



**Enabling End Users to see Real Time Price Signals and
Manage their Own Electricity Costs via the
PJM Demand Side Response Program**

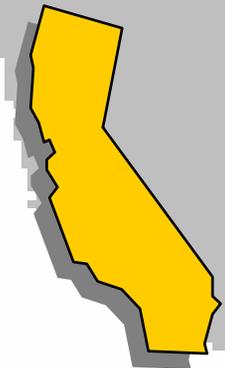
Delaware DNREC

Joe Polidoro, Sr. Engineer
PJM Interconnection, LLC
610-666-4693

- Maintain the safety, adequacy, reliability and security of the power system
- Create and operate a robust, competitive, and non-discriminatory wholesale electric power market

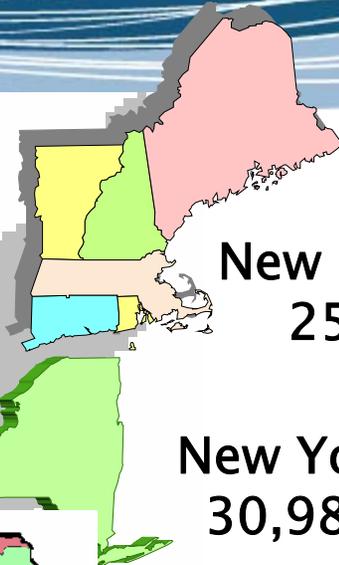


PJM is currently the largest centrally dispatched Entity in North America



**California
45,900**

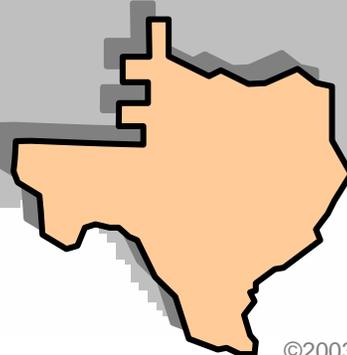
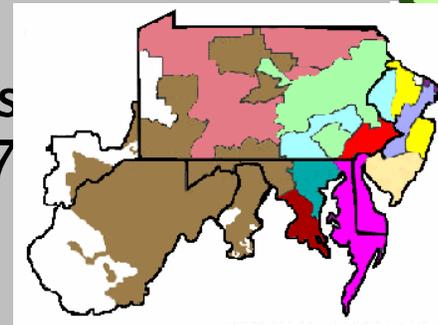
**IMO
25,414**



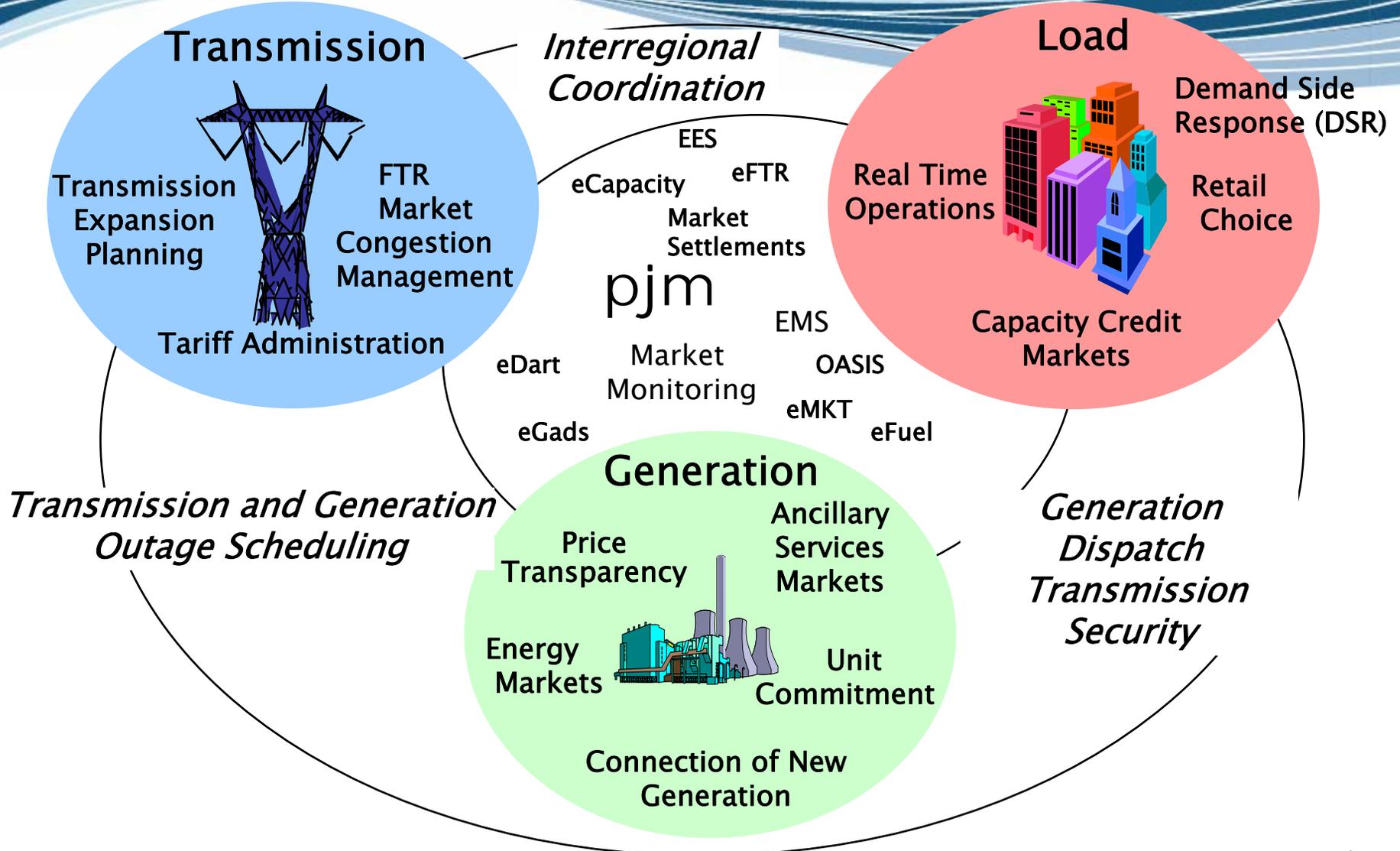
**New England
25,158**

**New York
30,983**

**PJM +
PJM West
63,777**



**ERCOT
57,000**

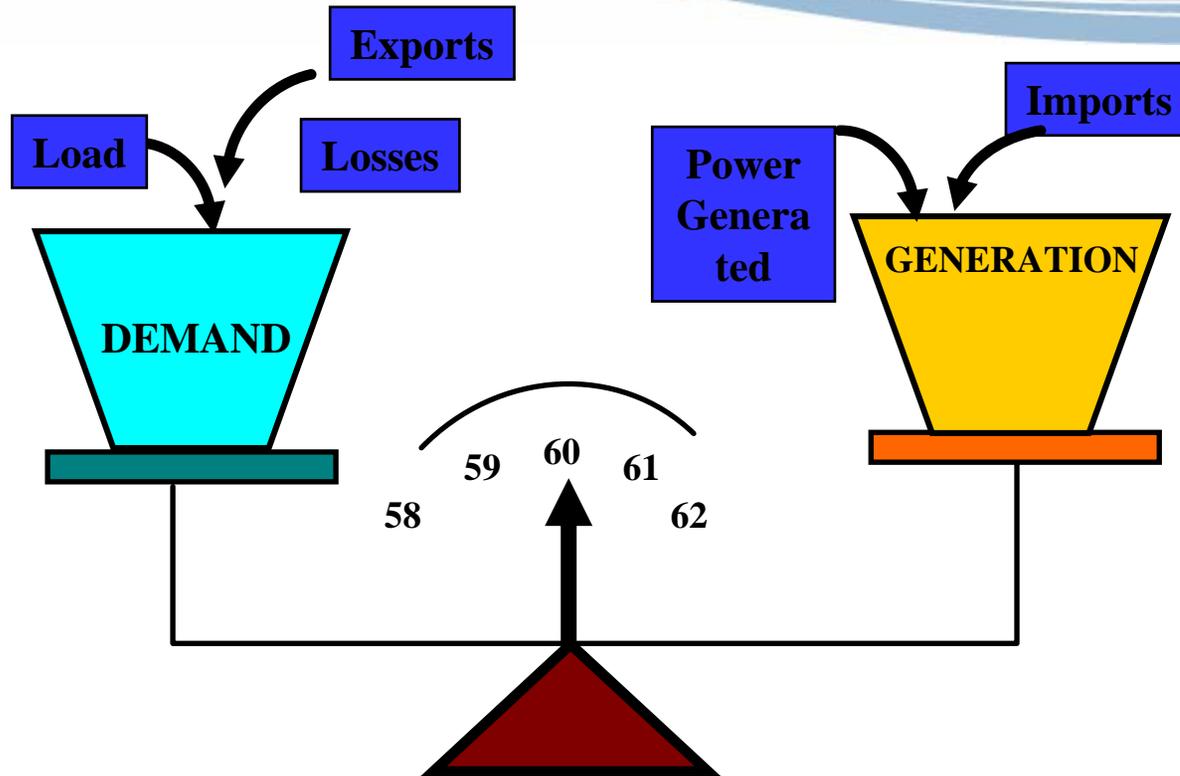


- **Reliability Improved**
 - Improved generation equipment performance by nearly 35 percent since market incentives were introduced in April 1997.
 - Improved generating unit performance translates into consumer savings of about \$1.2 million on a hot summer day.

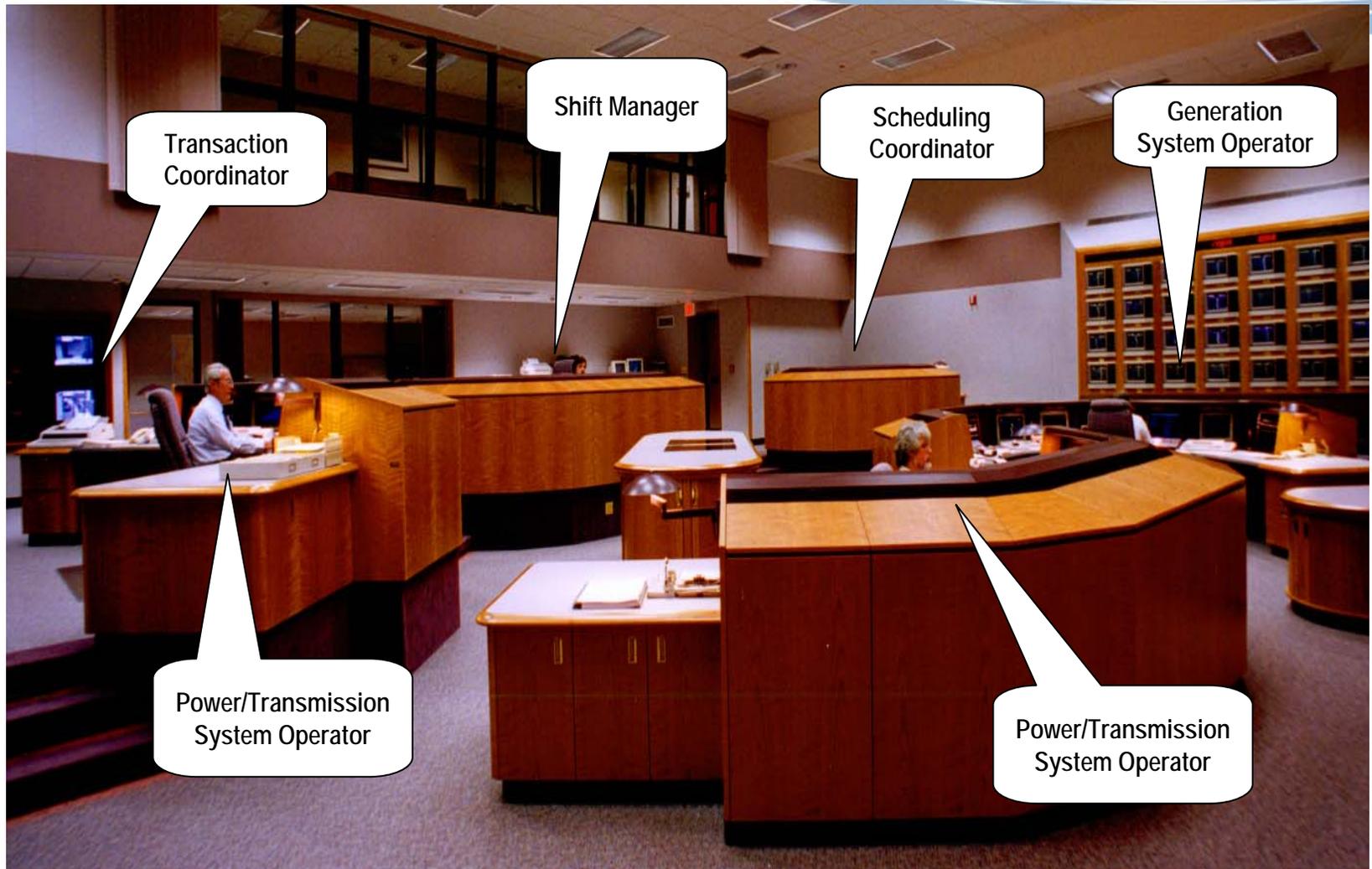
- **New Power Supply Attracted**
 - Regional transmission planning process creates proper incentives to attract future generation.
 - More than 7,500 MW on line
 - 7,500 MW under construction
 - 26,000 MW under evaluation
 - New generation results in \$775 million of associated transmission system upgrades.

- **Wholesale Energy Prices Reduced**
 - Wholesale prices dropped to \$35.33/MWH in 2002 from \$43.63/MWH in 2001 – 25% hotter in 2002.
 - Nine all-time peaks in summer of 2002 – peak load served at an average of \$150/MWH as compared to \$900/MWH on peak days in 2001 (savings of about \$10 million to wholesale energy customers).

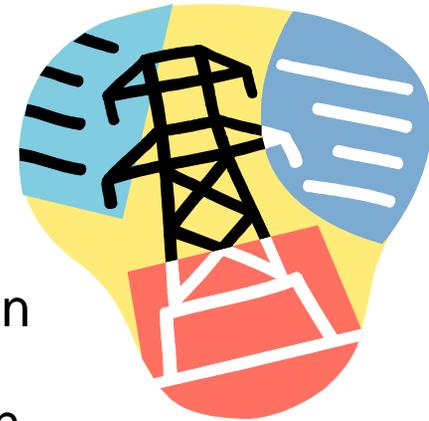
- **Demand Response Empowered**
 - PJM's demand response programs enabling customers to manage their own electricity costs grew 300 percent in 2002.
 - The most active 2002 demand side management hour lowered prices by more than 12%.



Without a demand response mechanism, the [independent system] operator is forced to work under the assumption that all customers have an inelastic demand for energy and will pay any price for power.

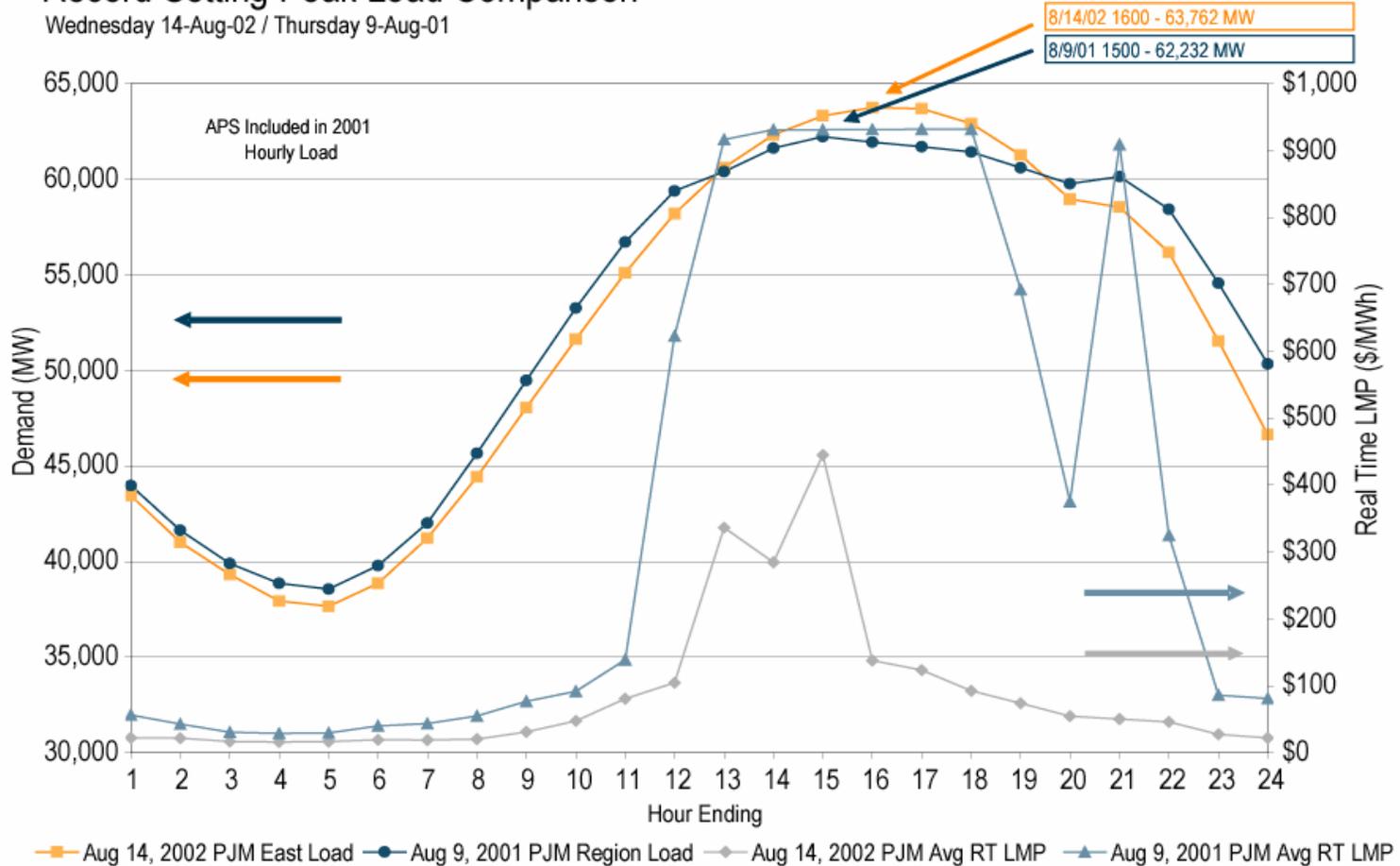


- A working demand response program puts downward pressure on price.
- It is an alternative to generating more electricity.
- When wholesale prices are high, Demand response can stabilize prices by reducing demand. When electricity supplies are short, demand response reduces stress on the grid.
- 400+ Large Industrial and Commercial participants.
- 45,000+ small commercial and residential end users in the program.



Record Setting Year Load Comparison

Wednesday 14-Aug-02 / Thursday 9-Aug-01



| Program Name | | Emergency | Economic-Real-Time |
|----------------|---|-----------|--|
| Frequency | I can respond frequently. Notify me when prices are high | | ✓ |
| | I can respond infrequently. Only notify me when the lights are in danger of going out | ✓ | |
| | | | |
| Risk | I want a 100% voluntary program with no risk and no penalties | ✓ | ✓ |
| | | | |
| Implementation | I want to use my emergency generators and I have the proper permits. | ✓ | ✓ |
| | I will only reduce load if I'm paid a minimum of \$0.50/kWh | ✓ | (Request to be dispatched at \$0.50/kWh or higher) |
| | | | |
| Registration | Industrial and Large Commercial (> 100 kW) | ✓ | ✓ |
| | Residential or Small Commercial Pilot Program (< 100 kW) | ✓ | ✓ |

PJM eData Services - Microsoft Internet Explorer provided by PJM Interconnection LLC

INT HUB (Hub) **\$67.26**
 WESTERN HUB (Hub) **\$75.29**
 PJM (Zone) **\$104.19**
 AE (Zone) **\$75.09**
 BC (Zone) **\$86.9**

Thursday March 06, 2003 - 14:40 EST
Current PJM RTO Load: 43,089MW

Fran Barrett
610-666-8888

MY eData PREFERENCES

Lym3 Load Response West
 Lym2 Lym1
 Load Response - East

MY eData CONSTRAINTS
 ENERGY CONTRACTS ACTIVITY LOG
 eSuite ANNOUNCEMENTS
 IRC REPORT

Forecast Last Updated - Thursday March 06, 2003 - 14:15 EST
 Forecasted—Instantaneous Day Ahead Demand
 Select: Cycle LMP, Dispatch, & ACE

4:10AM EST 6-MAR-2003
 WINDY
 FLURRIES
 ICE
 © 2003 AcuWeather, Inc. http://www.acuweather.com
 Current Conditions 24 Hour Forecast
 Satellite Image Radar Image
 Select: Cycle Weather & Load

Forecast Last Updated - Thursday March 06, 2003 - 14:15 EST
 Forecasted—Instantaneous Day Ahead Demand
 Select: Cycle Load, Tiewflow & Transfer

| | BB | A | W | C | E |
|----------------|-------|-------|-------|-------|-------|
| Transfer Level | 1,682 | 3,057 | 5,709 | 4,073 | 5,305 |
| Warning Limit | 1,598 | 2,904 | 5,424 | 3,869 | 5,040 |
| Actual Flow | 1,564 | 2,698 | 5,070 | 3,130 | 4,443 |

Done
 Slide 2 of 106 PJM Teal Slide Design English (U.S.)
 Start
 99% 2:43 PM

eData

Non-PJM members should register under the company name "Other"

<https://esuite.pjm.com/mu/i/index.htm>

IT'S FREE!

| | | | | | | | | | |
|-----------|---------|--------------|----------|--------------|---------|--------------|---------|--------------------|------|
| HUB (Hub) | \$27.01 | Current Load | 38,370MW | Min Dispatch | \$48.24 | Max Dispatch | \$74.80 | Area Control Error | .99M |
| | \$54.09 | | | | | | | | |

- Ticker can display Day-Ahead (top-yellow) and Real-Time prices (bottom-green), load, min and max dispatch rates and Ace.

- Double click on the ticker to spawn this mini-ticker outside of the main eData window.

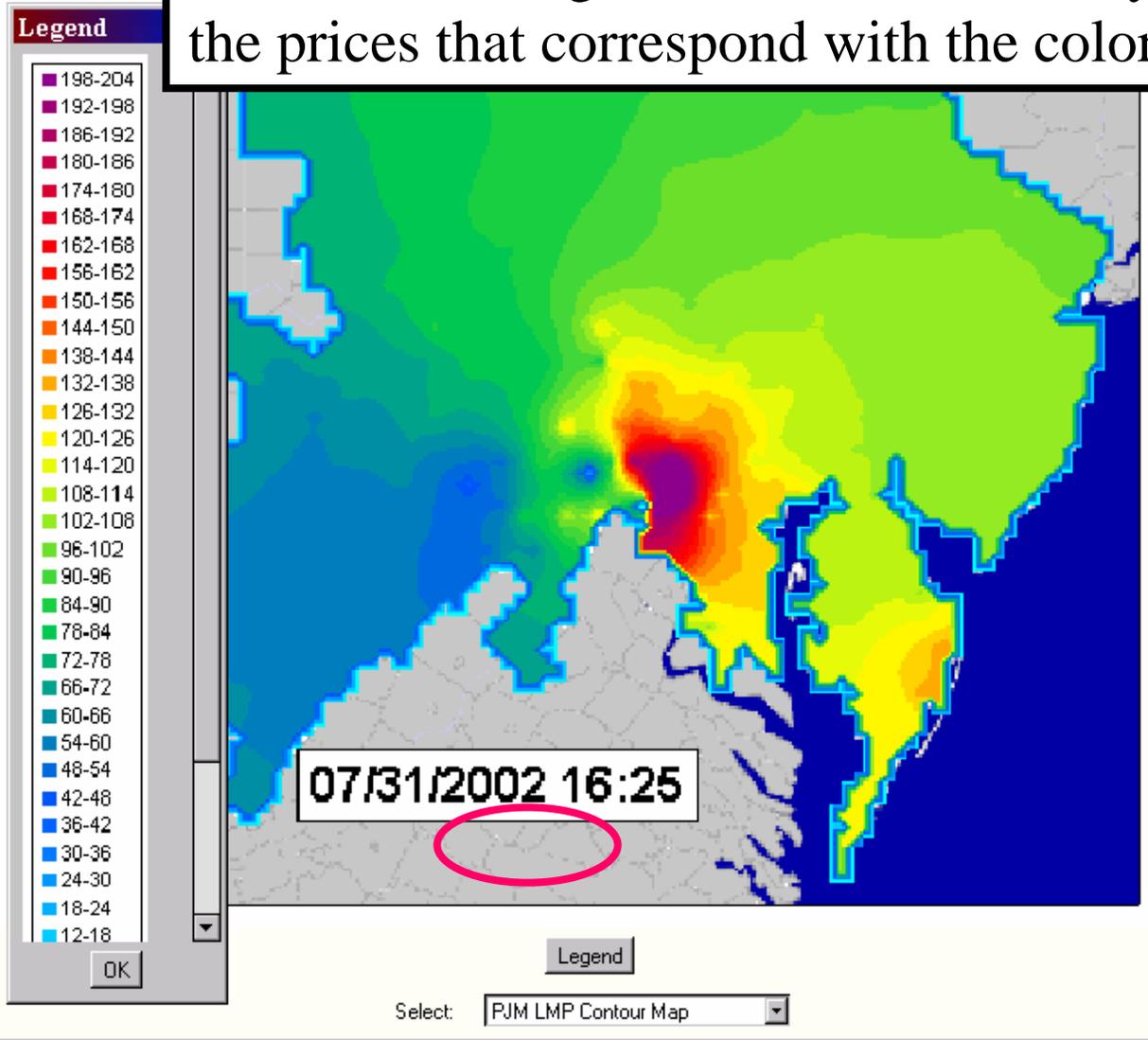
PJM eData Services Speed Direction

TRANSFER INTERFACE TIE FLOW

| | | | | | | | | | |
|--|-------------------|---------|--------------|----------|--|-----------|-----------|---------|----|
|  | WESTERN HUB (Hub) | \$27.01 | Current Load | 38,370MW | LMP data current as of Tue 04-Sep-01 19:15 EDT | Day Ahead | AE (Zone) | \$36.73 | BC |
| | | \$54.09 | | | | Real Time | | \$56.68 | |

[MY eData](#) [ENERGY CONTRACTS](#) [CONSTRAINTS](#) [ANNOUNCEMENTS](#) [eSuite](#) [ACTIVITY LOG](#)

Click on the “legend” and it will show you the prices that correspond with the colors.



Curtailment Service Provider List (1 of 4)

| Company | Contact | Phone | E-Mail | Active Zone(s) |
|-------------------------------------|------------------------|--------------|--|----------------------|
| Allegheny Power | Jason J. Wojciechowicz | 724-838-6189 | jwojcie@alleghenypower.com | APS |
| Amerada Hess Corporation | Blas Hernandez | 732-750-6148 | bhernandez@hess.com | PSEG, RECO, JCPL, AE |
| | Kevin Laguardia | 732-750-7113 | klaguardia@hess.com | |
| American PowerNet | Mike Messer | 610-372-8500 | mmesser@americanpowernet.com | All |
| Baltimore Gas & Electric | Gregory M. Urbin | 410-265-4221 | rider24@bge.com | All |
| Borough of Ephrata | Rick Gilkey | 484-840-1412 | rgilkey@mwn.com | All |
| Commercial Utility Consultants, Inc | Joe McGillian | 800-296-2821 | joe@commercialutility.com | All |
| | | 610-431-4400 | | |
| ConEdison Solutions | Adam H. Fairbanks | 888-210-8899 | FairbanksA@conedsolutions.com | PSEG, RECO, JCPL, AE |
| | | 914-286-7035 | | |



Curtailment Service Provider List (2 of 4)

| Company | Contact | Phone | E-Mail | Active Zone(s) |
|--|----------------------|--|--|---|
| Constellation Energy Source | George Pleat | 410-907-2052 | George.Pleat@CESource.com | PEPCO, BGE |
| Constellation NewEnergy | Kathleen Maher | 212-885-6422 | kathleen.maher@constellation.com | All |
| Continental Cooperative Services (CCS) | Phil Cerveney | 717-920-1111 From Illinois: 888/801-3069 | phil_cerveney@ccsenergy.com | PENELEC, PPL, METED, JCPL, APS |
| Downes Associates. Inc. | Barry C. Seldomridge | 410-546-4422 ext.121 | bseldomridge@downesassociates.com | PEPCO, DPL |
| Energy Analytics | Bill Hillis | 914-490-8005 | wjhr.1@juno.com | All |
| Emergency Systems Service Company | Steve Parker | 215-536-4973 ext. 11 | stevep@emergencysystems-inc.com | All |
| Enerwise Global Technologies | Barbara Scoglietti | 610-410-1100 ext 242 888-342-5201 | Barbara.Scoglietti@Enerwise.com | All |
| FirstEnergy | Bruce Rimmel | 610-921-6839 | bremmel@gpu.com | PENELEC, METED, JCPL |
| The Legacy Energy Group | Delbert Roberts | 540-351-0981 | droberts@legacyenergy.com | All |



Curtailment Service Provider List (3 of 4)

| Company | Contact | Phone | E-Mail | Active Zone(s) |
|---|------------------|--------------|--|----------------|
| Orange and Rockland Utilities (Rockland Electric Company) | Mike Thorpe | 845-577-3169 | thorpem@oru.com | RECO |
| PECO Energy | Gene Flanagan | 215-841-5363 | eugene.flanagan@exeloncorp.com | All |
| PEPCO | Steve Sunderhauf | 202-872-3507 | slsunderhauf@pepco.com | PEPCO |
| PEPCO Energy Services | Carolyn Moses | 703-253-1661 | cmoses@pepcoenergy.com | All |
| | Mark Koppelman | 302-369-9306 | MKoppelman@pepcoenergy.com | |
| Reliant Energy Solutions | Andy Bakey | 732-321-2037 | abakey@reliant.com | All |
| Richards Energy | Frank Richards | 717-898-6330 | Frichards@richardsenergy.com | All |
| Sempra Energy Solutions | Mary Madigan | 410-583-1950 | mmadigan@semprasolutions.com | All |
| South Jersey Energy Co. | Lou Decicco | 609-561-9010 | ldecicco@sjindustries.com | All |
| | | | | |

| Company | Contact | Phone | E-Mail | Active Zone(s) |
|--------------------------------|----------------|----------------|--|-----------------------|
| UtiliTech, Inc. | Jonathan Black | (610) 898-7119 | jhb@utilitech.com | All |
| Washington Gas Energy Services | Emily Harrall | 703-793-7570 | EmilyHarrall@wges.com | All |

EMERGENCY

2002

- ◆ **61 Registered Sites**
- ◆ **548 MW**
- ◆ **Payments \$177,000**

2003

- ◆ **107 New Registered Sites**
- ◆ **111 Additional MW**
- ◆ **Payments \$26,600**

ECONOMIC

2002

- ◆ **116 Registered Sites**
- ◆ **337 MW**
- ◆ **Payments \$895,000**

2003

- ◆ **129 New Registered Sites**
- ◆ **387 Additional MW**
- ◆ **Payments \$811,400_(up to 12-1)**

- Total Sites: 413 / Total MW: 1,384 MW
- 1,383 MW is approximately 2 % of the All Time Peak Demand
- Zonal LSE Charge (load ratio share) \$215,000

1. Enroll in the program (contact a CSP or obtain PJM membership)
2. Select a program (Emergency or Economic)
3. Obtain a free eData account
4. Dial in or attend the monthly working group meetings.
5. Send all requests to LoadResponse@pjm.com
6. Detailed information about PJM's demand-response program is available at PJM's Web site: www.pjm.com > Services > Demand Response Program.