

## Compliance Application Notice — 0020

Compliance Application: TPL-002, TPL-003, TPL-004 and  
TOP-002 Equipment Maintenance Outages

**Posted:** [DATE]

### Primary Interest Groups

NERC

Regional Entities

Registered Entities subject to TPL-002, TPL-003, TPL-004 and TOP-002

### Issue: Whether planned<sup>1</sup> maintenance outages should be addressed under the TOP standards or under the TPL Standards.

NERC received a request for further clarification<sup>2</sup> of whether maintenance outages, including Protection Systems, must be included in operational planning studies under TOP-002 or in transmission planning assessments under TPL-002, TPL-003, and TPL-004.

### Summary of Compliance Application Notice

Planned maintenance outages, including maintenance and testing of Protection Systems, that are known and scheduled in the planning timeframe, must be considered in TPL assessments.

All planned maintenance outages, including maintenance and testing of Protection Systems that are known and scheduled in the operations timeframe, must be included in operational planning studies under the TOP standard.

### Reliability Objective

The Reliability Objective is to ensure the interconnected BES transmission system is planned such that the Network can be:

- 1) Operated to acceptable reliability performance at all times, including during planned maintenance outages.
- 2) Operated to address current system conditions, including the impacts on system reliability that may result from planned protection system maintenance.

<sup>1</sup> “Planned” is interchangeable with the term “scheduled.”

<sup>2</sup> FERC approved an interpretation for TOP-002-2 on December 2, 2009 in the *Order on Reliability Standard Interpretation*, 129 FERC ¶ 61,191 (2009) and an interpretation for TPL-002 and TPL-003 on April 23, 2010; in the *Order on Reliability Standard Interpretation*, 131 FERC ¶ 61,068 (2010).

## Background

### TPL-002, TPL-003 and TPL-004

TPL-002, -003 and -004 addresses planning for the near term (years 1 through 5). TPL-002 and TPL-003 also address planning for the longer term (years 6 through 10).

The three standards contain similar requirements specifying that the *Planning Authority*<sup>3</sup> and *Transmission Planner* shall each demonstrate through a valid assessment that its portion of the interconnected transmission system is evaluated for the risks and consequences of contingencies, and to be valid, the assessment shall include the planned (including maintenance) outage of any bulk electric equipment (including Protection Systems or their components) at those demand levels for which planned (including maintenance) outages are performed (see TPL-002-0 R1.3.12, TPL-003-0 R1.3.12 and TPL-004-0 R1.3.9).

### TOP-002

TOP-002 addresses planning for current-day, next-day, and seasonal operations.

This standard requires that the *Balancing Authority* and *Transmission Operator* will plan to meet unscheduled changes in system configuration (R6) and perform seasonal, next-day, and current-day Bulk Electric System studies to determine System Operating Limits (SOLs) (R11).

## Compliance Application

### TPL-002/TPL-003/TPL-004

TPL-002-0 provides, in pertinent part:

***R1.3.** Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category B of Table 1 (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).<sup>4</sup> ...*

***R1.3.12.** Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.*

TPL-003-0 provides, in pertinent part:

***R1.3** Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following*

<sup>3</sup> The Planning Authority was renamed “Planning Coordinator” in the Functional Model dated February 13, 2007. TPL-002, TPL-003 and TPL-004 use the former “Planning Authority” name; the Functional Model terminology was a change in name only and did not affect responsibilities.

<sup>4</sup> Consistent with applicable FERC precedent, the term ‘Regional Reliability Organization’ in this context refers to the Regional Entity. Pursuant to Federal Energy Regulatory Commission (FERC) Order 693, FERC eliminated the RRO as the appropriate Compliance Monitor for standards and replaced it with the Regional Entity (RE). See paragraph 157 of Order 693.

*Category C of Table 1 (multiple contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).<sup>5</sup> ...*

**R1.3.12.** *Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.*

*TPL-004-0 provides, in pertinent part:*

**R1.3.** *Be supported by a current or past study and/or system simulation testing that addresses each of the following categories, showing system performance following Category D contingencies of Table I. The specific elements selected (from within each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).<sup>6</sup> ...*

**R1.3.9.** *Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.*

#### Outages to be included in TPL assessments

TPL assessments must include all planned and scheduled equipment maintenance outages, including Protection System maintenance outages, that are to occur within the near-term (years one through five) and longer-term (years six through ten) planning horizons.

The distinction between planned maintenance outages that must be included in the TPL assessment versus the TOP operational studies is in how far in advance of the outage that it is scheduled. At some point, all maintenance outages are planned and scheduled. If an outage, including a Protection System maintenance outage, is scheduled more than 12 months in advance then that outage would fall within the TPL planning horizon and would be required to be evaluated as a planned outage pursuant to R1.3.12 of the TPL-002-0 and TPL-003-0 standards and R1.3.9 of TPL-004-0.

Although there are situations in which maintenance outages are planned and scheduled more than 12 months in advance, more often maintenance is scheduled in the operating horizon. Most maintenance plans have to be developed and the associated outages scheduled much sooner to when the outages are expected to occur. This does not circumvent the requirements of TPL—maintenance scheduling in the operating horizon is driven by requirements to coordinate the actual work and to study system conditions that are as close as possible to those expected when the maintenance outage occurs. The scheduling is fluid in real time as managers schedule work

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<sup>5</sup> See footnote 5.

<sup>6</sup> See footnote 5.

crews, procure equipment, and perform other tasks pertaining to the maintenance. Additionally, since maintenance outage windows typically occur in the spring and fall months, multiple outages may be scheduled concurrently. The Transmission Operator has the additional responsibility of resolving any potential scheduling conflicts that develop, with the Reliability Coordinator performing any required arbitration. Due to the need to schedule these outages close to the time the outage is taken, the TPL planners would not be aware of them at the time the long-term planning studies are being conducted. Any planning study performed under the TPL standard 12 months prior to the outage(s) would have little value to the Transmission Operators scheduling outages.

All Protection System maintenance outages must be evaluated in the TOP planning timeframe in order to accurately assess the system impact in context of existing system topology, generation dispatch, and other outages. Results of any Protection System outages that were analyzed in the TPL planning horizon may be helpful to the Transmission Operator in designing his analysis, but those TPL studies are typically done with all lines assumed to be in service. Statistically, that is never the case in the operating horizon.

For example, if fully redundant Protection Systems are available, planned maintenance and testing can be performed on one of these Protection Systems without a loss of protection, and no outage of the protected system element is needed. However, when fully redundant protection is not available, outages of the protected system element may be required in order to perform the planned Protection System maintenance and testing. If the maintenance was known and scheduled in the TPL planning horizon, the maintenance outage would be included in the TPL assessments. Regardless if the Protection System maintenance and testing is included in the TPL assessments, the Transmission Operator must analyze the impact of system performance in context of all other outages that will be ongoing at the time of the planned maintenance, and thus must be included in the operational studies under the TOP standard.

#### TOP-002-2 R11

TOP-002-2 R11 provides:

***R11.** The Transmission Operator shall perform seasonal, next-day, and current-day Bulk Electric System studies to determine SOLs. Neighboring Transmission Operators shall utilize identical SOLs for common facilities. The Transmission Operator shall update these Bulk Electric System studies as necessary to reflect current system conditions; and shall make the results of Bulk Electric System studies available to the Transmission Operators, Balancing Authorities (subject to confidentiality requirements), and to its Reliability Coordinator.*

#### Outages to be included in TOP evaluations

Under R11, the Transmission Operator must incorporate **all** planned and scheduled maintenance outages – including short duration Protection System outages – in its current-day, next-day, and

seasonal operational planning studies to properly account for current system conditions as discussed above.

Additionally, the Transmission Operator must determine if its operational planning studies may or may not require additional evaluation (such as the assessments conducted by the planners under the TPL standard) conducted under the TOP current-day, next-day, and seasonal planning horizon.

### **Compliance Guidance**

#### TPL-002, TPL-003, TPL-004

A registered entity must be able to provide an auditor or Compliance Enforcement Authority:

1. Evidence that a valid assessment for its portion of the interconnected transmission system had been completed, and included any planned and scheduled outages of bulk electric equipment, including maintenance outages for equipment or Protection Systems that was scheduled during the planning timeframe.

#### TOP-002 R11

A registered entity must be able to provide an auditor or Compliance Enforcement Authority:

1. Evidence that its current-day, next-day, and seasonal operational planning studies evaluated all planned and scheduled<sup>7</sup> maintenance outages, including Protection Systems maintenance outages.

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*This document is designed to convey compliance guidance from NERC's various activities. It is not intended to establish new requirements under NERC's Reliability Standards or to modify the requirements in any existing NERC Reliability Standards. Compliance will continue to be determined based on language in the NERC Reliability Standards as they may be amended from time to time. Implementation of this compliance application notice is not a substitute for compliance with requirements in NERC's Reliability Standards.*

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<sup>7</sup> Balancing Authorities and Transmission Operators are required to plan for unscheduled outages under R6, which provides: "Each Balancing Authority and Transmission Operator shall plan to meet unscheduled changes in system configuration and generation dispatch (at a minimum N-1 Contingency planning) in accordance with NERC, Regional Reliability Organization, sub-regional and local reliability requirements."