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November 13, 2018

VIA ELECTRONIC FILING

M. Lynn Jarvis, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

**RE: Duke Energy Progress, LLC Supplemental Testimony and Exhibits
Docket No. E-2, Sub 1185**

Dear Ms. Jarvis:

Pursuant to the Commission's October 31, 2018 *Order Finding Application Incomplete* ("Order"), I enclose Duke Energy Progress, LLC's ("DEP") Supplemental Testimony of Jonathan A. Landy and Supplemental Exhibits 1B, 2, 3 and 4 ("Supplemental Filing") for filing in connection with the referenced matter. This Supplemental Filing provides additional detail on the alternatives considered, as well as supplements with additional information required by Commission Rule R8-61(b).

The Order also found that DEP's application was incomplete for not providing the information required by Commission Rule R8-61(c). Rule R8-61(c), however, requires the filing of annual construction progress reports after a facility has received a Certificate of Public Convenience and Necessity. Accordingly, DEP cannot provide Rule R8-61(c) information at this time.

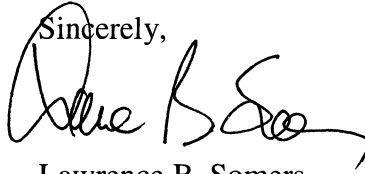
Portions of the Supplemental Filing are being filed under seal, and DEP respectfully requests that they be treated confidentially pursuant to N.C. Gen. Stat. § 132-1.2. Mr. Landy's Supplemental Testimony on page 6 and Supplemental Exhibit 3 contain projected capital costs and operating expenses for the project. Public disclosure of this confidential information would harm DEP's ability to negotiate favorable contracts at the lowest reasonable cost for the benefit of its customers. DEP will make the confidential information available to parties upon the execution of an appropriate confidentiality agreement.

OFFICIAL COPY

Nov 13 2018

Thank you for your attention to this matter. If you have any questions, please let me know.

Sincerely,

A handwritten signature in black ink, appearing to read "Lawrence B. Somers". The signature is fluid and cursive, with a large initial "L" and "S".

Lawrence B. Somers

Enclosures

cc: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1185

In the Matter of)
Application of Duke Energy Progress, LLC)
for A Certificate of Public Convenience)
and Necessity to Construct a Microgrid)
Solar and Battery Storage Facility in)
Madison County, North Carolina)

SUPPLEMENTAL TESTIMONY
OF
JONATHAN A. LANDY



1 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND**
2 **EMPLOYMENT RESPONSIBILITIES.**

3 A. My name is Jonathan A. Landy, and my business address is 400 South Tryon
4 Street, Charlotte, North Carolina 28202. I am employed as a Business
5 Development Manager by Duke Energy Business Services, LLC and have
6 project management responsibility for the Hot Springs Microgrid Project.

7 **Q. DID YOU PREVIOUSLY SUBMIT DIRECT TESTIMONY IN THIS**
8 **MATTER?**

9 A. Yes, I did.

10 **Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?**

11 A. The purpose of my supplemental testimony in this proceeding is to provide
12 additional information in support of Duke Energy Progress, LLC's (or "DEP")
13 application for a certificate of public convenience and necessity (or "CPCN")
14 for the Hot Springs Microgrid Project and in response to the Commission's
15 October 31, 2018 Order Finding Application Incomplete in this docket.

16 **Q. I SHOW YOU WHAT HAVE BEEN MARKED AS DEP'S**
17 **SUPPLEMENTAL EXHIBITS 1B, 2, 3, AND 4. WERE THESE**
18 **SUPPLEMENTAL EXHIBITS PREPARED BY YOU OR UNDER YOUR**
19 **DIRECTION?**

20 A. Yes.

21 **Q. PLEASE DESCRIBE DEP'S SUPPLEMENTAL EXHIBITS 1B, 2, 3 AND**
22 **4.**

1 A. These exhibits were prepared in response to the Commission's October 31,
2 2018 Order and contain additional information required by Commission Rule
3 R8-61(b), which was inadvertently not provided in the Company's original
4 CPCN application. Supplemental Exhibit 1B contains the capacity factor for
5 the solar generation facility. Supplemental Exhibit 2 contains the full and
6 correct name of the site owner; the justification for the site selected and general
7 information describing other locations considered; and a statement of plans
8 known to DEP for other developments at or adjacent to the site. Supplemental
9 Exhibit 3 contains additional details regarding the confidential cost estimate
10 provided in the Company's original CPCN application, including the
11 confidential estimated construction costs expressed as dollars per megawatt of
12 capacity; estimated annual operating expenses expressed as dollars per net
13 megawatt hour; the projected cost of each major component and the schedule
14 for incurring those costs; the projected effect of the investment in the generating
15 facility on the Company's overall revenue requirement for each year during
16 construction; the anticipated in-service expenses for the generation facility's
17 first 12 months of commercial operation; the anticipated impact on customer
18 rates; and cost information for the traditional wires alternative DEP considered
19 to the Hot Springs Microgrid Project. Finally, Supplemental Exhibit 4 contains
20 risk factors related to the construction and operation of the generation facility,
21 including a verified statement that the facility is capable of operating during the
22 lowest temperature that has been recorded in the area.
23

1 **Q. PLEASE PROVIDE JUSTIFICATION FOR THE SITE SELECTED**
2 **FOR THE HOT SPRINGS MICROGRID PROJECT.**

3 A. As discussed in the original CPCN application and in my direct testimony, the
4 Hot Springs Microgrid Project is a key component of the Western Carolinas
5 Modernization Project, or “WCMP” and the Commission’s WCMP CPCN
6 Order in Docket No. E-2, Sub 1089, which accepted DEP’s commitment to
7 solar and storage projects and noted its express expectation that DEP file as
8 soon as practicable CPCN applications to construct at least 15 MW of solar at
9 the Asheville Plant or in the Asheville region. At this time, DEP still intends to
10 construct approximately 9-10 MW of solar generation at its Asheville Plant site,
11 which is contingent upon completion of the ash basin work and coal plant
12 demolition activities. Thus, an additional approximately 5-6 MW of solar
13 generation will be deployed in other locations throughout the Asheville region,
14 and the Hot Springs Microgrid Project will meet a portion of this remaining
15 commitment.

16 The Hot Springs Microgrid site was selected due to the following
17 beneficial characteristics: the site is properly zoned for industrial land use; the
18 acreage is sufficient for siting multiple megawatts of solar generation and
19 additional battery storage; the site is primarily clear of trees and debris; the point
20 of interconnection is only approximately .10 miles from the planned project
21 substation and does not require additional land rights or permitting to access the
22 interconnection facilities; the site is not adjacent to residential customers; and
23 the site is owned by a landowner willing to enter into a lease agreement in

1 support of the project and community's goals. These characteristics minimize
2 project costs and environmental impacts; available sites within the Asheville
3 region that contain these characteristics are not abundant. Considering the
4 known challenges to siting utility-scale solar within the Asheville region,
5 including topography and land cost, the site selected is an optimal location for
6 the Hot Springs Microgrid. In addition to the Hot Springs Microgrid, DEP will
7 continue to work with its customers within the Asheville region to locate
8 optimal sites and opportunities to deploy solar generation.

9 **Q. THE COMMISSION'S OCTOBER 31, 2018 ORDER NOTED THAT**
10 **DEP'S ORIGINAL CPCN APPLICATION LACKS A DISCUSSION OF**
11 **WHAT ALTERNATIVES THE COMPANY CONSIDERED. WHAT**
12 **ALTERNATIVES TO THE HOT SPRINGS MICROGRID PROJECT**
13 **DID DEP CONSIDER?**

14 A. As discussed in the original CPCN application and in my direct testimony, DEP
15 is seeking to construct the Hot Springs Microgrid Project as an innovative
16 alternative to upgrading the existing Hot Springs 22.86 kV distribution feeder
17 or extending a new traditional distribution service through the Pisgah National
18 Forest to serve the Company's customers. The Hot Springs Microgrid will have
19 the unique opportunity to improve the reliability of service to customers
20 connected to the Hot Springs 22.86 kV distribution feeder, which is the single
21 source of service for the Town of Hot Springs, through a renewable-based
22 solution. The existing feeder, which extends approximately ten miles through
23 remote and hazardous terrain in the Appalachian Mountains, incurs long-

1 duration outage events due to its location and is expected to require high-cost
2 equipment upgrades beginning in 2020.

3 The Company evaluated two alternatives to the Hot Springs Microgrid
4 Project. The first was to construct a second distribution feeder into the town by
5 connecting to French Broad EMC, which has the service area adjacent to DEP's
6 service territory. A detailed cost estimate was not developed for this option as
7 it presented several challenges that made this option infeasible. Obtaining right
8 of way in this region was going to be extremely challenging. In addition, the
9 tie into the DEP system and the tie into French Broad EMC's system was also
10 going to result in significant infrastructure investments.

11 The second alternative that DEP evaluated was to reconductor and
12 rebuild the existing 22.86 kV Hot Springs feeder to modern storm/mountain
13 hardening standards. This alternative would involve replacing the existing
14 poles and structures with higher class poles for greater strength, adding guying
15 to each pole, and replacing the existing conductor. The capital-only cost of this
16 upgrade was estimated to be [BEGIN CONFIDENTIAL ██████████
17 ████████ [END CONFIDENTIAL], but would only leave Hot Springs with a
18 single feed that would still be susceptible to outages in remote and rugged
19 terrain and not provide the additional benefits to DEP customers that the
20 Microgrid will.

21 DEP determined that the Hot Springs Microgrid was the better option to
22 meet the needs of all DEP customers than these distribution upgrade
23 alternatives. By utilizing new technology, the Hot Springs Microgrid will

1 provide Hot Springs customers with multiple hours of back-up power to
2 improve the reliability of electric service to the community. The Hot Springs
3 Microgrid will also provide bulk system benefits as well, which neither of the
4 traditional distribution upgrades would have provided. For example, the solar
5 array will produce approximately 4,000 MWh of annual solar generation for the
6 benefit of all of DEP's customers. The battery components of the Hot Springs
7 Microgrid also provide capacity value and essential reliability services, such as
8 frequency, voltage, and ramping support, to DEP's bulk electric grid, which the
9 distribution alternatives would not. Finally, as I discussed in my direct
10 testimony, the Company anticipates increasing its reliance on these types of
11 distributed energy technologies to reliably and cost-effectively serve its
12 customers over time, and DEP's experience operating the Hot Springs
13 Microgrid will provide additional future benefits to all customers as these
14 technologies are further deployed across DEP's grid.

15 DEP did not consider a generation alternative to the solar generation
16 components of the Hot Springs Microgrid Project, such as a hypothetical 3 MW
17 diesel generator, because the Company determined that the solar generation
18 facility for which it is seeking a CPCN is the best alternative for the specific
19 needs to be met by the Microgrid and that it is consistent with the Company's
20 commitments and the Commission's WCMP CPCN order. As discussed in the
21 original CPCN application and in my direct testimony, the Hot Springs
22 Microgrid supports the WCMP's goals to attempt to avoid or defer the need for
23 the contingent natural gas combustion turbine through deliberate development

1 of solar and battery storage projects in the Western North Carolina region of
2 DEP's service territory.

3 **Q. IN CONCLUSION, WHY DOES DUKE ENERGY PROGRESS**
4 **BELIEVE THAT ITS HOT SPRINGS MICROGRID PROJECT IS**
5 **JUSTIFIED BY THE PUBLIC CONVENIENCE AND NECESSITY?**

6 A. For all the reasons stated in my direct and supplemental testimony, and in the
7 Company's verified application and exhibits, DEP believes that the
8 Commission should approve the construction of the generation components of
9 the Hot Springs Microgrid as required by the public convenience and necessity.
10 The site selected is an optimal location for deploying solar generation compared
11 to other available sites evaluated by DEP within the Asheville region. Also,
12 deploying the Microgrid as an innovative grid solution in lieu of upgrading the
13 existing distribution feeder or constructing a new traditional distribution service
14 in the Pisgah National Forest will allow DEP to leverage local renewable
15 generation and storage, thereby improving reliability and reducing the cost of
16 distribution upgrades and ongoing O&M activities in a remote location. The
17 Hot Springs Microgrid is consistent with the Company's 2018 Integrated
18 Resource Plan and the commitments of the WCMP, and will provide cost-
19 effective benefits for all of DEP's customers.

20 **Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?**

21 A. Yes, it does.

Supplemental Exhibit 1B

Statement of Need

1.1 CAPACITY FACTOR

The solar generation facility component of the Hot Springs Microgrid is expected to produce approximately 4000 MWh per year. This corresponds to a 25.1% net capacity factor. The service life of the asset is 25 years.

Supplemental Exhibit 2

Site Information

2.1 SITE OWNER

The full and correct name of the site owner is Madison Manufacturing Company d/b/a Peerless Blowers.

2.2 JUSTIFICATION FOR SITE SELECTION

To support Western Carolinas Modernization Project (“WCMP”), DEP has been exploring locations to support 15 MW solar installations within the Asheville region for approximately eighteen months. DEP conducted a GIS survey of potential solar sites throughout the Asheville region and evaluated many alternatives, including company-owned land. The Asheville Plant site is expected to accommodate approximately 9-10 MW of solar generation and DEP has identified additional sites to support the 15MW goal. Due to limitations in terms of parcel size, topography (e.g., slope), availability of land and distribution circuit limitations that would be suitable for a single solar installation, DEP has been exploring the possibility of multiple, but smaller, installations in lieu of a single, larger installation. As a result, DEP identified a suitable site in Madison County for the Hot Springs Microgrid, thus minimizing project costs compared to other candidate sites within the Asheville region. Additionally, the location is optimal for deploying a battery in conjunction with the solar facility, which will allow both assets to provide critical backup power to customers along the Hot Springs distribution feeder.

2.3 DEVELOPMENTS AT OR ADJACENT TO THE SITE

The Company is not aware of any known existing or proposed plans for other developments at or adjacent to the proposed site of federal, state, local governmental and private entities.

Supplemental Exhibit 3 Equipment and Cost for the Project

[BEGIN CONFIDENTIAL]

3.1 ESTIMATED CONSTRUCTION COSTS EXPRESSED AS \$/MW

For the solar generation facility: Approximately [REDACTED] / MW_{DC} (excluding AFUDC)

3.2 ESTIMATED ANNUAL OPERATING EXPENSES EXPRESSED AS \$/MWH

For the solar generation facility: Approximately [REDACTED] / MWh averaged over 25 years

3.3 PROJECTED MAJOR COMPONENT COSTS AND SCHEDULE FOR INCURRING COSTS

Solar Array	[REDACTED]
Racking System	[REDACTED]
Solar Power Conversion Devices	[REDACTED]

Schedule for incurring costs for the solar generation facility:

Q3 2018	[REDACTED]
Q4 2018	[REDACTED]
Q1 2019	[REDACTED]
Q2 2019	[REDACTED]
Q3 2019	[REDACTED]
Q4 2019	[REDACTED]
Q1 2020	[REDACTED]

3.4 UTILITY REVENUE REQUIREMENT DURING CONSTRUCTION

The Construction Work in Progress for this project will not be included in rate base, but instead will accrue AFUDC of [REDACTED]. Therefore, there should be no impact on revenue requirements during the construction period.

3.5 IN-SERVICE EXPENSES DURING THE FIRST YEAR

[REDACTED]

3.6 CUSTOMER RATES

[REDACTED] rate impact in Year 1

[END CONFIDENTIAL]

3.7 COST INFORMATION FOR TRADITIONAL WIRES ALTERNATIVES

DEP evaluated two distribution alternatives to the Hot Springs Microgrid Project. The first involved building a second distribution feed to the Town of Hot Springs by connecting to French Broad EMC. DEP determined that this alternative presented too many challenges to be feasible, so a formal cost estimate was not prepared. The second alternative involved reconductoring and rebuilding the existing 22.86 kV Hot Springs feeder to storm/mountain hardening standards. The capital cost for this initial upgrade was estimated at [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL]

Supplemental Exhibit 4

Commercial Operation of the Facility

4.1 RISK / FREEZE PROTECTION / WINTERIZATION

There would be no additional risk for the construction or operation of this solar facility compared to other facilities owned or operated by Duke Energy. The minimum daily low temperature recorded in January for the period between 1870 to 2018 happened on January 21, 1985. This minimum low temperature was -26.67 °C. The SMA Core1 inverter specified for the solar generation facility is rated to operate in the following ambient temperature range: -25 °C – 60 °C. Due to rare occurrence of the temperature going below -25 °C and due to the size of the asset, Duke Energy Carolinas has determined that it is not cost effective to add auxiliary heating at this point.

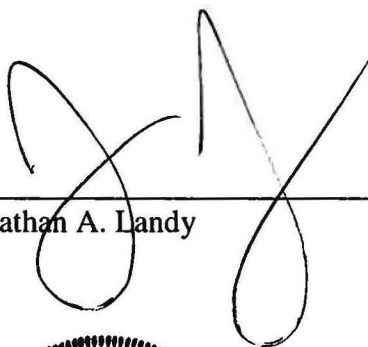
VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG)

DOCKET NO. E-2, SUB 1185

Jonathan A. Landy, being first duly sworn, deposes and says:

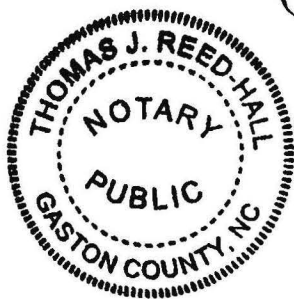
That he is Business Development Manager in the Combined Heat and Power, Microgrid and Energy Storage Development Department of Duke Energy Corporation; that he has read the foregoing Supplemental Exhibits and knows the contents thereof; that the same are true except as to the matters stated therein on information and belief; and as to those matters, he believes them to be true.


Jonathan A. Landy

Sworn to and subscribed before me
This 12th day of November, 2018.



Notary Public



My Commission expires: 07.30.2022

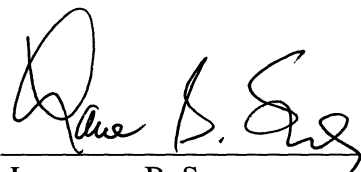
CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC's Supplemental Testimony and Exhibits, in Docket No. E-2, Sub 1185, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties:

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This the 13^h day of November, 2018.

By: 

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