



WELLS FARGO CAPITOL CENTER
150 FAYETTEVILLE STREET, SUITE 1700
RALEIGH, NC 27601

T 919.839.0300
F 919.839.0304
WWW.BROOKSPIERCE.COM

March 5, 2024

Via Electronic Filing

Shonta Dunston, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, NC 27699-4300

***Re: Docket No. SP-60808, Sub 0
ZNC Turkey Creek, LLC's Request for Approval of Amendment to
New Renewable Energy Facility Registration Statement***

Dear Ms. Dunston:

Transmitted herewith for filing in the above-referenced proceeding on behalf of ZNC Turkey Creek, LLC ("ZNC") is a second amended New Renewable Energy Facility ("NREF") Registration Statement pursuant to Commission Rule R8-66. For the reasons set forth below, ZNC respectfully requests acceptance of this amended registration.

Background

By order issued January 22, 2024, in the above-referenced proceeding, the Commission approved ZNC's NREF registration for a biogas swine waste-to-energy generating facility to be located in Sampson County, North Carolina.

This registration was predicated upon the provision of electric power from the ZNC NREF to the Duke Energy Progress, LLC ("DEP") power grid, as contemplated by a Power Purchase Agreement ("PPA") entered into between ZNC and DEP. As required by the PPA, in June 2023 ZNC submitted its interconnection request to the DEP 2023 Definitive Interconnection System Impact Study ("DISIS 2023").

Although this DISIS process remains ongoing, DEP has provided ZNC a Phase 1 Report which identifies several obstacles which will render interconnection infeasible. Specifically, as discussed below, (1) preliminary Class 5 (-50% to +100%) estimates are that the cost of Interconnection Facilities and Network Upgrades will total \$13.519 million; (2) ZNC will be required to construct, own and maintain approximately 5 miles of new conductors along newly obtained right-of-way to bring the point of interconnection to DEP's first zone of voltage regulation; and (3) the estimated lead time for the construction of the network upgrades is 6 years. Neither the cost estimate nor the time-of-completion estimate factors in costs and time associated with the construction, ownership, and maintenance of 5 miles of new conductors on new right-of-way.

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For these reasons, after significant investigation and due diligence, it has become apparent that the planned interconnection of ZNC's facility with DEP is not presently economically feasible, nor, in any event, is it achievable within a time frame which would permit the level of investment required. Consequently, if the ZNC NREF registration cannot be amended as requested, the ZNC project will need to be terminated, along with the projected \$1.2 billion in health and economic benefits to the rate payers in the low income and disadvantaged communities that the ZNC project will serve.

The amended NREF Registration Statement would permit ZNC to construct its New Renewable Energy Facility without the need for interconnection to DEP's grid, bringing numerous associated public benefits as described below. The project would permit the realization of In-State swine-RECs which are needed for compliance with G.S. § 62-133.8(e). For the local community Montauk's technology will address numerous social and environmental concerns associated with the hog production industry by permanently removing tens of thousands of tons of swine waste annually from the both the watershed and the low-income and disadvantaged communities that ZNC would serve.

ZNC has worked closely with Duke Energy on these plans and is authorized to represent that Duke Energy does not object to the Commission's acceptance of this amended NREF.

I. Interconnection with Duke has proven infeasible

ZNC entered the 2023 Definitive Interconnection System Impact Study ("DISIS") Study cluster in July 2023. In November 2023, Duke released the DISIS Phase 1 Report. In the Phase 1 Report, Duke estimated¹ that ZNC would be allocated \$13.519 million in Interconnection Facilities and Network Upgrades costs and projected a 72-month lead time for transmission upgrades associated with ZNC's facility. The Phase 1 Report also stated that ZNC would be "*required to construct, own, and maintain new conductors along newly obtained right of way (outside of Duke Energy's right of way) to bring the point of interconnection to the first zone of voltage regulation.*" (emphasis added). The \$13.5 million cost estimate from the DISIS Phase 1 Report did not include any costs associated with the required right of way, and DEP was unable to provide an estimate of such costs.

Nonetheless, hoping to pursue interconnection if at all feasible, ZNC entered DISIS Phase 2 and engaged engineering and land use contractors in order to estimate right-of-way acquisition costs and analyze the feasibility of such a project. Unfortunately, the results of this addition analysis confirm that the costs and uncertainties associated with acquiring the required right-of-way are prohibitive. The shortest possible distance for the right of way is approximately 5 miles and crosses approximately 100 separate parcels. Factoring in the potential and highly uncertain costs associated with land acquisition, together with costs for maintaining and operating the right-of-way, ZNC has determined that total right-of-way costs (including land, construction,

¹ DEP's estimates are "Class 5" estimates, meaning that they might be expected to deviate between -50% to +100%.

maintenance, and replacement costs, as well as property, casualty, and liability insurance premiums), over the term of ZNC's PPA are estimated to be between \$80 million and \$100 million.²

Even if all of these conditions could be met by ZNC, DEP would not begin construction of the grid interconnection until the ROW had been completely acquired and the privately-owned poles and powerlines had been completely installed, which would push the estimated interconnection completion date out to more than 100 months.

Given all these factors, it has become apparent that interconnection with Duke is not presently feasible or viable.

II. NREF Amendment—shift to self-provisioning

While electrical interconnection with DEP is not feasible, ZNC remains committed to its mission of converting swine manure into renewable fuels. In order to realize the benefits of the green energy production from its NREF, ZNC now intends to supply electrical power from its NREF to either or both planned swine manure processing and biofuels manufacturing facilities or other behind-the-meter uses. *See, e.g., In re: Oak Hills Farms*, SP-16248, Sub 0 (approving swine waste NREF where “electrical power will primarily be used to offset farm load”). Electrical power supplied by ZNC's NREF will directly offset energy that, under ZNC's previous interconnection plan, would have been supplied by DEP's electrical grid.

As with the currently approved NREF Registration Statement, parasitic station service loads will be connected to the NREF's microturbine generators upstream of the meter used for NC RETS compliance. Thus, only the electrical output that is distributed to ZNC's biogas manufacturing facilities will be metered for purposes of REC generation.

The revised sections of ZNC's NREF Registration Statement are as follows:

1. *Page 2, Question 1: Describe the facility, including its technology, and the source of its power and fuel(s). Thermal facilities should describe how its host uses the facility's thermal energy output. (Add additional sheets if necessary.)*

The facility consists of a series of interconnected 200 kW Capstone micro-turbine generators and auxiliary equipment. The facility is fueled from swine-derived biogas, which is fed to the micro-turbine generators from a biogas storage vessel. Auxiliary loads, including turbine control and monitoring equipment, lube oil pumps, and exhaust fans, are powered with un-metered electricity supplied by the micro-turbine generators. Electricity produced in excess of auxiliary loads will be ~~sold to the local utility.~~ supplied to ZNC Turkey Creek's swine manure processing and/or biofuels manufacturing facilities, offsetting power that otherwise would be sourced from the electrical grid.

² Even if ZNC were able to procure easements from 100-plus landowners, it is estimated that the premiums for liability coverage associated with the maintenance of private power lines over the 15-year PPA term would likely add tens of millions of dollars to the project costs.

2. *Page 4, Second Question 2: If the facility is not yet operating, on what date is the facility projected to be placed into service?*

The facility is scheduled to begin operation in ~~Q1-Q3~~ of 2024 and is expected to be fully operational at projected capacity by ~~April 1, Q3~~ of 2025.

3. *Page 4, Third Question 2: What entity does (or will) read the facility's energy production meter(s) for the purpose of issuing renewable energy certificates?*

~~Duke Energy Progress, LLC~~ ZNC Turkey Creek, LLC

III. Public benefits associated with the project

Through this amended NREF, ZNC is seeking to leverage technology of its affiliate, Montauk Ag Renewables, which transforms swine waste into useful products. To aid in evaluating the potential public benefits associated with this technology, Montauk engaged Dr. Michael Walden, Professor Emeritus of North Carolina State University and President, Walden Economic Consulting,³ to analyze and present estimates of economic benefits of applying Montauk's technology to the region where ZNC's facility is located—Turkey, North Carolina.

In his report, Dr. Walden notes that Montauk's technology, upon implementation, would be a "revolutionary development" in the sequestration and removal of hog waste:

It would simultaneously achieve three goals. By reducing the aggregate levels of CO_{2e}, the technology would add to the nation's efforts to address climate change and provide a cleaner and healthier environment, especially for residents near hog facilities. Second, by also removing PFAS from hog manure, the technology would remove the potential threat to residents' health by significantly reducing chemicals that have been linked to serious human maladies. Third, with these negative effects of hog manure removed, the hog industry could be safely expanded to create enhanced economic returns for local residents. Also, with the negative image of the hog industry eliminated from the local region, economic developments outside of hog farming and agriculture could be attracted and thereby offer broader occupational and business opportunities for local households.⁴

³ Dr. Walden taught economics at North Carolina State University for 43 years and is a well-known speaker and commenter on economics for the local and national media. Among other professional accomplishments, Dr. Walden developed the model used by the North Carolina Department of Commerce to evaluate business incentives—a model which has been used continuously for 25 years.

⁴ Dr. Michael L. Walden, Professor Emeritus, North Carolina State University, and President, Walden Economic Consulting, LLC, *The Potential Human, Environmental, and*

Analyzing the potential economic and societal benefits from full deployment of this technology, Dr. Walden projects annual economic development benefit of \$145.5 million from the removal of hog odor;⁵ an increase of \$36.2 million in annual revenue associated with hog farm expansion;⁶ and approximately \$215.8 million in annual economic benefit associated with removing CO_{2e} emissions in the region.⁷

More immediately, the construction of ZNC's facility in Sampson County will create 911 jobs, \$45.9 million in labor income and benefits, \$118.7 million in gross business revenues, and \$12.2 million in revenues to all levels of government.⁸ Once at full capacity, the operation of ZNC's facility in Sampson County will generate 271 permanent jobs, \$20.5 million annually in labor income and benefits, and \$145.1 million annually in gross business revenues in the region.⁹ Governments at all levels will experience an annual increase of \$7.7 million in public revenues.¹⁰

Additionally, the manufacturing factory supplying key equipment for ZNC's facility is located in the economically-challenged North Carolina Census Tract 35.¹¹ Annual orders from ZNC's facility will increase permanent employment at the factory by 247 jobs, annual labor income and benefits by \$14.7 million, and annual gross business revenues by \$61.2 million in the Census Tract 35region. Public revenues to governments at all levels will rise by \$3.3 million annually.¹²

In summary, the amended NREF Registration Statement would permit ZNC to begin immediate construction its New Renewable Energy Facility, bringing numerous associated public benefits:

- ZNC would, upon completion of construction of its facility, be able to supply much-needed In-State swine-RECs to North Carolina electric power suppliers as required by G.S. § 62-133.8(e). As the Commission is well-aware, many electric power suppliers have struggled to comply with the swine-waste component of the state's REPS requirements, particularly from locally sourced RECs.
- These swine waste RECs would be produced in connection with the proprietary manufacturing process developed by ZNC's affiliate, Montauk Swine Ag, LLC, which converts swine waste into biogas using a near-zero-emission waste-to-energy technology.

Economic Impacts of Safely Removing Hog Waste: An Application to Eastern North Carolina, July 2023, at 14.

⁵ *Id.* at 61–62.

⁶ *Id.* at 62.

⁷ *Id.* at 46.

⁸ *Id.* at 36.

⁹ *Id.* at 37.

¹⁰ *Id.*

¹¹ *Id.* at 18.

¹² *Id.* at 37.


- Montauk's technology will address numerous social and environmental concerns associated with the hog production industry by permanently removing tens of thousands of tons of swine waste annually from the both the watershed and the low-income and disadvantaged communities that ZNC would serve.
- Additionally, at full build-out Montauk's investment is estimated to generate economic and health benefits to the low income and disadvantaged ratepayers in the communities that the project will serve totaling between \$658 million and \$778 million annually, or \$9.8 billion to \$11.67 billion over the initial 15-year term.

* * *

For the foregoing reasons, ZNC Turkey Creek, LLC respectfully requests that the Commission accept the amended NREF filed with this letter.

Should any questions arise in connection with this matter, please do not hesitate to contact this office.

Very truly yours,



Marcus W. Trathen
Direct Dial: (919) 573-6207
mtrathen@brookspierce.com