2017 OPPORTUNITIES AND CHALLENGES… A VIEW FROM PJM INTERCONNECTION

WIRES UNIVERSITY

Congressional Briefing

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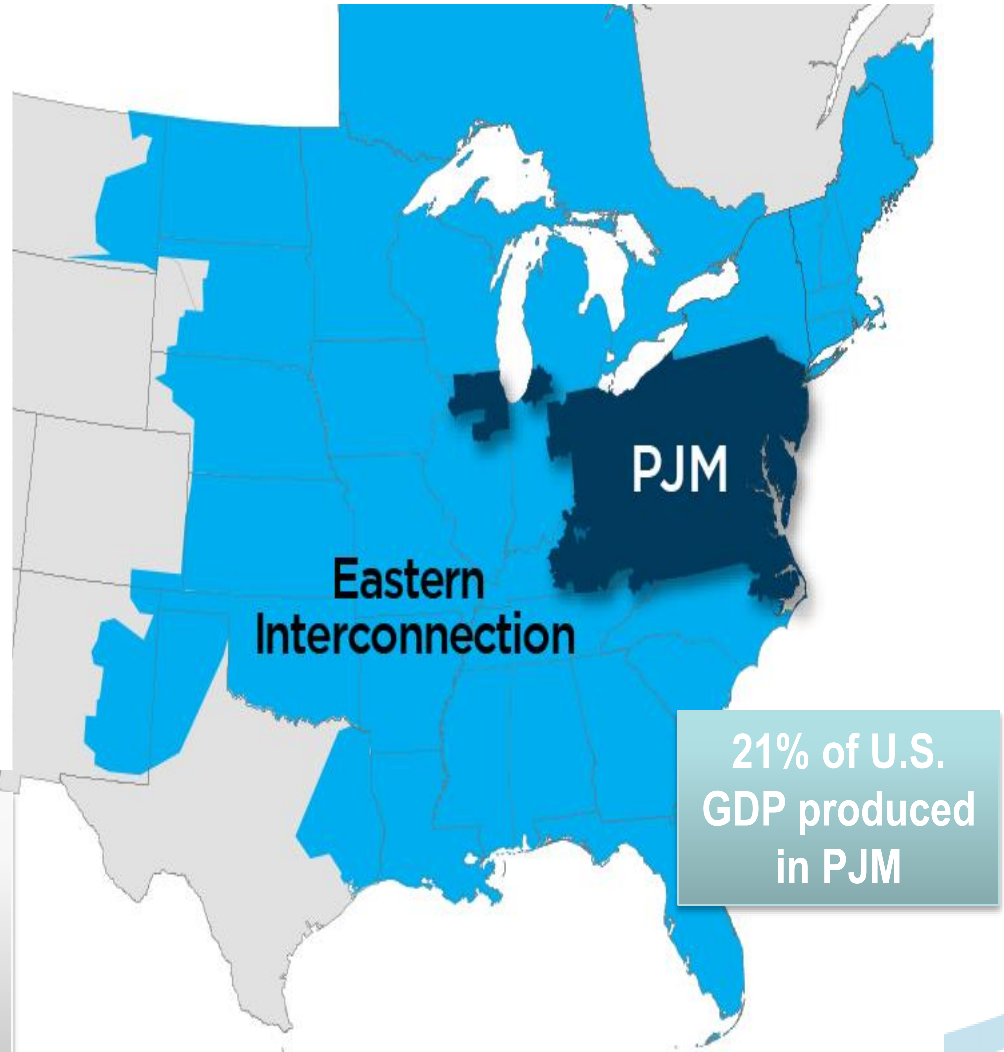
PJM Interconnection

PJM as Part of the Eastern Interconnection

Member companies	960+
Millions of people served	61
Peak load in megawatts	165,492
MW of generating capacity	171,648
Miles of transmission lines	81,736
2014 GWh of annual energy	792,580
Generation sources	1,304
Square miles of territory	243,417
States served	13 + DC

- 27% of generation in Eastern Interconnection
- 28% of load in Eastern Interconnection
- 20% of transmission assets in Eastern Interconnection



As of 5/2016

1 Reliability

- Grid Operations
- Supply/Demand Balance
- Transmission monitoring

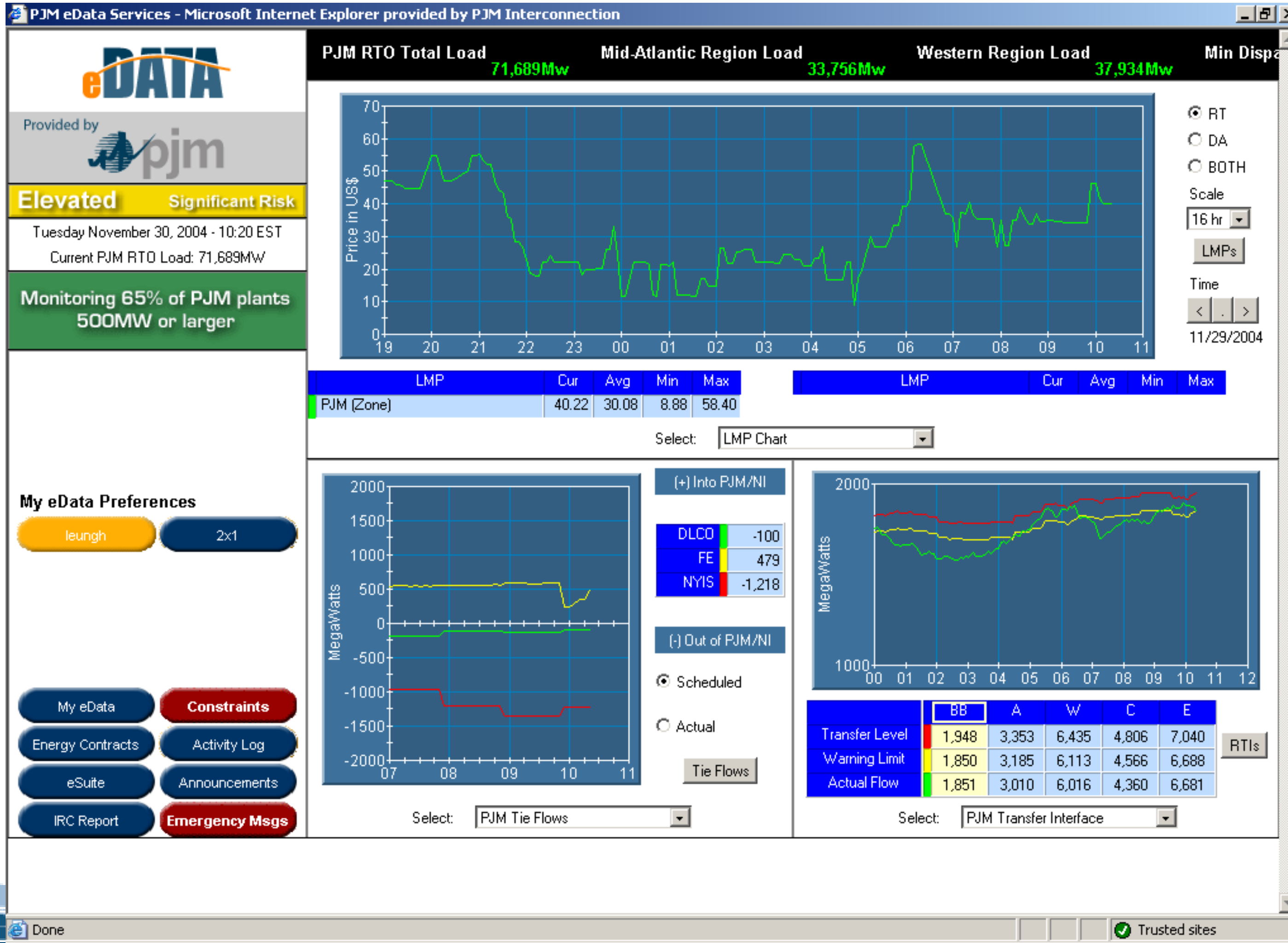
2 Market Operation

- Energy
- Capacity
- Ancillary Services

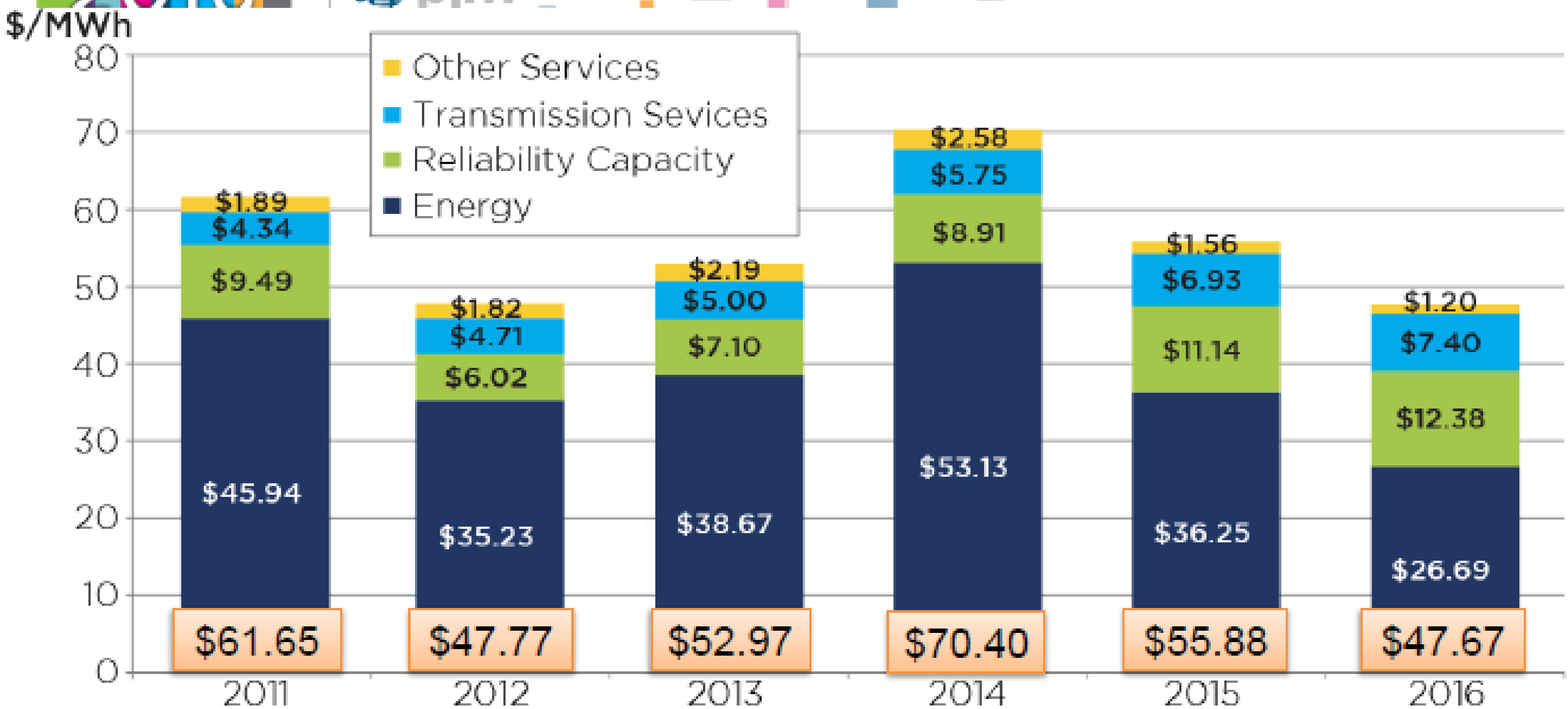
3 Regional Planning

- 15-Year Outlook

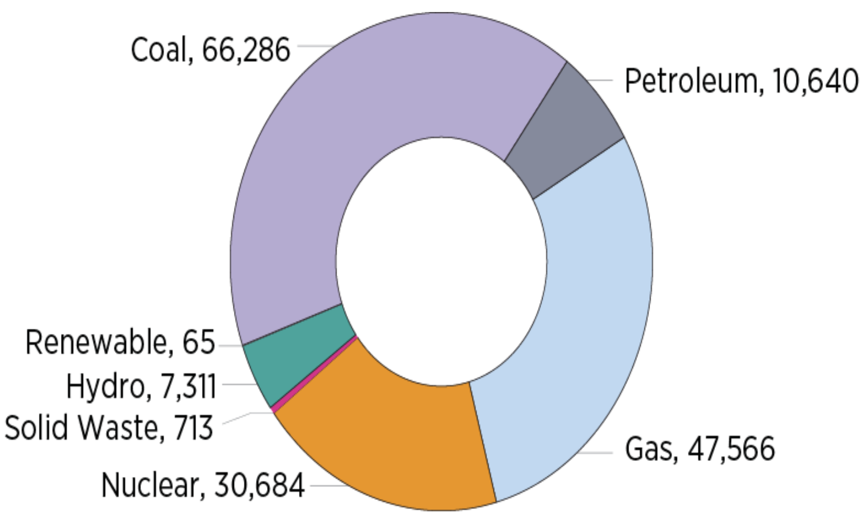
ISO RTO Council


PJM eData Services - Microsoft Internet Explorer provided by PJM Interconnection
eDATA
Provided by pjm
Elevated
Significant Risk
Tuesday November 30, 2004 - 10:20 EST
Current PJM RTO Load: 71,689MW
Monitoring 65% of PJM plants 500MW or larger
My eData Preferences
leungh
2x1
My eData
Constraints
Energy Contracts
Activity Log
eSuite
Announcements
IRC Report
Emergency Msgs
PJM RTO Total Load 71,689Mw
Mid-Atlantic Region Load 33,756Mw
Western Region Load 37,934Mw
Price in US$
RT
DA
BOTH
Scale
16 hr
LMPs
Time
11/29/2004
LMP Cur Avg Min Max
PJM (Zone) 40.22 30.08 8.88 58.40
Select: LMP Chart
MegaWatts
(+) Into PJM/NI
DLCO -100
FE 479
NYIS -1,218
(-) Out of PJM/NI
Scheduled
Actual
Tie Flows
Select: PJM Tie Flows
BB A W C E
Transfer Level 1,948 3,353 6,435 4,806 7,040
Warning Limit 1,850 3,185 6,113 4,566 6,688
Actual Flow 1,851 3,010 6,016 4,360 6,681
RTIs
Select: PJM Transfer Interface
Done
Trusted sites

Wholesale Cost

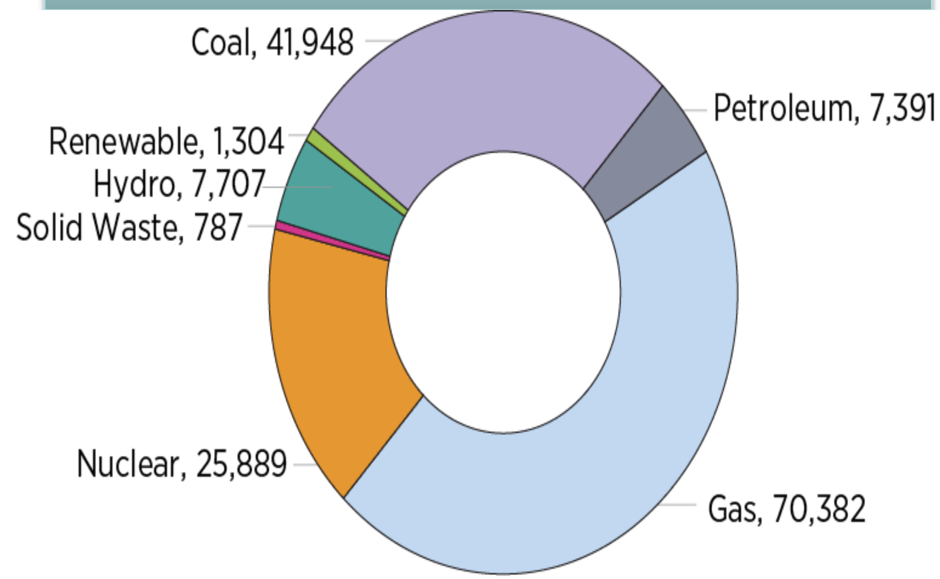


2007 PJM Installed Capacity (MW)



Iron in the Ground (ICAP)

Cleared Capacity for 2019/2020 Delivery Year (MW)



(UC
AP)

POLICY CHOICES…

The Long and Winding Road…

- Transmission: Built to support major generation projects
- Connect distant generation to load; Distribution: One way delivery of power to the home
- Grid Costs: Rate-based to the home utility's customers
- ROI: Little focus on transmission as a stand alone business element

Policy Choice #1

Is the grid an enabler or a competitor?

Grid as an Enabler?

- Accept the grid as a natural monopoly
- Drive solutions through regulation
- Provide incentives for innovation

Policy Choice #1 (cont'd)

Grid as a Competitor?

- Grid development must compete with generation or demand side
- Grid entrepreneurs take risk: no guaranteed ROI
- Grid pricing reflects competitive outcomes: Bid solutions into the marketplace (RPM)

Policy Choice #2: A Strong or Weak Grid?

Characteristics of the "Strong" Grid:

- Generation distance from load
- Meet the needs for future transmission expansion
- Costs socialized to reflect interconnected nature of the grid
- Broad regional approach

Policy Choice #2-The Alternative:

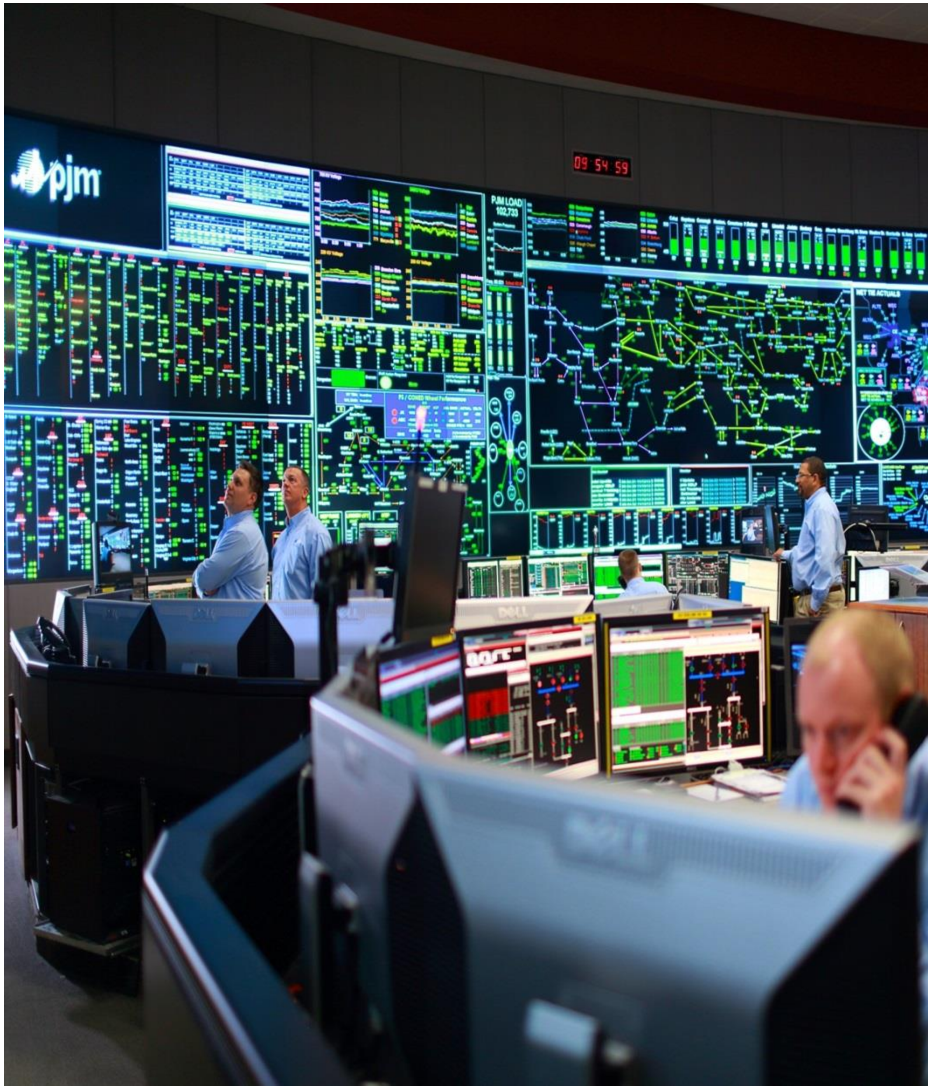
The localized grid…

- Generation closer to load
- Centralized focus on development of DSR, energy efficiency and renewables
- Transmission/distribution grid as an enabler of alternative generation
- Transmission focused on meeting state/local needs

An Added Complication:

Who Decides?

- States:
  - State Energy Policies: Governors/legislators
  - State PUCs
- FERC
  - FERC Order 1000
- Environmental Agencies
  - Non-attainment areas
  - RGGI et al.


pjm
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PJM LOAD
102,733

LET'S TALK…

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