LUMA

SYSTEM OPERATOR TRAINING

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APPROVED BY:

Name / Title Raphael Gignac / Director System Operations

Signature _____

REVIEWED BY:

Title _____

Signature _____

Title _____

Signature _____

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1.0 Executive Summary

The System Operator Training procedure defines the requirements for System Operators to become a LUMA Certified System Operator in the Transmission Operations Center and Distribution Operation Centers to perform their job functions and independently operate the Bulk Power System. Topics covered in this procedure include training on procedures, on-the-job training, competency verification, certification requirement, re-certification, continuing training and proper documentation of all training materials.

2.0 Objective/Scope/Roles

2.1 Objective

The objective of the System Operator Training procedure is to define the curriculum, prerequisites, and requirements to certify System Operators to perform their roles independently and maintain their certification through ongoing training or re-certification examination. This procedure also defines all the training requirements of system operators to ensure the safe, competent and reliable operation of the Bulk Power System (BPS) and maintain the system through various conditions of operations. The LUMA System Operator Certification is designed to provide the public and regulatory entities with confidence in the competence and capabilities of the System Operators.

2.2 Scope

This procedure describes how a candidate for a System Operator position progresses through the various training modules, meets requirements and passes assessments and testing as an Operator In Training (OIT) to become an independent system operator on the BPS. The procedure also defines the system operator's ongoing training, requirements to maintain certification, re-certification and maintain training records.

2.3 Roles and Responsibilities

This section addresses the roles and their involvement in successfully training and certifying a System Operator.

2.3.1 Manager Control Center Operations (MCCO)

Is responsible to review and participate in the selection of possible candidates for the System Operations positions. MCCO **shall** verify that all candidates are properly trained, are following all training and continuing training requirements and are certified to independently operate the BPS.

2.3.2 Manager Control Center Support (MCCS)

Is responsible to verify all documentation is current and correct for all System Operators and participate in candidate selection as needed and periodic evaluation of Operators.

2.3.3 Supervisor Transmission and Generation (STG)

Performs periodic evaluation of System Operators for certification and participates in candidate selection as needed.

2.3.4 Supervisor Distribution (SD)

Performs periodic evaluation of Senior Distribution Operator (SDO) for certification and participates in candidate selection as needed

2.3.5 Training Coordinator (TC)

Manages all aspects of training and certification of System Operators including the following:

- Maintains all training documentation of System Operators including Certification and periodic performance evaluation records.
- Verifies that all candidates are properly trained, are in compliance with initial and continuing training requirements and maintain their certification status to independently operate the BPS.
- Provides reports of training information to the MCCO, MCCS and Supervisor Transmission and Generation.
- Schedules all training and testing for operator in-training, Certified Operators, certification, re-certification and continuing training.

2.3.6 Senior Shift Engineer (SSE)

- Responsible for the oversight of Transmission System Operators during their initial training and the assignment of a Certified Operator to be a trainer for new operators. Operators will be always accompanied by their trainer in the control room until they are fully certified.
- Responsible for the oversight of Shift Engineers (SE) during their initial training and the assignment of a Certified SE to be a trainer for new SE. SEs will be accompanied by their trainer at all times in the control room until they are fully certified.
- Responsible for sign-off of on-the-job training in the control room delivered by the assigned trainer.
- If requested provides input to candidate selection of operators.

2.3.7 Shift Engineer (SE)

- If requested provide input to candidate selection of operators.
- Responsible for the oversight of Operators-in-training and the assignment of a certified operator to always be with an operator in training in the control room.
- Responsible for the oversight of SEs-in-training that are assigned to them by the SSE to always be within the control room.
- Responsible for on-the-job training of SE in training provided by the SSE or STG.

2.3.8 Senior Transmission Operator (STO)

- **Shall** coordinate with the Training Coordinator to ensure all training requirements are up to date and maintain certification as an Independent System Operator.
- Responsible for on-the-job training of new Operators.
- Responsible for sign-off of on-the-job training in the control room delivered by the assigned trainer.

2.3.9 Transmission Operator (TO)

- **Shall** Coordinate with the Training Coordinator to ensure all training requirements are up to date and certifications are maintained.
- Responsible for the oversight of Operators-in-training within the control room that are assigned to them by the STO
- Responsible for on-the-job training of the OIT provided by the STO.

2.3.10 Senior Distribution Operator (SDO)

- **Shall** Coordinate with the Training Coordinator to ensure all training requirements are up to date and Certifications are maintained.
- Responsible for the oversight of the OIT that are assigned to them by the SD to always be within the control room
- Responsible for on-the-job training of new DO's

3.0 Procedure

3.1 Selection of Candidates

- MCCO, MCCS, STG, SDO and others as appropriate **shall** select Candidates who will be chosen based on core competencies related to knowledge of the BPS and previous work experience
- Candidates who meet defined prerequisites will be reviewed by an interview team comprised of managers involved in the selection and will be approved based on the stated requirements of this procedure.

3.2 Requirements to be an Operator In Training (OIT)

- There are no prerequisites other than what has been established by Human Resources for applying to becoming a system OIT; however prior BPS experience in the industry is highly recommended.
- Once a candidate is selected as an OIT they will be required to take initial OIT courses in basic BPS operations determined by the Training Coordinator with input from the MCCO, STG, SDO before participating in real-time operations in the Transmission Operations Center (TOC) or the Distribution Operations Center (DOC).
- OIT will only participate in real-time operation under a LUMA Certified System Operator's direction and supervision.

3.3 Certified LUMA System Operator Requirements

- The certification program applies to system operators, engineers or other individuals who operate the LUMA BPS.

- Requirements are based on the daily operations-related knowledge and skills needed to implement procedures for normal, emergency and restoration conditions. All system operators must be able to implement these procedures as written to ensure the safe and reliable operation of the BPS.
- System operators also must understand and prove the proficiency of basic operating concepts to perform their daily tasks. Part of the Certification will include a sign-off sheet by a LUMA Certified System Operator stating that the candidate has completed operational tasks (see Appendix D).

3.4 Certification Term for System Operators

- Terms for Certified System Operators are 3 years or when there is a significant system change that warrants re-certification.
- Before the term expires the Certified System Operator **shall** complete re-certification requirements.
- Waivers will be considered on a case-by-case basis for illness or other approved absences and per section 3.6.

3.5 Re-certification Requirements for System Operators

- To be re-certified as a LUMA System Operator, before the Certificate expiration the Certified System Operator needs to apply, and pass an exam for the same certification.

3.6 Ensuring Proficiency Following an Extended Absence

The following steps are for LUMA Certified System Operators who have not worked shift duties as an Independent System Operator due to illness, military service, project assignment or other extended leave situations. This process will apply to all LUMA Certified System Operators who

have not worked their shift position for a consecutive period of three months (90) days or more due to an extended leave situation.

3.6.1 Leave Period of 3-6 Months

Certified LUMA System Operators who have not worked shift for a consecutive period of 3-6 months and upon clearance to return to work, must:

- Successfully complete all required training assigned to them from the MCCO.
- Read and acknowledge understanding of all new or revised Operating Memos or changes since their absence.
- Complete 2 days of On-The-Job-Training for each month of absence with a qualified OIT Trainer and their Shift Supervisor to determine their readiness to resume shift duties as an independent LUMA Certified System Operator.

3.6.2 Leave Period Over 6 Months

If a System Operators has not worked for a period of 6 months or longer, there are additional training requirements that **shall** be met prior to independently performing the job. Upon clearance to return to work, these operators must:

- Successfully complete all required training assigned to them from the MCCO.
- Read and acknowledge understanding of all new or revised operating procedures, memos or changes since their absence.
- Complete a minimum of 2 days of on-the-job training with a qualified OIT Trainer.
- Complete all training requirements of a new candidate including:
  - Completion of all OIT signoffs
  - Completion of all applicable training modules as directed by the MCCO.
  - Be interviewed and evaluated by their OIT Trainer and Senior Shift Engineer to determine their readiness to resume shift duties as an independent LUMA Certified System Operator.

3.7 Documentation and Control of Training Material

The Training Coordinator **shall** be responsible to control and maintain all training documents including the following:

- Operator-in-training.
- LUMA certification records for each System Operator.
- Re-Certification for each operator.
- All Training documents and dates for completion of certification and all associated documents.
- Revision and control of all training documents.

Appendix A: Glossary

Term	Definition
Independent System Operator	An operator who has been trained and is certified to independently operate the BPS and is able to perform all job functions without direct supervision
Bulk Power System	The transmission and distribution system and related facilities, equipment and other assets related to the transmission and distribution system in which Gridco has an ownership or leasehold interest.
Operator In-Training (OIT)	An operator in-training is an operator who has successfully passed the initial OIT training and can operate on the BPS system only under a LUMA Certified System Operator. OIT include SE's, TO's and DO's
Trainer	Certified independent system operator designated to oversee and train other Operators in a classroom or as the Certified Independent System Operator that oversees an OIT in the control room
Transmission Operations Center (TOC)	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
Distribution Operations Center (DOC)	Distribution control rooms in various locations throughout the island that has certified independent system operators who are responsible for the operation of the distribution system under 13.2 kV

Appendix B: Procedure Cross-Reference Matrix

Procedure Reference Matrix, Part 1 of 2	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
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 and Corrective Actions														
Public Reporting														
Performance Reporting														
Stakeholder Management														
Policy On Reserves														
Reducing Risk Exposure to Contingencies														
Critical Loads														
Load Shedding														
Contingency and System Operating Limits Response														
Energy Dispatch, Scheduling and Merit Order														
Transmission Operations														
Plant Level Communications														
Balancing Frequency and Voltage														
Demand-Side Resources (Non-Wire Alternatives)														
System Operator Training														
Scheduling Planned T&G Outages														
Forced Outage														
Outage Execution and Closeout														
Emergency Response Execution														
Emergency Response 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 Response	Energy Dispatch, Shedding & Merit Order	Transmission Operations	Plant Level Communications	Balancing Frequency & Voltage	Demand Side Resources (NWA)	System Operator Training	Scheduling Planned T&G Outages	Forced Outage	Outage Execution & Closeout	Emergency Response Execution	Emergency Response 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 and Corrective Actions															
Public Reporting															
Performance Reporting															
Stakeholder Management															
Policy On Reserves															
Reducing Risk Exposure to Contingencies															
Critical Loads															
Load Shedding															
Contingency and System Operating Limits Response															
Energy Dispatch, Scheduling and Merit Order															
Transmission Operations															
Plant Level Communications															
Balancing Frequency and Voltage															
Demand-Side Resources (Non-Wire Alternatives)															
System Operator Training															
Scheduling Planned T&G Outages															
Forced Outage															
Outage Execution and Closeout															
Emergency Response Execution															
Emergency Response Drills															

Appendix C: System Operator Training Matrix

Procedure	Senior Shift Engineer (SSE)	Shift Engineer (SE)	Shift Engineer in Training	Senior Trans Operator (STO)	Trans Operator (TO)	Trans Operator in Training	Senior Distribution Operator	Distribution Operator in Training	Lead Engineer Energy Planning	Engineer Energy Planning	Lead Engineer Energy Balancing	Engineer Energy Balancing	Lead Distribution Outage scheduler	Lead Trans Outage Scheduler	Engineer Performance	Operation Preparedness
1 Load Forecasting	X	X							X	X	X	X			X	
2 New Generation Interconnections	X	X		X					X	X	X	X		X	X	
3 Resource Adequacy Assessments	X	X							X	X	X	X		X	X	
4 Retirements	X	X							X	X	X	X		X	X	
5 G&T Demarcation & Metering	X	X	X	X	X	X			X	X	X	X		X	X	X
6 Generator Capability	X	X	X						X	X	X	X			X	
7 Black Start	X	X		X	X											
8 Telemetry	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
9 Cybersecurity	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
10 Root Cause & Lessons Learned	X	X		X	X		X		X	X					X	
11 Public Reporting	SUPERVISORS & MANAGERS															
12 Performance Reporting	SUPERVISORS & MANAGERS															
13 Stakeholder Management	SUPERVISORS & MANAGERS															
14 Policy on Reserves	X	X		X	X				X	X	X	X	X	X		
15 Reducing Risk Exposure to Contingencies	X			X	X		X				X	X				
16 Critical Loads	X	X	X	X	X	X	X	X					X	X	X	
17 Loads Shedding	X	X	X	X	X	X	X	X							X	
18 Contingency & System Operating Limits	X	X	X	X	X	X	X	X							X	
19 Energy Dispatch, Scheduling & Merit Order	X	X	X	X	X	X	X	X					X	X		
20 Transmission Operations	X			X	X	X								X		
21 Plant Level Agreement	X	X	X						X	X						
22 Balancing Frequency & Voltage	X	X	X	X	X	X	X	X			X	X				
23 Demand-Side Resources	X	X		X	X		X				X	X	X	X		
24 System Operations Training Requirements	X	X	X	X	X	X	X	X	SUPERVISORS & MANAGERS							
25 Scheduling Planned T&G Outages	X	X		X	X				X	X				X		
26 Forced Outage Response	X	X		X	X		X									
27 Outage Execution & Closeout	X	X		X	X		X		X	X			X	X	X	
28 Emergency Response Execution	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
29 Emergency Drills	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Appendix D: Training Record Form

Senior Transmission Operator Qualificatior

Link

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