RCP-NERC-FAC-001-ATT-A City of Lake Worth Beach	
Referencing Documents: NERC-FAC-001-4	**Revision Rev. 5** **Revision Date: 09/20/2025**

Facility Interconnection Requirements

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1. PURPOSE

These Requirements are considered to be supplemental technical requirements to the procedures and requirements set forth in the REGIONAL ENTITY Guideline: Facility Interconnection Requirements, and the procedures and requirements set forth by FERC and NERC. To the extent that there is a conflict between these Requirements and the current requirements of REGIONAL ENTITY, FERC, or NERC, then the REGIONAL ENTITY, FERC, or NERC requirements will govern.

2. SCOPE

These requirements apply to any entity seeking to interconnect facilities to the City of Lake Worth Beach Electric Utility system, including but not limited to:

- Independent power producers and generation developers
- Transmission Operators or neighboring utilities
- Large commercial or industrial customers with generation or significant demand that may impact electric system reliability

These Technical Interconnection Requirements ("Requirements") apply to all generator interconnections ("Interconnection" or "Interconnections"), regardless of size, for which the point of interconnection is the PLANT. These Requirements shall be applied on a comparable basis to all generators within this scope. These Requirements specify the minimum technical requirements intended to ensure a safe, effective and reliable interconnection. The requirements outlined in this document

may not cover all details in specific cases. Lake Worth Beach Electric Utilities reserves the right to revise these Requirements from time-to-time to comply with any requirements of from the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), state, or other governmental authorities with jurisdiction. Interconnections must comply with the updated Requirements [If the Interconnection does not comply, Lake Worth Beach Electric Utilities may disconnect the Interconnection after proper notification]

3. CONSTRUCTION AND OWNERSHIP

Following the execution of the respective Standard Generator Interconnection Agreement (SGIA), engineering, design and construction activities will commence according to the construction schedule documented in the SGIA. Lake Worth Beach Electric Utilities and INTERCONNECTING PARTY, have entered into a Shared Facilities Agreement as co-tenants for the shared facilities and as such the Shared Facilities Agreement will provide the pertinent details and requirements regarding the construction and ownership activities for the new generation interconnection.

4. INTERCONNECTION REQUIREMENTS

A. GENERAL REQUIREMENTS

Throughout the remainder of this document a number of national standards and guidelines (e.g. ANSI/IEEE) are referenced, the latest revision of these standards and guidelines, or the applicable superseding standard, shall govern the requirements of the Interconnections. The

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Interconnections must also comply with the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements.

An Interconnection shall not violate nor cause the Lake Worth Beach Electric Utilities electric system to violate the applicable NERC Reliability Standards.

In addition, the equipment associated with the Interconnection should be in accordance with the practices described in the latest revision of the following ANSI/IEEE Standards or Guides or the applicable superseding standard.

- General Requirements for Synchronous Machines, ANSI C50.10
- Requirements for Salient Pole Synchronous Generators and Condensers, ANSI 50.12
- Requirements for Cylindrical-Rotor Synchronous Generators, ANSI C50.13
- Requirements for Combustion Gas Turbine Driven Cylindrical-Rotor Synchronous Generators, ANSI C50.14
- Guide for Generator Ground Protection, ANSI/IEEE C37.101
- Guide for AC Generator Protection, ANSI/IEEE C37.102
- Guide for Abnormal Frequency Protection for Power Generating Plants, ANSI/IEEE C37.106
- Guide for Interfacing Dispersed Storage and Generation Facilities with Electric Utility Systems, ANSI/IEEE Std. 1001
- Standard for Interconnecting Distributed Resources with Electric Power Systems, IEEE 1547
- IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems, IEEE Std. 519
- American National Standard for Electric Power Systems and Equipment-Voltage Ratings (60Hz), ANSI/IEEE C84.1
- Recommended Practice for Measurement and Limits of Voltage Fluctuations and Associated Light Flicker on AC Power Systems, IEEE 1543
- IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits, IEEE Std. C62.41.2
- IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V or less) AC Power Circuits, IEEE Std. C62.45

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- Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems, ANSI/IEEE Std. C37.90.1
- Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers, ANSI/IEEE Std. C37.90.2
- Guide for Safety in AC Substation Grounding, IEEE 80
- Recommended Practice for Grounding of Industrial and Commercial Power Systems, IEEE 142
- Guide for Identification, Testing and Evaluation of the Dynamic Performance of Excitation Control Systems, IEEE Std. 421.2

B. SYSTEM PROTECTION REQUIREMENTS

Each Interconnection shall incorporate equipment to detect system abnormalities or disturbances in either the Interconnection customer's system or the Utilities system. This equipment shall have the capability to isolate the sources of the disturbance. At a minimum, the Interconnection customer shall install adequate protective devices to:

- Detect and clear short circuits on Lake Worth Beach Electric Utilities facilities serving the interconnecting facilities.
- Detect the voltage and frequency changes which can occur if Lake Worth Beach Electric Utilities facilities serving the interconnecting facilities are disconnected from the main system and clear any generation/load from the isolated system if necessary.
- Prevent reclosing generation to Lake Worth Beach Electric Utilities, after an incident of trouble until authorized by Lake Worth Beach Electric Utilities' Control Center.
- Isolate the Interconnection from Lake Worth Beach Electric Utilities' electric system upon:
- Receipt of a direct trip signal from the upstream TOP substation
- Failure of the communications channel used for direct tripping
- Receipt of a trip command from the TOP Control Center via supervisory control and data acquisition (SCADA).

The Interconnection customer is solely responsible for the design that affects its facility, including generation and connected load.

The equipment associated with the Interconnection should be protected in accordance with the practices described in the latest revision of the following ANSI/IEEE Standards or Guides. There may be special requirements imposed by Lake Worth Beach Electric Utilities due to the specific project or application.

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- Guide for Protective Relay Applications to Power Transformers, ANSI/IEEE C37.91
- Guide for Protective Relaying of Utility- Customer Interconnections, ANSI/IEEE C37.95
- Guide for Protective Relay Applications to Power System Busses, ANSI/IEEE C37.97
- Guide for Generator Ground Protection, ANSI/IEEE C37.101
- Guide for AC Generator Protection, ANSI/IEEE C37.102
- Guide for Abnormal Frequency Protection for Power Generating Plants, ANSI/IEEE C37.106
- Guide for Interfacing Dispersed Storage and Generation Facilities with Electric Utility Systems, ANSI/IEEE Std. 1001

The Interconnection shall be able to withstand Electromagnetic Interference (EMI) environments in accordance with latest revision of ANSI/IEEE Std. C37.90.2. The associate systems and protection systems shall not mis-operate due to EMI, including handheld communication devices.

The following interconnection relays would be required at a minimum:

- Over-voltage (59)
- Under-voltage (27)
- Over/Under frequency (81O/81U)
- Two zone Distance, Phase and Ground (21). On short transmission lines or installations where the Lake Worth Beach Electric Utilities interconnection substation and the customer's Interconnection substation are adjacent, differential relay(s) may be substituted
- Ground Overcurrent Relay (51TN)
- Transformer Differential Relay (87T)
- Breaker Failure Initiate from all appropriate protective relays
- Reverse Power (32)
- Synchronize Check (25X)
- Speed Matching (15) for Induction generators

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The following additional protection functions may be suggested or required to coordinate with the protective systems of Lake Worth Beach Electric Utilities:

- Out-of-Step (68)
- Breaker Failure Relay (50BF)
- Voltage Balance (60)
- Phase Sequence (47)
- Transfer Trip (TT)
- Directional Overcurrent (67)

All protective relays shall be “Utility Industry Grade” protective relays. These relays have more stringent tolerances and more flexible, widely published characteristics than “industrial quality” relays.

All protective devices supplied to satisfy the requirements of this section shall be equipped with operation indicators (targets) or shall be connected to an annunciator or event recorder so that it will be possible to determine, after the fact, which devices caused a particular trip.

1. Redundant/Backup Relaying

   The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for redundant relaying.

   Relays protecting the Lake Worth Beach Electric Utilities’s Energy System shall be designed to ensure that the failure of a single protective relay will not result in failure to clear the fault. The design shall provide the necessary backup that will meet the Lake Worth Beach Electric Utilities standards and regional protection requirements.

   Lake Worth Beach Electric Utilities requires primary and secondary protective relaying, including independent primary and secondary communications paths for transmission lines.

2. Coordination & Testing of Protective Devices

   Lake Worth Beach Electric Utilities shall review the generator, main transformer, main breakers, synchronizing and any other interface equipment protection schemes and the setting and certified test records for these protective devices. The proposed settings for these devices shall be submitted no less than 60 days prior to implementation. Acceptance will not be unreasonably withheld. Any Changes required by Lake Worth Beach Electric Utilities, will be made prior to final acceptance, and Lake Worth Beach Electric Utilities shall be provided with final copies of the reviewed drawings and settings.

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The interconnection customer shall not make any substantial modifications or alterations to its facility or any modifications to the protective devices or setting of the devices without written notice and acceptance from Lake Worth Beach Electric Utilities at least 60 days before the proposed change is to be made. All relaying equipment shall be kept under seal, which shall be broken only when the relays are to be tested or adjusted, or subject to in section by Lake Worth Beach Electric Utilities.

All protective devices supplied to satisfy the requirements of this section shall be tested by qualified personnel at intervals at least as frequent as those used by Lake Worth Beach Electric Utilities for the relays protecting the facilities serving the interconnection facilities. Special tests may also be requested by Lake Worth Beach Electric Utilities to investigate apparent misoperations. Each routine or special test shall include both the calibration check and an actual trip of the circuit breaker from the device being tested. A report of each test shall be prepared and sent to Lake Worth Beach Electric Utilities listing the tests made and the “as found” and “as left” calibration values.

a. Synch-Check Requirements

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for synchronization of generators to the transmission system.

The Interconnection design shall incorporate adequate facilities to enable the on-site generation to be synchronized with the Lake Worth Beach Electric Utilities electric system and TOP Transmission system. The interconnection customer shall solely be responsible for synchronizing the generator to the system. At TOP’s discretion or Lake Worth Beach Electric Utilities’s discretion, all occurrences of synchronizing the generator shall be preceded with advance notification, of not less than one full clock hour, provided to TOP Control Center and Lake Worth Beach Electric Utilities Control Center.

C. FREQUENCY CONTROL

Frequency control of the interconnected generation facility will be addressed by:

- FERC Order 842, or
- Applicable Regional Standard

D. INSULATION REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for equipment insulation levels.

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The interconnection customer shall design the Interconnection such that it is adequately protected from surges. Industry standard Basic Insulation Level (BIL) ratings shall be used for the Interconnection and electric interface equipment.

E. GROUNDING REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for substation and equipment grounding.

The Interconnection must be designed to provide adequate grounding. The ground grid must be designed according to the latest revision of IEEE 80.

The Interconnection grounding scheme will not cause over-voltages that exceed Lake Worth Beach Electric Utilities equipment ratings or interconnection equipment ratings and shall not disrupt ground fault protection coordination.

The Interconnection design shall be such that Lake Worth Beach Electric Utilities will be able to ground and test any Lake Worth Beach Electric Utilities owned or serviced equipment. This may require the Interconnection customer to pay for and install approved grounding equipment at the facility.

F. COMMUNICATIONS REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for communications.

G. METERING & INDICATION REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for metering and supervisory control and data acquisition (SCADA).

H. VOLTAGE REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for voltage performance.

1. Steady State Voltage

The Interconnection shall not cause the Lake Worth Beach Electric Utilities electric system to violate the Lake Worth Beach Electric Utilities voltage criteria or voltage ranges defined in the latest revision of ANSI std. C84.1 Range A (plus or minus 5% of nominal) If real-time voltage measurements violate the Lake Worth Beach Electric Utilities voltage criteria and the Interconnection is causing or contributing to the violation, the Interconnection will be immediately disconnected. The Interconnection will remain disconnected until it can be verified through real-time studies by Lake

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Worth Beach Electric Utilities and TOP that the restoration of the Interconnection would not cause violation of the Lake Worth Beach Electric Utilities voltage criteria.

a. Automatic Voltage Regulation

The Interconnection shall adhere to the latest revision, if any, to NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for automatic voltage regulation.

b. Power Quality/Harmonics Requirements

The Interconnection shall adhere to the latest revision, if any, to NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for power quality and harmonics.

I. POWER SYSTEM STABILIZER REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, to NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for power system stabilizers.

J. FAULT CURRENT

The Interconnection shall adhere to the latest revision, if any, to NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for fault currents.

The facilities study will identify the highest level of available fault current at the point of interconnection. The interconnection customer's facilities should be designed to accommodate reasonable increases in the available fault current, which may occur over time due to changes on the TOP transmission system.

K. OPERATING REQUIREMENTS

The generator shall be operated in accordance with the latest requirements of NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities.

The Interconnection shall also adhere to REGIONAL ENTITY Guideline: Facility Interconnection Requirements, any TOP or Lake Worth Beach Electric Utilities Operating Guides and any additional operating requirements either stated herein or mutually agreed to elsewhere.

Lake Worth Beach Electric Utilities and the interconnection customer shall each identify one representative to serve as the coordination contact to be the initial point of contact and coordinate communications between the parties for both normal and emergency conditions. Lake Worth Beach Electric Utilities and the interconnection customer shall notify each other in writing of the personnel that it has appointed as its coordination contact.

Lake Worth Beach Electric Utilities and the interconnection customer shall abide by their respective switching and tagging rules for obtaining clearances for work or for switching

operations on equipment. Such switching and tagging rules shall be developed in accordance with OSHA Standards. Lake Worth Beach Electric Utilities and the interconnection customer shall develop mutually acceptable switching and tagging rules for Lake Worth Beach Electric Utilities' and the interconnection customer's facilities that involve common clearance requirements.

The interconnection customer shall not be permitted to energize a de-energized Lake Worth Beach Electric Utilities circuit and will follow lockout/tagout procedures.

The interconnection customer will follow Lake Worth Beach Electric Utilities and TOP defined outage processes and shall not commence parallel operation of generator(s) until final written notice has been given by Bishop Hill Energy II, LLC.

1. Abnormal/Emergency Conditions

   If required by Good Utility Practice to do so, Lake Worth Beach Electric Utilities or TOP may require the interconnection customer to interrupt or reduce output if the Interconnection could adversely affect the ability of Lake Worth Beach Electric Utilities and/or TOP to safely and reliably operate and maintain the electric system.

L. MAINTENANCE/INSPECTION REQUIREMENTS

The Interconnection shall adhere to the latest revision, if any, to NERC, REGIONAL ENTITY, TOP and Lake Worth Beach Electric Utilities standards and requirements for maintenance and inspection.

The interconnection customer must complete field-testing of all their electrical equipment prior to energization. Testing of equipment must be completed by qualified personnel according to manufacturers' recommendations and shall include testing of all protective relays and control systems according to manufacturer's recommendations. Lake Worth Beach Electric Utilities reserves the right to inspect the interconnection customer's facilities and witness test any equipment or devices associated with the Interconnection. The interconnection customer shall submit a written, detailed procedure with specific requirements for initial commissioning of the interconnection customer's generation and interconnecting facilities for Lake Worth Beach Electric Utilities approval.

The interconnection customer shall maintain its interconnection facilities and any generating equipment that could negatively impact the Lake Worth Beach Electric Utilities system in good order. Lake Worth Beach Electric Utilities reserves the right to inspect the interconnection customer's facilities on a periodic basis or whenever it appears that the Interconnection is operating in a manner hazardous to Lake Worth Beach Electric Utilities' system integrity.

Lake Worth Beach Electric Utilities and the interconnection customer may, in accordance with good utility practices, remove from service facilities or network upgrades as necessary to perform maintenance, test, and install or replace equipment. Lake Worth Beach Electric Utilities and the interconnection customer will use reasonable efforts to coordinate outages for maintenance on dates and times mutually acceptable to both parties.

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M. PUBLICLY AVAILABLE INTERCONNECTION RESOURCES

To support transparency and accessibility, the City of Lake Worth Beach Electric Utility maintains and references the following public-facing interconnection resources:

FMPA Facility Interconnection Requirements
URL (PDF): https://fmpa.com/wp-content/uploads/2023/12/FAC-001-FAC-002-FMPA-8_FacilityInterconnectionReqs_12272023.pdf
Summary: As the Planning Coordinator for Lake Worth Beach Electric Utility, the Florida Municipal Power Agency (FMPA) has published interconnection guidance applicable to all its member cities. This document outlines requirements for generation and transmission-level interconnections, including modeling data submission, voltage support, study coordination, and reliability analysis.

N. CONTACT AND REQUEST INFORMATION

Entities seeking to initiate an interconnection with the City of Lake Worth Beach Electric Utility must contact the Utility Engineering Department to request detailed interconnection procedures, technical criteria, and study requirements.

Phone:(561)533-7300
Email:electricutility@lakeworthbeachfl.gov
Mailing Address:
City of Lake Worth Beach Electric Utility
1900 2nd Avenue North
Lake Worth Beach, FL 33461-4204

O. CLOSING STATEMENT

The City of Lake Worth Beach Electric Utility is committed to maintaining a safe, secure, and reliable electric system through transparent and coordinated interconnection practices. These Facility Interconnection Requirements are reviewed and updated regularly to reflect current engineering standards, operational needs, and regulatory obligations under NERC Reliability Standard FAC-001-4.

Entities seeking to interconnect are encouraged to contact the Utility Engineering Department with any questions or to request additional information regarding applicable procedures, technical specifications, or system impact assessments. The City values collaborative planning and looks forward to working with all partners to ensure reliable system performance and compliance with regional and national standards

Latest Revision Approval: (Revision History)

Written By: NAES Corporation Date: 9/20/2025

Approved By: City of Lake Worth Beach Date: 9/20/2025

REVISION HISTORY LOG
RCP-NERC-Plant Name

Rev.	Date	Description	By Initials	Approval Initials
1	5/20/22	Program Update	NC	Joseph Bogaert
2	5/22/23	Annual Review	NC	Joseph Bogaert
3	5/16/24	Annual Review	NC	Joseph Bogaert
4	5/20/25	Annual Review	NC	Joseph Bogaert
5	9/20/2025	CIP Senior Manager Review	NAES Corporation	Jason Bailey