LESSONS LEARNED FROM ELECTRIC RESTRUCTURING…

LOOKING BACK TO LOOK FORWARD



International Energy Agency
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At the Wholesale Level…

- Transmission access
  - Negotiation of "wheeling rights"
  - Discriminatory treatment
  - Lengthy litigation: "*Refunds to a Corpse"*
- Build-out costs
- "Reliability" and "native load" as code
- *TLRs, demand ratchets, price squeeze you name it…*

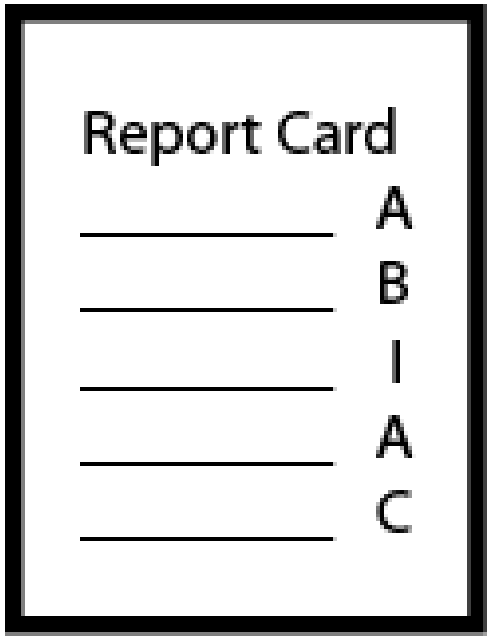
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At the Retail Level---

- Rates significantly above the national average
- Industrial subsidies for public interest programs
- Investment stagnation
- Hit to global competitiveness

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- Reminding Ourselves What We Got Right: *Taking credit for our accomplishments*
- Building on Past Experience: *Learning What Needs Further Work*
- Avoiding the Quagmire of Inaction



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Accomplishment No. 1:

We moved the risk allocation formula:

aka "There was no Enron rate case"

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Accomplishment No. 2:

We got the fundamentals right!



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Structural Solutions Have Worked

- Eliminating multiple control areas
- Regional planning
- Redispatch in lieu of TLRs
- Maximizing use of the Grid
- Allowing customers to make economic decisions
- Transparency

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PJM as Part of the Eastern Interconnection

Key Statistics	
Member companies	990+
Millions of people served	65
Peak load in megawatts	165,492
MW of generating capacity	176,569
Miles of transmission lines	82,546
2016 GWh of annual energy	792,314
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



21% of U.S. GDP produced in PJM

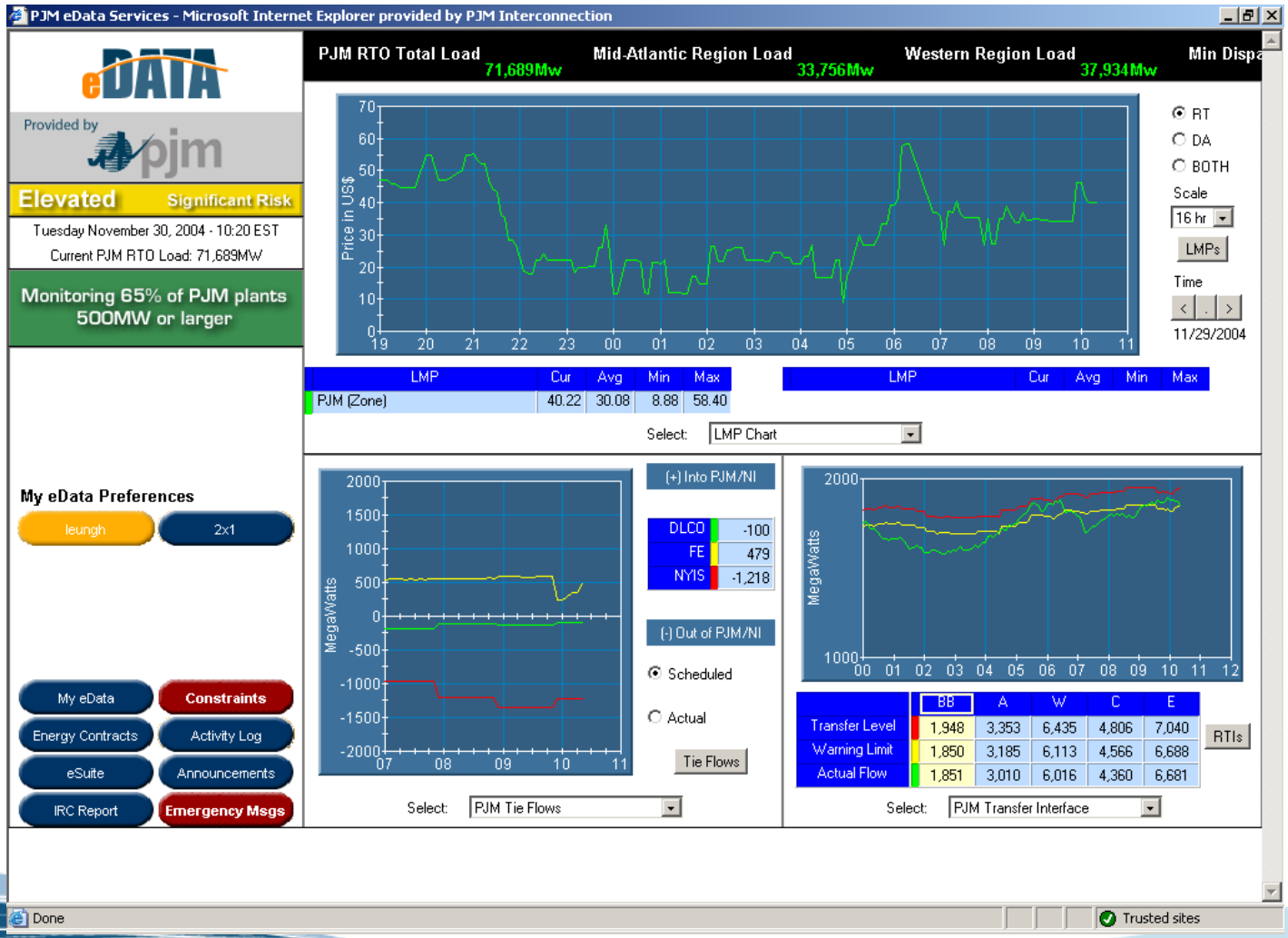
As of 2/2017

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ISO RTO Council



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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
Min Dispa
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

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Policy Headaches Looking Forward:

- Impact of State Legislative Support for Specific Resources
- Losing Our Way: Re-regulation by piece part
- Fuel Diversity vs. Fuel Security





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State Legislative Actions:

- Lack of federal carbon policy or regional agreements on carbon pricing

State parochial actions have dominated:

- Out of market state financial subsidies for specific nuclear or coal units
- Lack of political will for full re-regulation including taking on resource adequacy
- Renewable Portfolio Standards—-Little consideration of cost or feasibility

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Re-regulation plant by plant:

- The “half slave/half free” problem
- Skewed investment signals
- Re-juggling the risk allocation formula once again
- Ignoring the lessons of the past—(stranded costs, technology risk etc.)

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Looking Further:

- Monetizing the value of Distributed Resources thru a single market
- Fuel security vs. fuel diversity
- More transparent natural gas markets
- Being mindful of our past: Keep the 'risk/reward' decision on the investor side



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An Added Complication:

Who Decides?



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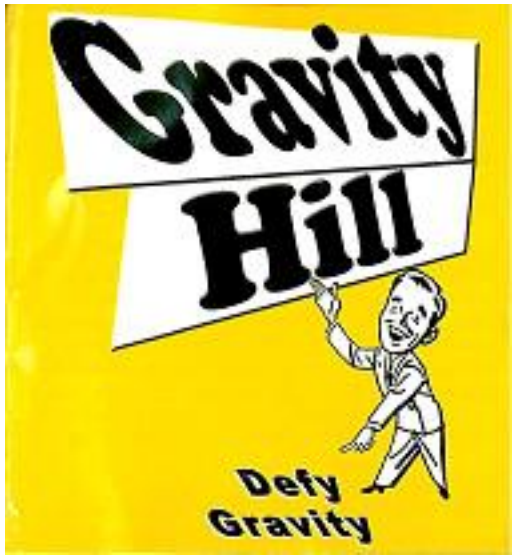
Who Decides?

- States:
  - State Energy Policies: Governors/legislators
  - State PUCs
- FERC
- Environmental Agencies
- Department of Energy
- Congress
- US Supreme Court



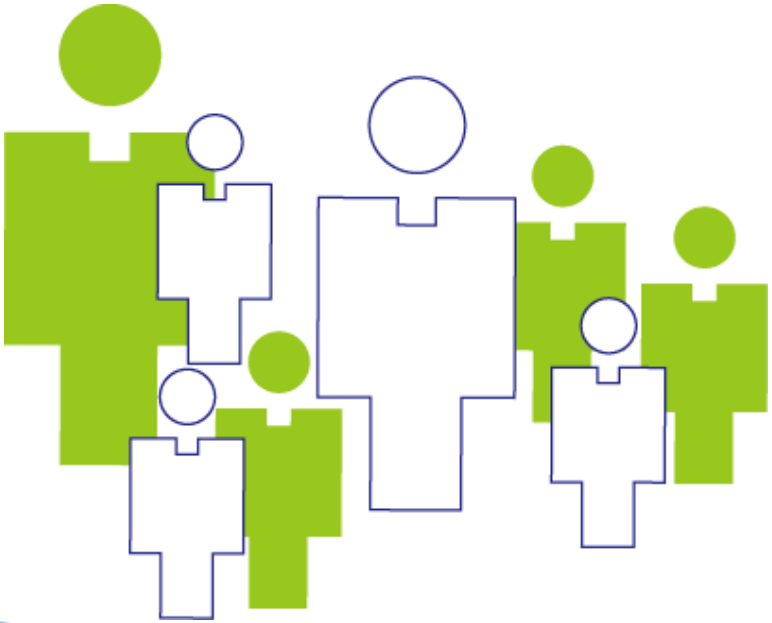
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"*Hanging in mid-air":* a dangerous place



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- A restructured industry or “Golden memories of yesteryear…”
  - The choice is ours



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LET'S TALK…



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