Valuing Fuel Security

Problem Statement

In March 2017, PJM published an analysis of the reliability attributes associated with various future resource mixes. As PJM concluded in this report, PJM's current fuel portfolio is reliable, diverse and among the highest performing of those studied. It is well supplied with the required generator reliability attributes. The PJM system can remain reliable with the addition of more natural gas and renewable resources. However, an increased reliance on any one resource type introduces potential fuel security risks not recognized under existing reliability standards. Therefore, in April of this year, PJM initiated a study and published a paper entitled "Fuel Security Analysis," which outlined a 3 phase plan for investigating resilience, focusing on one of its most important elements, fuel security.

During phase 1, PJM stress-tested fuel delivery systems serving generation in the PJM region under plausible but extreme scenarios to identify when the system begins to be impacted and to identify the key study assumptions that trigger impacts to the grid.

The Phase 1 analysis was completed in December of 2018. While there is no imminent threat, fuel security is an important component of reliability and resilience – especially if multiple risks come to fruition. The findings underscore the importance of PJM exploring proactive measures to value fuel security, and PJM believes this is best done through competitive wholesale markets. In order to enhance the fuel security of the grid into the future, PJM believes market-based mechanisms for retaining or procuring the necessary fuel security should be explored along with other mechanisms as determined through this initiative.

Therefore, PJM proposes the following items be addressed with this initiative:

1. Provide education at a minimum on the following:
    a. Fuel security study recently completed by PJM
    b. Work other ISO/RTOs are doing relative to fuel/energy security
    c. PJM mechanisms and products from both the supply side and demand side that contribute to fuel/energy security
    d. NERC Assessments that may support this initiative
    e. The primary risks to fuel/energy security in PJM and the impact and likelihood of such risks.

2. Determine what it means from a PJM system and/or resource level to be fuel/energy secure. This determination should include all aspects of fuel supply characteristics, location of the fuel supply, roles of demand response and demand side management, location and characteristics of non-fuel generation (e.g., renewable and energy storage resources), and other alternative options that can ensure fuel/energy security in the coming years.
3. Determine whether there is a quantifiable and/or locational requirement for fuel/energy security in PJM.
4. Identify criteria to guide the selection of design alternatives that should be considered to ensure maintenance of any requirements identified in #2 and #3 above. Input into the determination of this criteria will include at a minimum the following:
    a. Impact of existing tools, designs, and operational or planning standards on Fuel/Energy security.
    b. Results of Phase 1 Fuel Security Analysis
    c. Timing of fuel/energy security primary risks.
    d. Triggering mechanisms to implement future design alternatives that are currently not needed but may be needed in the future.
    e. Analysis of any benefits of design alternatives to ensure that they are commensurate with the costs incurred.
5. Where technically feasible, provide stakeholder requested analyses and/or additional scenarios to support discussions, potential plausible future FERC/NERC reliability standards/guidelines, and for evaluating the potential impact of proposals to maintain any identified requirements.
6. Determine and compare potential mechanisms, including costs, to ensure and value fuel/energy security in PJM and consider recommendations from relevant studies and assessments that are technically feasible.