



A Romp Through Restructuring... Looking Back to Look Forward

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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...*

At the Retail Level...

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

- 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

Report Card	
_____	A
_____	B
_____	I
_____	A
_____	C

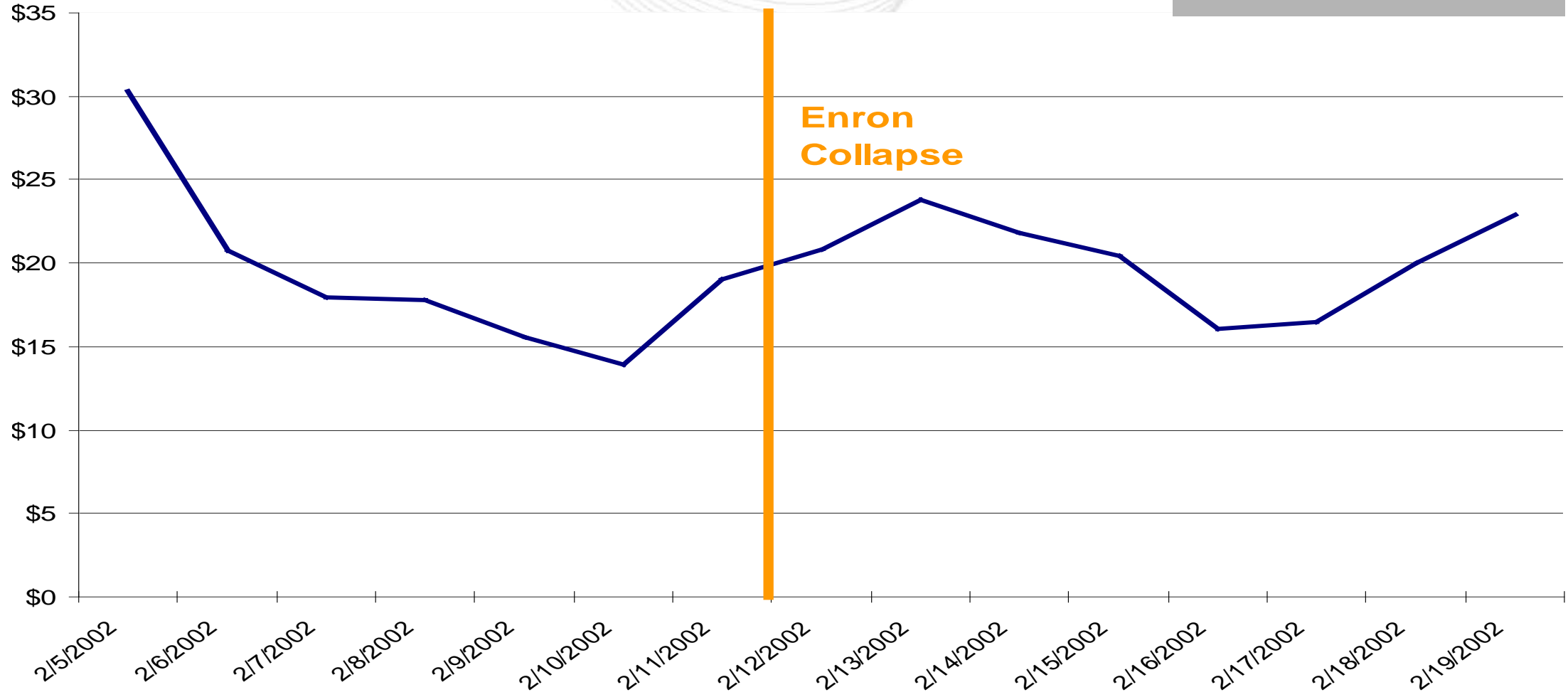
Accomplishment No. 1

We moved the risk allocation formula:

aka “There was no Enron rate case!”

\$/MWh

Mean PJM RTO LMP



Accomplishment No. 2:

We got the fundamentals right!



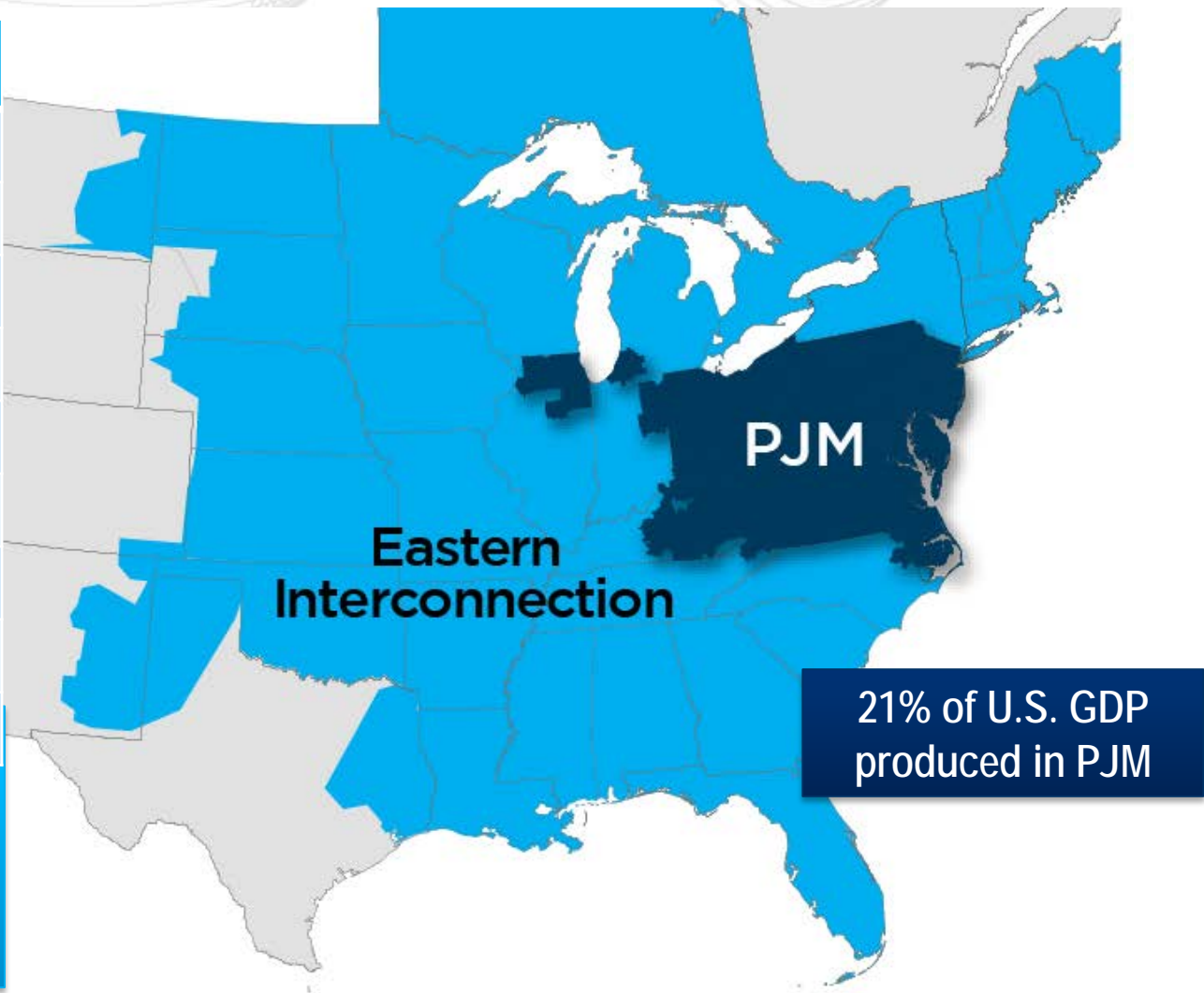
Structural Solutions ***Have*** Worked

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

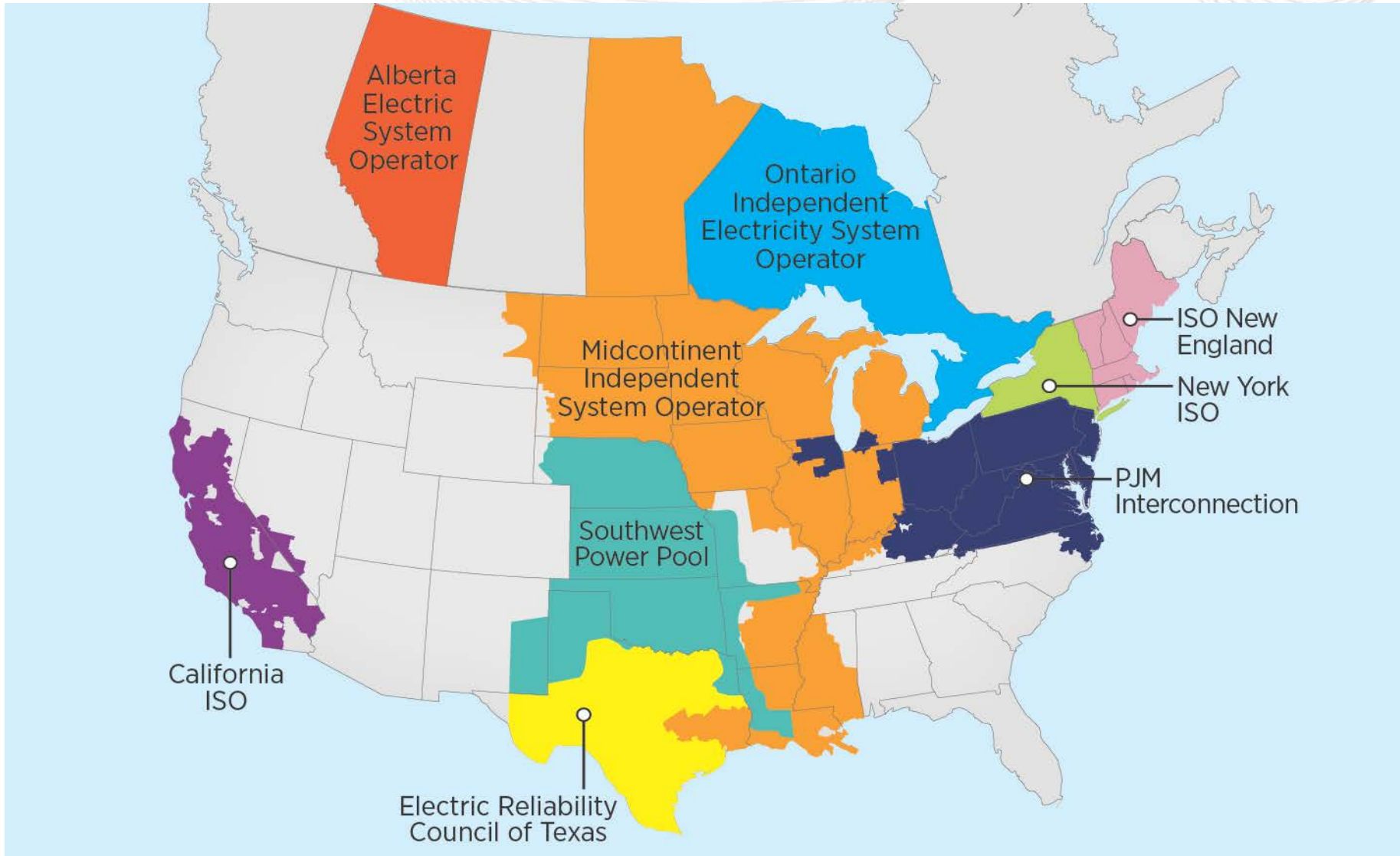
Key Statistics

Member companies	1,040+
Millions of people served	65
Peak load in megawatts	165,492
MW of generating capacity	178,563
Miles of transmission lines	84,042
2017 GWh of annual energy	773,522
Generation sources	1,379
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 2/2018



PJM eData Services - Microsoft Internet Explorer provided by PJM Interconnection

Provided by

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

leugh 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

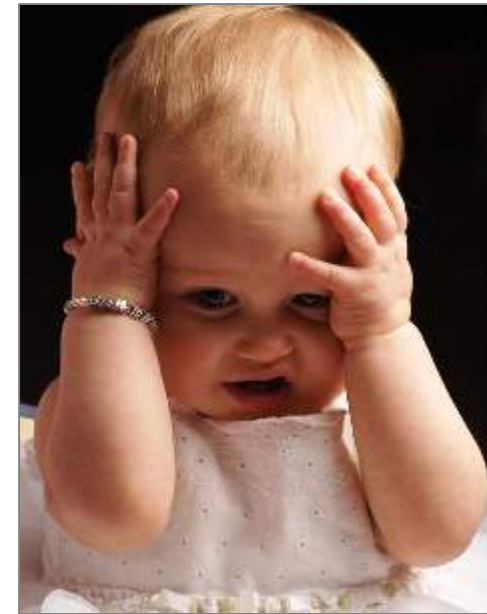
	LMP	Cur	Avg	Min	Max
PJM (Zone)		40.22	30.08	8.88	58.40

Select: LMP Chart

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

Select: PJM Transfer Interface



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 board 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?



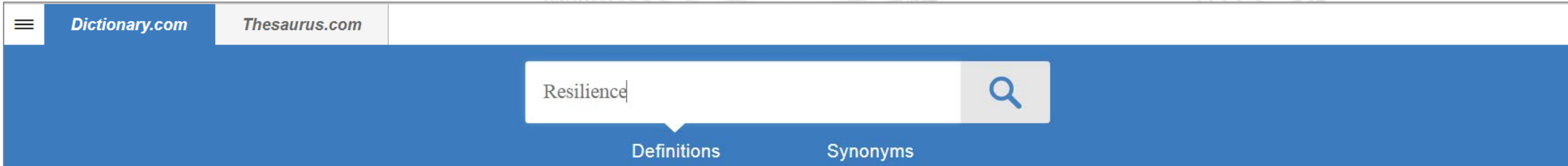
RESILIENCE 101

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”

- “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?



- 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?



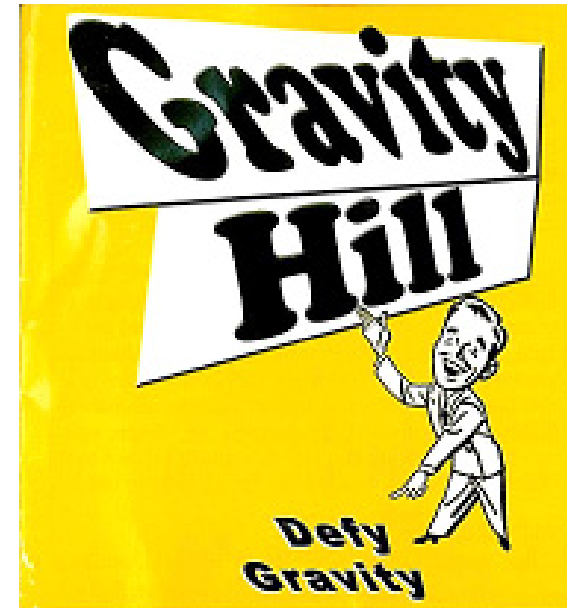


Or...a passing buzzword relegated to the ash heap of history



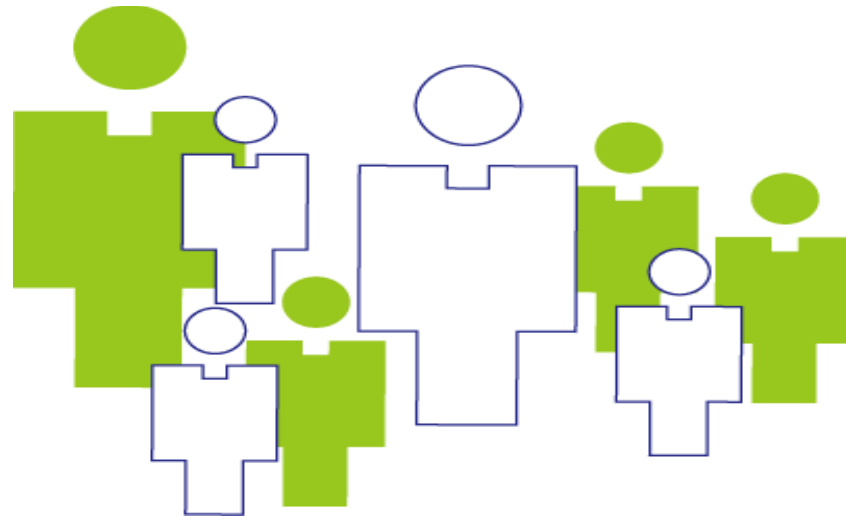
The choice is ours....

**“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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