Resilience and Reliability

**FUEL SECURITY**
- **Focus**: Resilience
- **Construct**: To Be Determined
- Improve the system’s capability to continue serving load during severe, long-term events that disrupt fuel supplies
  - Helps prepare the system to better withstand prolonged disruptions in fuel delivery
  - Incentivizes investment in energy secure products
  - Addresses locational and temporal fuel constraints
  - e.g. 14-day cold weather duration

**CAPACITY PERFORMANCE**
- **Focus**: Long-Term Reliability
- **Market Construct**: Capacity
- Ensure individual capacity resources perform throughout the delivery year during peak emergency conditions
  - Improves performance during peak operating conditions
  - Incentivizes resource improvements to deliver during peak emergency conditions
  - Penalizes non-performance
- Full delivery year (Jun. 1 – May 31)

**RESERVE PRICE FORMATION**
- **Focus**: Short-Term Reliability
- **Market Construct**: Energy Reserves
- Improve price signals to more accurately value and procure the energy reserve product
  - Strengthens the reserve product to improve real-time resource performance
  - Incentivizes investment in flexible resources
  - Improves locational reserve needs
- 10-30 minute real-time operations
High-Impact Low-Frequency Event Probability

- Resilience is preparing for, operating through and quickly recovering from a high-impact, low-frequency event.
- Resilience goes beyond existing reliability criteria.
- Advancing resilience includes a range of cost-effective solutions to mitigate the dependence on critical assets.

- The probability for naturally occurring events can be quantified: cold snaps, hurricanes, GMD, etc.
  - PJM experienced a 12-day consecutive cold snap winter 2017/18
  - PJM experienced a concurrent 90/10 Peak Winter Load and Gas-Pipeline Failure January 2019

- The probability of man-made events cannot be quantified: physical attack on a gas pipeline, cyber-attack, EMP, etc.