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Capacity Testing for Hydroelectric Resources

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Problem Statement

Overview

- Problem Overview
  - Seasonal testing rules and windows can conflict with critical maintenance and understate the capacity available from hydro resources
  - Seasonal capacity testing has no value since hydro resources operations are not impacted by ambient temperatures
- Scheduling Pressures
  - New winter testing requirements, transmission construction and tighter reserve margins complicate outage coordination
  - Rescheduling can make shared contractor crews unavailable and compress seasonal testing windows
- Reliability and Cost Implications
  - Extended outages, particularly with hydro (intermittent and pumped storage) facilities, can span an entire test window, forcing a choice between critical maintenance and testing
  - Suboptimal tests can reduce capacity offered in future auctions, increasing capacity clearing prices and generation costs

Reexamine current capacity testing rules for intermittent hydro and pumped storage hydro, to determine if additional flexibility is needed

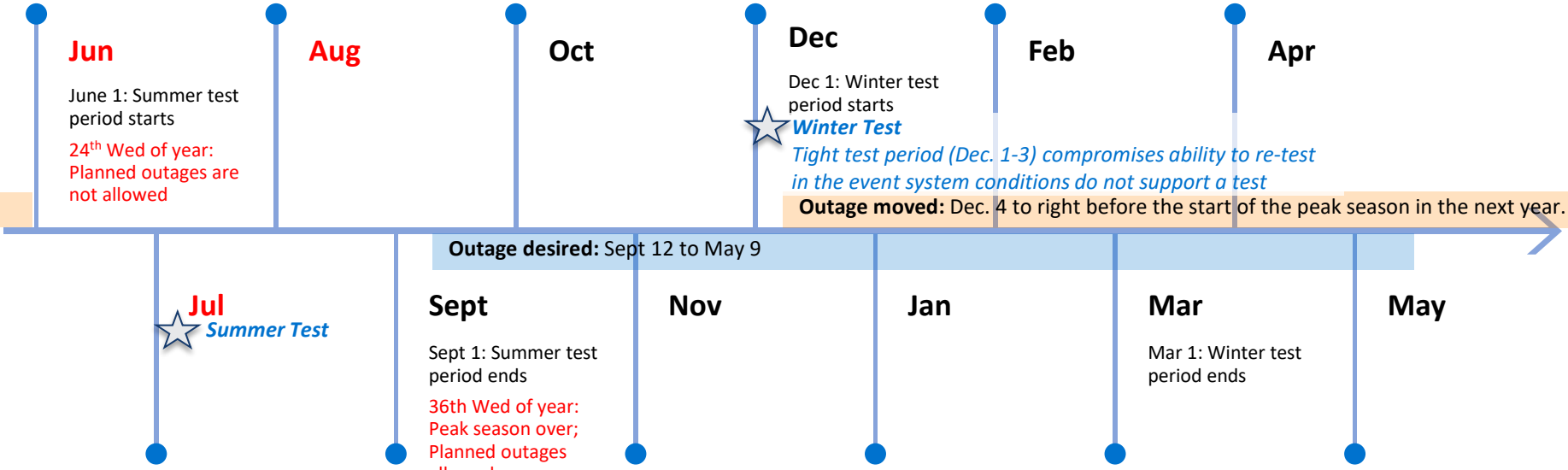
Issue Charge

Overview

- Improve testing flexibility for intermittent and pumped storage hydro while supporting critical maintenance and reliable operation
- Key work activities
  - Education and performance factors
    - Review outage rules, missed or failed tests and long-outage options
    - Identify hydro performance factors, test timing and duration
  - Testing Improvements and penalties
    - Account for resource-specific operations and review penalties for tests missed due to outages or PJM directives
  - Test consideration and outage coordination
    - Improve consolidation of generation and capacity tests and coordinate test and outage schedules
- Scope Boundaries and Deliverables
  - Excludes broader capacity market rules, except capacity testing, outage planning and related penalties
  - Energy and ancillary service market rules remain out of scope
  - Deliverables: Revisions to PJM Governing documents

Example of how testing windows impact outages

A hydro resource needs a full turbine and generator overhaul to ensure future reliable operations. The complete overhaul requires a 240-day outage. However, the outage is forced to be shortened to 192 days to avoid accruing test penalties and to avoid being in a Forced Outage during Peak Season. The shorted outage limits work that is completed, compromising future reliability. Moving multiple outages can also cause outages to pile during certain months, which is a growing reliability concern as load increases.



Interest Areas

Overview

- Testing Flexibility
  - Seasonal testing windows and options for missed or failed tests, particularly when extended maintenance outages span the testing period
- Hydro-specific performance considerations
  - Test frequency, timing, duration and operating conditions that accurately reflect intermittent and pumped storage hydro capabilities
- Penalty Treatment
  - Review penalty structure for tests missed due to outages or PJM directives, according to resource-specific operating constraints
- Reliability and capacity impacts
  - Support critical maintenance and reliable operation while avoiding test outcomes that understate available capacity and increase costs

Capacity Testing for hydro resources should support critical maintenance, protect reliability, accurately reflect available capacity and ensure fair treatment.

Possible Alternatives

- **Winter Testing Exemption**
  - Eliminate winter testing requirement for intermittent hydro and pumped storage hydro facilities that are utilized continuously throughout the year
  - Resources would still perform summer tests to prove capacity ability, as these resources have no seasonal ambient impact
- **Out of Period Tests**
  - Allow out of period tests for intermittent hydro and pumped storage hydro facilities affected by long duration outages, with successful testing eliminating seasonal capacity test penalties.
- **Class Specific Testing Requirements**
  - Adjust testing requirements for intermittent hydro class and create new class for pumped storage hydro (currently combined with battery storage resources)
  - Allow for single summer test for those 2 classes
  - Consider testing every 2-3 years versus every year due to almost daily operation
  - Non-ambient capacity output is consistent across seasons

Contact Information

Jim Davis
Regulatory and Market Policy Senior Strategic Advisor
james.g.davis@dominionenergy.com