

Summary Response to TPL-008-1 Draft Comments Received

NERC Project 2023-07 Transmission Planning Performance Requirements
for Extreme Weather | November 2024

Comments Received Summary

There were 66 sets of responses, including comments from approximately 156 different people from approximately 101 companies representing 10 of the Industry Segments. A summary of comments submitted can be reviewed on the project page.

If you have an interest in joining the distribution list for this project, please reach out to Senior Standards Developer, [Jordan Mallory](#).

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact Manager of Standards [Jamie Calderon](#) (via email) or at (404) 960-0568.

Consideration of Comments

The NERC Project 2023-07 thanks all of industry for your time and comments. The drafting team (DT) feels that many great points have been provided for the DT to consider during the drafting phase of this project. High level themes received from industry are located below (bolded is the high-level theme followed by the DT's response).

Zones

Many commenters continued to express concerns that the temperature regions as proposed in the map (and elsewhere) are in several cases far too large to provide meaningful analysis (e.g., MISO and SPP in particular). Additionally, the benchmark temperature events identified for both MISO and SPP do not represent what would be considered extreme temperature events due to their large geographically diverse regions.

The zones shown in Attachment 1 lumps Ontario with the Maritimes (New Brunswick, Nova Scotia, and parts of Northern Maine); however, practical experience has shown that there is no reliability benefit to coordinating the extreme weather planning assessments for two reasons:

- Experience has shown that Ontario and the Maritimes are sufficiently distant from each other as to experience extreme temperature conditions at different times. An extreme temperature event in Ontario would not occur at the same time as an extreme temperature event in the Maritimes.
- The balancing areas of Ontario and the Maritimes are not adjacent and the capacity of the transmission system to transfer power between Ontario and the Maritimes is small enough that

the power transferred between Ontario and the Maritimes would most likely be negligible during an extreme temperature event.

For the NPCC region, it would make the most sense to divide the weather zones for extreme weather planning assessments along the boundaries of the existing Reliability Coordinator areas, resulting in five different weather zones:

- ISO New York
- ISO New England
- Ontario
- Quebec
- The Maritimes, including New Brunswick, Nova Scotia, and Northern Maine

In addition to the foregoing, New Brunswick Power would like to support the comments of Helen Lainis, Independent Electricity System Operator.

Drafting team response:

The DT agrees and NERC staff will work to get the zones modified to address the concerns received regarding splitting certain zones into further sections. Below lists out the zones that have been split further. This will be reflected in the map and Table 1 draft 4 posting of the TPL-008-1.

- SPP (north and south)
- MISO (north and south)
- Ontario
- Quebec
- New Brunswick, Nova Scotia, Prince Edward Island, and Northern Maine

Overlapping Zones

A commenter expressed concern with overlapping zones within neighboring entities and should be allowed to meet the requirements of extreme weather conditions. Although we agree that the focus of the study is within the boundary, PCs should have the flexibility to consider maybe a little bit past the confines of the identified zone as identified in Attachment 1.

Drafting team response:

The TPL-008-1 is the bare minimum of what is required. If a PC determines that it needs to coordinate with PCs in other zones, it is more than welcome to coordinate.

Weather Data

One commenter expressed concern with picking weather data that is comparable between New Mexico and Arizona. We believe differences in weather patterns would impact New Mexico study if building that study to Arizona's summer temperatures.

Drafting team response:

The ERO benchmark data provided is aggregated for that zone and not specific areas. Therefore, you would not be subject to the summer temperatures of Arizona. Data used to make this inclusion uses zip code by zip code data.

Benchmark Events

Some commenters expressed that the benchmark events should be included as an attachment to the TPL-008-1 Standard.

Drafting team response:

The DT disagrees with this route for multiple reasons listed below.

1. There will be around 59 plus tables needed to be created, which will make for a 100-plus page standard.
2. Feedback received is that entities appreciate the Excel option to be able to filter and sort, where necessary, when sorting through all the data provided in the benchmark temperature.
3. NERC will need to put together a DT and open the TPL-008-1 standard to update the attachment with ERO benchmark event data every five years and complete this in a timely manner for industry. With Requirement R2 being updated, the DT does not see the need for all benchmark events to be added as an attachment to TPL-008-1.

How to use Benchmark Events

A commenter requested that the drafting team clarify how the event temperature information (available on NERC's website) is intended to be used, and more specifically, whether it is to be applied across the entire zone.

Drafting team response:

The data provided has been calculated via the entire zone identified in table 1. This is no different from other studies that have been completed.

Requirement Order Confusion

Requirement R2 and R3 following R1 creates confusion when reading the responsibilities of requirements 4-11. Consider reordering – R2, R3 then R1. Coordinating Zones, develop benchmark planning then conducting the assessments. The Transmission Planner (TP) is not referenced in R2 or R3.

Drafting team response:

The drafting team determined R1, R2, and R3 are in the appropriate order. R1 requires the PCs and its TP(s) to discuss and identify responsibilities. Although R2 and R3 are applicable to the PC only, TPs may want to inform their PC they want to be included in R2 and R3 activities during the initial R1 discussions. For instance, TPs may want to provide feedback to their PCs with respect to the selection of the benchmark temperature events and/or the implementation of the process for developing benchmark planning cases.

Requirement R1

Document

A commenter requested the drafting team (DT) add document to Requirement R1.

Drafting team response:

The DT followed TPL-007-4 and how it was drafted and did not add “document” to Requirement R1. The DT recognizes there has been a lot of back and forth as to whether document is needed in various standards and does not feel it is necessary to be used in this instance.

Requirement R2

Planning Coordinator Development Benchmark Events

Some commenters expressed that Requirement R2 be made clear that Planning Coordinators are allowed to develop their own benchmark events should the benchmark events provided by the ERO are not sufficient for its zone.

Drafting team response:

FERC Order 896 recognizes that historical events may span across regions and therefore, the ERO is in the best position to develop benchmark events. The DT updated the TPL-008-1 Standard to ensure it is clear that TPL-008-1 allows Planning Coordinators, in coordination with other Planning Coordinators, to develop benchmark events, should the events provided by the ERO not be adequate for Planning Coordinators to consider. As a reminder, one common extreme heat benchmark temperature event and one common extreme cold benchmark temperature event are to be identified and studied among the PCs within the zone identified in Attachment 1 of the TPL-008-1 Standard.

Requirement for NERC to Coordinate with PCs

Some commenters expressed that a requirement should be added to the TPL-008-1 standard requiring NERC to coordinate with Planning Coordinators when developing benchmark events.

Drafting team response:

A NERC Process¹ has been developed and posted to the NERC Project 2023-07 page laying out the process for the 5-year iteration of benchmark events being developed. Please see this document for next steps on future benchmark event development.

¹ Link to NERC Process document: [NERC Standards Development Process Document](#)

Year Events

A commenter suggested that if the goal is for the PCs to study a one in 40-year event for temperature that each PC perform a study for their footprint and share results to the adjacent PCs, similar to the way existing NERC standards are coordinated. For instance, there are other standards that utilize language for the applicable entity to study its PC footprint and coordinate with 1st tier entities. SPP believes that language similar to this can accomplish the intended goal without creating a burden if the boundaries change in the Map.

Drafting team response:

The goal is not for the PC to study a one in 40-year event. TPL-008-1 is to study an extreme cold or extreme heat event considered no less than a 40-year period of temperature data.

Years Used for Benchmark Events

40 years of temperature data is an immense amount of data. The data collected 40 years ago compared to today's temperatures may not be accurate and could construe the data from the last 20-25 years. We believe that there have been enough recent extreme weather events in the last 25 years to accurately consider extreme heat and extreme cold benchmark temperatures. We recommend that the drafting team consider utilizing a timeline closer to 20 years and not 40 years.

Another commenter proposed 50 years should be used.

Drafting team response:

The requirement to consider no less than 40 years of temperature data was established based on the observation that many of the worst events identified in various regions of North America occurred in the 1980s and 1990s. For example, preliminary data indicated that the five worst extreme cold temperature events in the PJM region over the last 43 years occurred between 1983 and 1994. Similar results were seen in other regions for both extreme heat and extreme cold temperature events. Thus, the SDT determined that a minimum of 40 years of temperature data should be used to ensure more extreme events weren't excluded by using a shorter duration of temperature data.

Regarding 50-year proposal. There is nothing that precludes an entity from pulling 50-years of data, should they find this more beneficial. A standard provides the bare minimum of what is required and anything above and beyond is not precluded from an entity from considering.

Disagreements during coordination

There should be some method to help ensure coordination on scenario selection and case data submittal among all PCs in a zone. How will disagreements among PC's be resolved? Voting? Regions can probably resolve this on their own most of the time, but there may be disputes that need to be resolved somehow.

Drafting Team Response:

The DT understands that this may happen and enough time during implementation has been provided for additional meetings to work through disagreements. In addition, if majority of the PCs within the zone agree, then the team would recommend going the route of majority and let the entity who is in disagreement work through their justification when it comes time for them to be audited. Lastly, entities are welcome to reach out to their Regional Entities if a disagreement comes up to guidance, if needed.

Requirement R2 Subparts – Too Prescriptive

One commenter believes the language in sections 2.1 and 2.2 are too prescriptive. We believe the Planning Coordinator should work with stakeholders to determine the data set that will be used to derive extreme heat and cold weather temperatures. Does the planning coordinator have the ability to carve the zones?

Drafting team response:

Benchmark event data provided by the ERO are there for entities to review and determine what data works for their zone. R2 also allows entities to develop their own benchmark temperature event, should the data provided not be allowed. In addition, criteria is needed per FERC Order 896 and Parts 2.1 and 2.2 to complete this. Order 896: “We also direct NERC to include in the Reliability Standard the framework and criteria that responsible entities shall use to develop from the relevant benchmark event planning cases to represent potential weather-related contingencies”.

Extreme Event selection

The new requirement proposed in R2 2.1 in the updated draft that the event selected represent “one of the 20 most extreme temperature conditions” may result in entities selecting events that are not representative of the most severe generation shortfalls they are likely to experience. First, entities should be required to select from a smaller number of most severe events, like the three most severe events. Second, the ranking of events should not be based on most extreme temperature, but rather most severe generation shortage, accounting for both higher demand and higher generator outage rates during the event. This will accurately reflect that temperature alone does not determine the severity of an event, as wind speed, insulation, and other factors affect how extreme cold and heat affect both generator outages and the need for building heating or cooling.

Drafting team response:

The DT understands the concern. However, when considering extreme events over a 3-day rolling average over 40-years does not provide a ton of data to work from. While yes, extreme events have become more common in recent years, it is important for an entity to be able to evaluate events that happened over 40-years as some of the events may not be extreme compared to other events. It is important to collect 20 extreme events to review and consider which event to study for further studies. Pulling data for 10 most extreme events may not provide the full picture of events to review and select from.

Requirement R3/R4 Transmission Planners Missing

The prior draft of TPL-008 contained language in R3 that required “Planning Coordinator(s), Transmission Planner(s), and other designated study entities” to collectively implement the requirement. The SRC requests language along these lines be reinstated such that all parties that play a role in implementing the process for developing benchmark planning cases must comply.

Drafting team response:

Coordination is at the PC level and not the TP level. Therefore, the team removed this from the last draft, and it does not need to be added back in.

Benchmark Event Framework

Some commenters requested the DT to clarify “other designated entities.”

Drafting team response:

The DT removed “other designated entities” from the TPL-008-1 Standard.

Number of Studies Required

Some commenters expressed concern regarding the number of studies which must be performed, particularly when a Planning Coordinator (PC) selects a benchmark temperature event that is different from that of its adjacent PC(s). In that situation, each benchmark temperature event may necessitate a significant coordination effort. It was recommended that a governing body identify the scenarios. Extreme temperature events will typically extend beyond the footprint of a single Planning Coordinator. To avoid putting the PCs in a position where they are required to agree on a scenario, a year and the sensitivity to be studied, NERC or other (e.g. ERAG) should identify the extreme heat and extreme cold temperature events to be studied. This is necessary for consistent modeling results across adjacent planning entities. Also, as a benchmark temperature event may extend across several planning areas, the governing body must take this into consideration when determining which extreme heat and extreme cold temperature events are to be studied so that no planning entity is assigned more than one of each.

Drafting team response:

The DT updated the TPL-008-1 Standard to identify that one common extreme heat and one common extreme cold benchmark planning case must be developed, as well as at least one common extreme heat and one common extreme cold sensitivity case. This does not preclude entities from developing more cases, but requires a minimum of one each. Per the FERC Order 896, it is important that entities are studying common historical events in preparation for future events. The ERO will provide entities with one common extreme heat benchmark temperature event and one common extreme cold benchmark temperature event for PCs to study within their zones. In addition, the TPL-008-1 Standard has been updated to allow PCs to coordinate with other PCs to develop their own benchmark event should the events provided by the ERO not be adequate for Planning Coordinators to consider.

Extreme Weather is a Sensitivity

Some commenters expressed that Extreme Temperature Events are already a “sensitivity” to normal long-term planning cases and are built with Gen/Load/Transfer based on the extreme weather conditions of an entity’s territory. Additionally, mandatory “sensitivity cases” seem redundant in nature. In addition, another commenter asked if sensitivity cases could be baked-in with the benchmark temperature event.

Drafting team response:

TPL-008-1 is different than TPL-001-5.1. The TPL-008-1 Standard focuses on extreme heat and extreme cold temperature events. Entities are to select an extreme heat and cold benchmark event, develop planning cases, and then develop sensitivity cases from that, which may indicate a different approach on how to handle certain scenarios.

Additionally, FERC Order 896 P124 states that “we adopt the NOPR proposal and direct NERC to require the use of sensitivity cases to demonstrate the impact of changes to the assumptions used in the benchmark planning case. Sensitivity analyses help a transmission planner to determine if the results of the base case are sensitive to changes in the inputs. The use of sensitivity analyses is particularly necessary when studying extreme heat and cold events because some of the assumptions made when developing a base case may change if temperatures change – for example, during extreme cold events, load may increase as temperatures decrease, while a decrease in temperature may result in a decrease in generation. We agree with AEP, and we direct NERC to define during the Reliability Standard development process a baseline set of sensitivities for the new or modified Reliability Standard. While we do not require the inclusion of any specific sensitivity in this final rule, NERC should consider including conditions that vary with temperature such as load, generation, and system transfers.” P126 continues to explain that “[w]e disagree with NYISO and LCRA that extreme heat and cold weather impacts are already studied as sensitivities under Reliability Standard TPL-001-5.1. Although TPL-001-5.1 mandates sensitivity analysis by varying one or more conditions specified in the standard such as load, generation, and transfers, this analysis alone cannot capture the complexities of extreme heat and cold weather conditions. Sensitivity analyses consider the impact on a base case of the variability of discrete variables. Extreme heat and cold weather impacts, on the other hand, may include numerous concurrent outages and derates which cannot be studied as part of a single-variable sensitivity analysis.”

TPL-008-1 Cases Used for TPL-001-5.1

One commenter asked whether language can be added to ensure that entities can take credit for studies that are run as part of the Sensitivity analysis, rather than running those studies again as part of the assessment to be conducted under TPL-001. For example, the Extreme Temperature Assessment could take the place of the sensitivity analysis required within the TPL-001 assessment for both the steady state and stability analyses. Moreover, if the Extreme Temperature Assessment is essentially a type of sensitivity analysis already, the commenter advised removing R4.2 because this would create a sensitivity case based on a sensitivity case.

Drafting team response:

A Planning Assessment must be completed annually in accordance with TPL-001-5.1, while an Extreme Temperature Assessment must be completed at least once every five calendar years in accordance with the TPL-008-1 Standard. Time will be required to coordinate and develop the common cases and therefore, may not meet what is required in TPL-001. TPL-008-1 does not speak to TPL-001; however, both standards have different expectations. The DT does not encourage this, but if an entity decided to go this route, it would be up to that entity to explain and demonstrate compliance with the TPL-008-1 Standard.

Concurrent/Correlated Outage Language

Some commenters expressed that in Order 896 paragraph 88, FERC directs “NERC to require under the new or revised Reliability Standard the study of concurrent/correlated generator and transmission outages due to extreme heat and cold events in benchmark events,” explaining in paragraph 89 that “it is necessary that responsible entities evaluate the risk of correlated or concurrent outages and derates of all types of generation resources and transmission facilities as a result of extreme heat and cold events.” Commenters suggested modifying “Benchmark planning cases that include seasonal and temperature dependent adjustments for Load, generation, Transmission, and transfers” to include “concurrent/correlated generator and transmission outages.”

Drafting team response:

Concurrent/correlated outages are addressed through the standard. The DT did not use language verbatim, but the standard is laid out on adjustment of temperature data that is provided by the event selection. Aligning with the directives set forth in FERC Order 896, which emphasizes the importance of incorporating derated generation, transmission capacity, and the availability of generation and transmission in the development of benchmark planning cases, it becomes imperative for responsible entities to consider potential concurrent or correlated generation and transmission outages and/or derates within relevant benchmark planning cases. This ensures that the benchmark planning case accurately reflects System conditions under extreme temperatures, with generation and transmission derates and/or outages already factored.

MOD-032 Data

Some commenters asked if the DT feels it would be necessary to add any additional data to the table in MOD-032 to complete this work. In addition, some sought clarification on how MOD-032 will allow for the collection of additional information related to extreme heat and cold events.

Drafting team response:

MOD-032 ensures an adequate means of data collection for transmission planning and requires applicable registered entities to provide steady-state, dynamic, and short circuit modeling data to their Transmission Planner(s) and Planning Coordinator(s). As outlined in R1 and Attachment 1 of MOD-032, MOD-032 allows various data collection such as in-service status and capability associated with demand, generation, and transmission associated with various case types, scenarios, system operating states, or conditions for the long-term planning horizon. MOD-032 also requires applicable registered entities to provide “other

information requested by the Planning Coordinator or Transmission Planner necessary for modeling purposes” for each of the three types of data required. Because the DT determined the responsible entities that will be developing benchmark planning cases are limited to Planning Coordinators and Transmission Planners, they will be able to request and receive needed data pursuant to MOD-032. Thus, the DT believes that there is no need to update MOD-032 because it allows Planning Coordinators and Transmission Planners to request any specific data needed for developing benchmark planning cases and sensitivity cases required in R4 of TPL-008-1.

Contingencies

In FERC Order 896, paragraph 39, there is a Commission Determination as follows:

“We also direct NERC to include in the Reliability Standard the framework and criteria that responsible entities shall use to develop from the relevant benchmark event planning cases to represent potential weather-related contingencies (e.g., concurrent/correlated generation and transmission outages, derates) and expected future conditions of the system such as changes in load, transfers, and generation resource mix, and impacts on generators sensitive to extreme heat or cold, due to the weather conditions indicated in the benchmark events. Developing such a framework would provide a common design basis for responsible entities to follow when creating benchmark planning cases. This would not only help establish a clear set of expectations for responsible entities to follow when developing benchmark planning events, but also facilitate auditing and enforcement of the Standard.”

In review of Order 896, we find the term “contingencies” is used two different ways. Paragraph 39 describes things that are in the base or N-0 state – for example, a cold weather event occurs, and certain wind generators can no longer operate – this as a base contingency. Similarly, in paragraph 88, there is an additional Commission Determination as follows, in further support of these baseline “contingency” outages:

“Pursuant to section 215(d)(5) of the FPA, we adopt the NOPR proposal and direct NERC to require under the new or revised Reliability Standard the study of concurrent/correlated generator and transmission outages due to extreme heat and cold events in benchmark events as described in more detail below.”

Then later, in Paragraph 92 (still under the Commission Determination), FERC further clarifies:

“Regarding the comments of NYISO and EPRI on the difference between extreme events and contingencies covered under Reliability Standard TPL-001-5.1, we clarify that all contingencies included in benchmark planning cases under the new or modified Reliability Standard will represent initial conditions for extreme weather event planning and analysis. These contingencies (i.e., correlated/concurrent, temperature sensitive outages, and derates) shall be identified based on similar contingencies that occurred in recent extreme weather events or expected to occur in future forecasted events.”

From these, it is clear that Order 896 is expecting “contingencies” of weather-based equipment outages to be part of the base or N-0 system state. The more traditional “contingencies” are then addressed on top of this condition, as presented in Order 896, Section G, starting at Paragraph 95.

The specific request from this comment is for the SDT to clarify how it expects such base “contingencies” to be included in the model. There does not appear to be language currently in the standard in support of this, and it is clear from Order 896 that it is expected both the base model outage “contingencies” and then subsequent contingency events to test system performance.

Drafting team response:

The SDT drafted Requirement R4 to require the responsible entity to use data consistent with Reliability Standard MOD-032, supplemented by other sources as needed, for developing benchmark planning cases that represent System conditions based on selected benchmark temperature events. This aligns with directives in FERC Order No. 896, paragraph 30, emphasizing the requirement of developing both benchmark planning cases and sensitivity study cases. Requirement R4 is consistent with Reliability Standard TPL-001-5.1 in cross-referencing Reliability Standard MOD-032, which establishes consistent modeling data requirements and reporting procedures for the development of planning horizon cases necessary to support analysis of the reliability of the interconnected System. It is also consistent with Reliability Standard TPL-001-5.1 in acknowledging that data from other sources may be required to supplement the data collected through Reliability Standard MOD-032 procedures.

The benchmark planning cases and sensitivity cases developed in Requirements R4.1 and R4.2, respectively, shall include forecasted seasonal and temperature dependent adjustments for Load, generation, Transmission, and transfers within the zone in accordance with Requirement R3.2, and assumed seasonal and temperature dependent adjustments for Load, generation, Transmission, and transfers in areas outside the zone, as needed, in accordance with Requirement R3.3. The seasonal and temperature dependent adjustments included during the development of the benchmark planning cases and sensitivity cases establish category P0 as the normal System condition in Table 1. Subsequently, the Contingencies for each category in Table 1 that are expected to produce more severe System impacts on the responsible entity’s portion of the Bulk Electric System shall be identified in accordance with Requirement R7 and evaluated in both steady state and transient stability analyses in accordance with Requirement R8 for the benchmark planning cases and sensitivity cases developed in Requirements R4.1 and R4.2, respectively.

Requirement R5
Use of “System Voltage Limits”

Some comments suggested using the recently adopted NERC Glossary term “System Voltage Limits.”

Drafting team response:

The DT determined “System Voltage Limits” focuses on operations and planning information and differs from what is used in the standard. The DT concluded to maintain the proposed language consistent with Reliability Standard TPL-001-5.1.

Requirement R6

Violation Risk Factor

The risk factor should be Medium to match TPL 001-5.1. Concern that level of coordination needed to affect the standard will be significant, particularly for “smaller” entities.

Drafting team response:

The DT determined that based on the planning for events such as instability, uncontrolled separation, or Cascading events would consist of a high VRF and therefore, kept the VRF as high. This is consistent with the definition of a high VRF in the justification document provided on the NERC website.

Requirement R8

Performance of Steady State and/or Stability Analysis

The standard does not clearly and specifically state whether steady-state and/or stability analysis is to be performed for the identified events as TPL-001 does, for instance. The DT should consider modifying R7 to allow the responsible entity to develop a methodology or rationale in the performance of a benchmark event to appropriately assess it for that entity’s planning area, otherwise, additional clarity in the analysis expectations is needed. Different weather events would require a different consideration of applicable contingencies and analysis approaches.

Drafting team response:

Requirement 4 has been updated to state one common extreme heat and one common extreme cold. In addition, R8 has been updated to clarify that steady state and transient stability analyses are to be performed.

Additional Sensitivity Cases

Additional sensitivity studies required in R8.2 would add a significant administrative burden without more clarification to how it benefits the long-term planning horizon.

Drafting team response:

Table 1 has been updated to require P0, P1, and P7 Contingencies. R4 has also been updated to clarify that it is one common extreme heat and one common extreme cold benchmark planning case, as well as at least one common extreme heat and one common extreme cold sensitivity case. In addition, this is a directive from the FERC Order 896 P124 which states “we adopt the NOPR proposal and direct NERC to require the use of sensitivity cases to demonstrate the impact of changes to the assumptions used in the benchmark planning case. Sensitivity analyses help a transmission planner to determine if the results of the base case are sensitive to changes in the inputs. The use of sensitivity analyses is particularly necessary when studying extreme heat and cold events because some of the assumptions made when developing a base case may change if temperatures change – for example, during extreme cold events, load may increase as temperatures decrease, while a decrease in temperature may result in a decrease in generation. We agree with AEP, and we direct NERC to define during the Reliability Standard

development process a baseline set of sensitivities for the new or modified Reliability Standard. While we do not require the inclusion of any specific sensitivity in this final rule, NERC should consider including conditions that vary with temperature such as load, generation, and system transfers.”

Requirement R9 Regulatory Burden

Some commenters raised concerns about the requirement to submit CAPs to regulatory authorities, suggesting it could delay approval, lacks justification, need clearer definitions, and should be limited or removed.

Drafting team response

The DT reviewed the comments and determined that the requirement is necessary to address the directives of Order 896, specifically the directives mentioned in the paragraphs 152 (i.e., “we direct NERC to develop certain processes to facilitate interaction and coordination with applicable regulatory authorities or governing bodies responsible for retail electric service as appropriate in implementing a corrective action plan”) and 165 (i.e., “we direct NERC to require in the new or modified Reliability Standard that responsible entities share their corrective action plans with, and solicit feedback from, applicable regulatory authorities or governing bodies responsible for retail electric service issues”).

Clarity on Sensitivity Analysis

Various commenters questioned the necessity of a Corrective Action Plan for issues identified in sensitivity analysis, seeking clarity on how sensitivity analysis is handled.

Drafting team response

The DT updated Requirement R9 to clarify that Corrective Action Plans are not required specifically for addressing performance requirements related to sensitivity cases. The responsible entity must develop Corrective Action Plan(s) when the analysis of a benchmark planning case indicates its portion of the Bulk Electric System is unable to meet performance requirements for Table 1 P0 or P1 Contingencies.

CAP Request

A commenter requested the DT to ‘make their CAP available’ in R9.1 to ‘make available on request.’

Drafting team response

FERC Order 896 P153 states: “We adopt our rationale set forth in the NOPR and conclude that the directive to require the development of corrective action plans is needed for Reliable Operation of the Bulk-Power System. Under the currently effective Reliability Standard TPL-001-5.1, planning coordinators and transmission planners are required to evaluate possible actions to reduce the likelihood or mitigate the consequences of extreme weather events, but are not obligated to develop corrective action plans, even if such events are found to cause cascading outages. Experience over the past decade has demonstrated that the potential severity of extreme heat and cold weather events exacerbates the likelihood to cause system instability, uncontrolled separation, or cascading failures as a result of a sudden disturbance or unanticipated failure of system elements. Thus, we conclude that entities should proactively address

known system vulnerabilities by developing corrective action plans that include mitigation for specified instances where performance requirements for extreme heat and cold events are not met.” Therefore, it is the responsibility of the PC or TP developing the CAPs to provide this information to the respective governing bodies and solicit feedback per the FERC Order.

CAP Process

There are already existing processes for interactions with applicable regulatory authorities and governing bodies regarding CAP for many other issues and items. Extreme weather CAPs are not exceptions and do not need a new way to solicit feedback. R9.1 should be removed because it also creates a compliance requirement without any benefit to reliability and would be confusing. In addition, a commenter requested 9.1 subpart be removed because it creates a compliance requirement without any incremental benefit to reliability and further conflicts with existing planning requirements and processes. In addition, some entities felt the way Requirement R9 was drafted out was providing some confusion and requested re-order of the sub-parts.

Drafting team response

An entity may use what is already in place to be compliant with this requirement. This requirement is addressing the FERC Order 896 directive in P152 that states “we direct NERC to develop certain processes to facilitate interaction and coordination with applicable regulatory authorities or governing bodies responsible for retail electric service as appropriate in implementing a corrective action plan.” Lastly, the TPL-008-1 Standard is aligning with what the FERC Order 896 directs. The DT did its best to align with TPL-001 while meeting the FERC Order 896 directives.

The DT re-order the CAP process within Requirement R9 to provide clarity. Please see the updated standard.

Include Threshold

One commenter believes the requirement for the notification to an applicable regulatory entity should also include a threshold. As written, an entity would need to make a notification if a proposal tripped 0.1 MW of non-consequential load. Recommend the DT add a threshold in a similar way as is included in TPL-001 Attachment 1.

Drafting team response

The DT does not feel that a threshold is needed in the TPL-008-1 Standard. An entity only has report obligations if it is a part of a CAP. Depending on the mechanism used, you may not be required to report smaller amounts of load.

Jurisdiction

One commenter expressed that the "applicable regulatory authorities... electric service" needs better clarification and questioned what this looks like for Jurisdictional vs non-Jurisdictional. The commenter asked the DT to provide better guidance and examples, and highly recommended using operation

procedures instead of CAPs since operation procedures have more flexibility to respond to a system's needs and adapt proactively.

Drafting team response

Per FERC Order 896 P165, building generation and transmission is outside the jurisdiction and left up to the states. FERC Order 896 provides some examples of various activities that would be appropriate in P155: "As noted by commenters, the NOPR provided examples of various activities that may be appropriate under a corrective action plan, some of which may require state or local authorizations (e.g., generation or transmission development). Other examples mentioned in the NOPR include "implementing new energy efficiency programs to decrease load, . . . transmission switching, or adjusting transmission and generation maintenance outages based on longer-lead forecasts," none of which involve the construction of generation or transmission capacity. In addition, responsible entities have the option to use controlled load shed as a mitigation measure. In sum, while responsible entities would have the obligation to develop and implement a corrective action plan, the Commission is not directing any specific result or content of the corrective action plan. In such circumstances, the Commission's directive does not exceed the jurisdictional limits set forth in section 215(i) of the FPA0." Also, "applicable regulatory authorities or governing bodies responsible for retail electric service issues" is in TPL-001; therefore, the same entities may be used. Finally, this language was added based on FERC Order 896 P165: "We direct NERC to require in the new or modified Reliability Standard that responsible entities share their corrective action plans with, and solicit feedback from, applicable regulatory authorities or governing bodies responsible for retail electric service issues. We agree with commenters that relevant state entities should have the opportunity to provide input during the development of corrective action plans. Just as this final rule seeks to ensure Reliable Operation of the Bulk-Power System during extreme heat and cold weather events, regulatory authorities and governing bodies responsible for retail electric service are taking actions to ensure reliability for local stakeholders. As such, we believe that requiring responsible entities to seek input from applicable regulatory authorities or governing bodies responsible for retail electric service issues when developing corrective action plans could help ensure that shared opportunities to increase system reliability are not missed. Further, as NESCOE points out, such consultation may allow these entities to better understand "the cost implications of various approaches" and, therefore, provide "better insight into the considerations and tradeoffs inherent in the options available."

Requirement R10

Clarity and Communication on Possible Actions

A commenter questioned what actions the responsible entity intends to take based on the identified "possible actions." There is uncertainty about how these actions will be executed. In addition, the commenter suggested that these possible actions should be communicated to the operators so they can prepare necessary plans and processes accordingly.

Drafting team response

The DT acknowledges the commenter's concerns regarding implementing possible actions and their communication to operators. The DT asserts that R11 outlines the expected actions, mandating responsible

entities to share Extreme Temperature Assessment results with any functional entities that has a reliability-related need to enhance readiness for extreme temperature events.

TPs Ability to Create CAPs

A commenter disagrees with R10 because the requirement does not give TPs the ability to create CAPs for the listed contingencies.

Drafting team response

Requirement 10 does not preclude Transmission Planners from developing CAPs; however, possible actions would be required should a Transmission Planner determine that a CAP is not required.

Requirement R11 Timeline for Distributing Assessment Results

Some commenters questioned if the 60 calendar days was appropriate and should align with TPL-001-5 that states 90-days.

Drafting team response:

The DT determined to keep the requirement unchanged as this strikes a good balance between allowing enough time for the responsible entity to distribute the results and the functional entity requesting the information to receive them.

Stability Performance

A commenter asked the DT how to determine stability performance requirements for P0 events. Currently, Table 1 says that the system shall remain stable, and that instability, uncontrolled separation and cascading shall not occur, but the commenters asked how those would occur for a P0 event.

Drafting team response:

Instability can occur during P0 conditions due to various factors like oscillations, renewable generation behavior, and excessive power transfers. For example, poorly damped oscillations between generators in different areas can grow and destabilize the system if not properly controlled. High levels of wind, solar, or energy storage may also cause instability if these resources don't adequately support grid stability. Additionally, excessive power transfers on key transmission lines can lead to voltage instability and potential voltage collapse.

Implementation Plan

One entity disagreed with the amount of time allowed for entities to implement TPL-008-1.

Drafting team response:

The DT appreciates the interest in making the turnaround transition complete in a quicker manner. However, TPL-008-1 has many factors at play, for example: locating and coordinating with other PCs within its zone, hosting meetings to determine the common factor that works for all PCs within its zone, etc. The

DT feels it is important to provide entities with adequate time to sort things out with these new requirements in place to ensure each entity is successful in the end.

Map

A request was made to disconnected portions of SERC and PJM be included into zones that more closely align with their temperature regions.

Drafting team response:

The “disconnected portions” of PJM and SERC are electrically connected via AC ties and should be studied together as a zone. In addition, the map is not an accurate depiction, and the disconnected portions are closer to the PJM and SERC zones than displayed on the map. As a reminder, the map is a visual assistance and not to be used for compliance purposes.

Update Map and Table 1

Some commenters requested the map be updated to accurately reflect the updated zones.

Drafting team response:

The DT updated the map and Table 1 accordingly.

Coordination via Map and Table 1

One commenter expressed concern with the western portion of the Table and Map. The Table and Map seem to group together PCs in a way that could create issues when trying to identify which PCs belong to those zones. There is currently no requirement to post publicly which zone a PC is within, therefore knowing which PC belongs to each zone is not possible.

Drafting team response:

Coordination with other PCs should be no different than coordinating with the PCs in TPL-001-5. An entity could reach out to its Regional Entity or coordinate with the larger PC within its zone. The DT recognizes this may take some time to research and figure out up front but is needed to meet FERC Order 896.

Add State Boundaries to Map

Some commenters support the zones outlined in the map provided in Attachment 1. However, the graphic would be significantly improved by incorporating state boundaries and referencing the NERC benchmark library.

Drafting team response:

The DT attempted to add state boundaries and found that the map is not an accurate depiction of zones when state boundaries are added. This is why Table 1 was developed and the map was added as a visual, but to be used for compliance purposes.

Technical Rationale

One comment was that the technical rationale states the zones have been determined by the Reliability Coordinator (RC) area. SPP believes that breaking the zone by RC footprint is not accurate and should be divided by the PC footprint especially considering that the standard only applies to the PC. PC and RC footprints can be drastically different across the grid.

Drafting team response:

The DT recognizes this causes confusion and has updated the Technical Rationale to remove RC.

Please see many updates to the Technical Rationale made by the team during this draft.