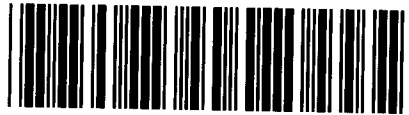




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**PUC Project No. 35077**

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**Amendment No. 2**

**INTERCONNECTION AGREEMENT**

**Between**

**LCRA Transmission Services Corporation**

**and**

**Goldthwaite Wind Energy LLC**

**Dated**

**December 20, 2013**

438

**AMENDMENT NO. 2 TO THE  
INTERCONNECTION AGREEMENT  
BETWEEN  
LCRA TRANSMISSION SERVICES CORPORATION  
AND  
GOLDTHWAITE WIND ENERGY LLC**

This Amendment No.2 to the Interconnection Agreement between LCRA Transmission Services Corporation and Goldthwaite Wind Energy LLC (this "Amendment") is made on this 20<sup>th</sup> day of December, 2013 by and between LCRA Transmission Services Corporation ("Transmission Service Provider"), and Goldthwaite Wind Energy LLC ("Generator"). Transmission Service Provider and Generator are each sometimes hereinafter referred to individually as "Party" or both referred to collectively as "Parties."

**WITNESSETH**

WHEREAS, Transmission Service Provider and Generator are parties to that certain Standard Generation Interconnection Agreement effective August 3, 2012, as amended by that certain Amendment No. 1, executed as of June 3, 2013 (the "Interconnection Agreement");

WHEREAS, the Interconnection Agreement provides terms and conditions that allow for the amendment to the Interconnection Agreement as mutually agreed by the Parties; and

WHEREAS, the Generator has requested to change the model and quantity of wind turbines for phase 2 of the project;

NOW, THEREFORE, in consideration of the foregoing premises and the mutual covenants set forth herein, the Parties agree as follows:

**I. CAPITALIZED TERMS**

Capitalized terms used but not otherwise defined herein shall have the meanings specified in the Interconnection Agreement, as amended and supplemented by this Amendment.

**II. AMENDMENT TO THE AGREEMENT**

- 1) The terms of this Amendment shall become effective on the date first written above, subject to Governmental Authority approval, if required.

- 2) Exhibit "C" (Interconnection Details) attached to the Interconnection Agreement is hereby deleted and replaced with Exhibit "C" attached hereto to show the change in power rating and the phase in of the generating units
- 3) Exhibit "C2" (One Line Diagram) attached to the Interconnection Agreement is hereby deleted and replaced with Exhibit "C2" attached hereto to show the change in power rating and number of the generating units.

### **III. RATIFICATION OF OTHER TERMS**

All other terms and conditions of the Interconnection Agreement which are not specifically amended by this Amendment shall remain unchanged and are hereby ratified by the Parties and shall continue to be in full force and effect.

IN WITNESS WHEREOF, the Parties have caused this Amendment to be executed in two (2) counterparts, each of which shall be deemed an original but both shall constitute one and the same instrument.

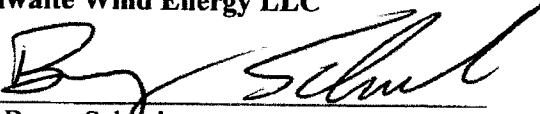
#### **LCRA Transmission Services Corporation**

By:   
Ray Pfefferkorn, P.E.  
LCRA Transmission Engineering Manager



Date: 11/20/13

#### **Goldthwaite Wind Energy LLC**

By:   
Bryan Schueler  
Vice President

Date: November 20<sup>th</sup>, 2013.



## **Exhibit "C"**

### **Interconnection Details**

1. Name: Goldthwaite Wind Energy
2. Point of Interconnection location: The Point of Interconnection is located at 131 US Highway 183 South, Goldthwaite, TX 76844 within the LCRA TSC Goldthwaite Substation. The Point of Interconnection, shown on Exhibit "C1" and Exhibit "C2", shall be the physical point where the LCRA TSC Goldthwaite Substation facilities are connected to the Generator facilities. This point is more specifically defined as being located at the 4-hole spade terminals on the dead-end assembly where the Generator's 138kV line connects to LCRA TSC's interconnect structure.
3. Delivery Voltage: 138 kV
4. Number and size of Generating Units ("The Plant"): The Plant is a wind generation facility with one Point of Interconnection to the grid. The Plant rating will be approximately 149 MW of AC power at the Point of Interconnection and will be constructed in two phases.

#### **Phase I**

141.1 MW from 83 wind turbines at 1.7 MW each

#### **Phase II**

7.5 MW from 3 wind turbines at 2.5 MW each

5. Type of Generating Unit: GE 1.7 MW and 2.5 MW, 60 Hz wind turbine generator system
6. Metering and Telemetry Equipment:
  - A). ERCOT settlement metering will be located at the TSP's 138 kV Goldthwaite Substation as part of the TSP Interconnection Facilities. 138 kV extended range, metering current transformers will be used to accurately read the generation energy and power delivered to the grid and the auxiliary energy and power consumed through the Point of Interconnection. 138 kV metering accuracy potential transformers will also be installed by the TSP for the ERCOT settlement metering. The ERCOT settlement metering panel furnished by the TSP will be located in the TSP's Goldthwaite Substation
  - B). A multi-ported RTU (remote terminal unit) will be furnished by the TSP at the TSP Substation as part of the TIF and will have a dedicated communication port available

to provide applicable breaker status, energy and other telemetered data to the Generator's monitoring and control systems. The Generator is responsible for determining and providing all their RTU communications needs.

C). Multi-ported RTU(s) will be furnished by the Generator at the Generator's interconnection substation(s) as part of the GIF and will have dedicated communication port(s) available to provide breaker status, energy and other telemetered data to the TSP's monitoring and control systems to meet the TSP's needs. The Generator will provide communication path(s) for the TSP's port(s) as described in Item 9 below.

7. Generator Interconnection Facilities: The Generator will provide as a minimum, the following major equipment for the Generator Interconnection Facilities:

A). One 795 ACSR, 138 kV circuit approximately 4 miles in length with single-mode, 24 pair, fiber optics (OPGW) shield wire and necessary material to dead-end and connect to TSP's A-frame structure at the TSP Substation ;

B). A full tension, dead-end, 138 kV line structure located near the TSP Substation property line (Generator shall coordinate the height of this structure, the arrangement of the phases, and the location of the structure with LCRA TSC);

C). 138 kV slack span from the Generator's full tension dead-end to the TSP's interconnect structure

D). Generator's interconnection substation(s) including 138 kV step-up transformer(s), transformer protection package(s), 138 kV circuit breaker(s), 138 kV line disconnect switch(es), and protective relaying panels for the Generator's 138 kV line that will coordinate with the TSP's line panels at the TSP Substation for the Generator line protection;

E). Multi-ported RTU(s) and panels to provide breaker status, telemetry and energy data from the Generator's interconnection substation(s) to the Plant, the TSP, Generator and ERCOT;

F). Fiber optic cable (24 pair, single-mode, fiber optics OPGW) or other data communications link reasonably acceptable to TSP from Generator's interconnection substation(s) control building to the TSP Substation control building complete with OPGW splice cable boxes, facility entry cable and fiber patch panels on each end for fiber utilization by both Generator and TSP; and

G). Associated structures, buswork, conductor, connectors, grounding, conduit, control cable, foundation work, perimeter fencing, grading/dirt work and any appurtenances necessary for construction and operation of Generator Interconnection Facilities.

8. Transmission Service Provider Interconnection Facilities: The TIF shall consist of the following:

- A). Additions and modifications to the existing LCRA TSC Goldthwaite Substation;
- B). One substation A-frame structure (TSP's interconnect structure) within TSP Substation for Generator's 138 kV slack span line termination;
- C). One 138 kV circuit breaker, associated line surge arresters, switches and protective relaying panels at the TSP Substation for the Generator's 138 kV line;
- D). ERCOT settlement metering panel;
- E). 3-138 kV Metering CT's; and
- F). 3-138 kV Metering Class Potential Transformers.

The above lists are not intended to be complete lists of all facilities that are part of the TIF.

9. Communications Facilities: Generator shall, in accordance with ERCOT Requirements and Good Utility Practice, provide communications facilities that are, or may in the future be, necessary for effective interconnected operation of the Plant and Generator Interconnection Facilities with the transmission system. The Generator will own, and be responsible for installation, operation, and maintenance of fiber optic communication facilities between the Generator's transmission voltage substations and the TSP's 138 kV Goldthwaite Substation complete with cable splice boxes, facility entry cable and fiber patch panels on each end for utilization by both Generator and TSP. LCRA TSC will provide Generator with space in the Goldthwaite Substation control house to terminate the Generator fiber optic communications. The Generator will provide the dedicated channels or fiber pairs for necessary items including Generator's 138 kV line protective relaying, RTU ports for TSP, telemetry, voice, and special protection system communications. Voice communications provided by the Generator shall at a minimum include one POTS (plain old telephone service) voice circuit in the Generator's substation control buildings.

10. System Protection Equipment:

A). Generator will provide a line protection panel for Generator's 138 kV line at the Generator's facilities, which will coordinate with the LCRA TSC line panel at the LCRA TSC Goldthwaite Substation.

B). Generator will be responsible for the proper synchronization of its facilities with the LCRA TSC transmission system, in accordance with ERCOT guidelines.

C). The Plant and the Generator Interconnection Facilities shall be designed to isolate any fault, or to disconnect from or isolate any abnormality that would negatively affect the

ERCOT system. The Generator shall be responsible for protection of its facilities. In particular Generator shall provide relays, circuit breakers, and all other devices necessary to promptly remove any fault contribution of the generation equipment to any short circuit occurring on the TSP system. Such protective equipment shall include, without limitation, a disconnect device or switch with the appropriate interrupting capability to be located within the Generator Interconnection Facilities. In addition to faults within the Plant and the Generator Interconnection Facilities, Generator shall be responsible for protection of such facilities from such conditions as negative sequence currents, over or under frequency, sudden load rejection, over or under voltage, generator loss of field, inadvertent energization (reverse power) and uncleared transmission system faults.

D). The Plant and the Generator Interconnection Facilities shall have protective relaying that is consistent with the protective relaying criteria described in the ERCOT Requirements and NERC standards. If reasonably requested by the TSP, Generator shall, at its expense, provide corrections or additions to existing control and protective equipment required to protect the ERCOT system or to comply with government, industry regulations, or standard changes.

E). The Generator's protective relay design shall incorporate the necessary test switches to enable complete functional testing. The required test switches will be placed such that they allow operation of lockout relays while preventing breaker failure schemes from operating and causing unnecessary breaker operations and tripping generator units.

F). Generator shall install sufficient disturbance and fault monitoring equipment to thoroughly analyze all system disturbances of the generation system. This equipment shall monitor the voltages at major nodes of the system, current at major branches, breaker and switch positions, and enough of the dc logic in the relay control scheme to analyze a system disturbance. The TSP shall provide for disturbance and fault monitoring equipment in its 138 kV Goldthwaite Substation. The disturbance and fault monitoring for both Generator and TSP shall be consistent with the disturbance monitoring requirements described in the ERCOT Requirements and NERC standard.

G). Prior to modifying any relay protection system design or relay setting involving the connecting facilities between the two Parties, Generator shall submit the proposed changes to the TSP for review and approval. TSP's review and approval shall be for the limited purpose of determining whether such proposed changes are compatible with the ERCOT transmission system.

H). In accordance with Good Utility Practice and ERCOT and NERC standards, the TSP shall determine requirements for protection of the Point of Interconnection and the zone of protection around the Point of Interconnection and shall specify and implement protection and control schemes as necessary to meet such requirements. Generator shall have the right to review and comment on the necessary protection requirements, and such comments shall not be unreasonably refused by the TSP when determining such requirements. The TSP shall coordinate the relay system protection between Generator and the ERCOT system.

I). Additionally, the Generator shall provide in PSSE or Aspen One-Liner format the short circuit model for the Generator Interconnection Facilities, the generators and collector facilities prior to the protective relays settings being calculated and in no case later than 60 days prior to the initial actual in-service date. Generator data submitted in accordance with Section 7.3 of Exhibit "A" shall include, but not be limited to, (1) a detailed one-line diagram of the proposed Plant and Generator Interconnection Facilities showing the collector buses and their voltages, (2) conductor types and lengths of all lines connecting the collector buses to the TSP Substation, (3) the total number of turbines to be served by each collector bus, (4) size, make and model of individual turbines, (5) capacitor bank sizes, locations (electrical) and control settings, and (6) the impedance and rating data of each transmission voltage line, GSU and/or autotransformer that will be installed to get power from the Plant and onto the transmission grid.

11. Inputs to Telemetry Equipment: GIF disconnect devices status, Generator's 138 kV line protection/relay status, and Generator's 138 kV line MegaWatts, MegaVars, KiloVolts and Amperes.

12. Supplemental Terms and Conditions:

A). Device Numbers, Switching and Clearance:

(a) Generator shall obtain prior approval of the TSP before operating any transmission voltage circuit switching apparatus (e.g. switches, circuit breakers, etc.) at the Generator Interconnection Facilities, whether for testing or for operations of the Plant, which approval shall not be unreasonably withheld, conditioned or delayed.

(b) The TSP shall coordinate switching at the Point of Interconnection. Each Party shall be responsible for operations of their facilities.

(c) In the event the Generator desires to have the ability to operate any directly connected TSP facilities for emergency operations switching, the TSP will provide transmission switching training to Generator personnel along with a copy of the TSP's transmission operations procedure manual ("Red Book") and any subsequent amendments thereto. Generator personnel or their designated agents that are to perform switching of the directly connected TSP facilities must be on the TSP authorized switching list. Generator and the TSP agree to conduct all switching operations of any directly connected TSP facilities in accordance with the Red Book, as it may be changed by the TSP from time to time.

(d) Generator and TSP will collaborate and reach mutual agreement on the establishment of: i) unique name(s) for the Generator's substations, unit main transformers and switching station(s) connected at transmission voltage; ii) device numbers for all transmission voltage switches and breakers which will be owned by Generator; and iii) unique names for Generator's generating units, in accordance with ERCOT Requirements. Generator will submit to TSP, within thirty (30) days after execution of this Agreement, its proposed name(s), as referenced in this paragraph. Generator will register the name(s) of the facilities specified in this paragraph and Generator-owned device numbers at ERCOT, in accordance with ERCOT Requirements, and such names and device numbers will be consistent with the names and numbers mutually agreed upon pursuant to this paragraph. Generator will not change any of the

names or device numbers, established pursuant to this paragraph, without written approval of TSP. Generator will label the devices, referenced in item (ii) above, with the numbers assigned to such devices.

(e) Each Party will keep records of maintenance and switching operations of control and protective equipment associated with this interconnection and will allow the other Party reasonable access to inspect such records.

B). No Retail Sale of Electricity to Generator by TSP: TSP considers the energy and power that the Plant and Generator Interconnection Facilities may from time to time consume from the 138 kV ERCOT grid through the Point of Interconnection to be a retail transaction and as such, the TSP does not intend to be the provider of this retail service. Generator shall make necessary arrangements with the appropriate retail supplier for the energy and power that the Plant and Generator Interconnection Facilities may consume from the 138 kV ERCOT grid through the Point of Interconnection.

C). Notification:

(a) Upon written request from TSP, Generator shall notify the TSP in writing as to which ERCOT Qualified Scheduling Entity the Plant will be scheduling through.

(b) Upon written request from TSP, Generator shall supply notification to the TSP identifying their retail service provider 120 days prior to the In-Service Date and Generator shall supply notification to the TSP 60 days prior to any changes in retail service provider, thereafter.

(c) In the event of any interruption of service, TSP shall provide prompt notice to Generator of cause of such interruption and an estimation of when the Plant may be re-connected to the TSP.

13. Special Operating Conditions:

A). Quality of Power. Generator shall provide a quality of power into the TSP system consistent with the applicable ERCOT Requirements and NERC guidelines.

B). Harmonics. The Generator's alternating current generating system must have a frequency of 60 Hz, be designed for balanced three-phase operation, not cause unreasonable imbalance on the ERCOT system or the TSP Switchyard equipment, and adhere to the recommendations in Institute of Electrical and Electronic Engineers Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems (IEEE 519), or its successor.

C). Voltage, Frequency and Reactive Support.

(a) Generator shall have and maintain the reactive capability as required in the ERCOT Requirements.

(b) Generator shall be able to remain online during voltage disturbances up to the time periods and associated voltage levels set forth in the ERCOT requirements for Low Voltage Ride Through (LVRT) capability.

(c) The Generator shall be equipped with both frequency and voltage controls and shall be operated in synchronism with the TSP's system with such controls in service. Generator shall notify the TSP at any such time that such controls are out of service.

D). ERCOT Operating Arrangements. A special ERCOT-approved operating arrangement such as a Remedial Action Plan or Special Protection System may be required either prior to, or after, Commercial Operation. The terms "Remedial Action Plan" and "Special Protection System" shall have the meanings as set forth in the ERCOT Requirements. TSP and ERCOT will examine the need and feasibility of these arrangements in cooperation with the Generator. In the event that ERCOT determines that such an arrangement is required, then TSP, ERCOT, and Generator will cooperate to design and install the necessary facilities, to be operational for the duration of the period where such Remedial Action Plan or Special Protection System may be necessary.

E). Back-up Power during Point of Interconnection Outage. The Generator acknowledges that this Point of Interconnection may not always be available due to maintenance or other outage activities and at these times of unavailability the loss of both generator output and power delivery to the Generator will not be the responsibility of the TSP. The Generator is responsible for providing any back-up power sources that it may require due to the unavailability of this Point of Interconnection for any period of time.

# **Exhibit "C2"** **One Line Diagram – TSP Interconnection Facilities, Generation** **Interconnection Facilities and The Plant**

