# The Capacity Challenge in PJM

Audrey Zibelman
Executive Vice President and COO
PJM Interconnection

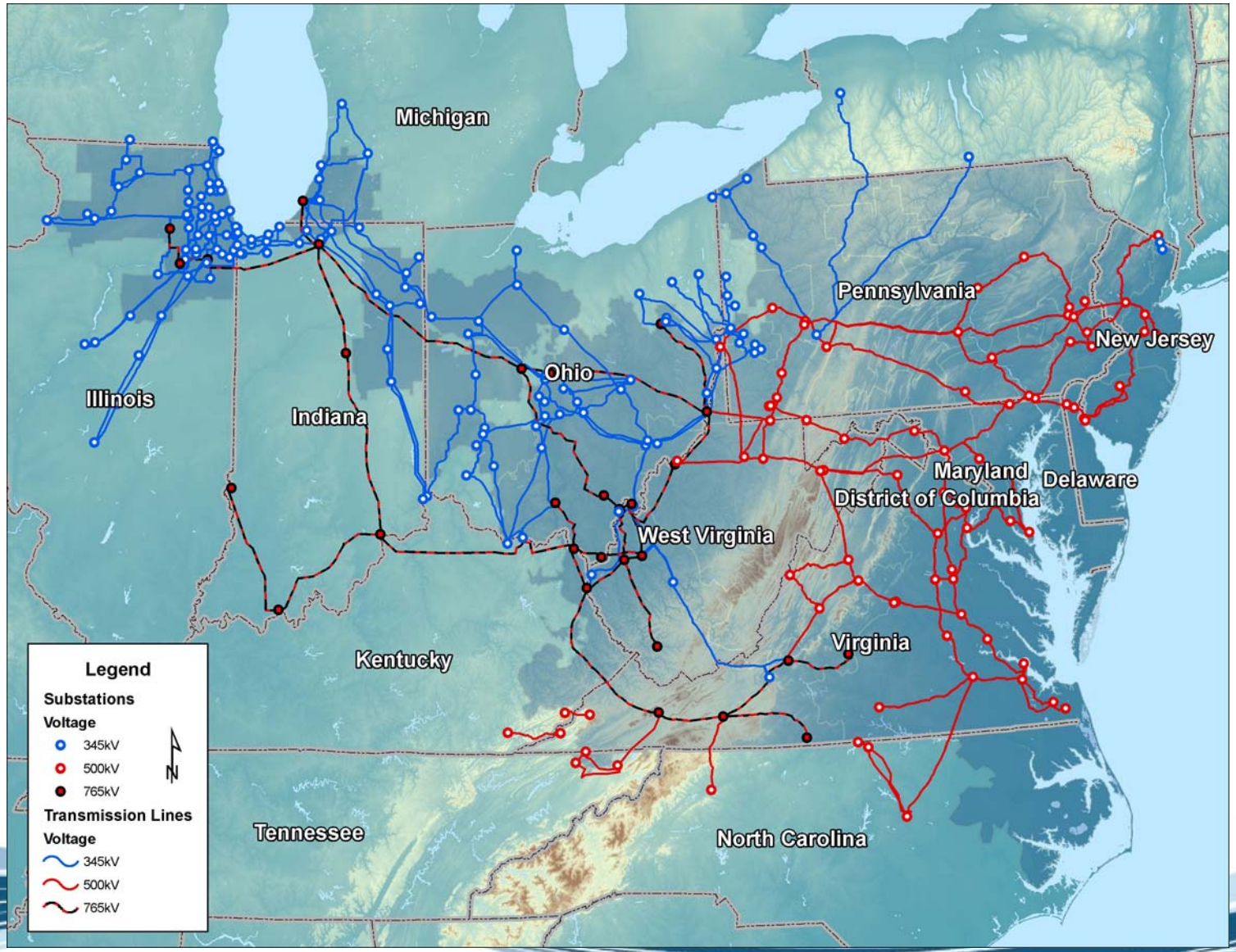
For the FERC Technical Conference

Docket Nos. ER05-1410-000
EL05-148-000

February 3, 2006

PJM ©2006

# PJM Backbone Transmission





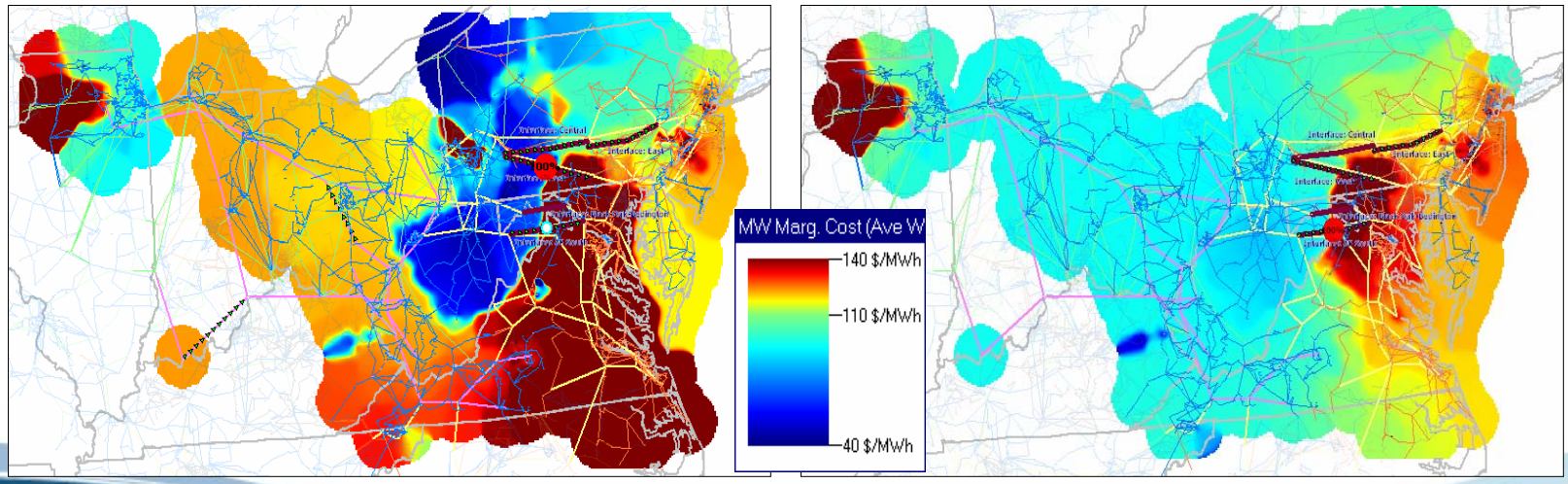
©2006 PJM

# Energy Market: Increased Efficiency

- **Lower energy prices across the expanded PJM region**
  - ESAI's technical study: region-wide energy price without integration would be $0.78/MWh higher in 2005 than with integration.
  - Spreading these savings over the total PJM RTO's energy demand of 700 terawatt-hours (TWh) per year yields aggregate savings of over $500 million per year.

Pre-Integration Price Pattern

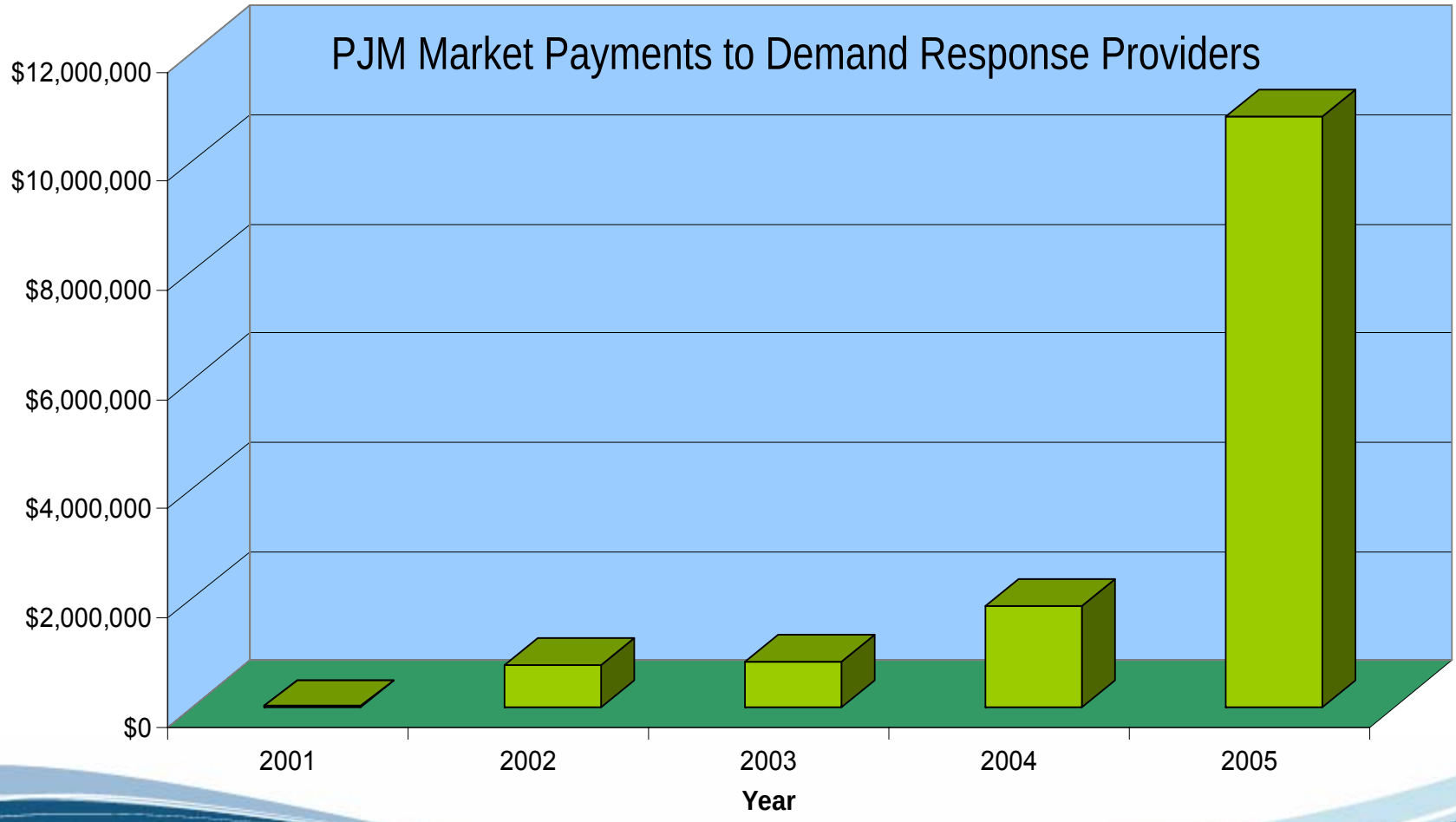
Post-integration Energy Price Pattern





©2006 PJM

# PJM Market Annual Demand Response Activity



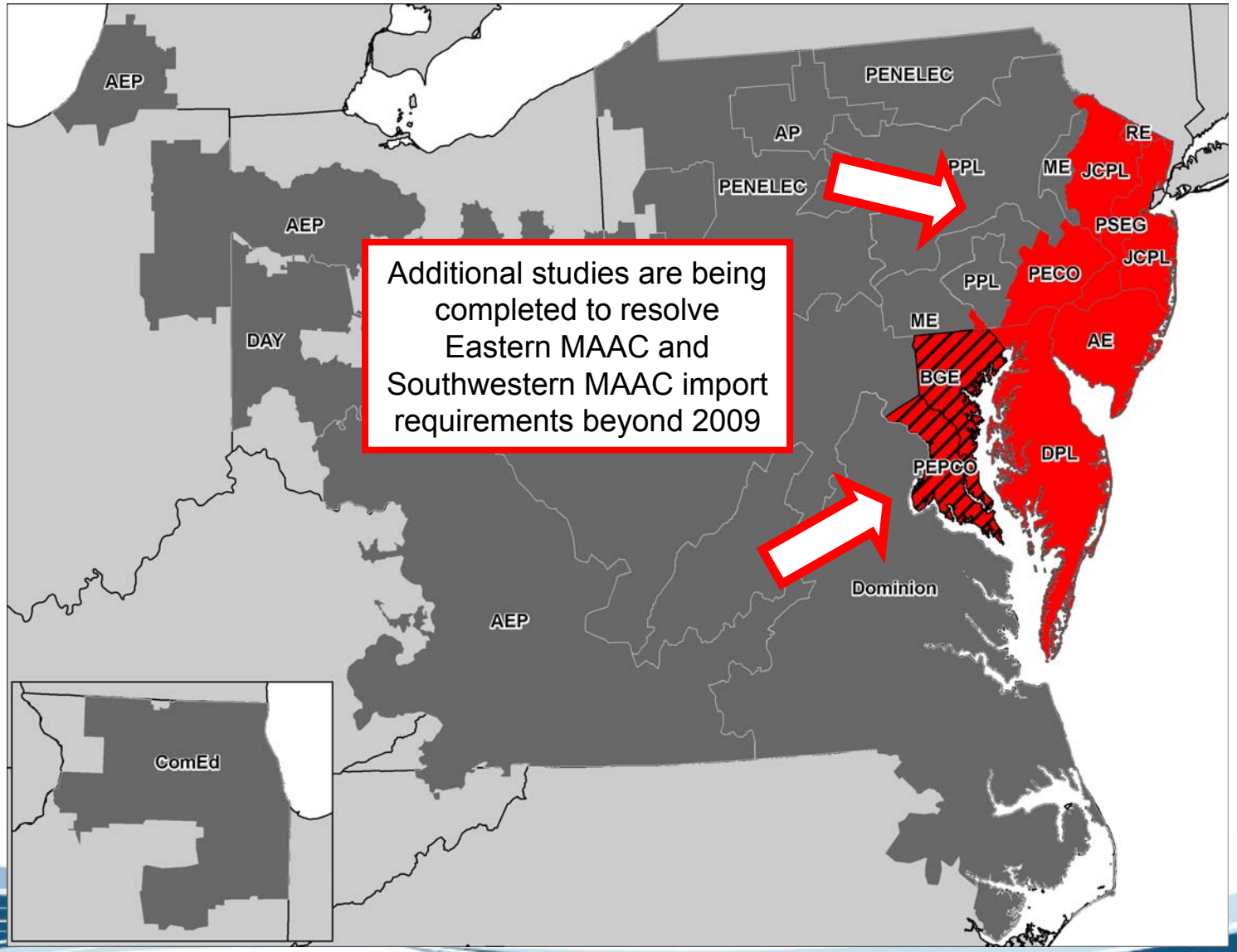


©2006 PJM

# Opportunities for Demand Response as PJM has Evolved in 2005

| Revenue Opportunity | Central Station Generation (PJM) | | PJM (January 2005) | PJM (as of December 31, 2005) | PJM with approval of RPM | PJM with addition of Forward Energy |
|---|---|---|---|---|---|---|
| **Real-Time/ Spot Energy Sales** | ✓ | → | ✓ | ✓ | ✓ | ✓ |
| **Day-Ahead Energy Sales** | ✓ | Demand Side Response | ✓ | ✓ | ✓ | ✓ |
| **Forward Energy Sales** | ✓ | | **No** ✗ | **No** ✗ | **No** ✗ | **Forward Energy Reserve** ✓ |
| **Forward Capacity Sales** | **RPM will enhance** ✓ | → | **Limited** ✗ | **Limited** ✗ | **RPM auction** ✓ | **RPM auction** ✓ |
| **Energy & Capacity payment for emergencies** | ✓ | → | **Not in all cases** ✗ | ✓ | ✓ | ✓ |
| **Ancillary Services** | **Spin, regulation, etc…** ✓ | → | **No** ✗ | ✓ | ✓ | ✓ |

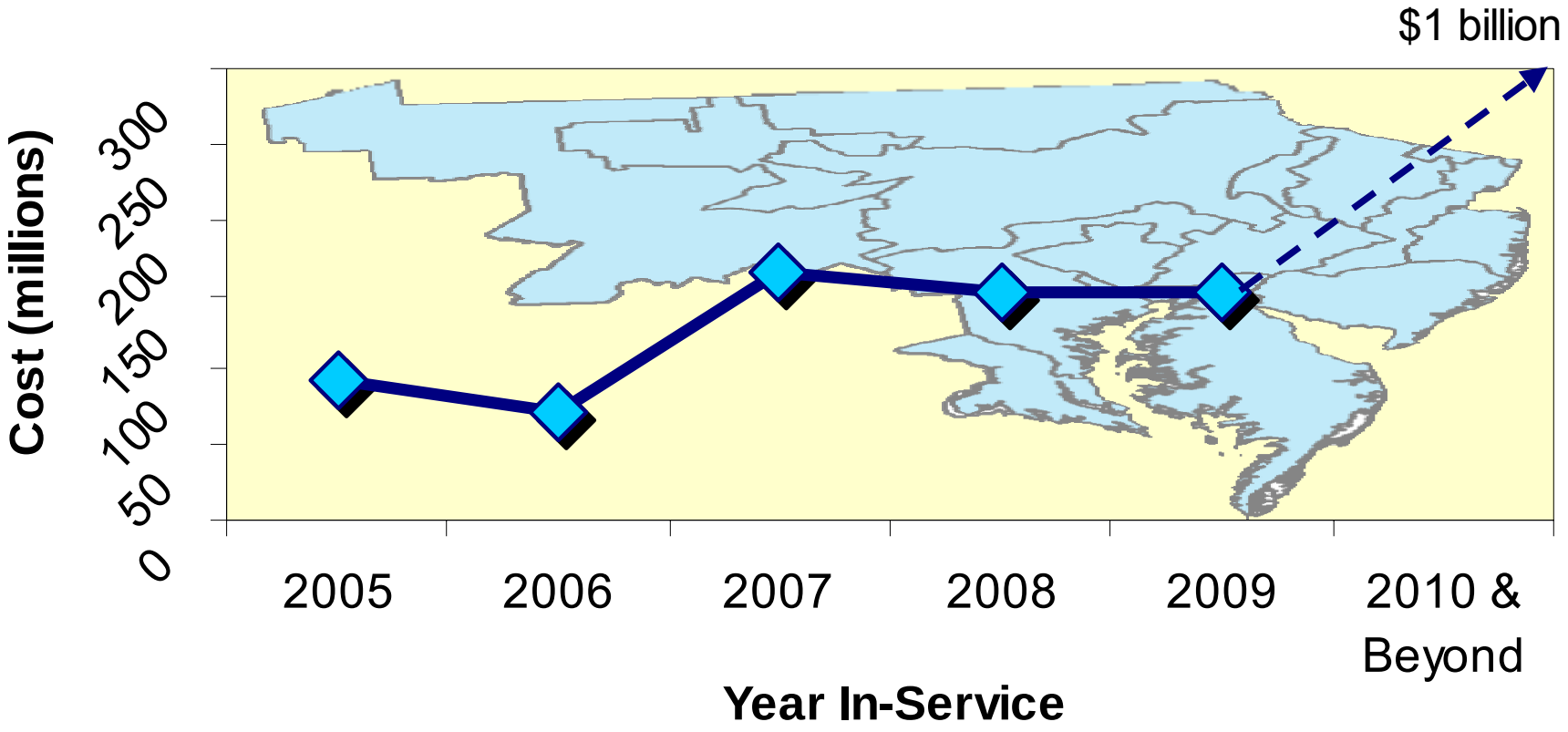
# Future Reliability Violations





©2006 PJM

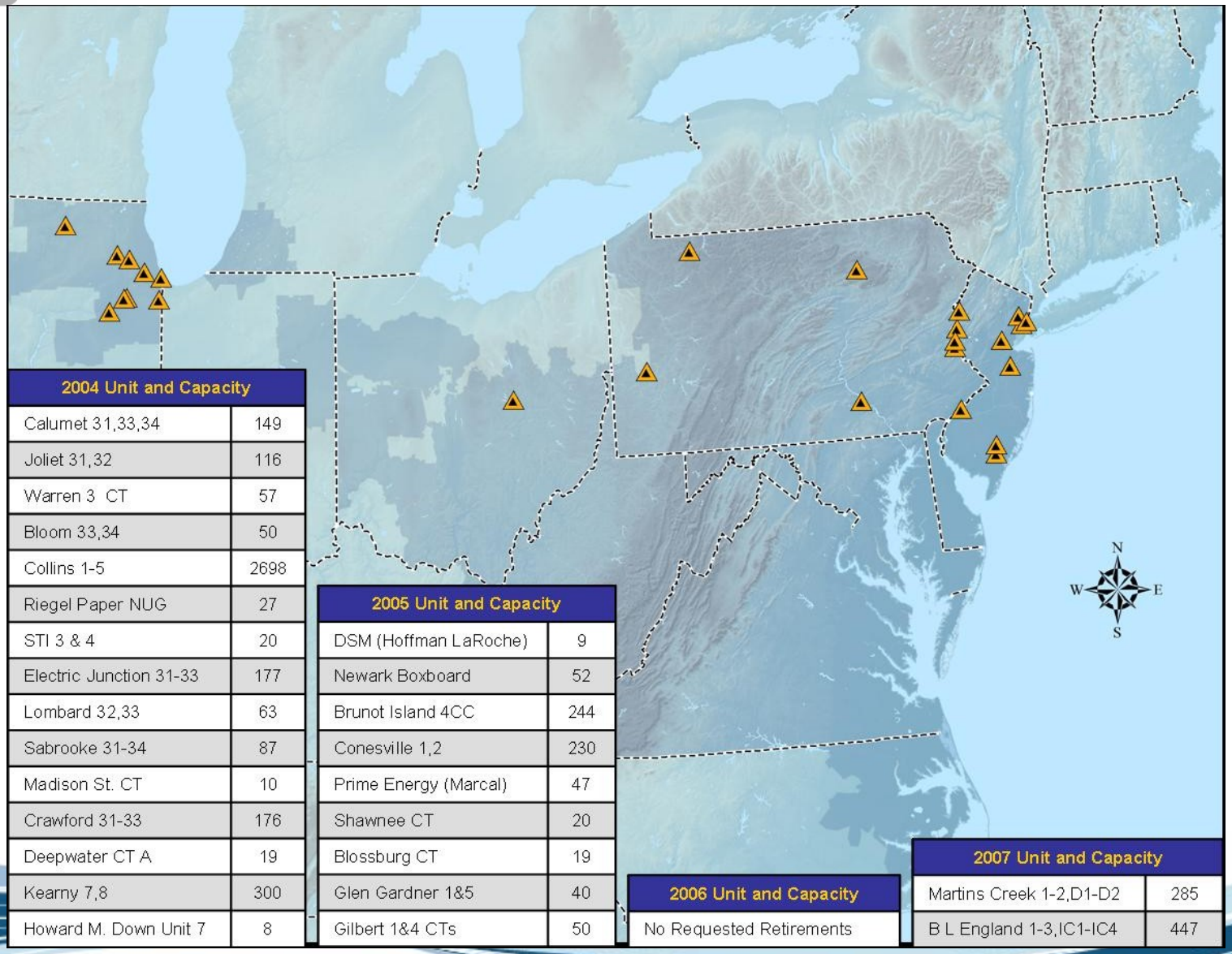
# Eastern Baseline Upgrades





©2006 PJM

# Generation Retirements



| 2004 Unit and Capacity | |
|---|---|
| Calumet 31,33,34 | 149 |
| Joliet 31,32 | 116 |
| Warren 3 CT | 57 |
| Bloom 33,34 | 50 |
| Collins 1-5 | 2698 |
| Riegel Paper NUG | 27 |
| STI 3 & 4 | 20 |
| Electric Junction 31-33 | 177 |
| Lombard 32,33 | 63 |
| Sabrooke 31-34 | 87 |
| Madison St. CT | 10 |
| Crawford 31-33 | 176 |
| Deepwater CT A | 19 |
| Kearny 7,8 | 300 |
| Howard M. Down Unit 7 | 8 |

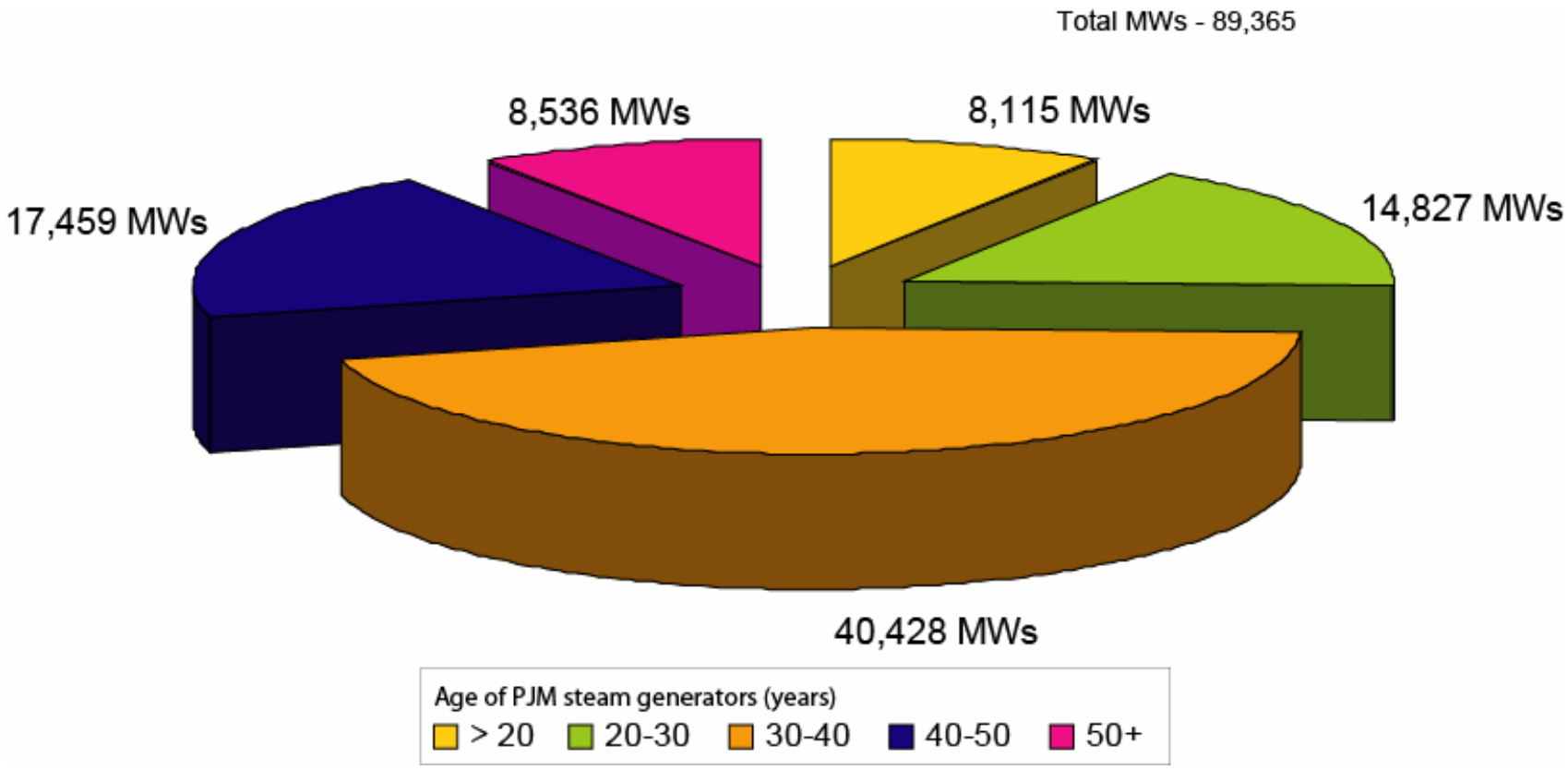
| 2005 Unit and Capacity | |
|---|---|
| DSM (Hoffman LaRoche) | 9 |
| Newark Boxboard | 52 |
| Brunot Island 4CC | 244 |
| Conesville 1,2 | 230 |
| Prime Energy (Marcal) | 47 |
| Shawnee CT | 20 |
| Blossburg CT | 19 |
| Glen Gardner 1&5 | 40 |
| Gilbert 1&4 CTs | 50 |

| 2006 Unit and Capacity |
|---|
| No Requested Retirements |

| 2007 Unit and Capacity | |
|---|---|
| Martins Creek 1-2,D1-D2 | 285 |
| B L England 1-3,IC1-IC4 | 447 |


©2006 PJM

# Age of PJM Fossil Steam Generators





©2006 PJM