



Natural Gas and Electric Market Coordination Problem Statement and Issue Charge



Markets and Reliability Committee– August 25, 2021




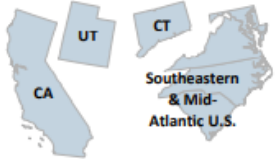
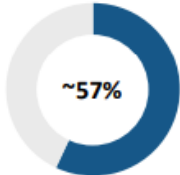
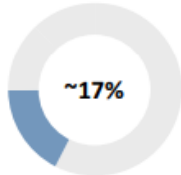
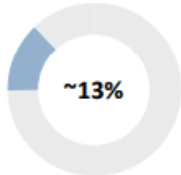
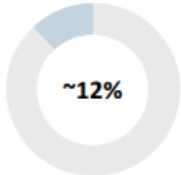
Jim Davis – Regulatory and Market Policy Strategic Advisor

Dominion Energy

Company Overview



- Narrowed **focus** on **regulated** and **regulated-like** businesses
- Premier **state-regulated** utility operations
- Industry-leading **clean energy** profile

	State-regulated utility operations			Contracted Assets
	Dominion Energy Virginia	Gas Distribution	Dominion Energy South Carolina	
States of operation				
2021 operating earnings contribution				
Description	Electric distribution, transmission & generation	Gas distribution & Renewable natural gas (RNG)	Electric distribution, transmission, generation & gas distribution	Long-term contracted zero-carbon generation & Cove Point (50%)

Aggressively pursuing vision to be the most sustainable energy company in the country

Natural Gas and Electric Markets

Background

- Natural Gas is a substantial source of power generation in PJM.
 - Increased reliance on gas is expected to continue in the short term.
 - Coal/oil fired plants are retiring.
- Continued increase in intermittent generation in the PJM system is imminent.
- Fueling gas fired units are fundamentally different from onsite fuel sources, such that they require close coordination with pipelines.
- Pipelines are fully subscribed.
- More restrictive operations for gas fired generation with greater frequency of localized Operational Flow Orders (OFO).
- Greater imbalance penalties with more restrictive imbalance provisions.
- Inflexible, ratable contracts requiring natural gas fired generation to hourly burn same quantity of gas throughout gas day.
- Exacerbated with future intermittent resource development.

Continued Misalignment

Problem Statement

Primary Problem (Market Design)

- Market design discourages fuel procurement.
- Corporate limitations at extreme prices that prevent fuel purchases.
- Market design limitations incentivize burning of back- up fuel for resources with dual-fuel capability.

Secondary Problem (Coordination and Operations)

- Greater limits on pipeline flexibility consequently limits flexibility provided by natural gas-fired generation.
- High demand, combined with decreased flexibility and onset of intermittent resources requires greater coordination for reliable operation of the electric system.
- Greater natural gas pipeline restrictions will hinder gas-fired generators' ability to operate and provide reserves during critical events.
- Lack of accounting of fuel limitations in economic dispatch signal.
- Persistent misalignment between gas and electric markets puts electric system at risk of failure as more intermittent resources added to the system.

Issue Charge

Key Work Activity 1

Provide Education on topics:

- A. History
- B. Natural Gas pipeline tariffs, products, procurement, imbalance charges and penalty structure.
- C. Overview of recent events, highlighting coordination failures.
- D. Accounting of gas pipeline and fuel procurement in planning and dispatch models.
- E. Impact of intermittent generation.

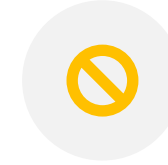
Issue Charge

Key Work Activity 2

Potential Improvements to PJM Market to mitigate the impacts of misalignment:

- A. Establish Common Understanding
- B. Examine possible improvements to coordination and emergency procedures
- C. Examine PJM situational awareness of fuel supply.
- D. Examine improvements to PJM's Economic Dispatch Model.
- E. Examine improvements to fuel procurement flexibility used in PJM reliability planning.
- F. Examine potential market solutions to improve fuel procurement flexibility, modeling and optimize gas and electric market alignment.
- G. Identify potential market power and/or manipulation risks.

Areas of Common Understanding



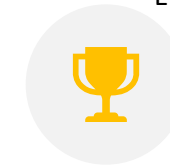
NO PARTY WANTS TO VIOLATE FERC REGULATED ENTITY MANDATES



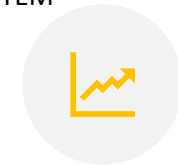
PJM LIKELY HAS THE MOST INFORMATION RELATING TO OVERALL BULK ELECTRIC SYSTEM NEEDS



NO ONE WANTS A RELIABILITY EVENT



CREDIBLE/LEVEL PLAYING FIELD IS DESIRABLE



MARKET SOLUTIONS ARE LIKELY THE BEST APPROACH

Issue Charge

Out of Scope

Out of Scope

- Issues that can only be resolved by the Federal Energy Regulatory Commission (FERC) or the North American Energy Standards Board (NAESB) taking action to reform the gas market.

Issue Charge

Expected Deliverables

Expected Deliverables

1. Account for natural gas transportation, gas procurement, and oil reserves in its economic dispatch signal and reserve calculations, as necessary.
2. Enhance the dispatch rules and energy offers for dual fuel generation resources with alternative fuel (e.g. oil, LNG) back-up under extreme weather events and constrained pipelines, as necessary.
3. Develop PJM market rules that can address challenges of procuring gas over non-peak hours, weekends and holidays, as necessary.
4. Enhance emergency procedures and increase coordination between PJM and natural gas pipelines, as necessary.
5. Develop any additional PJM market rules to address the natural gas and electric coordination, as necessary.

Issue Charge

Timing and priority

- Tier 2 decision-making.
- Assigned to MRC.
- Commencing October 1, 2021.
- Completed in 12 months, with a high priority. Timeline to be revised, as necessary.
- Meeting monthly.

Summary

- ❑ Natural Gas and Electric markets misalignment continues to exist.
- ❑ Gas pipelines are becoming more restrictive.
- ❑ Increases in intermittent resources are imminent.
- ❑ Market design and operational coordination limitations exist.
- ❑ At a minimum, emergency procedures and coordination between PJM and the natural gas pipelines need to be examined and enhanced, as necessary.



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