FACILITY CONNECTION REQUIREMENTS

REQUIREMENTS FOR TRANSMISSION SYSTEM INTERCONNECTIONS FOR GENERATION, TRANSMISSION AND END-USER FACILITIES

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Version 1.0	06/21/10	New document	Greg Coco	Greg Coco APPROVED
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Version 1.2	07/06/2011	Corrected Table of Contents	Louis Guidry	Greg Coco APPROVED
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		TOC to Cleco TOC in 6.10.		
Version 4.2	09/10/2018	Added requirement 3.3, procedure for notification	Robert Hirchak	Jerry White APPROVED
Version 4.3	03/02/2020	Added NERC TPL-001 and additions to Section 5	Robert Hirchak	
Version 4.4	12/15/2023	Modification for Inverter Based Resources, update responsibility, updates to Responsibility Section and added "qualified change" term for FAC-002 R6	Robert Hirchak	Marty Evans X Marty Evans Mgr Transmission Operations
Version 4.5	07/05/2024	Added new text to Section 5, renumbered 5.5, 5.6 and 5.7. Edited footer with new logo.	Robert Hirchak	Marty Evans (Jul 10, 2024 12:57 CDT) X Marty Evans Mgr-Transmission Operations

TABLE OF CONTENTS

INTRODUCTION

Cleco Corporate Holdings LLC (Cleco) is a regulated electric utility serving customers in Louisiana. For more details regarding Cleco refer to www.cleco.com.

Cleco owns a network of transmission lines which interconnects generating plants to various transmission and distribution substations serving the loads of the Cleco service territory and to transmission lines of adjacent utilities. The Cleco transmission system is physically interconnected with the transmission systems of Entergy Louisiana LLC, AEP Southwestern Electric Power Company, and the Lafayette Utility System.

The requirements herein are for all interconnections to the Cleco transmission system.

PURPOSE

Cleco and its affiliates have prepared this document to establish the requirements for interconnection to the Cleco transmission system for generation, transmission and end-user facilities per NERC FAC-001. These requirements are intended to promote safe operation, system integrity and reliability of the Cleco and interconnected systems. These requirements are minimums to be used as a guide toward Cleco's processing of interconnection requests. A thorough review and understanding of these requirements shall assist a requesting party in obtaining timely and mutually satisfactory responses.

Each request for an interconnection shall be evaluated on a case-by-case basis and shall be subject to meeting the reasonable needs of the requesting party. The requesting party may be an Independent Power Producer (IPP), another electric utility, a municipality, or a retail customer. Interconnections shall meet electric utility standards and practices, such as the North American Electric Reliability Corporation (NERC) standards, SERC Reliability Corporation (SERC), Midcontinent Independent System Operator (MISO) Business Practices Manuals and Cleco standards. The review and approval requirements detailed here shall apply to all interconnected facilities regardless of which party performs the design, construction, or installation work.

This document will be revised as needed to meet current conditions, MISO Definitive Planning Phase (DPP), MISO Business Practice Manuals, and NERC/SERC Reliability Standards. Cleco shall make this document available within five business days to the users of the transmission system, the Regional Reliability Organization, and NERC on request.

RESPONSIBILITY

Many Cleco departments play vital roles in this document including Transmission Strategy, Transmission Operations, Construction Management, T&D Engineering, Engineering Project

Management, Asset Management, Asset Performance & Analytic Engineering, and Transmission & Distribution Maintenance.

The Manager of Cleco Transmission Operation Center (CTOC) is responsible for maintaining this document.

Director – Transmission Operations,
Director–Asset Management, and the
Vice President- Engineering, Construction and Project Management

The Vice President or Directors listed above are responsible for reviewing and approving the Facility Connection Requirements document.

Manager – Transmission Reliability Operations,
Manager – Transmission & Distribution Construction
Manager – T&D Engineering
Manager – Engineering Project Management
Manager – Transmission Strategy
Manager -- Asset Performance and Analytic Engineering
Manager -- Asset Management & Reliability
Manager -- Transmission Operations and the
Manager -- Electric System Maintenance.

The Managers are responsible for implementing these requirements.

Engineers – Transmission and Distribution, Engineering, Project Management, Transmission and Distribution Construction, Transmission Strategy, Asset Performance and Analytics, Transmission Operations and Transmission Reliability Operations and ESM.

The Engineers are responsible for ensuring that Cleco's Interconnection Requirements are used in the reliable planning, design, construction and operation of the Bulk Electric System (BES).

GENERAL REQUIREMENTS

Interconnections to the Cleco transmission system shall be consistent with MISO, NERC, SERC, Cleco standards and with standard utility practices. A proposed interconnection shall not degrade the reliability, operating flexibility or safety of the existing power system. System studies will be required to evaluate the impact of the requested interconnection.
All generation and transmission interconnections shall comply with the requirements of North American Electric Reliability Corporation (NERC) and Midcontinent Independent System Operator (MISO). All new or qualified change facilities shall be confirmed by Cleco to exist within the metered boundaries of the Cleco Local Balancing Area (LBA) per MISO requirements.

TECHNICAL REQUIREMENTS FOR GENERATION, TRANSMISSION AND END-USER FACILITIES

1. INTERCONNECTION STUDIES

1.1. Cleco and/or MISO will conduct a System Impact Study (SIS), at the expense of the requesting party, as needed to substantiate system impact, reliability and capability of the transmission system with the addition of the proposed (generation, transmission or end-user facility) interconnection. If the customer agrees to move forward with the interconnection process, a Facilities Study (FS), at the expense of the requesting party, will be performed and may include, but not be limited to, power flow, system stability, protection scheme, short circuit, breaker duty, surge protection, insulation coordination, equipment ratings, system grounding, safety, voltage level, MW capacity, and MVAR capacity. Evaluation of alternatives to the proposed interconnection, such as lower voltage construction, reactive support facilities, or upgrading facilities, may be requested or conducted. Power flow analysis will include 10-year load or resource growth projections and the planned facilities needed to satisfy such requirements.

1.2. If the SIS predicts that the new interconnection will impact another transmission system, Cleco will so inform the requesting party. Cleco and the requesting party will coordinate with the appropriate parties to determine if the impact is valid and determine the facility additions that may be required to be constructed to mitigate the impact. The requesting party may have the option to modify the interconnection request to a level that can be sustained without causing an impact on another transmission system.

2. NOTIFICATION OF NEW OR MODIFIED FACILITIES MEETING “QUALIFIED CHANGE” DEFINITION

2.1. Notification of the intent to connect new facilities or qualified change to an existing facilities already connected to the Cleco transmission system should be provided through the MISO Policy Administrator at 318-484-4966 or email: cindy.guillot@cleco.com

2.2. Cleco will notify regional transmission system operator and appropriate parties affected by the "Qualified Change" that will be interconnected to the transmission system. This notification will occur when the interconnecting party agrees to proceed with construction of the interconnection facilities and prior to the energization or commercial operation date of the planned facilities.

2.3. Qualified Change will follow the definition and requirements provided by the MISO Planning Coordinator for FAC-002-4 R 6. This can be found on the public MISO website. Cleco may also consider any change in system topology, including but not limited to: adding a breaker(s), modifying zones of protection, adding a generator, or changing the bus configuration. Normal transmission upgrades such as replacing an existing breaker or relays does not constitute a qualified change.

3. VOLTAGE LEVEL AND MW/MVAR CAPACITY

3.1. Cleco Transmission System Voltages - Nominal transmission system voltages presently on the Cleco transmission are 230kV, 138kV, and 69kV. Cleco does have joint ownership of the Dolet Hills 345kV substation and 500kV transmission lines.

3.2. Interconnection Supply Voltage – the interconnecting facility supplied from the transmission system, which under normal and single transmission element outage conditions, will generally have voltages that range between 90% and 105% of nominal.

3.3. Interconnection Capacity for Load – the load connected to the transmission system cannot exceed the MW and MVAR capacity or demand levels requested and studied in the System Impact Study. If these levels need to be exceeded, another System Impact Study and Facilities Study may need to be performed.

3.4. Interconnection Capacity for Generators -- The interconnecting generator facility cannot exceed the MVA level studied in the System Impact Study. If the interconnecting generator wishes to exceed the studied MVA level, another System Impact Study, and if required a Facility Study may need to be performed. The generator owner will pay for all costs, including the studies and any resulting new facilities.

4. BREAKER DUTY AND SURGE PROTECTION

4.1. Circuit breaker minimum duty and design criteria are listed in Appendix A. Depending on the interconnecting facilities and the location of the interconnection, higher interrupting and/or continuous current ratings may be required.

4.2 Lightning Arresters shall be installed on the high and low side of all transformers. If there are no transformers at the station, then each line terminal shall have arresters installed. The

arresters shall be station class metal oxide varistor (MOV) type with a maximum continuous phase to ground (MCOV) rating of:

4.1.1. 96kV to 100kV for 138kV systems

4.1.2. 150kV to 154kV for 230kV systems

4.1.3. These ratings may be adjusted by Cleco based on the Temporary Overvoltage Capability (TOC) of the proposed arrester to be used. The manufacturer's TOC data for each arrester shall be supplied to Cleco by the interconnecting party.

5. SYSTEM PROTECTION AND COORDINATION

5.1. Cleco is not responsible for protecting the interconnected party's facilities beyond the point of interconnection. The interconnecting party is solely responsible for protecting their equipment so that faults, unbalances or other disturbances on the Cleco or the surrounding transmission systems do not damage the party's facilities. Sync check and synchronizing of the party's facilities is the sole responsibility of the interconnected facility owner. The interconnecting party's protection system shall not be solely dependent on any signals provided by Cleco. Cleco may provide or require backup protection for each party's facilities in accordance with good utility practice.

5.2. The interconnecting party's protection system associated with the point of interconnection and any protective function that is coordinated with Cleco's protection systems shall be installed and maintained so that the applied protection functions are acceptable to Cleco. The required protection functions may include any combination of current, voltage, impedance, pilot, transfer trip, powerline carrier, fiber optic and other protection scheme elements based on Cleco's protection requirements. Scheme changes are at the sole discretion of Cleco, and the interconnected party shall implement the changes in a timely manner. The described interconnecting party's protection systems shall be maintained at all times in compliance with applicable NERC standards including NERC PRC-027.

5.3. The interconnecting party's protection system associated with the point of interconnection and any protective function that is coordinated with Cleco's protection systems shall be installed and maintained so that no single point of failure causes either system to misoperate or operate in an uncoordinated manner. This includes but is not limited to DC supplies, protective relays, current signals, voltage signals control and secondary circuits. The associated DC supply system shall be installed and maintained at all times in compliance with applicable NERC standards including NERC TPL-001.

5.4. High-speed pilot primary relaying, high-speed non-pilot secondary relaying and breaker failure relaying are the minimum required for 100 kV and higher systems. Additional relaying systems may be required based on local protection requirements. The interconnecting party's Facility Study request shall include all information necessary to model the facility, evaluate the system impacts and identify the required protection elements. The Facility Study request shall include at a minimum a singleline drawing of the proposed interconnection, a single-line

diagram of the proposed facility protection system and the electrical characteristics of the facility elements.

5.5. Generating facilities when electrically connected to the transmission system are required to supply relay operating quantities necessary to reliably detect faults and to permit the protection system to isolate the faulted element from all energy sources. This requirement extends to all terminals between the generating facility and the interconnected transmission network where the generating facility is radially connected with one transmission element out of service. Redundant current differential protection will generally be required where the fault contribution from the generating facility doesn't provide adequate margins between faulted conditions and emergency facility loading.

5.6 The electrical characteristics shall include the resistance and reactance in per unit on an identified base. 100 is the preferred MVA base value. The electrical characteristics are required for the second zone of protection past the point of interconnection for load or network interconnections and the characteristics of all energy sources including the entire path between an energy source and the point of interconnection to Cleco's system. The facility study cannot begin until all required information is submitted.

5.7. Where the facility elements electrical characteristics are not specifically known, an estimated value with a tolerance range is acceptable. The interconnecting party is cautioned that either excessive tolerances or submittal of actual values later that do not fall within the studied tolerances can invalidate the study results. This may lead to project delays and additional costs to analyze the new conditions and update the protection requirements.

6. METERING AND TELECOMMUNICATIONS

6.1. General – Unless otherwise agreed by the parties, Cleco shall design, purchase and install the metering equipment to the operation of the interconnecting facilities and shall own, operate, test and maintain such equipment. Power flows to and from the interconnecting facility shall be measured in analog and/or digital form as required by Cleco. The interconnecting party shall bear all reasonable documented costs associated with the design, purchase, installation, operation, testing and maintenance of the metering equipment. If interconnecting party provided the metering equipment it shall be of the type and configuration specified by Cleco. The interconnecting party shall provide adequate space for the installation and maintenance of metering equipment. Cleco standard panel design is 32" Wide x 90" Tall x 28" Deep.

6.2. Current transformers – current transformers used for revenue metering circuits shall meet the accuracy standards, as specified under the American National Standards Institute (ANSI) C57.13, for an accuracy class of 0.3 percent at all burdens. Current transformers shall have a thermal rating factor of at least 2.0.

6.3. Voltage transformers – voltage transformers used for revenue metering circuits shall meet the accuracy standards, as specified under ANSI C57.13, of 0.3 percent accuracy with the following burdens:

6.3.1. “W” through “Y” burden for 5 kV through 25 kV; and

6.3.2. “W” through “Z” burden for 25 kV and above.

6.3.3. CCVT’s shall not be used for metering

6.4. Check Meters - the interconnecting party, at its option and expense, may install and operate, on its premise, one or more check meters to check Cleco’s meters. Such check meters shall be for check purposes only and shall not be used for the measurement of power flows. The check meters shall be subject at all reasonable times to inspection and examination by Cleco or its designee. The installation, operation and maintenance thereof shall be performed entirely by interconnecting party in accordance with Good Utility Practice.

6.5. Standards - Cleco shall install, calibrate, and test revenue quality metering equipment in accordance with applicable ANSI standards.

6.6. Testing of the Metering Equipment - Cleco shall inspect and test all metering equipment upon installation and at least once every two (2) years thereafter. If requested to do so by the interconnecting party, Cleco, at the interconnecting party’s expense, inspect or test the metering equipment more frequently than every two (2) years. Cleco shall give reasonable notice of the time when any inspection or test shall take place, and the interconnecting party may have representatives present at the test or inspection. If at any time the metering equipment is found to be inaccurate or defective, it shall be adjusted, repaired or replaced at the interconnecting party's expense, in order to provide accurate metering, unless the inaccuracy or defect is due to Cleco's failure to maintain, then Cleco shall pay. If the metering equipment fails to register, or if the measurement made by the metering equipment during a test varies by more than two percent from the measurement made by the standard meter used in the test, Cleco shall adjust the measurements by correcting all measurements for the period during which the metering equipment was in error by using the interconnecting party's check meters, if installed. If no such check meters are installed or if the period cannot be reasonably ascertained, the adjustment shall be for the period immediately preceding the test of the metering equipment as agreed to by the parties, but in no event shall the period be greater than one-half the time from the date of the last previous test of the metering equipment.

6.7. Metering Data - At the interconnecting party’s expense, the metered data shall be telemetered to one or more locations designated by Cleco and one or more locations designated by the interconnecting party.

6.8. Voice Communications – the interconnecting party shall maintain satisfactory operating communications with Cleco’s transmission system dispatcher or other designated

representative. The interconnecting party shall provide standard voice line, dedicated voice line (generator interconnections only) and facsimile communications at its control room or central facility through use of either the public telephone system or a separate voice communications system.

6.9. Data communications - The interconnecting party shall also provide the dedicated data circuit(s) necessary to provide interconnecting facility data to Cleco as required for reliable transmission system operation. Any required maintenance of such data circuit(s) shall be the responsibility of the interconnecting party. Operational communications shall be activated and maintained under, but not be limited to, the following events: system paralleling or separation, scheduled and unscheduled shutdowns, equipment clearances, and hourly and daily load data. All data communication cable, fiber optic or copper, shall conform to Cleco material and installation specifications.

6.10. Remote Terminal Unit (RTU) – Prior to the operation of the interconnecting facilities a Remote Terminal Unit shall be installed by Cleco at the interconnecting party's expense, to gather accumulated and instantaneous data to be telemetered to the Cleco Transmission Operation Center. The communication protocol for the data circuit(s) shall be specified by Cleco. Instantaneous bi-directional analog real power and reactive power flow information shall be telemetered directly to the location(s) specified by Cleco. Each party will promptly advise the other party if it detects or otherwise learns of any metering, telemetry or communications equipment errors or malfunctions that require the attention and/or correction by the other party. The party owning such equipment shall correct such error or malfunction as soon as reasonably feasible. The data for telemetry shall be as dictated by Cleco and be provided to the RTU. The interconnecting party shall provide adequate space for the installation and maintenance of communication equipment. Cleco standard panel design is 32” Wide x 90” Tall x 28” Deep.

7. GROUNDING AND SAFTEY ISSUES

7.1. The grounding system design and construction shall meet the requirements listed in Appendix E.

7.2. When making an interconnection to Cleco’s transmission system, the requesting party shall comply with applicable safety laws and building and construction codes, including provisions of applicable Federal, State, or local safety, health, or industrial regulations or codes, and the Cleco Safety Manual and programs.

7.3. Cleco will make final determination as to whether the Cleco facilities are properly protected before an interconnection is energized. The interconnecting facility owner is responsible for proper protection of their own equipment and for correcting such problems before the facilities are energized or interconnected operation begins. Cleco may determine the measures to maintain the safe and reliable operation of the Cleco transmission system.

8. INSULATION AND INSULATION COORDINATION

8.1. Power system equipment is designed to withstand voltage stresses associated with expected operation. Adding or connecting new facilities can change equipment duty, and may require that equipment be replaced or switchgear, telecommunications, shielding, grounding and/or surge protection be added to control voltage stress to acceptable levels. Interconnection studies include the evaluation of the impact on equipment insulation coordination. Cleco may identify additional requirements to maintain an acceptable level of transmission system reliability, equipment insulation margins, and safety. Voltage stresses, such as lightning or switching surges, and temporary overvoltages may affect equipment duty.

8.1.1. 138kV facilities shall be design for a Basic Impulse Insulation Level of 650kV.

8.1.2. 230kV facilities shall be design for a Basic Impulse Insulation Level of 900kV.

9. VOLTAGE, REACTIVE POWER, AND POWER FACTOR CONTROL

9.1. Voltage Schedule for Generation – The interconnecting generator shall be able to maintain the following voltage schedule. A specific voltage schedule will be provided to the interconnecting party depending on the location of the generator within Cleco's system.

9.1.1. 138kV interconnecting bus voltage – 131.1 to 144.9kV

9.1.2. 230kV interconnecting bus voltage – 218.5 to 241.5kV

9.1.3. 345kV interconnecting bus voltage – 327.8 to 362.3kV

9.1.4. 69KV interconnection bus voltage – 65.6 to 72.5kV

9.2. Voltage for Loads - It is the responsibility of the interconnecting facility owner to incorporate appropriate voltage regulation equipment in their facility if the interconnecting facility's supply voltage requirements are more restrictive than a range from 90% to 105% of nominal voltage.

9.3. Reactive Power/Power Factor for Generator - The interconnected generator shall be designed and operate to maintain a composite power delivery at the continuous rated power output at a power factor between 0.95 lagging and 0.95 leading.

9.4. Reactive Power/Power Factor for Load - The interconnected facility shall be responsible for providing their own reactive power needs in order to maintain a power factor between 0.95 lagging and 0.95 leading. All reactive resources shall be capable of operating within the

voltage limits stated in the current NERC Standards for normal and emergency conditions. Switched reactive resources shall be designed to not cause voltage transients on the system.

10. EQUIPMENT RATINGS

10.1. Equipment ratings shall be suitable for the ambient temperature range of -40° C (-40 F) to 50°C (122 F). Equipment ratings shall be sized for load and system expansion for the 20 year time frame. Equipment ratings shall comply with the latest ANSI, IEEE, NEMA, and NERC requirements and shall be in accordance with the Cleco methodology for determining facility ratings.

10.2. Cleco will provide minimum specifications for all large power transformers with a high side voltage greater than 100kV. Interconnecting party shall supply control power to transformers.

10.3. Coupling Capacitive Voltage Transformer (CCVT) minimum design criteria are listed in Appendix B.

10.4. Wave trap minimum design criteria are listed in Appendix C.

10.5. Potential Transformer (PT) and Current Transformer (CT) minimum design criteria are listed in Appendix D.

10.6. Air break disconnect switches shall be as follows:

10.6.1. 138kV system - USCO AVR-13820 (vertical break), AGCH5-13820 (center side break) and AGCH-5V13820 (vee)

10.6.2. 230kV system - USCO AVR-23020-9 (vertical break), AGCH5-23020 (center side break) and AGCH-5V23020 (vee)

10.6.3. Where motor operated air break switches are specified Pascor Atlantic MO-10 motor operators shall be installed.

11. SYNCHRONIZING OF FACILITIES

Synchronization of an interconnected synchronous generator shall be accomplished by providing suitable equipment to measure both the phase angle across the breaker and the voltage on each side of the breaker. The phase rotation shall be slowed to a near stop condition and the phase angle reduced to 10 degrees or less before interconnection is made. Under no circumstances shall Cleco alter bus voltage to allow synchronization of the interconnecting party's generator.

12. MAINTENANCE COORDINATION

12.1. Obligations – Cleco and the interconnecting party shall maintain their facilities in a safe and reliable manner in accordance with Good Utility Practice.

12.2. Coordination - Cleco and the interconnecting party shall confer regularly to coordinate the planning, scheduling and performance of preventive and corrective maintenance on the interconnecting facilities.

12.3. Secondary Systems – Cleco and the interconnecting party shall cooperate with the other in the inspection, maintenance, and testing of control or power circuits that operate below 600 volts, AC or DC, including, but not limited to, any hardware, control or protective devices, cables, conductors, electric raceways, secondary equipment panels, transducers, batteries, chargers, and voltage and current transformers that directly affect the operation of the interconnecting facilities and equipment which may reasonably be expected to impact the other party. Cleco and the interconnecting party shall provide advance notice to the other party before undertaking any work on such circuits, especially on electrical circuits involving circuit breaker trip and close contacts, current transformers, or potential transformers.

13. OPERATIONAL ISSUES

13.1. Abnormal Frequency Conditions -- It shall be the responsibility of the interconnecting facility owner to provide adequate protection or safeguards to prevent damage to Cleco caused by over/under frequency originating in the interconnected facility. The interconnecting facility owner shall provide adequate protection and safeguards to protect the interconnected facility from inadvertent over/under voltage conditions originating from the Cleco electrical system. Steady-state voltages shall be maintained within the normal and emergency limits as defined in the current NERC Standards.

13.2. Abnormal Frequency Conditions Specific for Generators – the transmission system is designed to automatically activate a load shed program in the event of an under frequency system disturbance. The interconnected generator shall implement under and over frequency relay set points to endure “ride through” capability of the transmission system. The generator’s response to frequency deviations of predetermined magnitudes shall be studied and coordinated with Cleco.

13.3. Generator Frequency Control - A speed governor system is required on all synchronous generators and inverter based resources. The governor/inverter regulates the output of the generator as a function of the system frequency. That function shall be coordinated with the governors of other resources, all located within the same control area, to assure proper system response to frequency variations. The speed governor shall incorporate droop control.

13.4. Abnormal Voltages - It shall be the responsibility of the interconnecting facility owner to provide adequate protection or safeguards to prevent damage to Cleco caused by over/under voltages originating in the interconnected facility. The interconnecting facility owner shall provide adequate protection and safeguards to protect the interconnected facility from inadvertent over/under voltage conditions originating from the Cleco electrical system. Steady-state voltages shall be maintained within the normal and emergency limits as defined in the current NERC Standards.

14. INSPECTION REQUIREMENTS FOR EXISTING OR NEW FACILITIES

14.1. Pre In-service Operation Testing and Inspection - Prior to the new interconnection facilities being placed in service, Cleco shall inspect, test, or witness the testing of the interconnecting facilities to ensure their safe and reliable operation. Similar testing may be required after initial operation. Cleco and the interconnecting party shall make any modifications to its facilities that are found to be necessary as a result of such testing. The interconnecting party shall bear the cost of all such testing, inspection, and modifications.

14.2. Post In-service Operation Date Testing and Modifications – Cleco and the interconnecting party shall perform routine inspection and testing of its interconnecting facilities and equipment in accordance with Good Utility Practice and NERC/FERC requirements as may be necessary to ensure the continued interconnection of the new facility in a safe and reliable manner. Both Cleco and the interconnecting party shall have the right, upon advance written notice, to request additional testing of the other's interconnecting facilities.

14.3. Advance Notice - Both Cleco and the interconnecting party shall notify the other party in advance of its performance of tests of the interconnecting facilities. The other party has the right, at its own expense, to observe such testing.

14.4. Right to Inspect – Cleco and the interconnecting party shall have the right, but shall have no obligation to:

14.4.1. observe the other party's tests and/or inspection of any of its system protection facilities and other protective equipment;

14.4.2. review the settings of the other party's system protection facilities and other protective equipment; and

14.4.3. review the other party's maintenance records relative to the interconnection facilities, the system protection facilities and other protective equipment.

14.5. Exercise rights - Cleco and the interconnecting party may exercise these rights from time to time as it deems necessary upon reasonable notice to the other party. The exercise or non-

exercise by a party of any such rights shall not be construed as an endorsement or confirmation of any element or condition of the interconnection facilities or the system protection facilities or other protective equipment or the operation thereof, or as a warranty as to the fitness, safety, desirability, or reliability of same.

15. COMMUNICATIONS AND PROCEDURES

15.1. General -- Operational communications between in the interconnected facility and the Cleco Transmission Operations Center shall be active and maintained under both normal and emergency conditions 24 hours per day 7 days a week including holidays.

15.2. Normal Conditions -- include, but not limited to, the following events: system paralleling or separation, scheduled and unscheduled shutdowns, equipment clearances, and hourly and daily load data.

15.3. Emergency Conditions -- are events or scenarios in which immediate action shall be taken to ensure safety, prevent equipment damage, or jeopardize the reliability of the Cleco or interconnected party's system.

15.4. Failure of Communications -- Emergency telecommunications conditions may develop that affect telecommunications equipment with or without directly affecting power transmission system facilities. Therefore, the interconnecting facility owner may provide equipment redundancy and telecommunications route redundancy to protect against certain kinds of failure and telecommunications path interruption.

15.5. Backup Communications Strategy -- Where commercial, public telephone network facilities or services support important power system telecommunications, a backup strategy shall be developed by the Requester to protect against interruption of such services. Backup methods could include redundant services, self-healing services, multiple independent routes, carriers and combinations of independent facilities such as wireline and cellular, fiber and radio, etc. Backup telecommunications system equipment such as emergency standby power generators with ample on-site fuel storage and reserve storage battery capacity shall be incorporated in critical telecommunications facilities. Backup equipment shall also be considered for certain non-critical telecommunications to provide continued operation of telecommunications during interruption of transmission services.

16 Inverter Based Resources

16.1 Inverter Based Resources (IBR) will follow the processes and requirements of MISO, NERC, FERC, SERC, Cleco, IEEE standards and with Standard Utility Practices. IBR have specific requirements found in FERC Order Number 827 (Power Factor), Order Number 842 (Primary Frequency Response), IEEE 519 and 1453.

16.2 It is recognized that certain circumstances may exist that necessitate the addition of performance criteria, specifically IEEE 2800-2022, that is considered more stringent than the default criteria specified above. Such circumstances shall be identified during the System Impact Study or operational study by Cleco or MISO for each particular generator.

16.3 Generation must ride through temporary excursions to support the grid and avoid cascading events. Consult the latest version of PRC-024 Standard.

16.4 IBR will validate units(s) performance in MOD-026 and MOD-027 within 365 days of commissioning and provide the results to the Transmission Planner.

16.5 Disturbance Monitoring shall be installed to capture performance of IBRs in response to large and small disturbances via Digital Fault Recorders (DFR) and Dynamic Disturbance Recorders (DDR) as described in PRC-002.

16.6 Voltage performance of IBR shall meet the requirements of VAR-002 and Cleco Voltage Schedule for Generating units (VAR-001). Automatic Voltage regulator (AVR) shall operate in automatic to maintain voltage at the Point of Interconnection to the transmission system.

TRANSMISSION SERVICES CONTACT

If there are any questions concerning these requirements, please telephone, email or write:

Cleco Power LLC
Marty Evans
Manager- Transmission Operation
P.O. Box 5000
Pineville, LA 71361-5000

318-484-7620

Marty.Evans@cleco.com

Appendix A

Circuit Breaker

Minimum Design Criteria (1)	Units	Breaker Voltage			
		38kV	72.5kV	138kV	242kV
Maximum Line-to-Line Voltage	kV	38	72.5	145	242
Nominal Line-to-Line Voltage	kV	34.5	69	138	230
Insulation Withstand Test Voltages					
Low Frequency - 1 minute dry	kV rms	80	160	310	425
Low Frequency - 10 seconds wet	kV rms kV	75	140	275	350
Impulse - Full Wave Withstand	crest kV	200	350	650	900
Impulse - Interrupter Full Wave	crest c kV			488	675
Impulse - Chopped Wave (2E-6 se	crest c kV	258	452	838	1160
Impulse - Chopped Wave (3E-6 se	crest	230	402	748	1040
Continuous Current Rating	A	2000	2000	2000	2000
Closing & Latching Current Capability	kA peak	82	82	104	104
3 Second Current Capability	kA rms	31.5	31.5	40	40
Rated Short Circuit Current	kA rms	31.5	40	40	40
Maximum Symmetrical Interrupting	kA rms	31.5	31.5	40	40
Maximum Interrupting Time	cycles	5	5	3	3
Maximum Closing Time	cycles	20	20	20	20
Auxiliary Control Voltages					
AC - Heaters and Motors*	V	240	240	240	240
DC - Trip & Close Circuit	V	125	125	125	125
Bushing BIL	kV	200	350-	650	900
Bushing Creepage	inches	28	42	84	140

1) Based on the results of the interconnection studies, Cleco reserves the right to modify the Minimum Design Criteria

Appendix B (1)

Coupling Capacitor Voltage Transformer

Minimum Design Criteria	Units	Coupling Capacitor Voltage Transformer		
		362kV	242kV	145kV
Maximum Line-to-Line Voltage	kV	362	242	145
Nominal Line-to-Line Voltage	kV	345	230	138
Nominal Line-to-Ground Voltage	kV	207	138	80.5
Nominal Secondary Voltages	V	69 and 115	69 and 115	67.08 and 115
Ratio		1800 and 3000	1200 and 2000	700 and 1200
Radio Influence Voltage				
Test Voltage	kV	209	140	84
Maximum Voltage	microvolts	250	250	250
1 minute overvoltage	kV	289.8	193.2	112.7
Power Frequency Withstand Test				
Dry (1 minute)	kV	785	525	320
Wet (10 seconds)	kV	680	460	275
BIL	kV	1550	1050	650
Capacitance range	picofarads	1900 to 2400	2900 to 3300	4800 to 5500
Porcelain Creepage Distance	inches	230	154	92

1) Contact Cleco for specifications for 500 KV CCVT's

Coupling Capacitor Voltage Transformer – High Capacitance (1)

1)Contact Cleco Transmission Engineering for specifications on 362 and 500 KV high capacitance CCVT's

Minimum Design Criteria	Units	High Capacitance CCVT	
		242kV	145kV
Maximum Line-to-Line Voltage	kV	242	145
Nominal Line-to-Line Voltage	kV	230	138
Nominal Line-to-Ground Voltage	kV	138	80.5
Ratio		1200 and 2000	700 and 1200
Nominal Secondary Voltages	V	69 and 115	67.08 and 115
Radio Influence Voltage			
Test Voltage	kV	140	84
Maximum Voltage	microvolts	250	250
1 minute overvoltage	kV	193.2	112.7
Power Frequency Withstand Test			
Dry (1 minute)	kV	525	320
Wet (10 seconds)	kV	460	275
BIL	kV	1050	650
Capacitance range	picofarads	10000 - 25000	16500 - 20800
Porcelain Creepage Distance	inches	154	92

Appendix C (1)

Minimum Design Criteria	Units	Wave Trap		
		362kV	242kV	145kV
Maximum Line-to-Line Voltage	kV	362	242	145
Nominal Line-to-Line Voltage	kV	345	230	138
Nominal Line-to-Ground Voltage	kV	207	138	80.5
Continuous Current Rating	A	2000	2000	2000
Short Time Current Rating	kA	63	63	63
Main Coil Inductance	mH	0.265	0.265	0.265
Radio Influence Voltage				
Test Voltage	kV	209	140	84
Maximum Voltage	mV	250	250	250
Self Resonance Frequency	Hz	>500	>500	>500
Tuning Range	kHz	100 to 300	100 to 300	100 to 300 or 50 to 200
Precision of Tuning	%	+/- 0.5	+/- 0.5	+/- 0.5
Blocking Impedance	Ohms	400	400	400
Varation of Blocking Characteristic	%	<2	<2	<2
Impulse Withstand	kV	80	80	80
Mechanical Strength	kA	160	160	160

Wave Traps

1) Contact Cleco for specifications for 500 KV wave traps.

Appendix D
Potential Transformer (1)

		Potential Transform r				
Minimum Design Criteria	Units	362kV	242kV	145kV	38kV	38kV
Maximum Line-to-Line Voltage	kV	362	242	145	38	38
Nominal Line-to-Line Voltage	kV	345	230	138	34.5	34.5
Nominal Line-to-Ground Voltage	kV	207	138	80.5	20.125	24
Ratio		1800 and 3000	1200 and 2000	700 and 1200	175 and 300	200 and 346
Nominal Secondary Voltages	V	69 and 115	69 and 115	67.08 and 115	67.08 and 115	69.3 and 120
Thermal burden						
One secondary	VA	5000	5000	5000	2500	2500
Divided between secondaries	VA	7500	7500	7500	3000	3000
Impulse						
Full wave withstand	kV crest	1300	900	550	200	200
Chopped wave (3 x 10-6 sec)	kV	1500	1035	630	230	230
Power Frequency Withstand Test						
Wet (10 seconds)	kV rms	555	385	230	95	95
BIL	kV	1300	900	550	200	200
Applied potential Test						
Primary	kV rms	575	395	230	70	70
Secondaries	kV rms	2.5	2.5	2.5	2.5	2.5
Porcelain Creepage Distance	inches	205	135	79	26	26

Current Transformer (1)

Minimum Design Criteria	Units	Current Transformer			
		362kV	242kV	145kV	38kV
Maximum Line-to-Line Voltage	kV	362	242	145	38

Nominal Line-to-Line Voltage	kV	345	230	138	34.5
Nominal Line-to-Ground Voltage	kV	207	138	80.5	20.125
Ratio		1000/2000:5	1000/2000:5	1000/2000:5	400/800:5
BIL	kV	1300	900	550	200
Continuous Thernal Rating Factor		2	2	2	2
Short Time Mechanical Rating	kA	40	40	40	40
Minimum Leakage Distance	inches	205	135	79	26

1) Contact Cleco for specifications for 500 KV PT's and CT's

APPENDIX E

GROUNDING SYSTEM DESIGN AND CONSTRUCTION

1.1 The substation grounding system shall be designed to protect personnel and equipment during faults. All substation equipment, structures and metallic conduits shall be connected to the grid. The design calculations and soil resistivity test data shall be submitted to Cleco for approval. The ground grid shall be designed in accordance with IEEE 80, NEC, or NESC whichever is more stringent but at a minimum meet the following requirements. Software such as SES or WinIGS (or other software approved by Cleco) may be used.

1.1.1 Maximum clearing time: ..... 0.417 sec.

1.1.2 Minimum ground fault grid current: (unless higher fault currents dictate requirements above and beyond those specified) ..... 40 kA 1.1.3 Soil Resistivity: ..... to be determined by Contractor

1.1.4 Ground rods: ..... Per design and at breaker and lightning arrester.

1.1.5 Grid size: ..... The grid shall extend 3 ft outside the substation fence.

1.1.6 Grid Burial depth: ..... 1.5 ft 1.1.7

Grid conductor (minimum size) ..... Bare 4/0

1.2 All steel structures shall have a hole for a ground clamp approximately 8" above grade.

1.3 The fencing shall be grounded at all corner posts, fence posts, and where the internal grid crosses the fence.

1.4 All below grade connection shall be exothermic type.

1.5 All switch stands shall have ground clamps on two diagonal legs. Clamps shall be provided such that a 4/0 copper ground cable can be run up to the vertical operating pipe. A flexible braided strap shall be clamped from the switch stand ground to the switch's vertical operating pipe. Also, a 4/0 ground lead shall be exothermically welded to the switch stand ground and clamped onto the 30" x 36" grounding mat.

1.6 For all duct systems, two 1/0 copper ground cables shall be run through the top corner conduits (or attached to the top corners in trench type systems). A tail from the station grid shall protrude through the concrete bottom of all manholes and connect to both of these ground cables. In trench type systems, the two ground cables shall be connected to the ground grid approximately every 100'. This connection shall be an exothermic type connection. Both of these cables shall be connected to the ground bus in the control house junction box.

1.7 For all breakers, PTs, CTs, CCVTs and associated junction boxes, a 1/0 ground wire shall be run from the ground wires in the duct system, clamped along the conduits to the equipment, then terminated on the equipment grounding lug.

1.8 The control house, equipment cabinets and panels shall be solidly grounded from two separate points on the station grid (one per duct entrance).

1.9 All shield wires connecting to dead end structures shall be bonded to a 4/0 ground cable running up the tower leg. The connection shall be made with a tinned bronze clamp.

1.10 All excavations shall be backfilled by compacting the native soil into the excavation (trench) in lifts not to exceed nine inches. The minimum acceptable density of the compacted backfill is that of the existing undisturbed soil. Special care shall be exercised while compacting the first lift to ensure that the soil is compacted tightly around the grounding conductor such that no void exists.

1.11 A Cleco representative shall inspect all below grade grounding before backfilling. There shall be no exceptions. Failure to allow for inspection shall be cause for uncovering the grounding at the Contractor's expense.

1.12 Lightning Protection - Overhead shield wires and lightning masts installed on the takeoff towers shall be provided for protection from direct lightning strikes. Freestanding lightning mast shall also be supplied, if required, to protect the substation. The shield system shall be tied into the substation ground grid. The lightning protection design shall be per IEEE 998 Guide, Classical Empirical Method.

1.13 The grounding system shall be tested in accordance with IEEE Std. 81 by an outside testing contractor approved by Cleco and paid for by the interconnecting party.

APPENDIX F

CONNECTIONS TO TRANSMISSION LINES

1.1. Proposed connections to the Cleco transmission system are subject to approval on a case-by-case basis.

1.2. Connections to transmission lines shall meet the following minimum criteria:

1.2.1. A proposed interconnection to a transmission line, whenever possible, shall be connected at an existing substation provided the requesting party builds out the substation to provide a bay to connect. Such build out shall be subject to Cleco approval. Spare bays in existing substations generally shall not be available to requesting parties for interconnection. Interconnects at a new location on an existing line shall require the requesting party to provide a substation site suitable for breakers, relaying and transformer installations.

1.2.2. The interconnecting transmission lines shall have overhead ground wire (OHGW) shielding over the entire length of the line.

1.3. If the interconnecting party does not require highly reliable service, the use of line sectionalizing devices may be employed. Only gas insulated circuit breakers shall be installed in the line sectionalizing positions for all interconnected substations. These circuit breakers would be used to de-energize line sections without interruption of the connected loads. Cleco would assume ownership of the sectionalizing breakers. The bus configuration shall provide isolation of the interconnection while maintaining the integrity of the Cleco system by employing a bypass breaker similar to a three terminal ring bus configuration.

1.4. Parties constructing transmission lines shall submit verification that the transmission line structures and foundations have been, or shall be, designed in accordance with Good Utility Practice.

2024 Facility Connections Requirements

Final Audit Report 2024-07-10

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