



NERC Fuel Assurance Reliability Guideline

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Background

- ❑ Nationwide resource mix changes: large increase of natural gas fired generators
- ❑ NERC published the Special Reliability Assessment: Potential Bulk Power System Impacts Due to Severe Disruptions on the Natural Gas System in November 2017
- ❑ Many recommendations were made in the report for assessing the impacts of the natural gas infrastructure disruptions on the bulk power system
- ❑ Some recommendations were assigned to the NERC Planning Committee (PC)

Background Cont'd

- ❑ NERC PC conducted a workshop with experts from across industries to develop plans for the fuel assurance related risks in July 2018, and desires for guidance around contingency selection and study assumptions were expressed by workshop attendees
- ❑ NERC Board approved the recommendations made by the PC in November 2018 to address the concerns from the 2017 Special Reliability Assessment, which included the development of fuel assurance reliability guideline
- ❑ NERC Electric Gas Working Group (EGWG) was assigned to develop the guideline

NERC EGWG

- ❑ NERC EGWG includes experts from both the gas and electric sides to collaboratively develop the fuel assurance reliability guideline
- ❑ Expertise in the following area (EGWG scope document) are included



Membership

The EGWG will include members who have technical or policy level expertise in the following areas:

- Fuel supply and delivery chains
- Fuel procurement for electric generation
- Transmission Planning studies and system analysis
- Electric and fuel infrastructure operations



2017 NERC Special Reliability Assessment

Appendix E Recommendations

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1. Identify potential natural gas system contingencies and their frequency of occurrence
 2. Assess the impacts for each of the identified contingencies in terms of duration and amount of natural gas supply disrupted
 3. Apply the contingency disruptions to the natural gas supply capabilities to calculate the impact on total natural gas supplies and, more specifically, the amount of natural gas available to electric generators
 4. Determine the transmission systems ability to transport power to load under these extreme conditions
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Intention of the Fuel Assurance Reliability Guideline

- ❑ Provide guidance on methods to implement the recommendations from the 2017 NERC Special Reliability Assessment
- ❑ Provide best practices/approach instead of a single methodology that can be broadly used for all the major fuel types, unique circumstances in each region, and adopted by entities including but not limited to Transmission Planners and Planning Coordinators
- ❑ Provide flexibility to allow entities to adopt a portion of the best practices related to their unique fuel assurance risks

Fuel Assurance Definition

- ❑ Fuel assurance is now formally defined in the NERC fuel assurance reliability guideline

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Fuel Assurance: proactively taking steps to identify fuel arrangements or other alternatives that would provide confidence such that fuel interruptions are minimized to maintain reliable BPS performance during both normal operations and credible disruptive events

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- ❑ The level of confidence is unique to each region, and should be established based on internal assessment and asset characteristics
- ❑ Regional planners and generator owners have different roles to assure fuel assurance
- ❑ Fuel assurance needs to be evaluated under credible disruptions besides normal operating conditions

Electric Generation Fuel Supply Primer and Fuel Supply Risk Analysis

- ❑ The guideline provided information with regard to the supply chain and their characteristics for each major fuel type, and potential risks associated with the supply chain that should be taken into considerations by planners to develop study assumptions for their fuel assurance assessment
- ❑ Fuel types included in the guideline are natural gas, oil, coal, nuclear, hydro, solar, wind, and other (e.g. battery storage)

Fuel-related Reliability Risk Analysis Framework

- ❑ A seven-step framework was recommended as the best practice to perform fuel assurance analysis
 - It provided guidelines to help planners to determine a problem statement, gather necessary data, formulate input assumptions and initial system conditions, select credible contingencies, and select the right tools for the analysis
 - Planners were encouraged to develop a solution framework before potential reliability issues arise
- ❑ A risk analysis checklist and suggested items to be included in a fuel/energy survey were also provided to aid the planners in assessing their fuel assurance

Key Takeaways

- ❑ Regional planners should focus on assessing the vulnerabilities of the entire region during credible events, which may include both high-probability, low-impact and low-probability, high-impact events
- ❑ Each region should identify their unique fuel assurance risks and form their problem statement
- ❑ Data gathering and collaboration between the gas and electric industry are critical to understand the fuel assurance risks and develop credible contingencies for a meaningful fuel assurance analysis

References

□ NERC fuel assurance reliability guideline

https://www.nerc.com/comm/PC/ElectricGas%20Working%20Group%20EGWG/Fuel_Assurance_and_Fuel-Related_Reliability_Risk_Analysis_for_the_Bulk_Power_System.pdf

□ NERC 2017 special reliability assessment

https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SPOD_11142017_Final.pdf

□ NERC EGWG scope document

<https://www.nerc.com/comm/PC/ElectricGas%20Working%20Group%20EGWG/EGWG%20Scope%20Document%20-%20May%202019.pdf>



Questions?

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