



Control Number: 35077



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September 17, 2020

Filing Clerk
Public Utility Commission of Texas
1701 N. Congress Avenue
P.O. Box 13326
Austin, TX 78711-3326

RE: Project No. 35077, ERCOT Standard Generation Interconnection Agreement between CenterPoint Energy Houston Electric, LLC and HO Clarke Generating, LLC

To whom it may concern:

Enclosed for filing in Project No. 35077 is the ERCOT Standard Generation Interconnection Agreement (SGIA) Amendment dated September 10, 2020 between CenterPoint Energy Houston Electric, LLC and HO Clarke Generating, LLC. Also enclosed are the SGIA Amendment Provisions agreed to by the parties. This filing is made pursuant to 16 Tex. Admin. Code § 25.195(e).

Respectfully submitted,

Mickey Moon
Assistant General Counsel
CenterPoint Energy Houston Electric, LLC

Enclosures: (1) Executed SGIA Amendment Provisions

Project No. INT-19-343-A

**AMENDMENT ONE TO
ERCOT STANDARD GENERATION INTERCONNECTION AGREEMENT**

This Amendment One ("Amendment") to the PES1 Project Electric Reliability Council of Texas Standard Generation Interconnection Agreement, (the "SGIA") dated December 17, 2019, is made between **HO Clarke Generating, LLC** ("HO Clarke Generating") and **CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC** ("CenterPoint Energy"), (collectively, "the Parties") effective on the 1st day of September, 2020. In consideration of the mutual promises and undertakings herein set forth, HO Clarke Generating and CenterPoint Energy agree to amend the SGIA as follows:

Exhibit "C" dated December 17, 2019 is replaced with the Exhibit "C" dated September 1, 2020, which is attached to this Amendment One.

Except as otherwise expressly provided for herein, the SGIA will continue in full force and effect in accordance with its terms.

HO Clarke Generating and CenterPoint Energy have caused this Amendment to be executed in several counterparts, each of which shall be deemed to be an original but all shall constitute one and the same instrument.

CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC

DocuSigned by:
By: David J. Lesar
41F0FA6DD0A8F494
Name: David J. Lesar
Title: CEO
Date: September 17, 2020

HO Clarke Generating, LLC

DocuSigned by:
By: Mike Alvarado
FF3AAZ083F854F7
Name: Mike Alvarado
Title: SVP
Date: September 10, 2020

Exhibit “C”
Interconnection Details

- 1) Plant Name: HO Clarke Generating, LLC (“Plant”).
- 2) Point of Interconnection Location
 - A) TSP system side of Plant’s terminating structure(s)/transmission voltage circuit breaker(s)/disconnect switch(es) inside Generator’s GIFSUB, located at 12584 Hiram Clarke Road, Houston, Texas 77045 Harris County, Texas.
- 3) Delivery Voltage: 138 kV
- 4) Number and Size of Generating Unit(s)
 - A) Plant will be comprised of eight (8) generators with a total net rating of 408 MW (“Planned Capacity”), which is projected to be the Plant’s Net Dependable Capability, as defined by ERCOT Requirements.
- 5) Type of Generating Unit
 - A) Description
 - B) Eight (8) GE LM6000 natural gas fired combustion turbine generators rated at approximately 51.0 MW each. Each electric generating unit has its own 138 kV step-up (main power) transformer, with the 13.8 kV winding connected to plant auxiliary transformers as well as the unit’s generator through one common generator breaker.

Natural gas combustion turbines				
Description	Manufacturer	Rating (@97°F)	GSU Transformer Voltages	
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
LM6000	GE	51.0 MW	13.8kV – 138 kV	Natural Gas
Total nominal gross MW:		408 MW		

- C) Step-up, standby and auxiliary transformers connected at Delivery Voltage will have one common circuit breaker for isolation from the TIF.
 - D) Electrical characteristics of Plant’s generating units shall be in accordance with the most recent version of data that Generator has provided to TSP and shall be consistent with data provided to ERCOT.
- 6) Metering Equipment
 - A) TSP shall provide and install ERCOT Polled Settlement (EPS) primary and check meters, 138 kV instrument transformers and associated wiring required for measuring the output of the Plant’s generation and auxiliary electrical load at TSP’s TIFSUB Substation. The 138 kV metering instrument transformers for the EPS metering shall be procured by TSP and owned, maintained, and replaced by TSP. TSP shall install and maintain the

metering system's components in a manner consistent with ERCOT Requirements and the PUCT Substantive Rules.

7) Generator Interconnection Facilities (GIF)

- A) Generator shall furnish, operate, and maintain a complete generation facility capable of generating the Planned Capacity, including, but not limited to, all generators, power system stabilizers, generator step-up transformers, protective devices, and other transformers and associated foundations, the terminating structures, all relays necessary for the protection, synchronization and coordination of the generators, generator auxiliary equipment and the disconnect switches and foundations at the Point of Interconnection.
- B) The generation unit(s) shall meet all voltage and reactive requirements as outlined in the ERCOT Protocol, ERCOT Operating Guides and other binding documents.
- C) Generator shall furnish, own and maintain the connection from Plant's equipment to Plant's terminating structure at the Point of Interconnection, including phase conductors, static conductors, structure(s), tower fittings, suspension insulators, terminating clamps and line conductor terminal fittings.
- D) TSP shall provide to Generator the TSP's alpha/numeric identifiers for incoming 138 kV transmission lines and shall provide TSP's alpha/numeric identifiers for high voltage circuit breakers, switches, power transformers, generators and certain low side equipment and the TSP's assigned 6-character substation identification for the GIF ("NEWSUB"). The GIF high voltage circuit breakers, switches, transformers, generators and certain low side equipment, shall be identified with TSP's identifiers. TSP will develop a substation basic one-line diagram that includes these identifiers. The Generator shall mark these identifiers on the substation equipment. TSP may stencil identification numbers on substation equipment and mount signs, labels, drawings, telephone numbers, and instructions on the GIF. The Generator shall use TSP's assigned substation name, or Substation ID, and equipment identifiers in discussions with TSP and in RARF submittals.
- E) Generator shall provide the foundations, terminating structures and disconnecting devices at the Point of Interconnection. Generator shall design and install the Plant's terminating structure(s), and disconnecting devices in accordance with TSP's conductor loading requirements.
- F) Generator shall connect its generating Plant ground mat to TSP's transmission tower static wires at the Plant's terminating structures. Static wire(s) shall be bonded directly to the generating plant's ground mat via use of dedicated grounding conductor(s) of adequate ampacity to establish main electrical bond(s).
- G) Electrical characteristics of Plant's Generator Interconnection Facilities shall be in accordance with the most recent version of TSP's "Specification for Customer 138 kV Substation Design" attached as Exhibit "H" and in particular, the section pertaining to "Generation".
- H) Generator shall provide a disconnect switch located on Generator's terminating structure(s) for connection to TSP's System.
- I) Generator shall provide NEMA four-hole pads on Plant's disconnect switch for connection to NEMA four-hole pads on TSP's connecting conductors.
- J) Generator shall grant to TSP all necessary land rights, in a form acceptable to and drafted by TSP.

- K) Generator shall own all protective relays, instrument transformers, instrumentation, and control equipment physically located on Plant side of the Points of Interconnection.
- 8) TSP Interconnection Facilities (TIF)
- A) Generator shall facilitate conveyance to TSP, and TSP shall purchase, fee title to the property for the TIFSUB Substation at an agreed price that shall not be greater than the market price as determined by an independent appraisal, the cost of said appraisal shall be split evenly between Generator and TSP. TSP shall subsequently construct the TIFSUB Substation on real property at the location shown in Exhibit "F".
 - B) TSP shall complete its entire scope of work on the TIFSUB Substation (except for Punch List Items) including, but not limited to, bus works, supports, structures, circuit breakers, disconnect switches, relays, and other equipment necessary for protection and coordination, controls, and wiring all as necessary to provide an interconnection between Plant's generation facilities and TSP's System; energize the same, and interconnect with Plant, all as provided herein.
 - 1) Punch List Items are defined as those non-material items of work that remain to be performed in order to ensure full compliance with this Agreement. Punch List Items do not include any items of work, alone or in the aggregate, non-completion of which (i) prevents the TIFSUB Substation from being used for its intended purposes as described in this Agreement or in accordance with applicable laws; (ii) prevents the TIFSUB Substation from being legally, safely, and reliably placed in commercial operation; or (iii) in the exercise of reasonable engineering judgment could have an adverse effect on the operation, efficiency, or reliability of the TIFSUB Substation, or its ability to transmit the Plant's power to the ERCOT grid.
 - C) TSP shall furnish, own, and maintain the connection from TSP's equipment to Plant's terminating structure(s) at the Point of Interconnection, including phase conductors, static conductors, structures, tower fittings, suspension insulators, terminating clamps and line conductor terminal fittings with NEMA standard four-hole flat pads for attachment to the NEMA four-hole pads on Plant's disconnecting device.
 - D) TSP shall furnish, own, and maintain the connection from TIFSUB Substation to TSP's transmission system.
 - E) TSP shall develop and install transmission improvements that it determines, in its sole discretion, are foreseeable and reasonably necessary to safely, reliably, and economically integrate the Plant into the TSP System. TSP MAKES NO PROMISE, REPRESENTATION, OR WARRANTY AS TO WHETHER THE TSP SYSTEM WILL BE FREE OF CONSTRAINTS AT ANY TIME, INCLUDING BUT NOT LIMITED TO TIMES WHEN THE TRANSMISSION IMPROVEMENTS UNDER THIS AGREEMENT ARE BEING MADE OR AFTER THEIR COMPLETION.
 - F) TSP shall expand its existing TIFSUB Substation as shown on the drawing entitled "CenterPoint Energy 138 kV TIFSUB Substation, Substation Development Plan for HO Clarke Generating, LLC Project Interconnection Agreement – Final Proposed Offer," dated 05-09-2019 ("TIFSUB Substation Development Plan") and any subsequent modifications to such drawing(s) made by TSP and delivered to Generator.
 - G) Generator shall facilitate to TSP all necessary land rights, in a form acceptable to and drafted by TSP.

9) Communications Facilities

- A) TSP shall provide and maintain, at TSP's expense, a communication circuit for real-time data transmittal via SCADA equipment from the TIFSUB Substation to TSP's Energy Management System.
- B) Generator shall provide a fiber optic communication interface device on its end of the fiber and TSP will provide a fiber optic communication interface device on its end of the fiber associated with the RTU inputs between Plant and the TIFSUB Substation.
- C) Generator shall furnish RTU inputs identified in Exhibit "C", Paragraph 11)A) from the Plant to the TIFSUB Substation's communication interface point.
- D) Generator shall provide a voice telephone extension outlet in close proximity to Plant's relay panel that is located within the Plant. Such telephone extension outlet shall be connected to the local exchange carrier's telephone system; however, the telephone extension outlet may be connected to Plant's internal telephone system, provided Plant's internal telephone system is equipped with an uninterruptible power supply system.
- E) TSP shall furnish RTU inputs identified in Exhibit "C", Paragraph 11)B) from TIFSUB Substation to Plant's communication interface termination point.
- F) TSP shall provide fiber optic communication cables of sufficient length to connect between Plant to the TIFSUB Substation relay panel.

10) System Protection Equipment

- A) Generator shall provide two sets of protective relaying accuracy (C800) current transformers on Generator's 138 kV circuit breakers associated with the protective relaying between Plant and the TIFSUB Substation. Each set of current transformers will provide signals to independent sets of primary and backup protective relays for the interconnecting lead between the GIF and the TIFSUB Substation. The current transformer ratio will be approved by the TSP relay protection engineer and reflected on the Generator's drawings.
- B) The fiber optic communication cables will have strands of single mode fiber optic cable to be utilized at 1300 nm wavelength for communication of protection data and telemetry.

11) Telemetry Requirements

- A) TSP shall furnish a substation SCADA RTU at the TIFSUB Substation. The RTU will be multi-port equipped and operate with protocols compatible with TSP. The RTU will be equipped to monitor the TIFSUB Substation as outlined in Paragraph 11 and control circuit breakers in the TIFSUB Substation. TSP shall also furnish the RTU inputs, such as contacts and transducers, in the TIFSUB Substation. Selected real-time data of the TIFSUB Substation will be available at TSP's RTU for Generator's use. TSP's RTU will be equipped with a DNP-3 "Slave" serial communication port for this purpose. TSP shall furnish the fiber optic cable(s) between the TIFSUB Substation and the Plant RTU or DCS "Master" serial communication port for this purpose.
- B) Generator shall furnish Plant data to TSP's RTU communication port at the TIFSUB Substation as referenced below. The Generator's RTU/DCS shall be equipped with a DNP-3 "Slave" serial communication port for this purpose. TSP shall furnish the fiber optic cable between the Plant and the TIFSUB Substation RTU "Master" serial communication port for this purpose.
- C) Generator shall provide Plant data to ERCOT according to ERCOT requirements. TSP is not responsible for providing Plant data to ERCOT.

- D) Generator shall provide to TSP at TSP's TIFSUB Substation the following signals originating at Generator's Plant:
- 1) Analog Data from Plant
 - (i) Kilovolts for each collector bus (single line-to-line value).
 - (ii) Net megawatts for each generator feeder (three phase).
 - (iii) Net megavars for each generator feeder (three phase).
 - (iv) Net megavars for the reactive support equipment.
 - (v) Kilovolts for 138 kV transmission voltage (A phase).
 - (vi) Net megawatts and megavars for the 138 kV transmission line (three phase).
 - (vii) Frequency at the collector bus
 - (viii) Megawatts and megavars for each 138 kV transformer (three phase).
 - 2) Status Data from Plant
 - (i) Status of the 138 kV transmission voltage circuit breakers.
 - (ii) Status of all 13.8 kV circuit breakers for feeders and reactive support equipment.
 - (iii) Status of generator automatic voltage regulator (automatic and manual).
- E) TSP will provide to Generator at Generator's {GIFSUB}_ Substation the following signals originating at TSP's {TIFSUB}_ Substation:
- 1) Analog Data from TSP Substation Devices
 - (i) Kilovolts for the Point of Interconnection (A phase).
 - (ii) Megawatts, megavars, and megawatt-hour data.
 - 2) Data from TSP Substation Devices
 - (i) Status of transmission voltage circuit breakers associated with the generator lead(s).
 - (ii) Alarm for failure of Pilot Wire/fiber optic relaying communication channels, if applicable.

12) Supplemental Terms and Conditions

- A) The following drawings are attached and made a part of this agreement as Exhibit "F" – Attached Drawings. *(Note: The drawings contain a line of demarcation between TSP provided facilities and Generator provided facilities).*
- 1) CenterPoint Energy 138 kV Project / TIFSUB Substation for HO Clarke Generating Project Interconnection Agreement – Final Substation Development Plan Basic Offer, dated 05-09-2019.
 - 3) Basic Offer –HO Clarke Generating Project / TIFSUB Substation Interconnection Agreement One-Line Relaying and Metering Diagram dated 05-09-2019, drawing number 1-STD-GEN-, sheets 1 through 1 of 1.
- B) Cost Responsibility:
- 1) Notwithstanding the provisions of Exhibit "A", Section 8.1, the amount of the contribution in aid of construction, if any, that Generator may be required to make, shall be specified in Exhibit "E", Security Arrangement Details.
 - 2) The Generator does not desire any enhancements to TSP's basic offer interconnection facilities and therefore no contribution in aid of construction ("CIAC") of the Transmission Interconnection Facilities is required.
 - 3) The TIF described herein is designed based on the generating capacity provided by the Generator. It is assumed that the generating facility will be capable of generating the Planned Capacity by the Scheduled Commercial Operation Date specified in Exhibit "B". Within the first 12 months following Commercial Operation, if the

highest level of Actual Capacity is less than the Planned Capacity, the Generator shall be responsible for TIF costs, if any, that are determined, solely by the TSP, to have been incurred to accommodate Generator's Planned Capacity, but are then determined to not be necessary to accommodate Generator's Actual Capacity. As used here, "Actual Capacity" shall mean the Plant's total Net Dependable Capability, as determined or accepted by ERCOT, in accordance with ERCOT Requirements. Generator shall pay such costs determined herein within thirty (30) days following the receipt of TSP's invoice.

C) Authorization to Proceed:

- 1) Generator authorizes TSP to begin work on any required transmission system additions, modifications, and upgrades and the TIFSUB Substation additions, modifications, and upgrades secured by this agreement except that, TSP will not, without prior written approval from Generator, incur any costs and expenses in excess of \$7.45M; and
- 2) (i) until released to do so by Generator. Such release shall be provided in the form of a Notice to Proceed.

D) Clarifications to Exhibit "A"

- 1) The Parties agree that at the time of executing this Agreement the references to the PUCT Rules contained within certain definitions set forth in Exhibit "A", "Article 1. Definitions" have the meanings ascribed to such terms as established in the current PUCT Rules. The Parties recognize that the PUCT Rules are amended from time to time by the PUCT. The parties also acknowledge that ERCOT issues ERCOT Requirements in which terms are redefined from time to time. When the PUCT Rules or ERCOT Requirements are amended and terms defined in Exhibit "A", "Article 1. Definitions" are affected by such amendments, the Parties agree that such terms shall have the meanings as amended by the PUCT or ERCOT. The term "System Security Study" shall have the same definition as "Security Screening Study" in the ERCOT Requirements.

E) Miscellaneous

- 1) Each Party shall be solely responsible for keeping itself informed of, and understanding its respective responsibilities under, all applicable North American Electric Reliability Corporation ("NERC") Standards and ERCOT Requirements and all valid, applicable laws, rules, regulations and orders of, and tariffs approved by, duly constituted Governmental Authorities.
- 2) CenterPoint Energy has documented data specifications that define the operational data CenterPoint Energy requires to perform real-time monitoring. These specifications are incorporated in Section E above, Exhibit 'J' Outage and Clearance Coordination Procedure, and Exhibit 'I' Telemetry Specification.
- 3)
- 4) Each Party's personnel, contractors, subcontractors, and agents shall abide by and comply with the other Party's reasonable safety requirements and procedures while in areas designated as under that other Party's control.
- 5) In the event that Generator's personnel, contractors, subcontractors, or agents cause delays in the work schedule of TSP, Generator shall reimburse to TSP the additional costs associated with such delays within 30 days of receipt of an invoice for such costs.

- 6) Generator understands and agrees that identification of any, including but not limited to stability, oscillation, harmonic, short circuit, over frequency, under frequency, over voltage, under voltage, phase imbalance, or geomagnetic disturbance conditions that may affect Generator's Plant and implementation of any associated protective measures, are the sole responsibility of Generator.
- 7) ERCOT Requirements.
 - (i) Unless expressly stated herein, where the ERCOT Requirements are in conflict with TSP's specifications or procedures, the ERCOT Requirements shall prevail.
 - (ii) ERCOT requirements currently require installation of power system stabilizers on generators.
 - (iii) Prior to commercial operation, ERCOT may verify that the Generator is meeting ERCOT Requirements, including complying with Guide and Protocol requirements on RARF modeling, telemetry and testing, as well as complying with reactive standards, the provision of accurate stability models, and the installation of power system stabilizers, if required. It should be noted that the Generator will not be able to go into commercial operation until after 30 days after the TIF is modeled and energized. Failure to meet these ERCOT Requirements may result in delays to commercial operation.
- 8) All generator data, including data for stability studies (transient and voltage) and subsynchronous resonance data, as required by the ERCOT Requirements, shall be provided to ERCOT and the TSP before commercial operation. This data shall be updated when the Plant begins commercial operation. Any updates to this information will be provided within 60 days to ERCOT and the TSP as changes or upgrades are made during the life of the Plant. This requirement applies to all future owners of the Plant. The Generator and any future owners of the Plant shall comply with these data requirements along with all applicable NERC Standards. Such Standards are subject to change from time to time, and such changes shall automatically become applicable based upon the effective date of the approved change.
- 13) Special Operating Conditions, if any, attached: None.
- 14) Cost Estimate Differences, if applicable:
 - A) The difference between the estimated cost of the TIF under 4.1.A (\$__N/A____) and the estimated cost of the TIF under 4.1.B (\$__N/A____) is: __N/A__, if applicable.