



# Utility Data Sharing Risk and Economics Assessment Framework

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North American SynchroPhasor Initiative (NASPI)  
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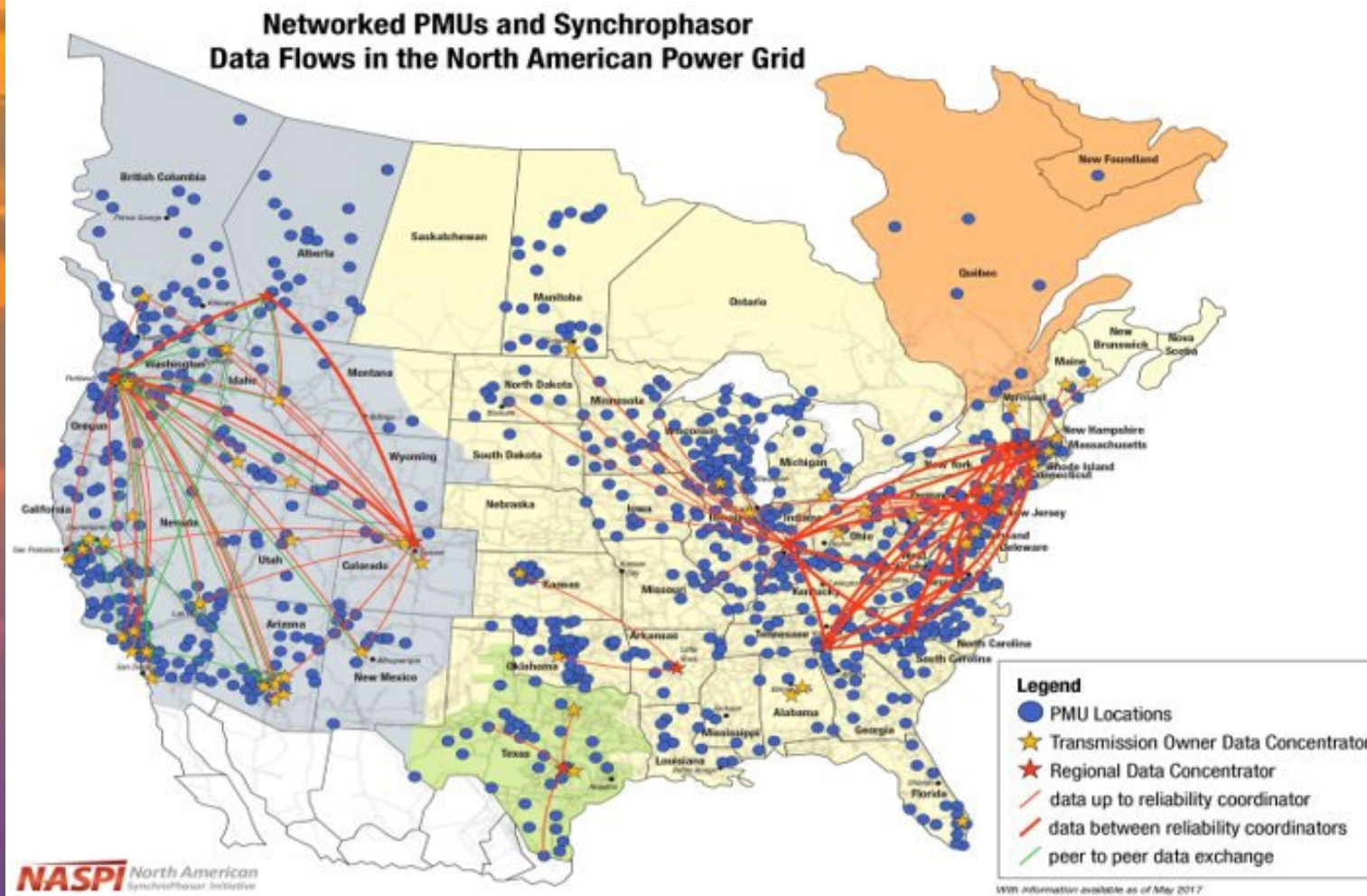
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# Talking Points



- Why Share Synchrophasor Data?
- Benefits of Sharing
- Data Sharing Challenges
- Data Sharing Risk Framework
- Risks with Sharing Utility Data
- Real Costs of Data Sharing
- Measuring Risk
- Ways to Mitigate Risk
- Monitoring Risk
- Next Steps

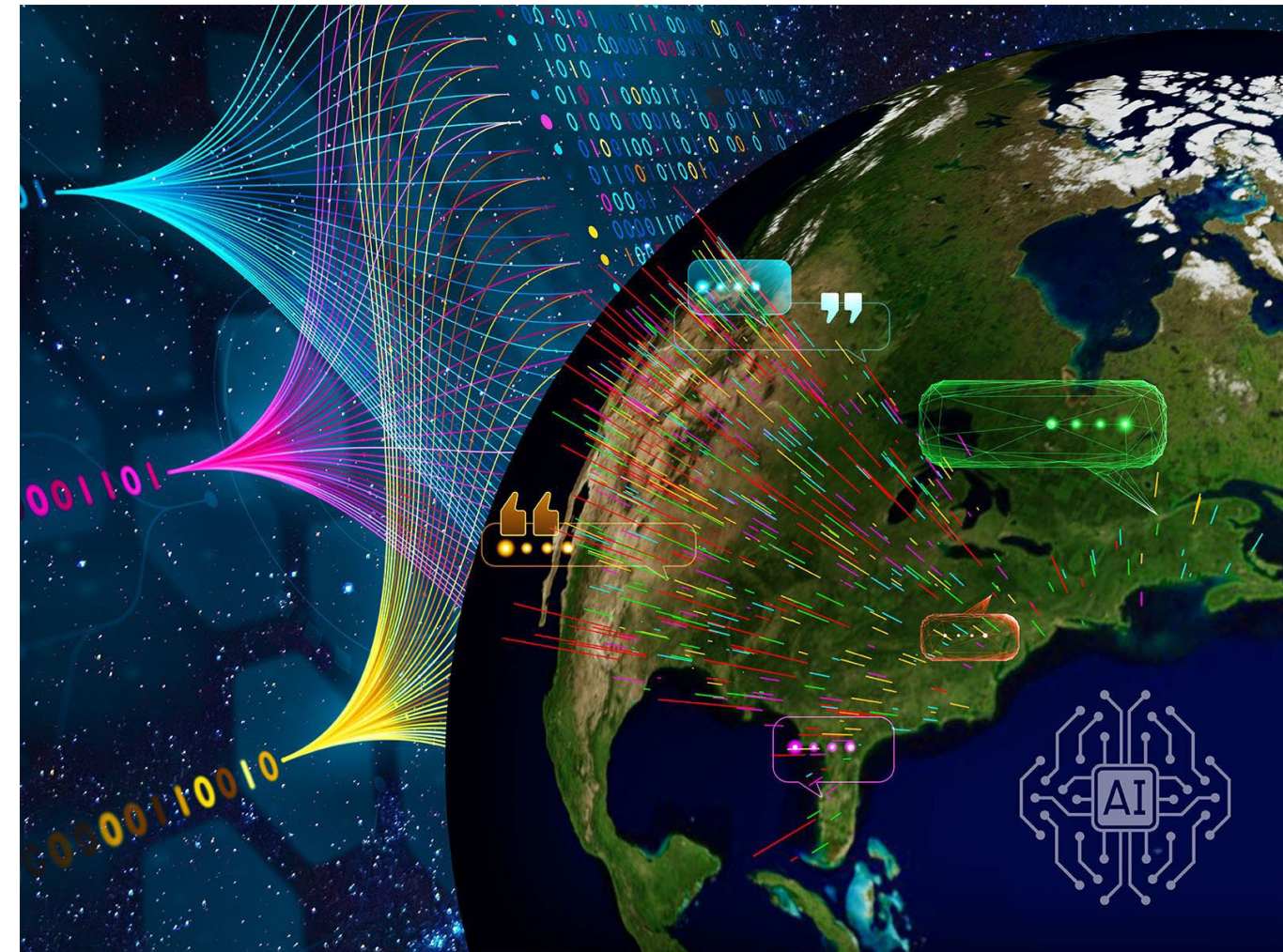
# Why Share Synchronphasor Data?

- Specific phasor measurement units from sensors/monitors
  - Data provides indication of grid health (voltage, current, frequency)
  - Lots of data collected at a high rate (~ 30 or more observations/sec)
  - GPS Time-stamped provides a common reference point
- Sharing grid data required by
  - North American Electric Reliability Corporation (NERC) Reliability Standards
  - NERC Critical Infrastructure Protection Standards (NERC-CIPs)
  - Electricity Information Sharing and Analysis Center (E-ISAC)
  - State and local government (public utility commissions)
  - Etc.
- Other Interested Stakeholders
  - Utilities
  - Consultants, grid vendors, etc.
  - University researchers, national laboratories, etc.



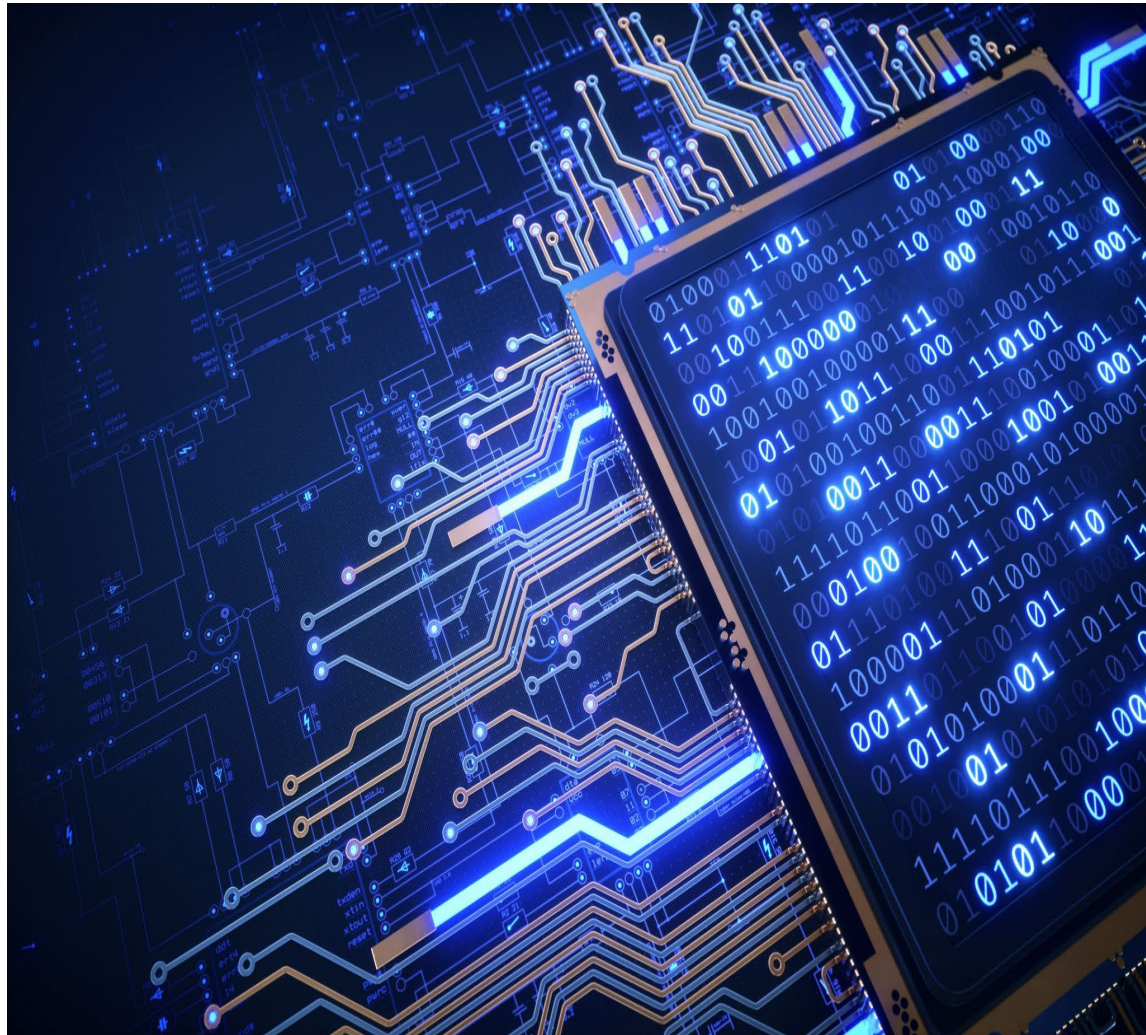
# Benefits of Sharing

- Grid performance
  - Improve operations and reliability
  - Predictive modeling
  - Insights on potential causes of grid faults/disturbances
- Develop new and innovative technologies
  - Data analytics (i.e., support integration of inverter-based energy resources)
  - Enhance diagnostics (i.e., event monitoring, oscillation detection, etc.)
  - Optimize grid controllers
  - Digital grid twin to simulate events/conditions
  - New applications and tools



Graphic: PNNL Cortland Johnson

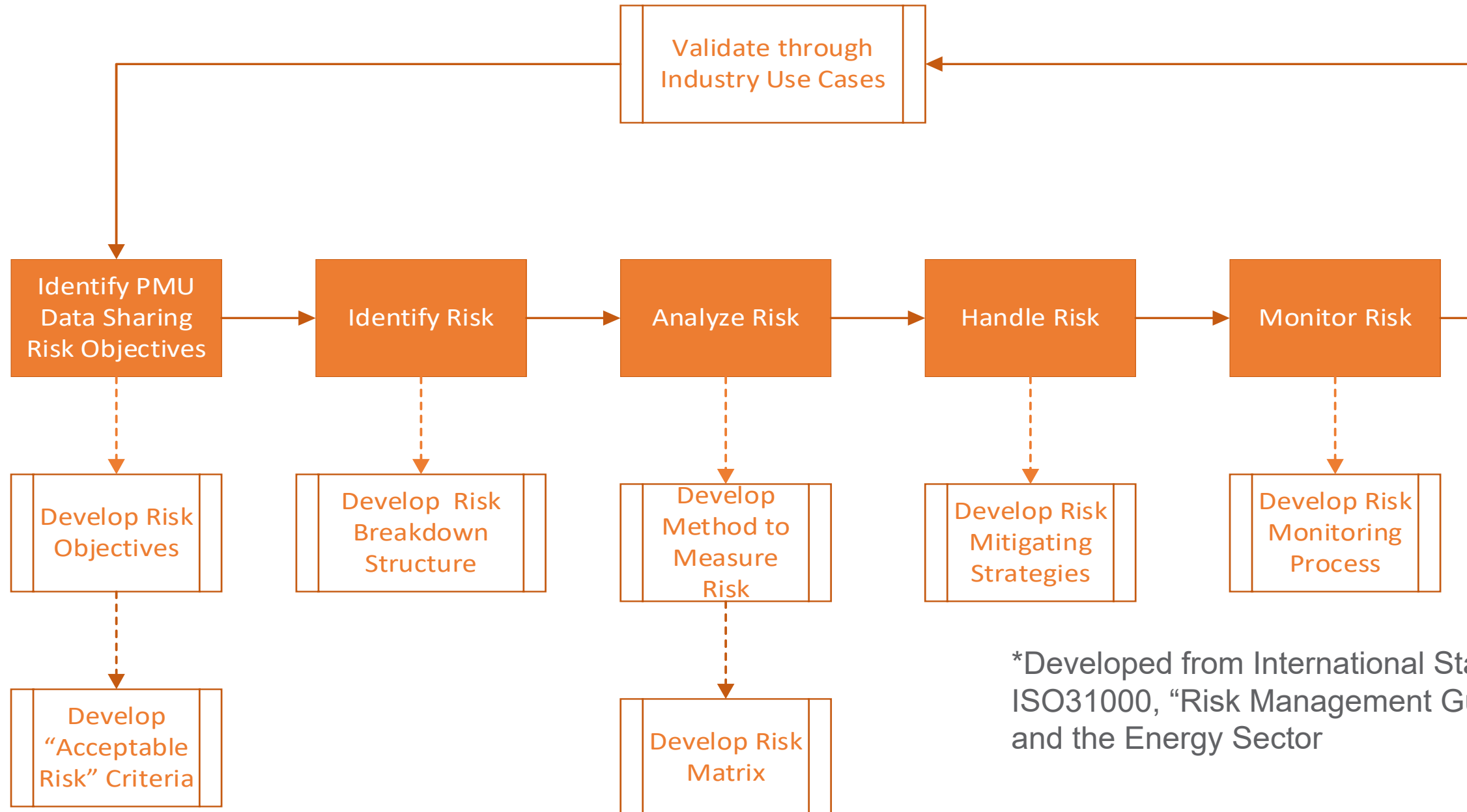




# Data Sharing Challenges

- Financial impact to sharing
  - Workflow
  - Stewardship
  - Competition risk
  - Regulatory fines
- Data Quality (missing data, time synchronization)
- No standard data formats
- Data Security
  - Critical Energy/Electric Infrastructure Information (CEII)
  - “Need to Know” recipient
  - Don’t want PMU data to get to the wrong hands

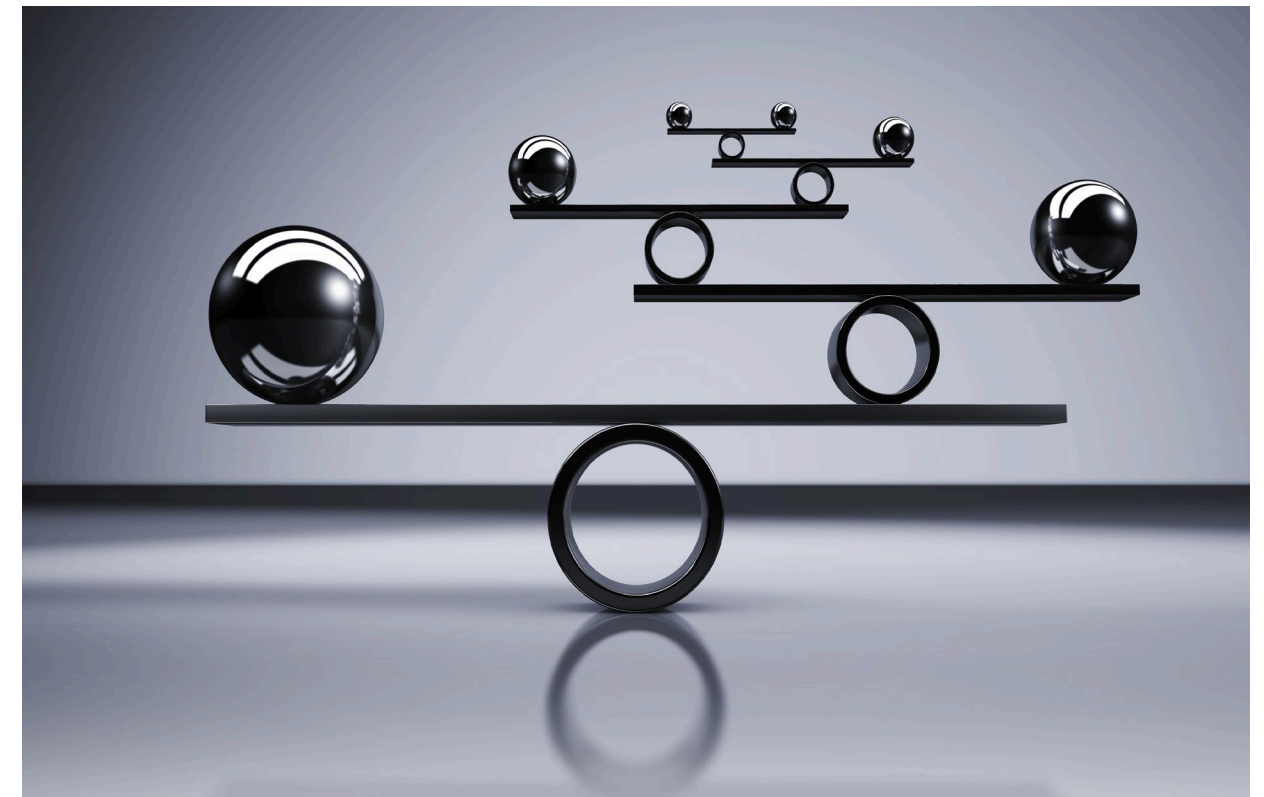
# Utility Data Sharing Risk Framework\*



\*Developed from International Standard ISO31000, "Risk Management Guideline" and the Energy Sector

# Risks with Sharing Utility Data

- Regulatory Compliance
  - NERC/FERC non-compliance and impact to Bulk Electric System
  - Violation of Power Contracts
- Economics
  - Technological Advancements
  - Reliability of grid operations and interconnectivity
  - Data Breach Recovery Costs
- Business Competitiveness
  - Proprietary Intellectual Property
  - Governance
  - Reputation
- Supply Chain Security
  - Communication Protocols
  - Data Breach (CEII and PCII)
  - Cybersecurity of Contractors, Vendors and Subcontractors



**Balance benefits and acceptable risk**

CEII = Critical Energy/Electric Infrastructure Information  
PCII = Protected Critical Infrastructure Information



# Real Cost of Data Sharing



*Effort for receiver in addition to utility...*

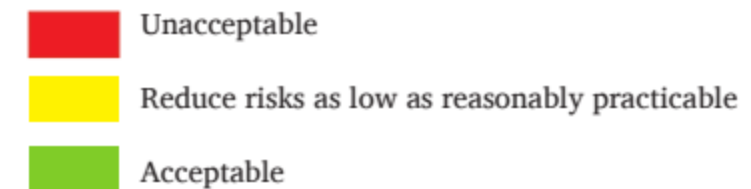
- Insights from PNNL effort to obtain large volumes of research data from utilities
- Storage and Handling of PMU data
- Evaluation of data to share
- Packaging and transport/delivery of data
- Protection and archiving
- Conditioning and preserving PMU data for research purposes
- Generally more cost to receiver than utility



# Measuring Risk

- Quantifying risk helps with decision-making
  - Cost-benefits or return on investment to protect data
- Utilities have different risk thresholds (even within different business units within the same utility)
- Difficult to quantify financial impact or other intangible costs (reputation)
- Explore approach utilities use to measure risk

		<i>Frequency</i>				
		very infrequent	infrequent	fairly frequent	frequent	very frequent
<i>Consequence</i>	catastrophic					
	very large					
	large					
	medium					
	small					



Source: ISO31000

# Monitoring Risk to Utilities after Data is Shared

- Measure impact of sharing data
- Periodic risk assessments
- Reporting of data agreement violations
- Validate security of data management and transport





# Next Steps to Developing Utility Data Sharing Guide



- Take the risk framework out for a dry run
- Work with BPA, WAPA and other utilities to pilot the risk framework
- Obtain insights on risk thresholds and how utilities measure risk
- Publish Utility Data Sharing Guide



# Thank you

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