# NERC Project 2023-07 Notes

## Phase I – TPL-008-1 (Extreme Heat and Cold Reliability Standard)

- Filed with FERC December 17th 2024, approved by FERC February 20th 2025. (Docket No. RD25-4-000)
- Requires:
    - Common regional benchmark events for heat/cold.
    - Planning cases and analyses (steady-state & stability).
    - Sensitivity studies (e.g., higher demand, lower supply).
    - Corrective Action Plans (CAPs).
- **Detailed Timeline (Based on 2023-07 Implementation Plan):**
    - **R1 due April 1, 2026**
        - **R1:** Planning Coordinator and Transmission Planners must document roles/responsibilities for the Extreme Temperature Assessment which will be on a 5 year cycle.
    - **R2–R6 due April 1, 2029**
        - **R2:** Planning Coordinator identifies which zones it belongs to, and requires Transmission Planners for each of its zones to identify one common extreme heat and one extreme cold benchmark temperature. Benchmark temperatures are obtained from the benchmark library maintained by ERO.
        - **R3:** Planning Coordinator must implement a process for developing benchmark planning cases for the Extreme Temperature Assessment from the temperatures identified in R2. Sensitivity Cases are also to be developed to demonstrate the impact of changes to assumptions.
        - **R4:** Responsible entities as identified in R1 use R3 process to develop:
            - One common extreme heat planning case.
            - One common extreme cold planning case.
            - One common extreme heat sensitivity case.
            - One common extreme cold sensitivity case.

        - **R5:** Responsible entities define criteria for acceptable system steady state voltage limits and post contingency voltage deviations.

        - **R6:** Responsible entities define and document steady-state and stability criteria and methodology.

    - **R7–R11 due April 1, 2031**

        - **R7:** Responsible entities identify the contingencies under P0 (no contingency, P1 (single contingency), and P7 (multiple contingency) categories that have most severe system impact.

        - **R8:** Responsible entities complete steady-state and transient stability analysis using contingencies identified in R7.

        - **R9:** Responsible entities develop Corrective Action Plans when benchmark planning case indicates portion of Bulk Electric System is unable to meet performance requirements

        - **R10:** Responsible entities evaluate and document possible actions to reduce likelihood or mitigate consequences of adverse impacts of instability, uncontrolled separation, or cascading within an interconnection.

        - **R11:** Responsible entities provide Extreme Temperature assessment Results within 60 calendar days of request.

## Phase II SAR (Transmission Planning Energy Scenarios)

**Proposes:**

- Adding mandatory planning for:
    - **Normal natural events**
    - **Extreme natural events**
    - **Gas-electric interdependencies**
    - **DER events**
- Would require:
    - Benchmark and sensitivity study cases.
    - Steady-state and stability analyses.
    - CAPs for performance failures.
    - Wide-area coordination and data sharing.

- Periodic updates (3–5 years).

## Phase II SAR Comment Period

- **Industry Consensus:** ≈ 99% requested significant re-drafting.
- **Industry Concerns:**

1) **Overlap with existing or ongoing NERC standards/projects**

- **2022-02 – Uniform Model Framework for IBR (MOD-032)**
  - **Scope:** Standardize how inverter-based resources (IBRs), including DERs, are modeled in steady-state and dynamic studies.
  - **Key Requirements / Impacts:**
    - **R1:** Each Planning Coordinator (PC) and Transmission Planner (TP) must develop data requirements and reporting procedures that now explicitly include IBR modeling specifications (steady-state, dynamics, and short-circuit).
    - **R2:** Balancing Authorities, Generator Owners, Distribution Providers, Resource Planners, Transmission Owners, and Transmission Service Providers must provide data consistent with those requirements, including validated IBR dynamic models.
    - **R3:** Entities must respond to technical concerns about data with updates or justification.
    - **R4:** PCs must make models available to NERC/ERO for interconnection-wide case building.
- **2022-03 – Energy Assurance with Energy-Constrained Resources (TPL-001)**
  - **Scope:** Modify TPL-001 to ensure planners evaluate limitations of energy-constrained resources (e.g., fuel-limited gas, hydro, storage).
  - **Key Requirements / Impacts:**
    - **R2:** Transmission Planners and PCs must include energy-constrained resource assumptions (e.g., gas supply limits, hydro inflows, storage duration) in their planning cases.
    - **R6:** Sensitivity studies must account for reduced energy availability conditions.

        - **R7:** If studies show performance issues under constrained conditions, Corrective Action Plans (CAPs) are required.

- **2022-04 – EMT Modeling (MOD-032 / TPL-001)**
    - **Scope:** Introduce electromagnetic transient (EMT) modeling of IBRs for more accurate stability studies under high penetration.
    - **Key Requirements / Impacts:**
        - **MOD-032 R2:** Generator Owners must provide EMT-capable models where required by the PC/TP.
        - **TPL-001 R5:** Planners must perform stability analyses, which in areas with high IBR penetration must now include EMT simulations for critical contingencies.
- **2023-08 – Modifications to MOD-031 (Demand & Energy Data)**
    - **Scope:** Revise MOD-031 to expand and clarify demand and DER data submissions.
    - **Key Requirements / Impacts:**
        - **R1:** Balancing Authorities must annually submit demand and energy forecasts with greater granularity (hourly/seasonal shapes).
        - **R2:** Load-Serving Entities and others must provide DER adoption forecasts, including distributed solar, storage, and demand response.
        - **R3:** Planning Coordinators must make this data available for reliability assessments and interconnection-wide cases.
- **2024-02 – Planning Energy Assurance (TPL-001)**
    - **Scope:** Implement FERC Order 1920 direction to include long-term scenario-based energy assurance in planning.
    - **Key Requirements / Impacts:**
        - **R1:** PCs/TPs must document scenarios that reflect shifts in resource mix, renewable penetration, and fuel deliverability risks.
        - **R4:** Near-term and long-term planning studies must incorporate these scenarios in both steady-state and stability analyses.

- **R7:** Entities must identify deficiencies and prepare Corrective Action Plans if reliability is threatened under energy-limited conditions.

2) **Data gaps (Gas-Electric):**

   - Gas pipelines are not under NERC jurisdiction.
   - Without enforceable data from gas sector, planners cannot model accurately.

3) **Timing/bandwidth:**

   - Industry is still implementing **TPL-008-1** and **FERC Order 1920**.
   - Stakeholders argue NERC should allow implementation and lessons learned before layering on new requirements