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Outage Execution and Closeout

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Outage Execution and Closeout

1.0 Executive Summary

This procedure provides direction to Interconnected Facilities and System Operations for managing approved scheduled planned outages of Transmission Elements and Interconnected Facilities. This procedure provides detailed steps for analyzing, approving, scheduling, documenting and communications from post approval to execution and closeout.

2.0 Objective/Scope/Roles

2.1 Objective

This procedure provides for the safe, timely and efficient analysis, approval, scheduling, documenting, communications, execution, and closeout of Bulk Power System planned post approval outages on the Bulk Power System. This procedure also provides direction for ensuring pre-outage system conditions are such that the outage can be executed in a safe and timely manner, providing step by step outage field instructions, ensuring three-part communication throughout the process, returning to service and outage closeout.

2.2 Scope

Control Center Operations **shall** manage all Transmission Elements and Interconnected Facilities scheduled planned outages. The procedure has six phases: Transmission Planning, Transmission Execution, Transmission Closeout, Interconnected Facilities Planning, Interconnected Facilities Execution, and Interconnected Facilities Closeout.

2.3 Roles and Responsibilities

2.3.1 Manager Control Center Operations (MCCO)

The MCCO oversees all Transmission and Interconnected Facility operations and outage implementation.

2.3.2 Senior Shift Engineer (SSE)

The SSE has direct responsibility for the overall operation of the Transmission Operations Center (TOC). Oversees and ensures that all activities within the TOC are properly controlled and coordinated including

the functions of the Transmission Operator (TO), the Senior Transmission Operator (STO) and the Shift Engineer (SE). Consults on all planned outages to Interconnected Facilities.

2.3.3 Shift Engineer (SE)

The SE has direct responsibility for the operation and integration of the generation connected to the overall electrical system. Oversees load dispatching of the generation as well as managing scheduled outages to Interconnected Facilities. The SE is also responsible for the generation responses to emergencies or other system anomalies that may occur.

2.3.4 Senior Transmission Operator: (STO)

The STO has direct responsibility for the operation of the 115 kV and 230 kV portions of the electrical system. Oversees the loading and switching operations on the 115 kV and 230 kV system and responds to emergencies or other system anomalies that may occur and affect the safe and stable operation of the 115 kV and/or the 230 kV system. Consults on all Interconnect Facilities and Transmission planned outages.

2.3.5 Transmission Operator: (TO)

The TO has direct responsibility for the operation of the 38 kV portion of the electrical system. Oversees the loading and switching operations on the 38 kV system and the response to emergencies or other system anomalies that may occur and affect the safe and stable operation of the 38 kV system.

2.3.6 Supervisor Transmission and Generation (STG)

The STG is directly responsible for all Transmission and Interconnected Facility operations and outage implementation. Directs the STO, TO, SSE, SE.

2.3.7 Generator Facility Operator (GFO)

The GFO, asset manager, or equivalent will communicate in accordance with the Accepted Operating Procedure to allow personnel to implement this procedure.

2.3.8 Manager Control Center Support (MCCS)

The MCCS oversees all Transmission and Interconnected Facility outage planning.

2.3.9 Supervisor Outage Planning (SOP)

The SOP is directly responsible for all Transmission and Interconnected Facility outage planning by supervising the Lead Transmission Outage Scheduler and Transmission Outage Scheduler. Consults with Senior Shift Engineer and Senior Transmission Operator on all planned outage requests. Writes the Interconnected Facilities step-by-step outage process.

2.3.10 Lead Transmission Outage Scheduler (LTOS)

The LTOS performs Transmission and Interconnected Facility Outage planning, studies, analysis and the writes the Transmission step-by-step outage process.

2.3.11 Transmission Outage Scheduler (TOS)

The TOS assists the LTOS in all outage planning, studies, analysis and assists in writing the Transmission step-by-step outage process.

2.3.12 Field Operations Group

The Field Operations Group is directly responsible for field implementation of step-by-step outage sequences both removal from service and restoration to service.

3.0 Procedure

3.1 Transmission Planning Phase

3.1.1 45 days prior to the commencement of a major outage, the Responsible Requester **shall** confirm that all equipment, tools and parts are on-site and that all specialized training and all

safety training is complete upon receipt of confirmation request from the LTOS. Failure to do so in a timely manner, may result in outage rescheduling or cancellation.

3.1.2 Step-by-step sequences **shall** be produced by LTOS 30 days prior to outage commencement for removing Transmission Elements from service, and for returning Transmission Elements to service.

3.1.3 30 days prior to Major Transmission outages: a visual, thermographic and/or helicopter inspection of entire line **shall** be conducted.

3.1.4 Step-by-step sequences for removal from service and return to service **shall** be reviewed and approved 14 days prior to commencement by STO, TO, SSE and SE for all Major and Minor Transmission outages.

3.1.5 Step-by-step sequences for removal from service and return to service **shall** be reviewed and approved 14 days prior to commencement by STO, TO for all 38kV Transmission outages.

3.1.6 During the five days prior to the Transmission outage commencement, TOC **shall** monitor system load, review load forecast, monitor bulk system configuration, monitor weather forecast.

3.1.7 Field Operations shall assign field personnel to outage.

3.1.8 Field Operation Supervisor shall review with field personnel the following:

- Review safety procedures and follow Power System Work Standards (PSWS).
- Review each step of the approved Via Libre switching routine.
- Reiterate that three-part communication **shall** be utilized at all times.
- Review tagging procedure and grounding procedures.

Outage Execution and Closeout

3.2 Transmission Execution Phase

3.2.1 TOC **shall** communicate with Field Personnel to execute switching routines.

3.2.2 Field Operation personnel **shall** complete all field step by step removal from service sequence, and **shall** place all required tagging and grounding.

3.2.3 TOC **shall** inform Responsible Entity using three-part communication, that the Scheduled Planned Transmission outage step-by-step removal from service sequence has been completed, all required tagging and grounding has been placed.

3.2.4 When satisfied that Transmission Elements are safely removed from service with all tagging and grounding, Responsible Entity **shall** begin Maintenance work to be performed during the outage.

3.2.5 TOC **shall** notify SOP and LTOS that the Scheduled Planned Transmission Outage has commenced.

3.2.6 LTOS **shall** update outage in scheduling system as commenced.

3.2.7 Responsible Entity **shall** maintain daily and ongoing communication with the TOC while arriving on site, performing work on site and upon exiting site.

3.2.8 Responsible Entity **shall** immediately inform the TOC of any change in Emergency Recall time.

3.2.9 Responsible Entity **shall** inform TOC using three-part communication when all Maintenance work to be performed during the outage is complete, all work personnel are offsite and all Transmission Elements are ready for return to service.

3.2.10 Responsible Entity **shall** complete all required work order paperwork into appropriate work order system and **shall** document and report to the TOC any schematic mapping changes made to the Transmission during the outage.

3.2.11 Using three-part communication: Field Operations and TOC **shall** conduct step- by-step return to service sequence using both remote SCADA switching and in-field switching, removing all tagging and grounding.

3.3 Transmission Closeout Phase

3.3.1 TOC **shall** ensure system configuration maps are all current with any changes due to the Transmission outage and SCADA modifications, if any, are complete and functional.

3.3.2 Field Operations **shall** complete all required outage paperwork, computerized forms and **shall** formally sign off on the Transmission outage.

3.3.3 TOC **shall** complete all required paperwork, computerized forms, logbook entries and **shall** formally sign off on the Transmission outage.

3.3.4 TOC **shall** notify SOP and LTOS that the Scheduled Planned Transmission Outage has been Closed Out.

3.3.5 LTOS and SOP update the Transmission outage as Closed Out in scheduling system.

3.4 Interconnected Facility Planning Phase

3.4.1 45 days prior to the commencement of a major outage, the Responsible Requester (GFO) **shall** confirm that all equipment, tools and parts are on-site and that all specialized training

and all safety training is complete upon receipt of confirmation request from the LTOS. Failure to do so in a timely manner, may result in outage rescheduling or cancellation.

3.4.2 Step-by-step sequences **shall** be produced by SOP 30 days prior to outage commencement for removing Interconnected Facilities from service, and for returning Interconnected Facilities to service.

3.4.3 Step-by-step sequences for removal from service and return to service **shall** be reviewed and approved 14 days prior to commencement by SSE, SE, STO and TO for all Major and Minor Interconnected Facilities outages.

3.4.4 During the five days prior to the Interconnected Facilities outage commencement, TOC **shall** monitor system load, review load forecast, monitor bulk system configuration, monitor weather forecast.

3.4.5 Field Operations **shall** assign field personnel to outage.

3.4.6 Field Operation Supervisor **shall** review with field personnel the following:

- Review safety procedures.
- Review each step of the approved Via Libre switching routine.
- Reiterate that three-part communication **shall** be utilized at all times.
- Review tagging procedure and grounding procedures.

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3.5 Generation Execution Phase

3.5.1 TOC **shall** communicate with Field Personnel to execute switching routines.

3.5.2 Field Operation personnel **shall** complete all field step by step removal from service sequence and **shall** place all required tagging and grounding.

3.5.3 TOC **shall** inform Responsible Entity (GFO) using three-part communication, that the Scheduled Planned Interconnected Facilities outage step-by-step removal from service sequence has been completed, all required tagging and grounding has been placed.

3.5.4 When satisfied that Interconnected Facilities are safely removed from service with all tagging and grounding, Responsible Entity (GFO) **shall** begin Maintenance work to be performed during the outage.

3.5.5 TOC **shall** notify SOP and LTOS that the Scheduled Planned Interconnected Facilities Outage has commenced.

3.5.6 LTOS **shall** update outage in scheduling system as commenced.

3.5.7 Responsible Entity (GFO) **shall** maintain daily and ongoing communication with the SE while arriving on site, performing work on site and upon exiting site.

3.5.8 Responsible Entity (GFO) **shall** immediately inform the SE of any change in Emergency Recall time.

3.5.9 Responsible Entity (GFO) **shall** inform SE using three-part communication when all Maintenance work to be performed during the outage is complete, all work personnel are offsite and Interconnected Facilities are ready for return to service.

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3.5.10 Responsible Entity (GFO) **shall** complete all required work order paperwork and forward to SE and **shall** document and report to the TOC any schematic mapping changes made to the Interconnected Facilities during the outage.

3.5.11 Responsible Entity (GFO) **shall** provide any update to their Interconnected Facility to the TOC in accordance with the Interconnected Facilities Procedure.

3.5.12 Using three-part communication: Field Operations and SE **shall** conduct step- by-step return to service sequence using both remote SCADA switching and in-field switching, removing all tagging and grounding.

3.6 Interconnect Facilities Closeout Phase

3.6.1 TOC **shall** ensure system configuration maps are all current with any changes due to the Interconnected Facilities outage and SCADA modifications, if any, are complete and functional.

3.6.2 Field Operations **shall** complete all required outage paperwork, computerized forms and **shall** formally sign off on the Interconnected Facilities outage.

3.6.3 TOC **shall** complete all required paperwork, computerized forms, logbook entries and **shall** formally sign off on the Interconnected Facilities outage.

3.6.4 TOC **shall** notify SOP and LTOS that the Scheduled Planned Interconnected Facilities Outage has been Closed Out.

3.6.5 LTOS and SOP **shall** update Interconnected Facilities outage as Closed Out in scheduling system.

Appendix A: Glossary

Term	Definition
Three-part communication	The sender states the message, the receiver acknowledges the sender and repeats the message in a paraphrased form, and the sender acknowledges the receiver's reply.
Transmission Elements	Any electrical device on the BPS with terminals that may be connected to other electrical devices such as a generator, transformer, circuit breaker, bus section, or transmission line. An element may be comprised of one or more components.

Appendix B: Procedure Cross-Reference Matrix

Procedure Reference Matrix, Part 1 of 2	Load Forecasting	New Facility Interconnections	Resource Adequacy Planning	Retirements	G&T Demarcation & Metering	Interconnected Facilities Capabilities	Black Start	Telemetry	Data/Cybersecurity	Root Cause & Lessons Learned	Public Reporting	Performance Reporting	Stakeholder Management	Policy on Reserve
Load Forecasting														
New Facility Interconnections														
Resource Adequacy Planning														
Retirements														
G&T Demarcation & Metering														
Interconnected Facilities Capabilities														
Black Start														
Telemetry														
Data/Cybersecurity														
Root Cause & Lessons Learned														
Public Reporting														
Performance Reporting														
Stakeholder Management														
Policy on Reserves														
Reducing Risk Exposure to Contingencies														
Critical Loads														
Loads Shedding														
Contingency & System Operating Limits														
Energy Dispatch, Scheduling & Merit Order														
Transmission Operations														
Plant Level Agreement														
Balancing Frequency & Voltage														
Demand-Side Resources														
Shift System Operator Training Requirements														
Scheduling Planned T&G Outages														
Forced Outage Response														
Outage Execution & Closeout														
Emergency Response Execution														
Emergency Drills														

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Procedure Reference Matrix, Part 2 of 2	Reducing Risk Exposure to Contingencies	Critical Loads	Load Shedding	Contingency & System Operating Limits	Energy Dispatch, Shedding & Merit Order	Transmission Operations	Plant Level Agreement	Balancing Frequency & Voltage	Demand Side Resources	Shift System Operator Training Requirements	Scheduling Planned T&G Outages	Forced Outage Response	Outage execution & Closeout	Emergency Drills
Load Forecasting														
New Facility Interconnections														
Resource Adequacy Planning														
Retirements														
G&T Demarcation & Metering														
Interconnected Facilities Capabilities														
Black Start														
Telemetry														
Data/Cybersecurity														
Root Cause & Lessons Learned														
Public Reporting														
Performance Reporting														
Stakeholder Management														
Policy on Reserves														
Reducing Risk Exposure to Contingencies														
Critical Loads														
Load Shedding														
Contingency & System Operating Limits Response														
Energy Dispatch, Scheduling & Merit Order														
Transmission Operations														
Plant Level Agreement														
Balancing Frequency & Voltage														
Demand Side Resources														
Shift System Operator Training Requirements														
Scheduling Planned T&G Outages														
Forced Outage Response														
Outage Execution & Closeout														
Emergency Response Execution														
Emergency Drills														