Fuel Security Periodic Update

Patricio Rocha Garrido
Resource Adequacy Planning
Operating Committee
November 6, 2020

PJM©2020

Background: Fuel Security at PJM

2015 – 2017	• PJM produces a series of reports on impacts of the changing landscape of the power industry, including a report evaluating the changing resource mix in PJM and reliability attributes.
Apr 2018	• PJM releases a brief outlining its intent to perform further analysis on the topic of fuel security and its proposed approach to the process.
Nov / Dec 2018	• PJM releases the results of its analysis and simulations and presents the data to its stakeholders, identifying some potential risks and vulnerabilities associated with fuel security.
Feb / Mar 2019	• Problem Statement & Issue Charge presented to and approved by PJM stakeholders, identifying fuel security as an important component of reliability and resilience.
Apr – Dec 2019	• Fuel Security Senior Task Force conducts additional analysis to evaluate options and provide recommendations to the larger PJM stakeholder body.
Dec 2019	• MRC votes to sunset the FSSTF and continue to monitor parameters considered in the fuel security analysis and report to the MRC not less frequently than every 18 months.
Feb 2020	• OC Work Plan updated to include periodic Fuel Security updates.

PJM©2020

Scope of Periodic Updates for Fuel Security

Periodic reporting to the OC may include:

1. **Fuel Security Monitoring** with parameters from previous analyses
   - Operational metrics, seasonal reporting and event analysis
   - Loss of Load Expectation (LOLE) sensitivity analysis of 5-year ahead RTEP Portfolio
2. **Updates on Fuel Security Phase III**
   - Work with federal agencies and other industry sectors to analyze physical and cybersecurity risks
3. **PJM Gas Electric Coordination Team Efforts**
   - Seasonal reporting and event analysis
4. **Fuel Security Related Industry Updates**
   - NERC Electric-Gas Working Group (EGWG)

PJM©2020

Objectives of Fuel Security Monitoring

PJM will continue to monitor fuel security through:

1. Operational reliability metrics
   - Detailed assessment of forced outages submitted with specific fuel security-related GADS cause codes

2. Assessment of 5-year ahead RTEP Portfolio
   - Calculation of Loss of Load Expectation (LOLE) during extreme winter weather events
   - Analysis similar to what was performed during the Fuel Security Senior Task Force (FSSTF)

PJM©2020

Operational Reliability Metrics for Fuel Security

Rolling historical metrics and focused analysis of operational events:

1. Forced outages by month
   a. Fuel security forced outage rate
   b. Non-fuel security forced outage rate

2. Peak week concurrent forced outages

3. Occurrence & details of cold snap events
   a. Wind & solar performance during cold snap

4. Fuel delivery system events

5. Generation mix by fuel type, percent of Energy

PJM©2020

Loss of Load Expectation (LOLE) Assessment General Considerations

- Assessment will be conducted during the first quarter of each year
  - The RTEP portfolio is developed in February of each year

- Inputs to the assessment (discussed in next slides) will be updated by December of each year
  - For the most part, the updates will involve rolling in data on each of the inputs from the previous winter season

PJM©2020

LOLE Assessment of RTEP Portfolio

Inputs

- Cold Snaps
- Forced Outage Rates (FS-related and random)
- Wind/solar Capacity Factors
- Generic disruptions of variable impact

Procedure

- Set impact of generic disruption at X MW
- Calculate conditional LOLE based on each historical Cold Snap
- Aggregate LOLE values by Delivery Year
- Calculate average conditional LOLE

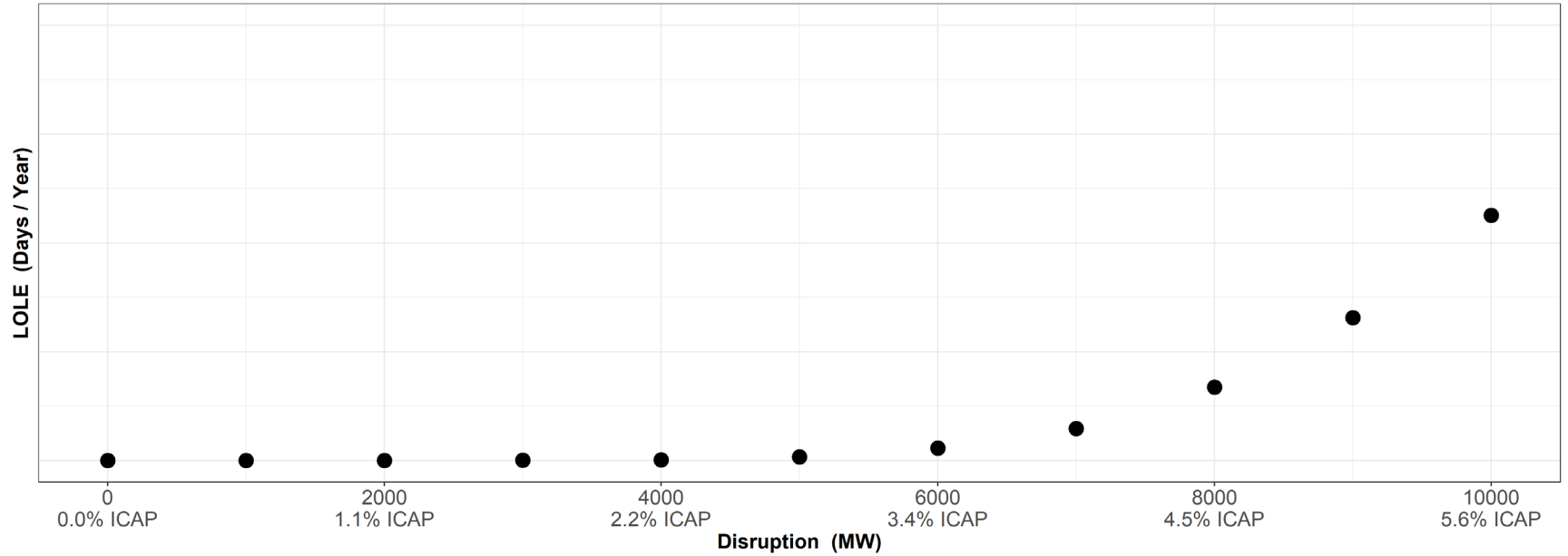
Output

- Portfolio's LOLE conditional on the occurrence on a generic disruption of size X MW coincident with a Cold Snap

PJM©2020

LOLE Assessment of RTEP Portfolio

- The result of the assessment is expected to be a graph establishing the relationship between a generic disruption of variable impact and LOLE. For example, consider the following **illustrative** graph



PJM©2020

Next Steps

Spring 2021

- Provide methodology documentation and assessment update to MRC

PJM©2020

Contact

Presenter:
Patricio Rocha Garrido,

patricio.rocha-garrido@pjm.com

Fuel Security

Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

PJM©2020