Generation Resource Cold Weather Preparation

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Disclaimer: While materials are current at the time of publishing, applicable requirements may change. PJM Governing Documents control.

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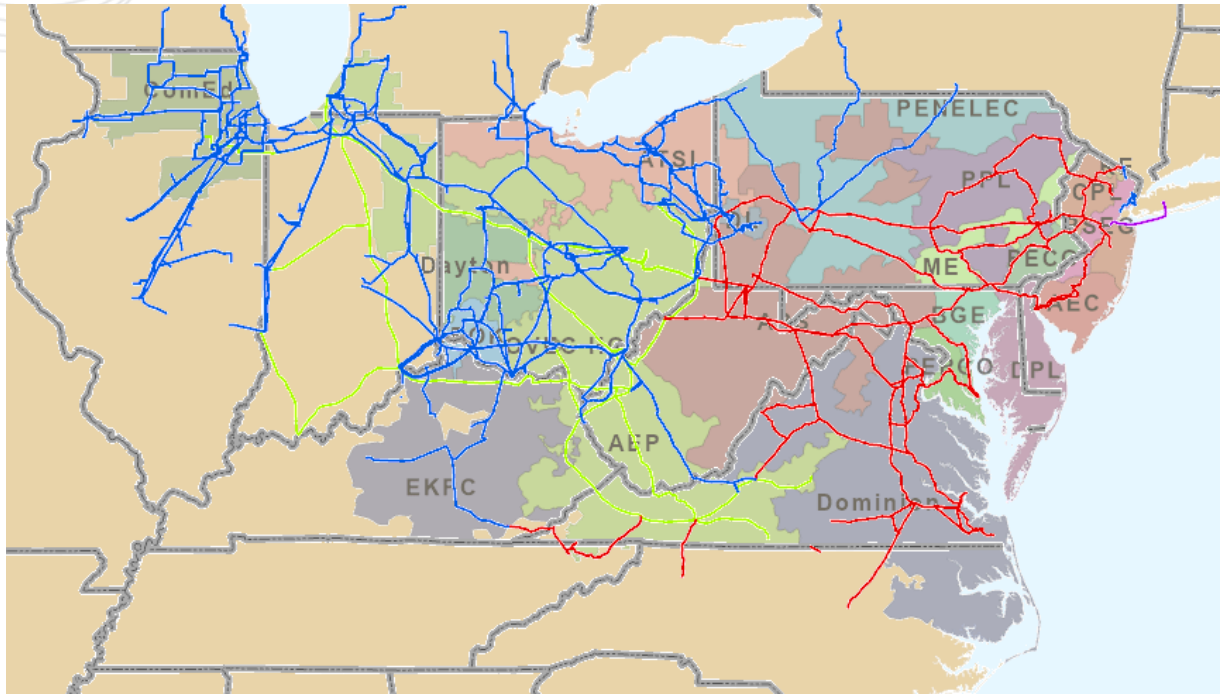
Why Cold Weather Prep Matters?

Our 67+ million customers are depending us (Generation, Transmission and PJM) to deliver safe and reliable electricity to their homes and businesses during extreme winter conditions.

- Polar Vortex – January 2014
- Winter Storm Uri – February 2021
- Winter Storm Elliot – December 2022
- Winter Storm Enzo – January 2025
- Winter Storm Fern – January 2026
- Winter Storm Gianna – Jan-Feb 2026
- NERC Reliability Standards:
  - EOP-011 Emergency Operations
  - EOP-012 Extreme Cold Weather Preparedness



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Key Risk Areas

- Mechanical Systems
  - Frozen transmitters, sensing lines, piping & valves, instrument air systems
  - New systems, equipment not heat traced / insulated
  - Lubricants and fluid viscosity
- Fuel Delivery and Supply
  - Gas curtailments, coal freeze, oil handling/storage, snow/ice on solar panels and wind turbine blades
- Electrical and Control Systems
  - Breaker failure, Critical instrumentation reliability
- Staffing & Accessibility
  - Travel challenges, extended shifts, onsite accommodations

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Preparation Best Practices

- Plant hardening measures
  - Heat tracing, insulation, shelters, enclosures, heaters
- Equipment checks & maintenance
  - Critical systems and instrumentation vulnerable to cold weather
- Fuel assurance plans
  - Inventory levels, alternate supply coordination
- Staff readiness
  - Training, cold weather procedures, onsite housing/food

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- **Cold Weather Advisory - Manual 13 Section 3.3.1**
  - Provides early notice (3-5 days) that forecasted temperatures may call for a Cold Weather Alert
    - PJM issues Cold Weather Advisory via Emergency Procedure Posting
    - Generators to review/update their Cold Weather Operating Limit (CWOL) in Markets Gateway as needed
- **Cold Weather Alert - Manual 13 Section 3.3.2**
  - Notice given in advance to operating day.
  - Update all parameters in Markets Gateway
  - Report any limitations to PJM Dispatch

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Operational Coordination

- **Markets Gateway**
  - Resource Limitation Reporting, Operational Restrictions, Max Run Time
- **Parameter Exceptions**
  - For additional information on submitting exceptions for pipeline constraints, please refer to the Temporary Operating Parameter Limit (PLS) Exceptions due to Pipeline Restrictions document posted on the Energy Market page under the Parameter Limited Schedules section
  - Temporary Exceptions can be submitted throughout the operating day including before and after the close of the Day-Ahead Market
  - Supporting Documentation can now be uploaded directly to Markets Gateway
- **Periodic Fuel and Non-Fuel Consumables Inventory Data Requests**
- **eDART Outage and Informational Tickets**

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- **Generation Resource Operational Exercise**
- Generation resources are strongly encouraged to self-schedule for testing
  - Day-ahead preferred, real-time acceptable with proper notice to PJM Dispatch
  - During December and temperatures forecasted below 35 degrees
  - Informational eDART ticket with cause “Cold Weather Preparation Exercise”
  - Manual 14-D, Section 7.5.1 has details.

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- **<u>Pre-Winter Reactive Capability Verification</u>**
- Pre-Winter Review: From October 1st, 2026 - October 31st, 2026
- Generation Owners review their unit reactive capabilities in eDART
- Update D-curves as necessary
- Provide acknowledgement via eDART
- Transmission Owner D-curve acknowledgment performed during November 1st – 30th.

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- **Seasonal Fuel and Emissions Data Request**
- Enhance PJM situational awareness in preparation for severe cold weather
- Data Request open in eDART October 1st - October 31st, 2026
- Focused on fuel supply and delivery details, emissions limitations and gas supply/delivery information
- Required for reliable operations planning purposes
- Data will be pre-populated where possible

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Tools and Resources

- **Cold Weather Preparation Guideline and Checklist**
- Provides generation resources with a guide to prepare units for cold weather operation
- Based on Manual 14-D, Attachment "N"
- Data Request in eDART
  - Open November 1st, 2026 to December 15th, 2026
  - Option of using the PJM or equivalent GO developed checklist
  - GOs requested to identify any improvements or changes to preparation activities made from previous cold weather experiences
  - GOs requested to share best practices not already documented in M-14D, Attachment "N"
  - Data will be pre-populated where possible

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Tools and Resources

- **NERC Winter Prep Webinar 09/17/2026 – Recording not yet available**
- **NERC Winter Prep Webinar 09/04/2025**
  - Preparation for the upcoming winter weather, including:
    - Industry specific presentations:
    - Reliability First- Generator Site visits
    - MRO- Generator Winterization
    - NERC- Failure Modes and Mechanisms/Lessons Learned- Combustion Turbine anti icing
    - MISO- Generator Survey data update to external stakeholders
    - ISONE- Generator readiness webinar
    - NERC/Duke Energy- Winter reliability assessment update

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Collaboration

- **Generation resource site visits**
  - PJM coordinating with RF to develop plan and schedule (~30 Sites)
  - Targeted start in Q4 2026 and continue into Q1 2027
  - Focus on winterization best practices and opportunities
  - PJM coordinating with SERC to initiate a winter site visit program:
    - SERC GWG has developed a procedure for the program
    - Targeting 3 site visits in the SERC region for the inaugural 2026-2027 season

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- **Gas-Electric Coordination**
  - During Critical Periods:
    - Dispatching gas units in real time taking the intraday gas nomination deadlines into account as necessary
    - Evaluating feedback from gas generators relative to gas supply availability via new Markets Gateway field in compliance with NERC TOP-002-5
    - Working with interstate natural gas pipelines and local distribution companies to assess gas delivery restrictions and potential impacts to gas deliveries

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Training

- **Upcoming In-person Training:**
  - PJM 101: The Basics – 12/08/2026
- **LMS Courses:**
  - Generation ITP Part B – Communications and Emergency Procedures
  - Generation ITP Part D – Ancillary Services and Real Time Operations
- **Virtual Sessions Planned for Q4 of 2026:**
  - Demand Response Overview – 10/13/2026
  - Performance Assessment Intervals – 12/09/2026

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Closing

- A successful 2026/2027 winter will take a collaborative effort
- Please keep us up to date on all operational limitations that may or will affect Generation Facility output.
  - Participation in data requests
  - Ensure markets gateway accurately reflects current unit conditions
  - eDART Outage/Informational tickets and cold weather operating limits as needed.

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Generation Resource Cold Weather Preparation

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