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April 24, 2015

**Via Electronic Filing**

Gail L. Mount
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, North Carolina 27603

Re: Docket No. EMP-91, Sub 0
North Carolina Renewable Power-Lumberton, LLC

Dear Clerk Mount:

Enclosed for filing is a Verified Application for Amendment of the Certificate of Public Convenience and Necessity and Registration as a New Renewable Facility. Registration Exhibits B, C, and E are marked confidential and are submitted under seal because these documents contain proprietary and confidential information pursuant to N.C. Gen. Stat. § 132-1.2.

Thank you for your assistance. Please contact me if you have any questions.

Sincerely,

/s/ Katherine E. Ross

Enclosure

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

Docket No. EMP-91, Sub 0

| | | |
|---|---|---|
| In the Matter of the Application of<br>North Carolina Renewable Power-Lumberton, LLC<br>for an Amended Certificate of Public Convenience<br>and Necessity and Registration as a New<br>Renewable Energy Facility | )<br>)<br>)<br>)<br>) | VERIFIED APPLICATION |

Pursuant to North Carolina Utilities Commission ("Commission") Rule R8-64 and R8-65, as applicable, and Rule R8-66, North Carolina Renewable Power-Lumberton, LLC ("NCRP-Lumberton" or "Applicant") hereby respectfully requests the Commission: (i) Amend the Certificate of Public Convenience and Necessity (CPCN), which is the subject of a pending Joint Petition for Transfer to NCRP-Lumberton, to certificate a renewable resource fueled generation facility; and (ii) Accept the Registration of the NCRP-Lumberton as a New Renewable Energy Facility. The Petitioners have discussed this Application with the Public Staff, including the multi-fuel and combined heat and power information, and the Public Staff has indicated that it does not object to the Amendment to the CPCN and that it will recommend Registration as a New Renewable Energy Facility.

**A. Amendment of Certificate of Public Convenience and Necessity**

(i) NCRP-Lumberton is a Delaware limited liability company authorized to do business in North Carolina. NCRP-Lumberton's principal office is located at 2100 South Bridge Parkway, Suite 585 Birmingham, AL 35209; telephone number (609) 389-2813. John C. Colucci is authorized to act as corporate agent. NCRP-Lumberton is a wholly-owned operating entity of GRP North Carolina, LLC, a Delaware limited liability company

("GRPNC"). GRPNC is wholly-owned by Georgia Renewable Power, LLC, a Delaware limited liability company. Both GRPNC and GRP are authorized to do business in North Carolina.

(ii) Correspondence in connection with this Application should be sent as follows:

John C. Colucci
North Carolina Renewable Power – Lumberton, LLC
2100 SouthBridge Parkway, Suite 585
Birmingham, AL 35209
ccolucci@greenfuelsenergy.com
(609) 389-2813

with copies to

Katherine E. Ross
Parker Poe Adams & Bernstein LLP
301 Fayetteville Street, Suite 1400
Raleigh, NC 27601
katherineross@parkerpoe.com
(919) 835-4671

The Applicant and Counsel agree to electronic service.

(iii) The NCRP-Lumberton facility is the subject of a CPCN for a 35 MW coal-fired merchant power plant located in Lumberton, North Carolina ("Facility"). NCRP-Lumberton fully acquired the Facility from Lumberton Investments 1, LLC on March 26, 2015, subject to transfer of the CPCN by this Commission. The Facility ceased operation as a coal-fired plant in June 2009. The Facility was developed by Cogentrix and was designed, constructed and operated to combust coal exclusively. No renewable energy resource has been used to fuel the Facility to date.

(iv) The Applicant is in the process of retrofitting the Facility to burn a biomass resource that is a mix of wood waste, hereinafter referred to as "Wood Biomass", and poultry waste combined with wood shavings, straw, rice hulls, or other bedding material, and herein after referred to as "Poultry Litter". The Applicant is

investing in excess of $20 million to rework, renovate, upgrade and repower the Facility, including the following work:

- upgrades to the fuel yard to handle the renewable resources as fuel, including creating separate handling areas for wood biomass and poultry litter;
- modifications to material handling equipment for Wood Biomass and Poultry Litter;
- modifications to existing boiler for fuel change to renewable resources;
- upgrades to the ash handling systems;
- upgrades to air system including;
- modifications to fuel handling systems and fuel bins;
- upgrades to ash handling system;
- addition of soot blowers;
- removal, extensive repair and overhaul of turbines and all pumps and motors;
- removal and rebuilding of cooling tower; and
- fire safety systems brought on line and upgraded for repowering

(v) The Applicant is negotiating the amendment and assignment of the Renewable Power Purchase Agreement (PPA) dated July 2, 2012 between Poultry Power USA #2 and Duke Energy Progress, Inc. (Duke Progress). Pursuant to the PPA, Duke Progress will purchase all of the energy generation output of the Facility and a portion of the renewable energy certificates generated by the Facility. The Applicant has filed self-certification as a Small Power Producing Qualify Facility with the Federal Energy Regulatory Commission (FERC). The certification was accepted in FERC Docket Number QF14-400 and a copy was filed in this docket on March 31, 2015.

(vi) The retrofitting of the Facility began in December 2014 and repowering is expected to occur in May 2015. After construction, the Facility will generate both electricity and useful thermal energy. The Facility's initial projected dependable capacity

is 20,000 kW net electric generation and 212 MMBtu/hr net thermal generation. The Applicant intends to make further modifications that will increase the projected dependable capacity to 35,000 kW net electric generation and 352 MMBtu/hr net thermal generation over the next twenty-four months. The Facility's maximum nameplate capacity is 35 MW electric generation.

(vii) The Applicant requests that the CPCN be transferred to a Small Power (SP) docket and be amended to reflect certification for a 35 MW renewable resource fueled generation facility.

**B. Registration as a New Renewable Energy Facility**

In support of its Registration as a New Renewable Energy Facility pursuant to Rule R8-66 ("Registration"), the Applicant states as follows:

(viii) The Applicant incorporates by reference each paragraph (i) through (vii).

(ix) The E911 address of the Facility is 1866 Hestertown Road, Lumberton, NC, Robeson County. The estimated GPS coordinates of the center of the Facility are 34.589, -79.002.

(x) A map of the location of the Facility is attached as Registration Exhibit A.

(xi) NCRP-Lumberton is the owner of the real property on which the Facility is sited and is the owner of the Facility.

(xii) The following is a complete list of federal and state permits anticipated to be required for the retrofitting and operation of the facility:

- The Facility has a Title V air permit which permits the use of biomass as a fuel source. NCRP-Lumberton is amending the permit to incorporate the use of poultry litter. Issuance of the amended permit by the North Carolina Department of Environment and Natural Resources, Division of Air Quality is anticipated in the second quarter of 2015.

- The Facility has an existing individual National Pollutant Discharge Elimination System (NPDES) Permit for the waste water pond and discharge. The NPDES is being transferred to NCRP-Lumberton.

- The Facility has an existing individual stormwater permit which is being transferred to NCRP-Lumberton.

- Form 7460-1 will be submitted to the Federal Aviation Administration (FAA) for review if a new stack is constructed that meets requirements for notification of the FAA.

- The Facility has been self-certified as a Small Power Producer Qualifying Facility with FERC.

Copies of permits will be filed upon receipt.

(xiii) The Facility has not previously operated using a renewable resource as fuel and is anticipated to begin operating in May, 2015.

(xiv) Duke Progress will read the Facility's energy production meters for the purpose of renewable energy certificate issuance.

(xv) The Facility will participate in NC-RETS.

COMBINED HEAT AND POWER INFORMATION

(xvi) The Facility includes two boilers which will both operate on 100% biomass fuel made up of a mixture of Wood Waste and Poultry Litter and a 35-MW turbine generator. Registration Exhibit B is a one-line diagram of the electrical and thermal generation systems and is filed under seal because the document contains proprietary and confidential information pursuant to N.C. Gen. Stat. § 132-1.2.

A data acquisition system will measure and record (1) net electricity to the grid (meter); (2) flows (by meter) and temperature (by thermocouple) in the circulating water to and from adjacent hot water host GRP PowerFiber, LLC, which will operate a wood drying and sanitization plant; and (3) pressure (transmitter), temperature (thermocouple) and flow (meter) of steam to the steam host Alamac American Knits (Alamac), which operates an adjacent textile mill. The system will integrate measurements at a minimum of 15 minute intervals and provide a total amount of electricity to the grid and heat to the

hosts for each reporting period, then calculate the total number of MWH (TH or EL) for the reporting period.

The boilers will initially produce approximately 220,000 lb/hr of steam at 1160 psia and 888 degrees F. The steam will be fed to a single turbine-generator which will generate electricity. Steam exiting the turbine will be condensed, transferring heat to a circulating water system and will be used by an adjacent wood drying facility operated by PowerFiber. The hot water (approximately 122 degrees F) will be used by PowerFiber to dry wood in a belt drying system. The wood dried by PowerFiber will be commercially sold. None of the dry wood will be consumed as Wood Biomass fuel in the Facility. The cooled water coming out of the drying system (approximately 92 degrees F) will be returned to condense additional steam from the turbine exhaust.

The useful thermal energy used in the commercial drying of wood that is eligible for Renewable Energy Certificate (REC) generation will be determined by the following formula: MWHTH = QD (btu/hr) / 3,412,000 btu/MWH x Hours in Period. Where useful heat in the drying operation, QD, is the product of: (a) the average circulating water flow to GRPPF ("MD" lb/hr); (b) the reduction in average water temperatures of the circulating water used by GRPPF ("TD1 – TD2" in degrees Fahrenheit); and (c) the specific heat of water ("Cp" in Btu/lb-degree F) minus thermal losses in the dryers (QL), and as a formula: QD = (MD x (TD1-TD2) x Cp ) – QL.

Combustion gasses from the boilers (flue gas) will also be used to produce useful thermal energy. Flue gas from each boiler, which will be approximately 350 degrees F, will pass through a heat exchanger, the condensing economizer, which will transfer heat from the flue gas to a second circulating hot water loop. The hot water in this loop will be used by PowerFiber to raise the temperature of dried wood to phyto-sanitize the wood. Phyto-sanitization occurs when the wood temperature is raised to and held at

132.8 degrees F for at least 30 minutes. Phyto-sanitization is required to ship the commercial wood biomass product internationally.

The Facility's thermal energy used in the phyto-santization of wood that is eligible for renewable energy certificate will be determined by the following formula: MWHTH = Q (btu/hr) / 3,412,000 btu/MWH x Hours in Period. Where Q is the product of: (a) the average circulating water flow in the Wood Sanitization Loop ("MS" lb/hr); (b) the reduction in average water temperature of the circulating water used for sanitization ("TS1 – TS2" in degrees Fahrenheit); and (c) the specific heat of water ("Cp" Btu/lb-degree F) minus thermal losses in the sanitization unit (QL), and as a formula: Q = MS x (TS1-TS2) x Cp – QL.

The method used to determine the Facility's thermal energy production sold to Alamac that is eligible for renewable energy certificates will be determined by the following formula: $MWH_{TH}$ = Q (btu/hr) / 3,412,000 btu/MWH x Hours in Period. Where Q is the product of: (a) average steam flow to Alamac ("MA" lb/hr); and (b) the average enthalpy ($H_S$) of the steam provided to Alamac (btu/lb) minus losses associated with the enthalpy of water leaving the Alamac processes ($H_W$), and as a formula: Q = MA x ($H_S$ – $H_W$). Steam flow, pressure and temperature will be monitored by the Applicant's data acquisition system while supplying steam to Alamac. Enthalpy will be calculated based on the measured steam conditions. The temperature of water leaving Alamac's processing operations is estimated to be 120 degrees (enthalpy of 90 btu/lb). The data acquisition system will integrate the measurements and provide a total amount of heat provided to Alamac and calculate the total number of $MWH_{TH}$ from process steam for the reporting period.

The waste heat generating capacity is provided as Registration Exhibit C, which is marked confidential and submitted under seal because the document contains proprietary and confidential information pursuant to N.C. Gen. Stat. § 132-1.2.

(xvii) The Facility's electric meters read for generation of RECs measure net electricity and parasitic load is not relevant. There are no parasitic loads associated with the thermal loads.

(xviii) In the commercial process of drying wood, heat loss through the walls of the wood dryers is estimated at 38,227 btu/hr each drier, for a total of 114,682 btu/hr or .03 $MW_{TH}$ for 3 dryers when operating. This represents an approximate .07% loss. Losses for the wood phyto-sanitization unit are estimated at 73,375 btu/hr or .02 $MW_{TH}$ when operating. This represents an approximate 0.3% loss.

For the useful thermal energy sold to Alamac, the temperature of water leaving Alamac's processing operations is estimated to be 120 degrees with an enthalpy of 90 btu/lb. This enthalpy will be subtracted from that of the steam sold to Alamac. This represents an approximate 7.5% loss.

(xix) There will be no steam bypassing the turbine or passing through a pressure reducing valve other than in start-up and atypical operation.

MULTI-FUEL INFORMATION

(xx) Attached as Registration Exhibit D is a spreadsheet showing example calculations for the energy production associated with the Wood Biomass and Poultry Litter fuel that will be used at the Facility. Registration Exhibit D is marked confidential and submitted under seal because these documents contain proprietary and confidential information pursuant to N.C. Gen. Stat. § 132-1.2.

(xxi) The Facility will use two renewable energy resources derived from biomass: Wood Biomass and Poultry Litter, as described above.

(xxii) The heat content of the Wood Biomass was determined by lab testing of southern yellow pine, which is the primary constituent in the fuel. The heat content of the Poultry Litter was determined by lab testing of poultry litter samples from multiple

regional sources between 2006 and 2012. Registration Exhibit E summarizes the results of this testing and is filed under seal because the document contains proprietary and confidential information pursuant to N.C. Gen. Stat. § 132-1.2.

The Applicant has entered into long-term contracts for Poultry Litter. The Poultry Litter will be supplied by aggregators that source the Poultry Litter from poultry farms. The Applicant has entered into long-term contracts for Wood Biomass, which will also be supplied by an aggregator. Upon delivery, each shipment will be weighed and samples from each source of Poultry Litter and Wood Biomass will be taken. The samples will be tested for moisture content (%) and heat content (Btu/lb) and results will be documented.

Each renewable resource will each be reclaimed from its individual storage locations on conveyor belts. Each conveyor belt has a belt scale that will measure the weight of the renewable resource prior to the two resources being mixed and fed to the boilers. At the end of each reporting period, the total amount of heat fed to the boilers will be determined for Poultry Litter by multiplying the average heat content, determined by averaging the heat content of the shipments for the period, by the total weight of Poultry Litter fed to the boilers. This will determine the total amount of heat (Btu) from Poultry Litter fed to the boilers. The same calculation will be done for Wood Biomass. The sum of these two results will be the total heat input to the boilers for that period. Therefore, for each reporting period the calculations are as follows:

PL Heat Input (Btu) = Weight PL (lbs) x Average Heat Content PL (Btu/lb)
WB Heat Input (Btu) = Weight WB (lbs) x Average Heat Content WB (Btu/lb)
Total Heat Input (Btu) = PL Heat Input + WB Heat Input
% Poultry Litter Heat Input (%PL) = (PL Heat Input) / (Total Heat Input)
% Woody Biomass Heat Input (%WB) = (WB Heat Input) / (Total Heat Input)

These percentages will then be applied to the total number of RECs generated by the Facility to determine the number of RECs generated from Poultry Litter and Wood Biomass.

## CERTIFICATIONS

(xxiii) The Applicant certifies that it is in substantial compliance with all federal and state laws, regulations, and rules for the protection of the environment and conservation of natural resources.

(xxiv) The Applicant certifies that the Facility satisfies the requirements of G.S. 62-133.8(a)( 7) as a new renewable energy facility and that the facility will be operated as a new renewable energy facility.

(xxv) The Applicant certifies that any renewable energy certificates (whether or not bundled with electric power) sold to an electric power supplier to comply with G.S. 62-133.8 have not, and will not, be remarketed or otherwise resold for any other purpose, including another renewable energy portfolio standard or voluntary purchase of renewable energy certificates in North Carolina (such as NC GreenPower) or any other state or country, and that the electric power associated with the certificates will not be offered or sold with any representation that the power is bundled with renewable energy certificates.

(xxvi) The Applicant certifies that it consents to the auditing of its books and records by the Public Staff insofar as those records relate to transactions with North Carolina electric power suppliers, and agrees to provide the Public Staff and the Commission access to its books and records, wherever they are located, and to the facility.

**WHEREFORE**, the Applicant respectfully requests the Commission (i) issue an Amended Certificate of Public Convenience and Necessity for the Facility in a Small Power (SP) Docket; and (ii) accept the Registration of the Applicant as a New Renewable Energy Facility.

Respectfully submitted this 24th day of April, 2015.

By: _____

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Counsel for North Carolina Renewable Power-Lumberton, LLC

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. EMP-91, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

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|---|---|---|
| In the Matter of the Application of<br>North Carolina Renewable Power-Lumberton, LLC<br>for an Amended Certificate of Public Convenience<br>and Necessity and Registration as a New<br>Renewable Energy Facility | )<br>)<br>)<br>)<br>) | VERIFICATION |

I, John C. Colucci, being duly sworn, do hereby declare that I am duly authorized to act on behalf of the Applicant and that I have read the foregoing application, and attached exhibits, and know the contents thereof to be true to my actual knowledge.

This 21 day of April, 2015.

John C. Colucci
Georgia Renewable Power, LLC

Sworn and subscribed to before me this 21 day of April, 2015.

Notary Public [Signature of Notary Public]

[Notary Seal]

Emily E. Coles
Name of Notary Public [typewritten or printed]

My Commission expires 6-25-2017

EMILY E COLES NOTARY PUBLIC ALABAMA STATE AT LARGE

PPAB 2773201v1

NCRP-Lumberton
EMP-91, Sub 0
Registration Exhibit A


Apr 24 2015 OFFICIAL COPY