LUMA

Forced Outage

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Forced Outage

Contents

1.0 Executive Summary 3

2.0 Objectives/Scope/Roles 3

2.1 Objective 3

2.2 Scope 3

2.3 Roles 3

3.0 Procedure 5

3.1 Forced or Unplanned Outage – Generation 5

3.2 Restoration and Restart of the Generation Resource 6

3.3 Restoration and Restart of the Generating Unit 6

3.4 Forced Outage: Transmission or Substation 7

3.5 Forced Transmission Outage Affecting an Interconnected Facility 7

Appendix A: Glossary 9

Appendix B: Procedure Cross-Reference Matrix 10

Forced Outage

1.0 Executive Summary

This procedure is designed to provide guidance to interconnected facilities and System Operations when responding to a forced outage of any of these elements that impacts the operation of the Bulk Power System and provides detailed steps for responding to the event, including communication and restoration.

2.0 Objectives/Scope/Roles

2.1 Objective

This procedure provides for the safe, timely and efficient restoration of the electrical service due to forced outages on the system. This procedure also applies to unplanned outages which are outages required by an imminent condition that may affect safety or operations.

2.2 Scope

A forced outage is an immediate reduction in output or capacity or removal from service, in whole or in part, due to an unanticipated failure, or other cause beyond the control of the owner or operator of the facility. This procedure requires the Transmission Operations Center to effectively respond to, manage and restore the electrical system following a forced outage. This procedure applies to all personnel from system operation, generation, transmission, and their supporting organizations.

2.3 Roles

2.3.1 Senior Shift Engineer (SSE)

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

coordinated including the functions of the Transmission Operator (TO) , the Senior Transmission Operator (STO) and the Shift Engineer (SE)

2.3.2 Transmission Operator: 38 kV (TO)

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

2.3.3 Transmission Operator: 115 & 230 kV (TO)

Direct responsibility for the operation of the 115KV and 230KV portions of the electrical system. Oversees the loading and switching operations on the 115kv and 230KV system and responds to emergencies or other system anomalies that may occur and affect the safe and stable operation of the 115kv and/or the 230KV system.

2.3.4 Shift Engineer (SE)

Direct responsibility for the operation and integration of the generation connected to the overall electrical system. Oversees the load dispatching of the generation as well as managing forced outages to interconnected facilities. Also responsible for the generation responses to emergencies or other system anomalies that may occur.

2.3.5 Generator Facility Operator (GFO)

The Generator Facility Operator (GFO) or equivalent **shall** communicate following the Plant Level Communications procedure to allow personnel to implement this procedure.

3.0 Procedure

This procedure **shall** be initiated during any forced outage of a generating facility or transmission element. This procedure can be used solely for restoration and system operation adjustments provided that the event does not cause an emergency event declaration of a Level 3, 2 or 1 emergency as declared by the Crisis Management Committee and the Incident Commander as outlined in the Emergency Response Plan (ERP). If an emergency is declared proceed to the Emergency Response Procedures.

3.1 Forced or Unplanned Outage – Generation

If the GFO has any advanced knowledge of an imminent unplanned or forced outage, the GFO **shall** notify the SE immediately with as much lead-time as practical and do the following:

- Inform the SE of the forced outage as promptly as possible and create a work order.
- Submit an Unplanned Outage notification via telephone or electronic messaging to the SE, SSE, and the TOs. The notification **shall** include the event description, the circumstances giving rise to the forced outage, an initial estimated time when the generation **shall** be impacted, an initial estimated time to restore, and the initially estimated elements used to isolate the generation from the electrical system.
- As soon as possible following the start of the unplanned or forced outage the GFO **shall** provide the SSE and the TOs with an updated and more accurate date and time that the generation resource will be made available. Additional details surrounding the reason for the forced outage **shall** be documented.

The SSE and TOs **shall** acknowledge all communications received from the GFO and record the information.

Forced Outage

3.2 Restoration and Restart of the Generation Resource

Before restoration and restart of the generation unit the following actions **shall** be performed:

- The GFO **shall** identify all critical work needed to be performed to return the resource to service.
- Once the outage period has been determined to make critical repairs required to return the unit to service, the GFO **shall** go to the Forced Outage Worklist to determine what other previously deferred maintenance items can also be performed during this allotted outage timeframe. This previously deferred work must be able to be performed at the same time as the critical restoration work and not prolong the outage.
- The TOs **shall** review their Forced Outage Worklist to determine if transmission maintenance work can also be performed without prolonging the critical path generation restoration timing.

3.3 Restoration and Restart of the Generating Unit

- The GFO **shall** notify the SSE and TOs by telephone or electronic notification as soon as their actual time to restore has been determined. This notification **shall** include the generation ramp-up schedule, the anticipated output following restoration and any diagnostic testing to be performed that could impact their restoration ramp-up.
- Following notification by the generation resource owner or operator that the generation is ready to go back online, the SSE, **shall** confirm with the TOs and the SE that system conditions are capable of safely integrating the generator back onto the electrical system and that any deferred transmission maintenance work that was being performed in conjunction with the forced outage has also been completed.
- The SSE **shall** authorize the necessary switching operations to bring the generation back onto the system in accordance with the Outage Execution and Closeout procedure.

Forced Outage

3.4 Forced Outage: Transmission or Substation

- Transmission and Substation personnel **shall** report any imminent or unplanned forced outage of Transmission or Substation facilities to the appropriate TO. The TO **shall** communicate the outage and the expected timing to any other personnel that may be affected as soon as feasible. The notification **shall** include the circumstances surrounding the unplanned or forced outage, the extent of damage and the expected duration of the outage. The appropriate TO **shall** also notify the SSE.
- The TO **shall** create a work order in Vias Libres for the outage with all pertinent information that is available at the time and update the work order as added information becomes available.
- The night shift (22:00 –06:00) TO **shall** assess all outages for the next two days and submit changes or revision to the Vias Libres work order due to cancellations, revised schedules, revised return to service times of outage or any other changes by 06:00 to the day shift (06:00 – 14:00) TO.

3.5 Forced Transmission Outage Affecting an Interconnected Facility

- If any forced transmission or substation outage will force either generation, or an Interconnected Facility off-line, then the appropriate TO **shall** immediately notify the SE, and the SSE **shall** then notify the Interconnected Facility and/or generator of the forced outage and provide them with the circumstances surrounding the forced outage, the estimated time to restore, and to what extent, if any, the Interconnected Facility will be impacted during and following the restoration of the forced outage. The Outage Execution and Closeout procedure **shall** be used for the detailed restoration of the system to normal operation.
- If any Interconnected Facility experiences a forced outage, the Interconnected Facility **shall** immediately notify the SE of the forced outage, the reason for the outage, and the anticipated duration of the outage and the SE **shall** then determine if this outage will also affect any generators.

Forced Outage

- The TOs **shall** determine if any deferred transmission maintenance can be performed as a result of the Interconnected Facility forced outage without adding additional time to the Interconnected Forced outage time to restore.
- When the GFO is ready to restore their facility to normal operation, they **shall** notify the SE and the TOs.
- Following notification by the GFO that the facility is ready to go back online, the SSE **shall** confirm with the TOs and the SE that system conditions are capable of safely integrating the Interconnected Facility back onto the electrical system and that any deferred transmission or substation maintenance work that was being performed in conjunction with the forced outage has also been completed.
- Proceed with restoration per the Outage Execution and Closeout procedure.

Appendix A: Glossary

Term	Definition
Transmission Operations Center	The main control room for the LUMA transmission system and interconnected facilities. The TOC has certified Independent System Operators who are responsible for operation and communication with all Interconnected Facilities and the operation of 230 KV, 115 KV and 38 KV. Systems.
Forced Outage Work List	An on-going list of maintenance work that has been deferred but can be considered for execution if an unplanned or forced outage enables this work to be completed without extending any unplanned or forced outage
Vias Libres	Software system for creating and tracking work orders of the Electrical System
Interconnected Facility	Any generation facility that produces power delivered into the bulk power system or energy storage facility that releases stored power to the bulk power system

Appendix B: Procedure Cross-Reference Matrix

Procedure Reference Matrix, Part 1 of 2	Load Forecasting	New Generation Interconnections	Resource Adequacy Assessments	Retirements	G&T Demarcation & Metering	Generator Capability	Black Start	Telemetry	Data/Cybersecurity	Root Cause & Lessons Learned	Public Reporting	Performance Reporting	Stakeholder Management	Policy on Reserve
Load Forecasting														
New Generation Interconnections														
Resource Adequacy Assessments														
Retirements														
G&T Demarcation & Metering														
Generator Capability														
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														

Forced Outage

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 Response Execution	Emergency Drills
Short Term Load Forecasting															
New Facility Interconnection															
Resource Adequacy Planning															
Interconnected Facility Retirements															
Legacy T&G Demarcation															
Interconnected Facilities Capabilities															
Black Start															
Telemetry															
Cybersecurity															
Root Cause Analysis & Corrective Actions															
Public Reporting															
Performance Reporting															
Stakeholder Management															
Policy on Reserves															
Reducing Risk Exposure to Contingencies															
Critical Loads															
Loads Shedding															
Contingency & System Operating Limits Response															
Energy Dispatch, Scheduling & Merit Order															
Transmission Operations															
Plant Level Communications															
Balancing Frequency & Voltage															
Demand-Side Resources (Non-Wire Alternatives)															
Shift System Operator Training															
Scheduling Planned T&G Outages															
Forced Outage						X	X					X	X	x	
Outage Execution and Closeout															
Emergency Response Execution															
Emergency Drills															

Forced Outage

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