



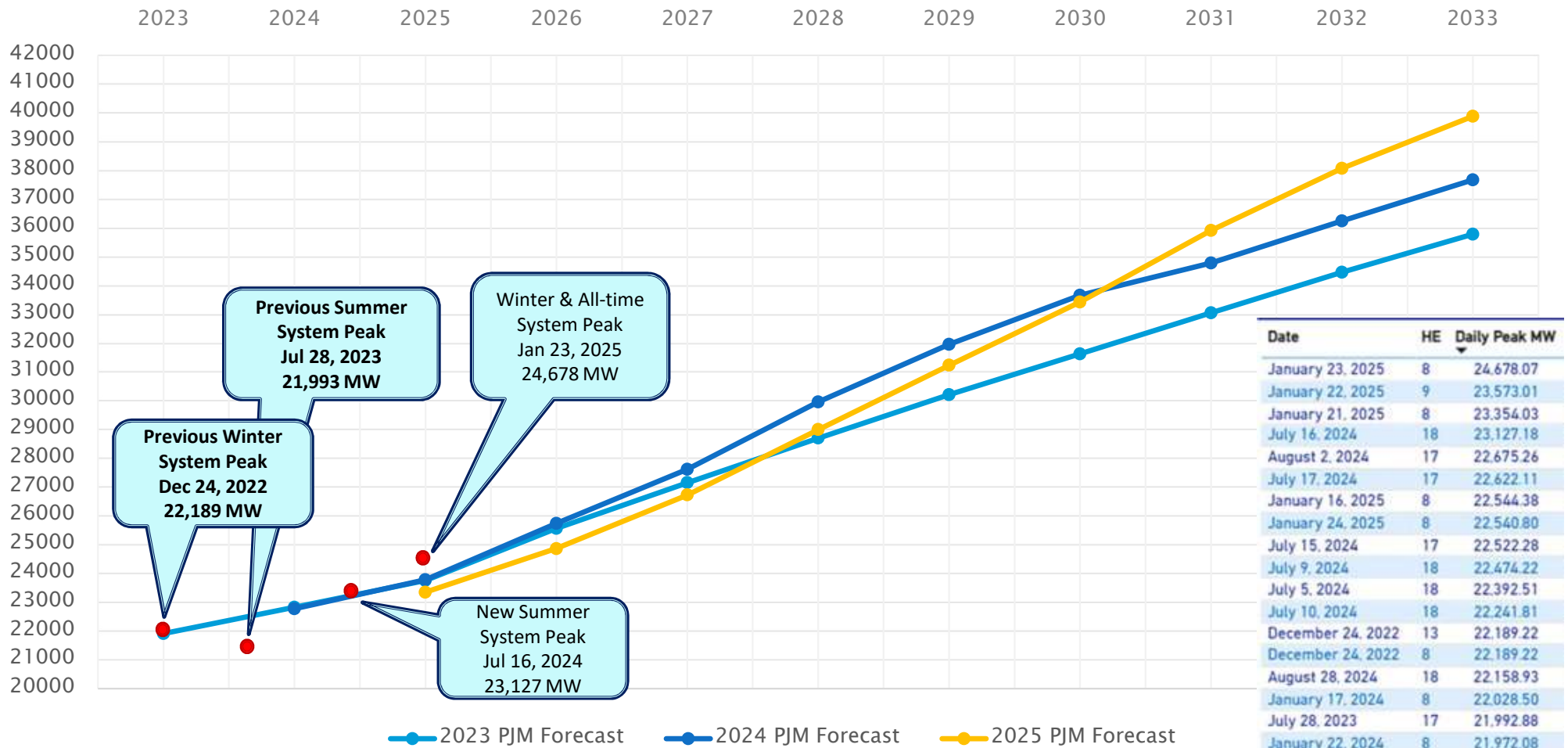
Application of ATF Features to Enable Dominion Energy Nuclear Fleet 24-Month Refueling Cycles

**USNRC Regulatory Information Conference
March 12, 2026**

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Year over Year PJM Summer DOM Zone Load Forecast

Increase in forecast driven by data center growth



Date	HE	Daily Peak MW
January 23, 2025	8	24,678.07
January 22, 2025	9	23,573.01
January 21, 2025	8	23,354.03
July 16, 2024	18	23,127.18
August 2, 2024	17	22,675.26
July 17, 2024	17	22,622.11
January 16, 2025	8	22,544.38
January 24, 2025	8	22,540.80
July 15, 2024	17	22,522.28
July 9, 2024	18	22,474.22
July 5, 2024	18	22,392.51
July 10, 2024	18	22,241.81
December 24, 2022	13	22,189.22
December 24, 2022	8	22,189.22
August 28, 2024	18	22,158.93
January 17, 2024	8	22,028.50
July 28, 2023	17	21,992.88
January 22, 2024	8	21,972.08
August 1, 2024	17	21,931.60
August 29, 2024	16	21,921.23
July 14, 2024	18	21,908.24
June 26, 2024	17	21,674.46
February 20, 2015	13	21,650.87

Drivers for 24-Month Refueling Cycles

▶ DRIVERS

- Increased unit capacity factor
- Fewer refueling outages
- Lower Operating Costs
- Improved reliability for customers

▶ CONSTRAINTS

◦ CORE DESIGN AND SAFETY ANALYSIS

- Designing high-power duty cores that satisfy all safety analysis criteria

◦ CYCLE ENERGY

- Ensuring cores can operate safely for 24-month cycles

◦ FUEL CYCLE ECONOMICS

- 24-month fuel cycles reduces fuel economics

◦ LICENSING

- Regulatory approvals for increased enrichment, burnup, analyses, transportation, and balance of plant considerations

Key Challenges for 24-Mo Refueling Cycles

▶ **NUCLEAR CORE DESIGN**

- Shutdown margin, peaking factors, axial shape control

▶ **FRONT-END FUEL SUPPLY**

- Uranium, conversion, and enrichment increases for reload batches

▶ **UF6 TRANSPORTATION**

- Exemption for limited use of existing UF6 transport containers
- Design and licensing of LEU+ transport containers

▶ **FUEL FRAGMENTATION, RELOCATION, AND DISPERSAL**

- LOCA cooling and radiological release assumptions
- Framatome approach resolves FFRD within existing regulations for MPS

▶ **RADIOLOGICAL CONSEQUENCES**

- NRC updates to RG 1.183 and conforming analyses

▶ **SPENT FUEL POOL CRITICALITY**

- Analysis to extend applicability to higher burnup and enrichment

Licensing Elements for 24-Mo Cycles

- ▶ **FRAMATOME HIGH BURNUP TOPICAL REPORT**
 - Fuel performance (GALILEO), neutronics (ARCADIA), non-LOCA analysis, M5 cladding, and fuel mechanical
- ▶ **RADIOLOGICAL CONSEQUENCES LICENSE AMENDMENT REQUEST**
 - Increased enrichment, burnup, and applicability of updated Alternative Source Term guidance
 - Transition from RG 1.183 Rev. 0 TO RG 1.183 Rev. 2
 - Dominion Energy expects to submit under draft guidance (currently DG-1425)
- ▶ **SPENT FUEL POOL (SFP) CRITICALITY LICENSE AMENDMENT**
 - Implement any rack loading restrictions or regional changes for subcriticality
- ▶ **LOCA / FFRD RESOLUTION WITHIN THE FUELS LICENSING BASIS**
 - Framatome method addresses all break sizes within 10 CFR 50.46
- ▶ **FUEL-RELATED TECHNICAL SPECIFICATION (TS) AND COLR CHANGES**
 - Fuel melt limits, COLR references, any plant-specific limits for increased burnup
- ▶ **BALANCE-OF-PLANT LICENSING IMPACTS (GL 91-04 LAR)**
 - TS Surveillance Intervals, instrument drift, risk-informed justification
- ▶ **TRANSPORTATION AND FRESH FUEL SHIPMENT LICENSING**
 - Interim exemptions for initial MPS3 delivery until fully licensed packages are available

Framatome Increased Enrichment Implementation





Questions?

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