



PJM Summer 2007 Reliability Assessment

**Indiana Utility Regulatory
Commission**

May 30, 2007



PJM Statistics

Population - 51 million

Generating sources - 1,082, with diverse fuel types

Generating capacity – 164,280 megawatts

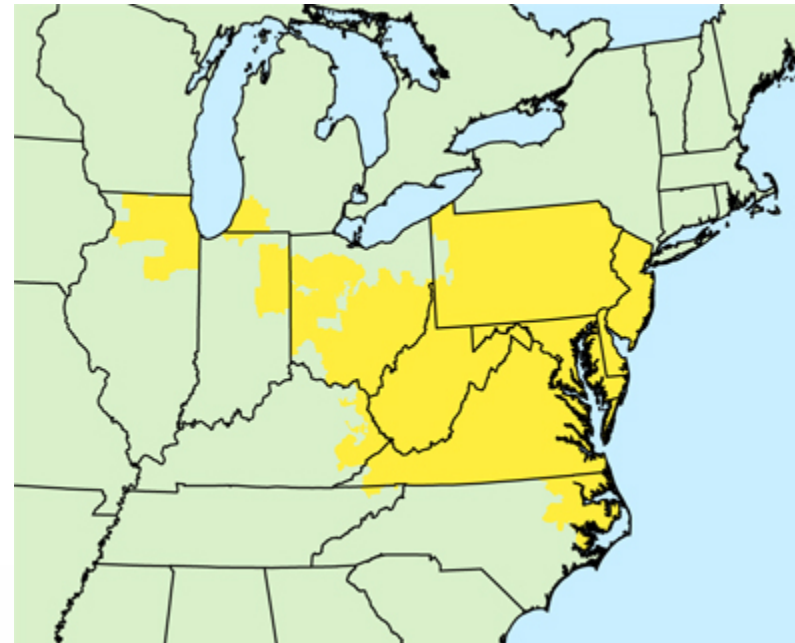
Peak demand - 144,644 megawatts (8/2/06, HE 1700)

Annual energy delivery - 729 million megawatt-hours

Transmission lines - 56,250 miles

PJM Members/ wholesale customers – 450+

Annual billing - \$20.1 billion





PJM Load and Capacity: 2007

2007

Forecast Load (MW) total	Load Mgt and Contractually Interruptible (MW)	Forecast Load (MW) Less Load Mgmt & Contractually Interruptible	Installed Generation Capacity (MW)	Reserve Margin (MW)	Capacity Margin	Reserve Margin	Required Reserve Margin
136,961	1,670 (est.)	135,291	164,280	28,989	17.6%	21.4%	15.0%



Glossary for Load and Capacity Comparison Slide

Forecast Load – Expected peak demand, based on normal weather (Total Internal Demand-TID)

Load Management and Contractually Interruptible – Demand Response and other customer load willing to be interrupted at direction of PJM

Forecast Load Less Load Management – Expected peak demand after demand response has been implemented (Net Internal Demand-NID)

Installed Generation Capacity – Total MW output of all of the generators within the PJM Balancing Area (Installed Capacity—ICAP)

Reserve Margin (MW) – Installed Generation Capacity minus Net Internal Demand

Capacity Margin (%) -- Reserve expressed as a percent of Installed Capacity

Reserve Margin (%) – Reserve expressed as a percent of Net Internal Demand

Required Reserve Margin (%) – PJM required planning reserve, as determined by the RPM process (Installed Reserve Margin-IRM)

Rev.



Hot Weather Events – Some Characteristics

1. Weather

- Temperatures into the low 90s are generally manageable unless there are unusual circumstances—transmission line outages, generator unavailability.
- Ability to accurately predict/prepare for high temperatures is extremely important.
- The extent (in time and geographical reach) of the forecasted hot weather is important – short duration and local scope usually is manageable while entire PJM footprint for many days can be a challenge.
- Availability of imports from neighboring RTOs can be of great assistance
- High temperatures combined with high humidity can cause air conditioning load to be extreme.
- Presence of frontal systems or thunderstorms can have a dramatic impact
- Unusual weather in shoulder months during which maintenance is being performed can be a challenge.



2. Transmission Congestion

- The transmission system is limited on west to east deliveries (It's virtually unlimited going east to west!) Eastern coastal heat waves are the most challenging situations.
- Generally, there is less transmission congestion as the load goes higher (more generators are running)



3. Emergency Procedures Messages

- Alerts are communicated to members/PUCs by PJM the day before
 - For example, a Hot Weather Alert is issued the day before or days before if we see 90s+ weather headed to all or a part of PJM
- Warnings are issued to members/PUCs by PJM in the operating day, usually in the morning
 - For example, a Primary Reserve Warning is issued when we see that we may not be able to have 1700 MW on hand, based on the load forecast and generator availability
- Actions are issued to members/PUCs by PJM at the instant of execution (a PJM press release may be issued)
 - For example, a Voltage Reduction is called and implemented when additional MW are needed in a capacity shortage situation.

Daily High Temperature					
Date	Baltimore	Chicago	Philadelphia	Richmond	Washington
7/26/2005	94°F	87°F	96°F	97°F	97°F
7/27/2005	96°F	75°F	98°F	100°F	97°F
7/17/2006	98°F	95°F	98°F	99°F	96°F
8/1/2006	100°F	99°F	98°F	97°F	98°F
8/2/2006	99°F	97°F	98°F	101°F	99°F
8/3/2006	100°F	83°F	98°F	102°F	101°F

Departure From Normal					
Date	Baltimore	Chicago	Philadelphia	Richmond	Washington
7/26/2005	7°F	0°F	7°F	8°F	7°F
7/27/2005	7°F	-7°F	7°F	11°F	5°F
7/17/2006	7°F	10°F	8°F	9°F	5°F
8/1/2006	13°F	16°F	10°F	9°F	10°F
8/2/2006	13°F	13°F	12°F	11°F	11°F
8/3/2006	13°F	1°F	12°F	13°F	12°F

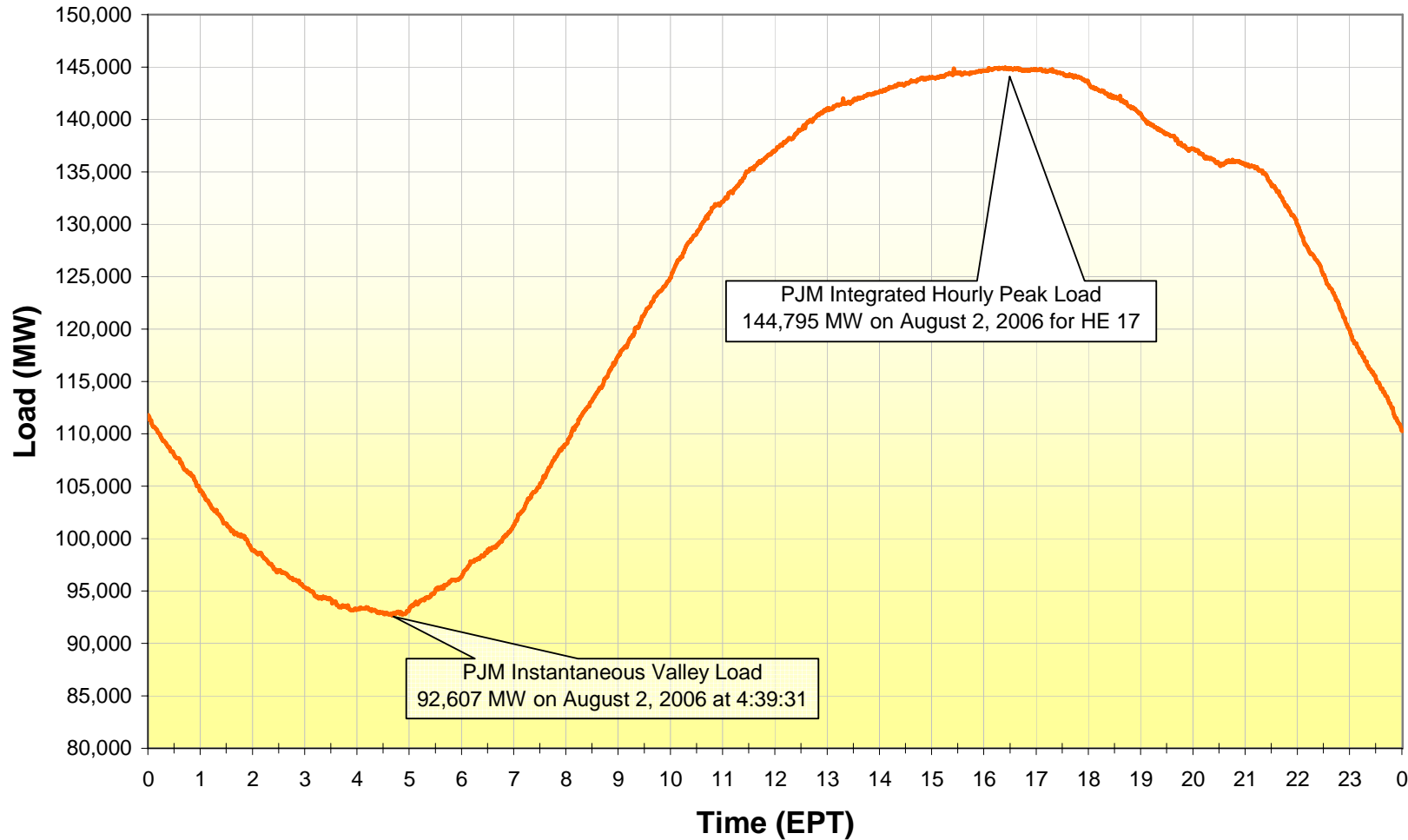
Weather services were accurately forecasting the magnitude of this heat wave. We had time to communicate early and often with our members. We were well positioned.



PJM 2006 Summer Peak Load

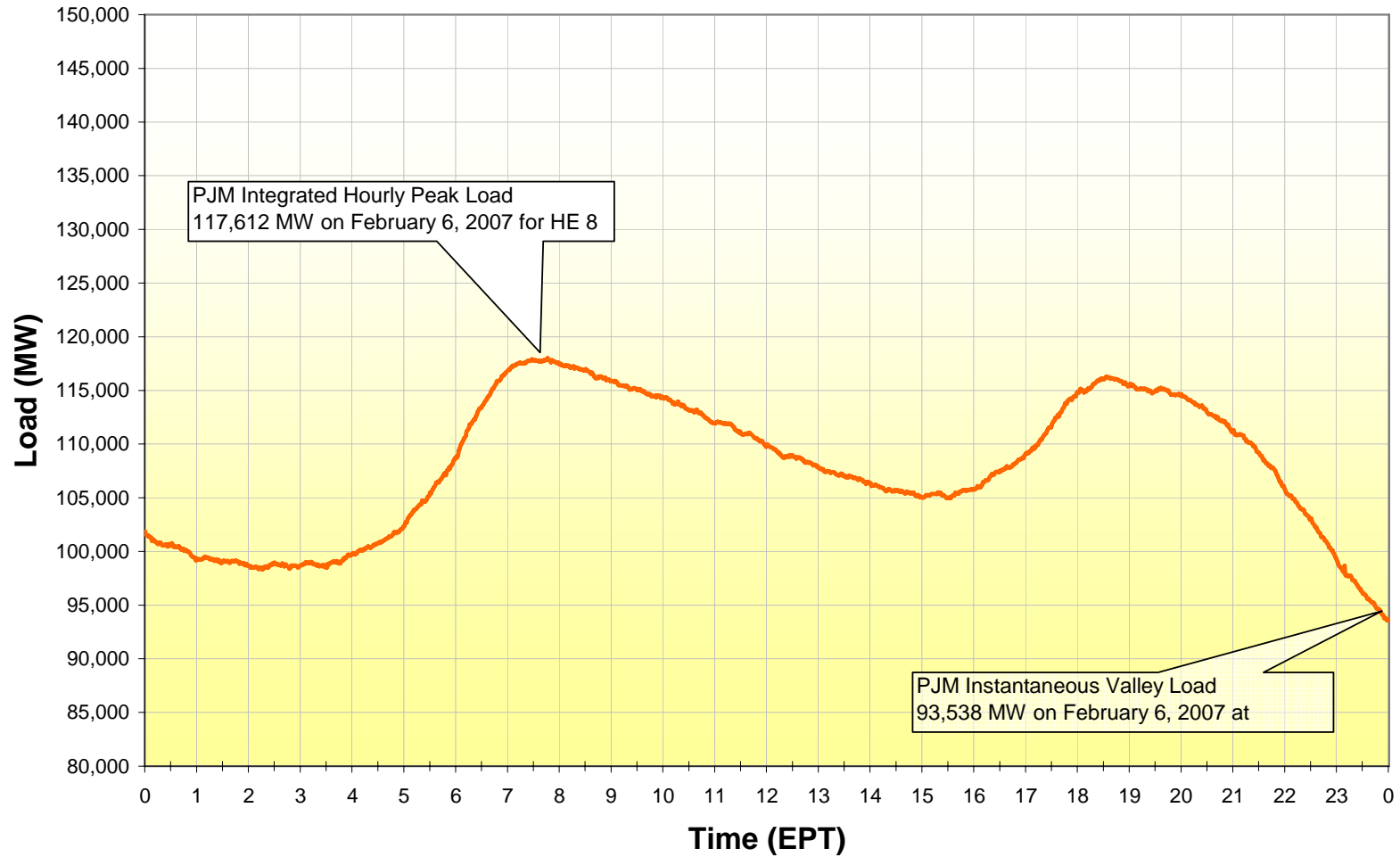
PJM RTO Load

August 2, 2006





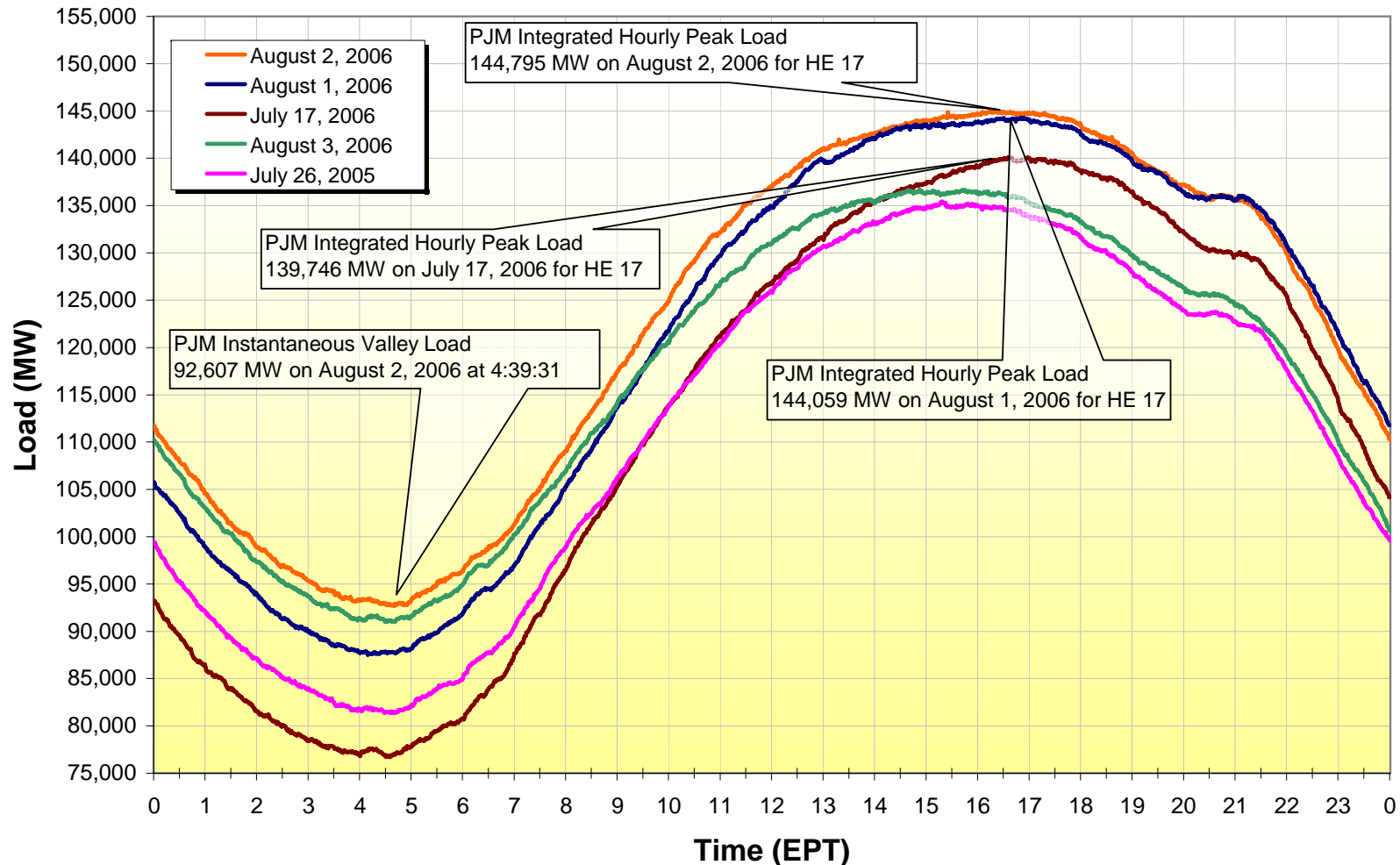
PJM RTO Load February 6, 2007





PJM Summer Peak Load Comparison

PJM RTO Load Comparison



The heat wave was so widespread that transmission congestion was minimal. August 3 was actually the most difficult day for operations as the cold front moved across the Midwest.



- PJM Operating Analysis Task Force (OATF) Summer Operating Study
- Reliability *First* Summer Assessment
- Joint MISO/PJM Operations Coordination Meeting
- PJM Spring Operator Seminar (9 sessions – over 500 operators attended)
- PJM Emergency Procedures Training for PUCs (May 7)
- PJM Emergency Procedures Drill (May 30)

- PJM expects to be able to reliably serve expected peak loads
- Western PJM system continues to be strong. Assuming no untoward events. PJM does not anticipate any problems
- PJM can transmit energy from Eastern PJM to Western PJM and to MISO, if necessary