A Romp Through Restructuring…
Looking Back to Look Forward

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And What Were They Mad About???

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…
And What Were They Mad About?

**At the Retail Level…**

- Rates significantly above the national average
- Industrial subsidies for public interest programs
- Investment stagnation
- Hit to global competitiveness
The Regulatory World Circa 2006

- 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
Accomplishment No. 1

We moved the risk allocation formula:

*aka “There was no Enron rate case!”*
Pre-and Post Enron Prices

Mean PJM RTO LMP

$/MWh

Enron Collapse

2/5/2002 to 2/19/2002
Accomplishment No. 2:

We got the fundamentals right!
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
### Key Statistics

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Member companies</td>
<td>1,040+</td>
</tr>
<tr>
<td>Millions of people served</td>
<td>65</td>
</tr>
<tr>
<td>Peak load in megawatts</td>
<td>165,492</td>
</tr>
<tr>
<td>MW of generating capacity</td>
<td>178,563</td>
</tr>
<tr>
<td>Miles of transmission lines</td>
<td>84,042</td>
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<tr>
<td>2017 GWh of annual energy</td>
<td>773,522</td>
</tr>
<tr>
<td>Generation sources</td>
<td>1,379</td>
</tr>
<tr>
<td>Square miles of territory</td>
<td>243,417</td>
</tr>
<tr>
<td>States served</td>
<td>13 + DC</td>
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</tbody>
</table>

- 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 2/2018
Electricity Policy Headaches: 2018 Version
Policy Headaches Looking Forward

• Impact of state legislative support for specific resources
• Losing our way: Re-regulation by piece part
• “Resilience”— A new challenge or new repackaging
State Legislative Actions

Gradations of actions with different market impacts:

- Federal subsidies
- State support for customer-focused programs (e.g. weatherization, energy efficiency)
- Generic RPS goals
- State-ordered ratepayer $$$ subsidies for a particular class of units or single units
Solution Options

• No action

• *PJM IMM Proposal*: Across the bard minimum offer pricing rule (MOPR)
  – Issue: ‘Paying twice’ problem

• *PJM Proposal Capacity Repricing*
  – Issue: Accommodates individual states but does not immunize neighboring states as much as MOPR
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.)
“Resilience”—
A New Challenge or Reliability by another name?
RESILIENCE 101
Starting with the Basics…

Mrs. Gould’s admonition:

“If you don’t know what it means, look it up in the dictionary!”
1. The power or ability to return to the original form, position, etc., after being bent, compressed, or stretched; elasticity.

2. Ability to recover readily from illness, depression, adversity, or the like; buoyancy.

**Synonyms:**
“flexibility” “recoil” “snap” “pliancy”
Resilience – PJM Definition

• “The ability to withstand or reduce the magnitude and/or duration of disruptive events, which includes the capability to identify vulnerabilities and threats, and plan for, prepare for, mitigate, absorb, adapt to, and/or timely recover from such an event

• Key elements:
  – Identify
  – Plan and prepare for
  – Timely recover from
Planning – Key Reforms

• Resilience 1.0 – Consider enhancing resilience under existing planning criteria – range of possibilities do “no harm” (i.e. don’t make an existing problem worse)

• Opportunistic – incorporate resilience as a factor in our selection among Order 1000 competitive proposals

• Resilience 2.0 – address resilience as a stand-alone driver

Related Reforms

• Developing resilience measurement tools – Resilience criteria would require new analytical procedures and tools assess vulnerabilities

• Develop resilience indices

• Interconnection coordination with natural gas pipelines
Operations – Key Reforms

• Dual fuel requirements for black start and critical load
• Behind the meter resources: visibility and dispatchability
• Gas/electric coordination
  – Real time modeling of contingencies
  – Consistency in information sharing
  – Triggers for conservative operations
Markets – Key Reforms

• Identification and valuing of reliability attributes
• Pricing reforms to reflect value of all units needed to serve load
• Shortage pricing signals
System Restoration – Key Reforms

- Identification of critical load
- Gas Coordination of restoration plans
- Coordination with telecommunications and water utilities
- Enhancing restoration resources – black start needs, behind the meter resources etc.
An added Complication:

*Who Decides?*
Who Decides?

- States
  - State Energy Policies (governors/legislators)
  - State PUCs
- FERC
- Environmental agencies
- Department of Energy
- Congress
- US Supreme Court
  - Demand response case
  - Hughes case
Resilience: An actionable goal or a new fad?
The Goal of a Resilient Future Grid…
Or...a passing buzzword relegated to the ash heap of history

The choice is ours....
“Hanging in mid-air”: a dangerous place
A restructured industry or “Golden memories of yesteryear…”

*The choice is ours*
Let’s talk….

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