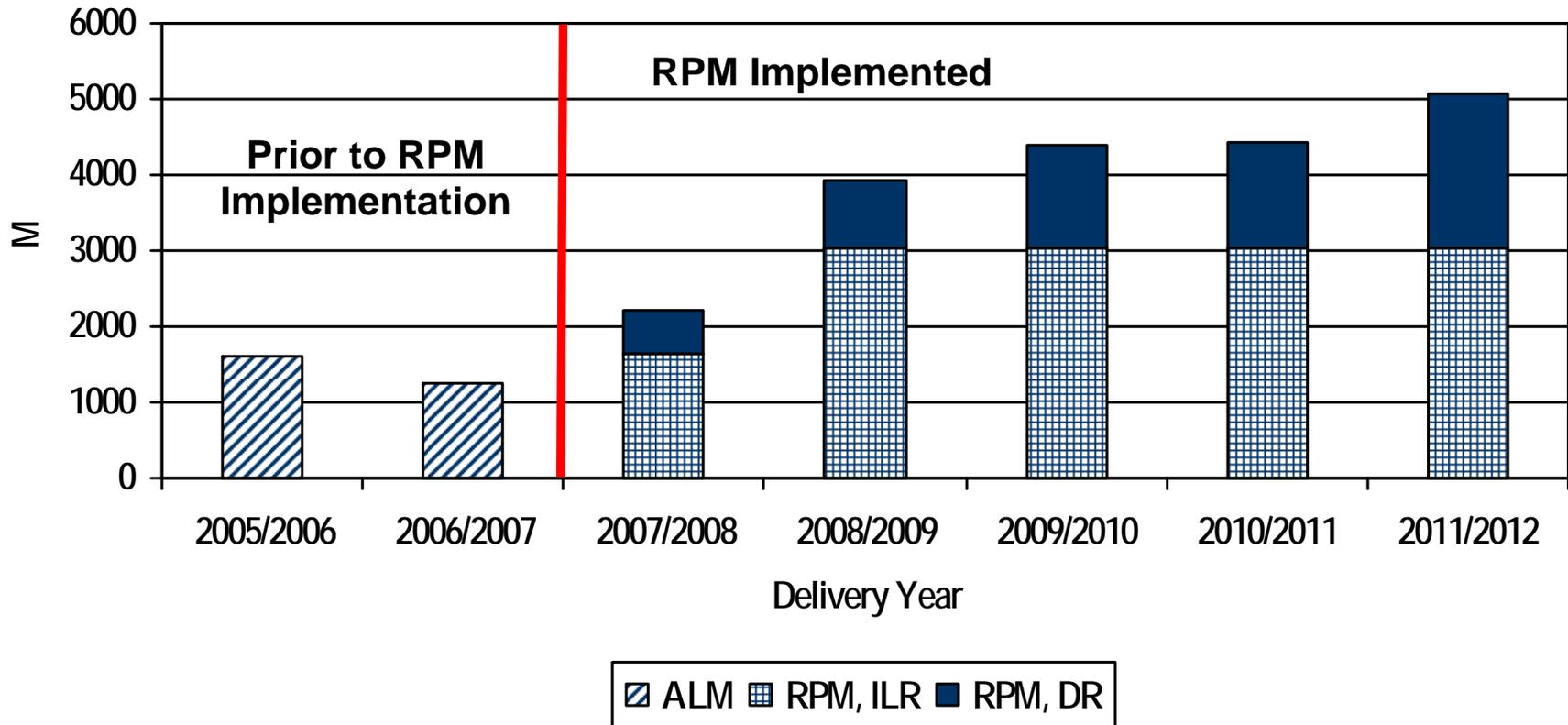
Designed to provide an incentive to customers or curtailment service providers to reduce consumption when PJM LMP prices are high.

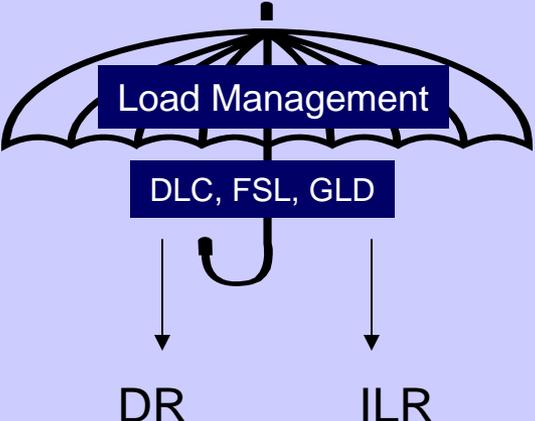
Demand Side Response (DSR) = Load Response

	Total MWh	Total Payments
2002	6,727	\$801,119
2003	19,518	\$833,530
2004	58,352	\$1,917,202
2005	113,393	\$12,000,354
2006	217,056	\$16,118,042
2007	608,745	\$45,173,237



Participation Growth – Emergency (Capacity)



Energy	Capacity	Ancillary Services
<ul style="list-style-type: none"> • Economic • Emergency – Energy Only <p>Voluntary load reductions for <u>energy</u>, even during a PJM emergency event</p>	<ul style="list-style-type: none"> • Emergency – Capacity Only • Emergency – Full (also gets an energy payment) <p>Mandatory reduction for PJM Load Management emergency event</p> 	<ul style="list-style-type: none"> • Synchronous Reserves • Regulation • DA Scheduling Reserves <p>Load bids into these markets and responds to an event exactly like a generator</p> <p>Mandatory response to a Synchronous Reserve event if cleared in market</p>

Load Serving Entity:

PJM Member, including Load aggregator or power marketer, serving end-users within the PJM Control Area, to sell electric energy to end-users within the PJM Control Areas.

Generator:

PJM Member that owns, or leases, facilities for generation of electric energy that are located within the PJM Control Areas.

*End
Use
Customer*

Curtailment Service Provider:

PJM Members that will act on behalf of end-use customers who wish to participate in PJM Load Response opportunities.

Electric Distribution Company :

PJM Member that owns, or leases, electric distribution facilities that are used to provide electric distribution service to electric load within the PJM Control Areas.

EMERGENCY

Energy Only Option

- PJM sends notification of event via All Call to CSP
- Energy payment
- Voluntary Curtailment

Capacity Only Option

- PJM sends notification of event via All Call to CSP
- Capacity value
- Mandatory Curtailment

Full Emergency Option

- PJM sends notification of event via All Call to CSP
- Energy payment and capacity value
- Mandatory Curtailment

ECONOMIC**

Day Ahead Market

- CSP Submit Day Ahead Bid in eMKT
- PJM Notifies CSP via eMKT
- Obligated in Real Time if Bid clears

Real Time Market

- CSP Notifies PJM via email one hour prior to reduction
- Voluntary Curtailment

Dispatched by PJM in Real Time

- CSP Submits operational info via eSuites
- PJM Notifies CSP via email

***Except Real Time LMP Based Customer*

EMERGENCY

PJM pays Zonal LMP

- Resource is made whole to its offer value, which includes:
 - Minimum dispatch price
 - Minimum down time
 - Shutdown costs
- Full Emergency participants also receive capacity value
- Emergency – Capacity Only participants receive capacity value only

ECONOMIC **

PJM pays Zonal LMP – Retail Rate

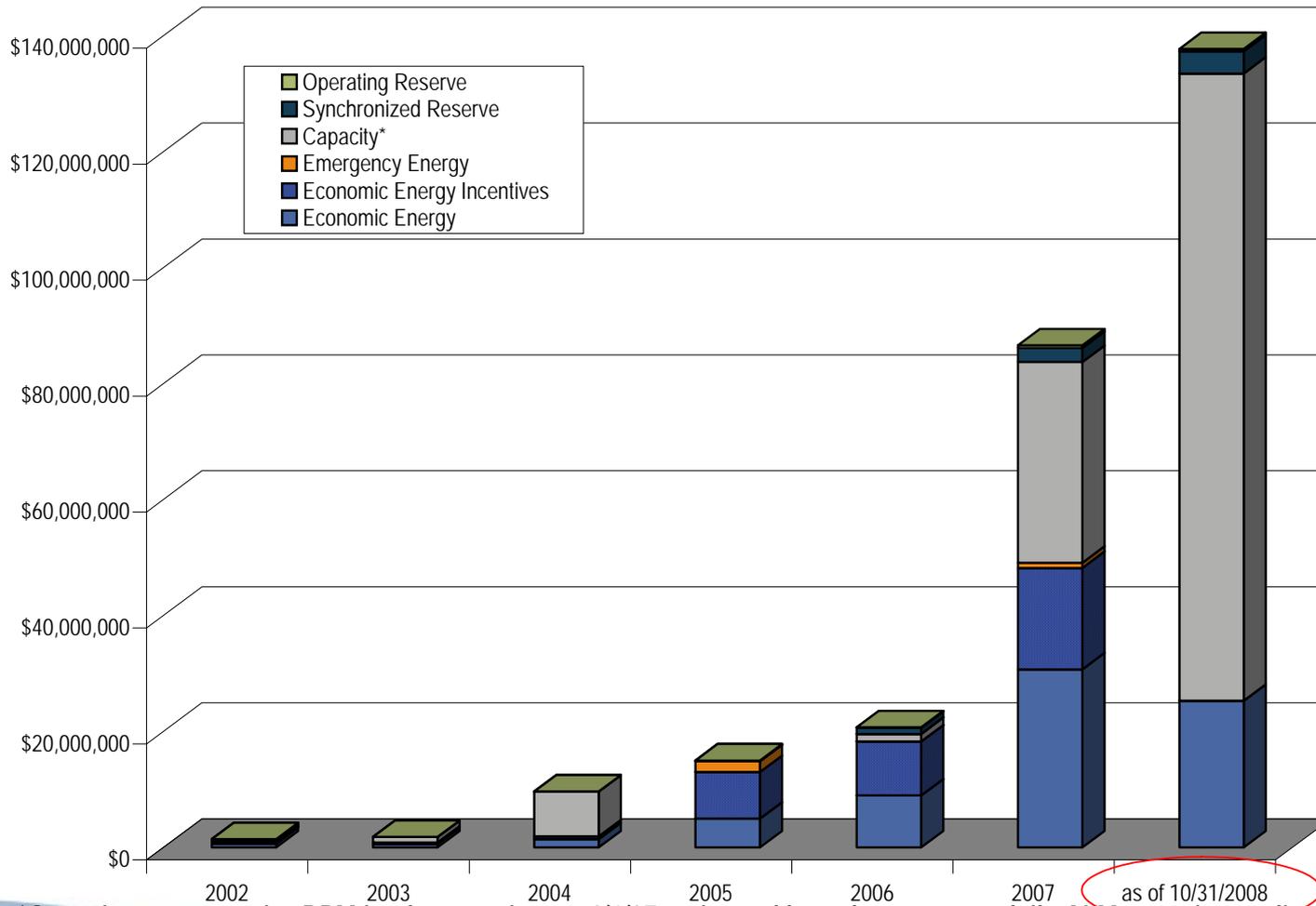
Retail Rate = Generation +
Transmission portion of the
LSE retail charges (G & T)

[Incentives for the Economic Program
expired December 31st, 2007]

***Except Real Time LMP Based Customer*

	Day Ahead LMP Based Customers	Real Time LMP Based Customers
Economic Program	May Participate	May Participate
Participation Options	<ul style="list-style-type: none"> •Real Time or Day Ahead 	<ul style="list-style-type: none"> •Real Time Market Only
Operations	<ul style="list-style-type: none"> •Clear in the Day Ahead Market •Self-Schedule a Load Reduction in Real Time Market •Dispatched by PJM in Real Time Market 	<ul style="list-style-type: none"> •Dispatched by PJM in Real Time Market
Compensation	<ul style="list-style-type: none"> •As defined by the program 	<p>PJM shall pay such end-use customer the difference between the actual savings achieved based on zonal LMP and the total value of the end-use customer's load response bid, if savings achieved by the end-use customer are less than the total value of the load response bid.</p>

PJM Demand Side Response Estimated Revenue



*Capacity revenue prior RPM implementation on 6/1/07 estimated based on average daily ALM capacity credits and weighted average daily PJM capacity market clearing price.

References

DSR Information on PJM.com

The screenshot shows the PJM website in Microsoft Internet Explorer. The browser title is "PJM - Microsoft Internet Explorer provided by PJM Interconnection". The address bar shows "http://www.pjm.com/index.jsp". The website header includes the PJM logo and navigation links: "About PJM", "Services", "Planning", "eTools", "Markets", "Committees & Groups", and "Documents". The "Markets" link is circled in blue. A dropdown menu is open under "Markets", listing various market categories. The "Demand Response" link is highlighted in orange and circled in blue. Below the dropdown menu, the main content area features the heading "Working to Perfect the Flow of Energy" and a list of bullet points describing PJM's role in the U.S. electric power system. The footer includes a "PJM Celebrating" logo and a "Recent News" section with links to "PJM Board of Managers Announces CEO Phillip G. Harris' Retirement; Karl V. Pfirrmann Named Interim President and CEO (07.23.2007)".

Address: <http://www.pjm.com/index.jsp>

Navigation: [About PJM](#) > [Services](#) > [Planning](#) > [eTools](#) > **Markets** > [Committees & Groups](#) > [Documents](#)

Market Categories:

- Operational Data
- Joint and Common
- Energy
- FTR
- Ancillary Services
- Market Settlements
- Capacity Credit
- Market Monitoring
- Demand Response**
- Reliability Pricing Model
- Marginal Losses

Advanced Search: > search

Reference Materials:

- DR Membership
- Curtailment Service Providers
- Data
- DR Energy Market
- DR Capacity Market
- DR Synchronized Reserve Market
- DR Regulation Market

[PJM 2007 Strategic Report](#)

RTO Load: 115249 as of 09:35 AM EPT

LMP Data: \$87.62 as of 08/08/07

Recent News:

- [PJM Board of Managers Announces CEO Phillip G. Harris' Retirement; Karl V. Pfirrmann Named Interim President and CEO \(07.23.2007\)](#)
- [PJM Reliability Model Production](#)

Trusted sites

Load Response Business Rules Link:

<http://www.pjm.com/markets/demand-response/downloads/documentation/load-resp-business-rule.pdf>

[> search](#)
[> advanced search](#)

Working to Perfect the Flow of Energy

PJM Interconnection, a regional transmission organization, plays a vital role in the U.S. electric power system.

- PJM ensures the reliability of the electric power supply system in 13 states and the District of Columbia.
- PJM operates an efficient, effective wholesale electricity market.
- PJM manages a long-term regional electric transmission planning process to maintain the reliability of the power supply system.

Quick Links

LMP: [Day-Ahead](#) | [Real-Time](#)
[Operational Data](#)
Login: [eSuite](#) | [eData \(Guest\)](#)
[Emergency Procedures](#)
[Training](#)

RTO Load

100093

as of 10:35 AM EPT

LMP Data

PJM (Zone) \$90.46 P

Click on eData (Guest) from the PJM Homepage (PJM.com)

[Home](#) > [Markets](#) > [Demand Response](#) > [Curtailment](#)

Curtailment Service Providers

Below is a listing of curtailment service providers (CSP) who participate in the PJM load response program. The list is broken down by [all](#), [multiple](#) and [single](#) states within the PJM footprint.

For more information on the territory served by PJM, please visit our [maps](#). If you are a CSP and wish to supply your company's contact information, complete the [enrollment/change form](#).

CSPs Who Participate in ALL States within the PJM Footprint

Company	Contact	Active Zone(s)
American PowerNet	David Butsack Phone: 610-372-8500 E-mail: David Butsack	All
Baltimore Gas & Electric	David E. Greenberg Phone: 410-234-5216 Email: David E. Greenberg	All



> advanced search

PJM Committees

PJM committees - an integral part of the PJM model - actively work to refine and improve PJM's rules, policies and processes. They are a dynamic forum for members/customers. Collectively, they facilitate PJM's ability to move forward with positive change.

The Members Committee (MC) reviews and decides upon all major changes and initiatives proposed by committees and user groups.

The Markets and Reliability Committee (MRC) is responsible for ensuring the continuing viability and fairness of the PJM markets. The MRC also is responsible for ensuring reliable operation and planning of the PJM system.

The Demand Response Steering Committee (DRSC) is responsible for setting policy direction for other committees and working groups aimed at promoting effective demand response market participation through development of clear and consistent market rules. This Committee reports to the Markets and Reliability Committee.

- > Committees Groups
- > Meeting Advisor
- > Committee Communications
- > **PJM Committees**
- > Working Groups
- > Stakeholder Meetings
- > Issue Tracking
- > State Commissions
- > Facilitator Feedback Form

- PJM Committee with stakeholder input:
- *sets policy direction for DSR in PJM*
 - *handles broad strategic initiatives that addresses barriers to entry, regulatory policy, education protocols, etc.*

- **PJM Web**
 - www.pjm.com (PJM Homepage)
 - <http://www.pjm.com/etools/edata-guest-browser-requirements.html#> (PJM eData Guest Login)
 - <http://www.pjm.com/services/training/train-media.html> (PJM Online Training)
- **PJM Member Relations:**
 - <http://www.pjm.com/about/contact/form-contact.html>
 - 610-666-8980
 - 866-400-8980

