



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

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**Electric Markets and State Challenges
Workshop**

National Conference of State Legislatures
Indianapolis, Indiana June 27, 2018



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

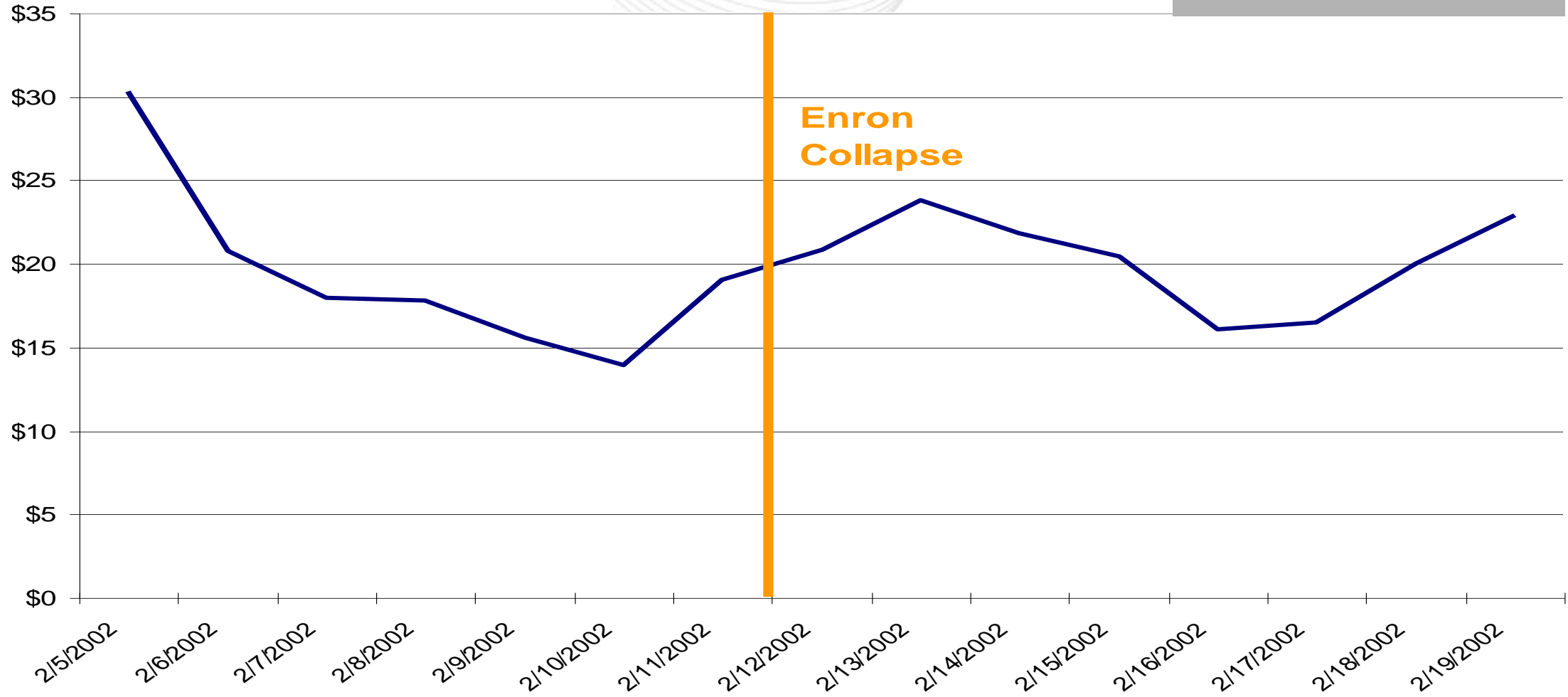
Accomplishment No. 1

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!



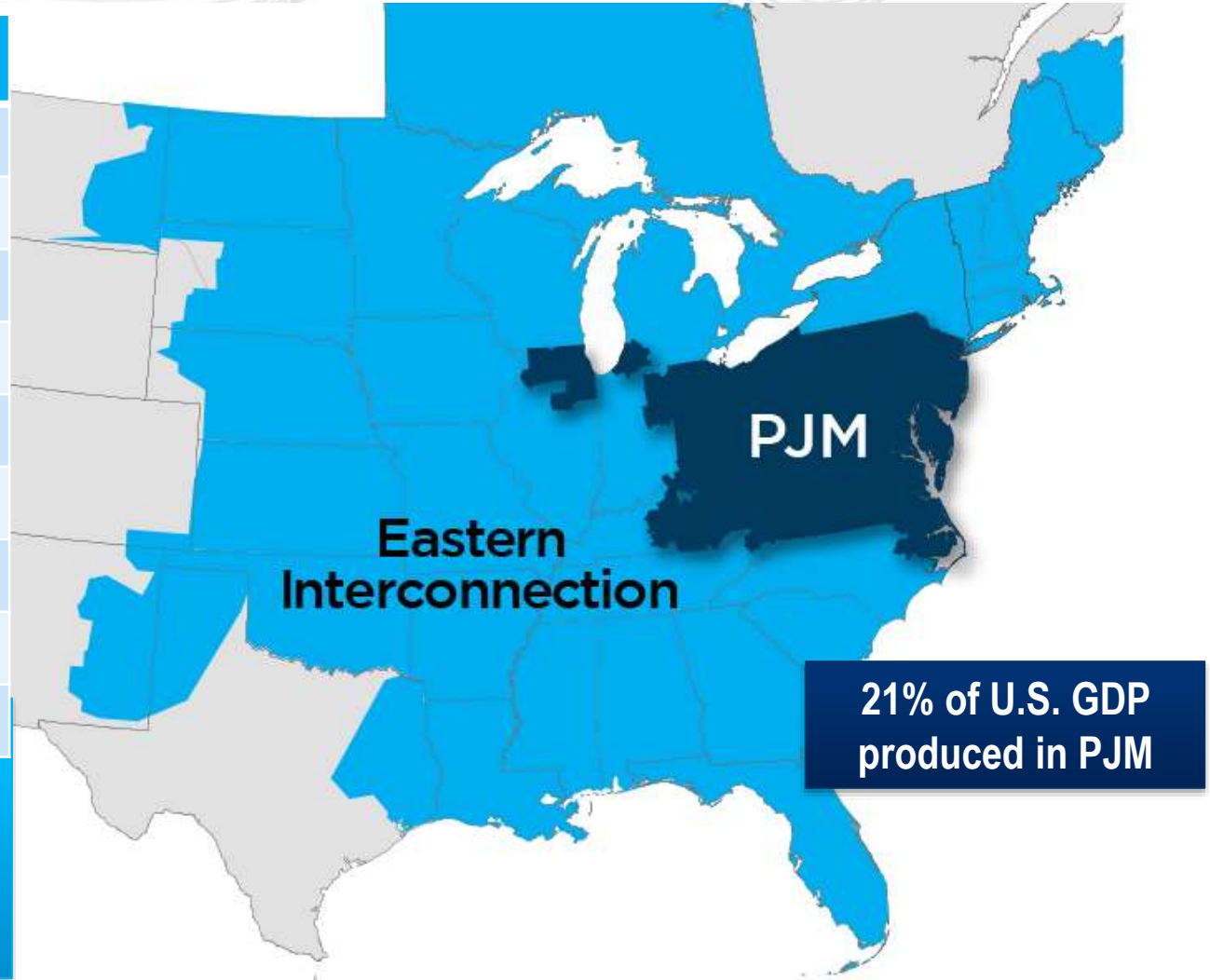
Structural Solutions ***Have*** Worked

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

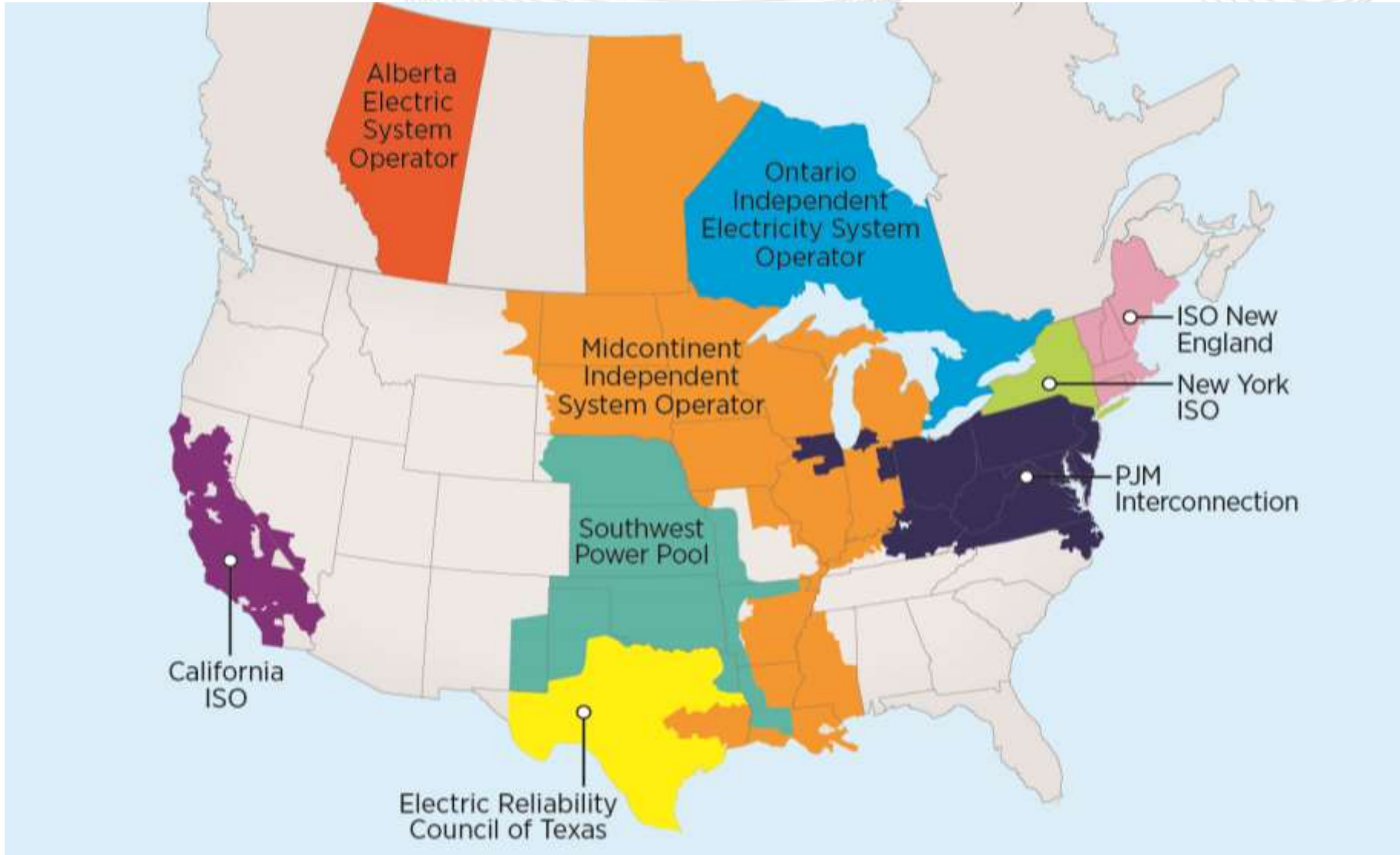
Key Statistics

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

13

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Policy Headaches Looking Forward

- Impact of state legislative support for specific resources
- Losing our way: Re-regulation by piece part
- Natural gas dependencies aka “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?



Gas System Dependencies — “Avoiding the Broad Brush”

Multiple Flavors

- Generation co-located with shale gas wells
- Generation with dual fuel
- Generation with primary firm from a pipeline
- Generation with firm purchased on the secondary market
- Generation behind an LDC



PJM Fuel Security Analysis

- **PJM 2017 Fuel Attributes Paper** – Attributes of each fuel type identified and later cited in DOE 2017 analysis
- **PJM Fuel Security Analysis** – Looking at supply chain vulnerabilities of each type of fuel and potentially using capacity market providing a revenue stream for resources that address those vulnerabilities



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?



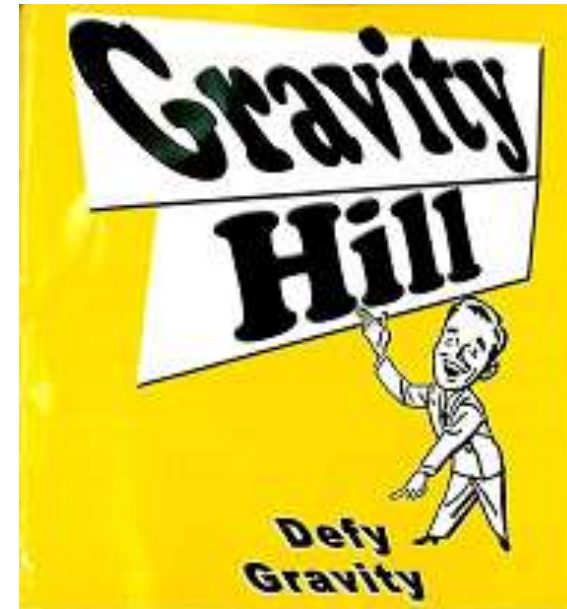
- States
 - State Energy Policies (governors/legislators)
 - State PUCs
- FERC
- Environmental agencies
- Department of Energy
- Transportation Security Administration
- Congress
- US Supreme Court



**Transportation
Security
Administration**

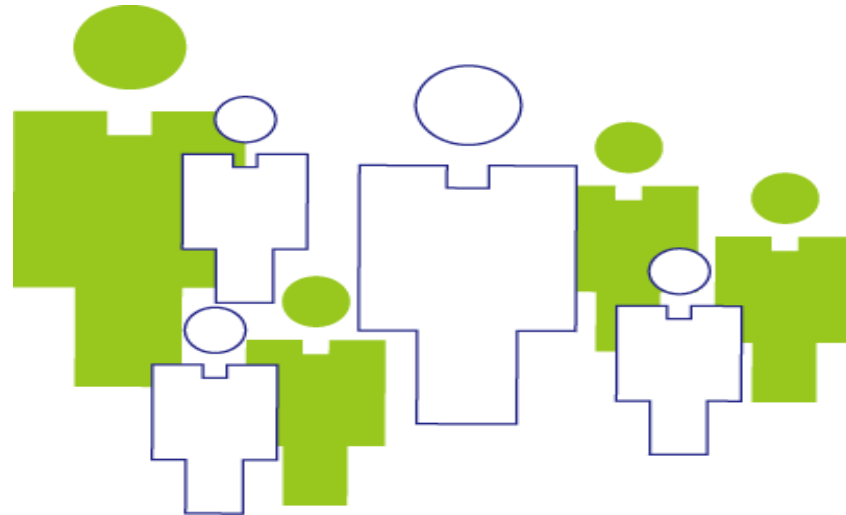


**“Hanging in mid-air”:
a dangerous place**



A restructured industry or “Golden memories of yesteryear...”

The choice is ours





Let's talk....

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