Lawrence B. Somers
Deputy General Counsel

Mailing Address:
NCRH 20 / P.O. Box 1551
Raleigh, NC 27602

o: 919.546.6722
f: 919.546.2694

bo.somers@duke-energy.com

November 19, 2019

VIA ELECTRONIC FILING

Kimberley A. Campbell, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Duke Energy Progress, LLC's Semiannual Hot Springs Microgrid Project Progress Report
Docket No. E-2, Sub 1185

Dear Ms. Campbell:

Pursuant to the Commission's May 10, 2019 *Order Granting Certificate of Public Convenience and Necessity with Conditions* and the subsequent order granting an extension of time in the above-referenced docket, I enclose Duke Energy Progress, LLC's ("DEP") semiannual progress report for its Hot Springs Microgrid Solar and Battery Storage Facility for filing in connection with this matter.

DEP's projected cost to construct the facility is confidential. Public disclosure of such information would impair DEP's ability to negotiate favorable contracts at the lowest reasonable cost for the benefit of its customers. Thus, this information is being filed under seal pursuant to N.C. Gen. Stat. § 132-1.2. It will be provided to interested parties pursuant to an appropriate confidentiality agreement.

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

Sincerely,

Lawrence B. Somers

Enclosure

cc: Parties of Record

Hot Springs Microgrid Solar and Battery Storage Facility
Progress Update
Docket No. E-2, Sub 1185
November 19, 2019

Duke Energy Progress has the following operational and learning goals for the Hot Springs Microgrid Facility:

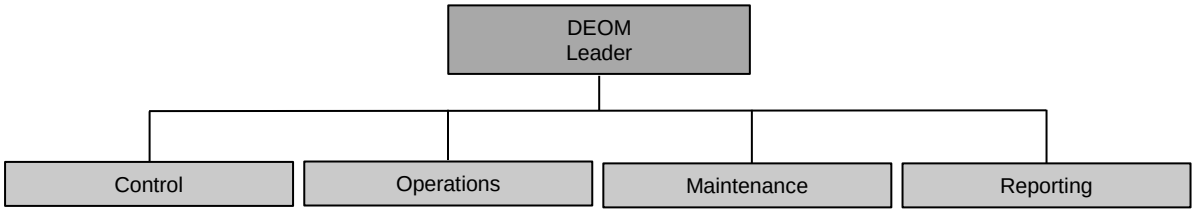
Goals

1) Ensure the safe and efficient operation of a distribution grid-connected Microgrid facility.
2) Use the Distributed Energy Operations & Maintenance (DEOM) team to monitor the distribution grid-connected Distributed Energy Resource (DER) and analyze data (e.g. operational, health, usage).
3) Learn to optimize the use and benefits of the Hot Springs Microgrid Facility using the Greensmith Energy Management System (GEMS).
4) Develop, operationalize, and improve procedures created for distribution grid-connected DERs.
5) Provide reports for various stakeholders using the sample metrics provided in Table 1.

Business Plan

The Distributed Energy Operations & Maintenance (DEOM) team is part of the Distributed Energy, Enablement & Storage (DEE&S) Program within Duke Energy's Customer Delivery department. DEOM will assist Duke Energy Progress with safe operation and maintenance of regulated distributed energy assets including the Hot Springs Microgrid Facility beginning Day 1 of operations. The DEOM team consists of 4 major focus areas depicted below;

Distributed Energy Operations & Maintenance (DEOM)



Control

DEOM is leading the effort to develop the Energy Storage Control System (ESCS) for Duke Energy's DER operations. The ESCS project for the Hot Springs Microgrid Facility is a key element of Duke Energy Progress' broader strategy to own, operate, and integrate distributed energy technologies into its regulated electric utility business. The Hot Springs control system will enable Duke Energy Progress to optimize the operation of the microgrid and dispatch this asset as part of a diverse distributed energy portfolio.

The control system implemented at Hot Springs will allow DEOM to monitor, analyze, and report operational data, plus provide the ability to troubleshoot potential issues or alarms for the site. The Greensmith Energy Management System (GEMS) will sit within the Duke Energy Control Zone and allow remote operations and monitoring of the microgrid utilizing a single control platform. Ongoing development and deployment of the control system will dovetail with the library of business use cases and operational procedures created.

Operations

DEOM has begun and will continue to build a library of operational documents and is responsible for monitoring the operation of all regulated distribution grid-connected DERs. Emergency Response Plans (ERP), Comprehensive Test & Commissioning Plans, Transition to Operations Checklists, and other Day 1 Operational protocols are in place for the first grid-connected DERs going operational in early 2020.

Maintenance

DEOM will maintain DERs (battery, solar, and microgrid) through contracted service agreements with third-party vendors for the foreseeable future. Third-party vendor agreements focus on preventative and corrective maintenance activities which will be performed monthly, quarterly, semiannually, or annually as appropriate. DEOM will project manage these third-party vendors' maintenance execution.

Reporting

DEOM will be responsible for collecting and communicating data and reports to a variety of stakeholders. Reports will include, at a minimum: weather-adjusted predicted energy production, actual energy production, energy yield, inverter availability, capacity factor, and more. Additional performance metrics can be tracked and reported when requested. The metrics that will be monitored and tracked in GEMS or PI Historian for the Hot Springs Microgrid facility are listed in Table 1 below:

Table 1: Hot Springs Microgrid Metrics

Level	BESS System Tags	Unit	Precision	Sample Rate
Battery Rack Array/System (Each Rack Array/System)	System Fault Status	bit	1	1sec
	System Alarm Status	bit	1	1sec
	System Current	A	0.1	1min
	System Voltage	V	0.1	1min
	System SoC	%	0.1	1min
	System Mode	bit	1	1min
	Max Cell Temp of System	Deg C	0.001	1min
	Min Cell Temp of System	Deg C	0.001	1min
Each Rack	Rack Voltage	V	0.1	1min
	Rack Current	A	0.1	1min
	Rack SOC	%	0.1	1min
	Rack SOH	%	0.1	1min
	Rack Fault Status	bit	1	1sec
	Rack Alarm Status	bit	1	1sec
	Maximum Cell Voltage Value	V	0.1	1min
	Maximum Cell Voltage Position	dec	1	1min
	Minimum Cell Voltage Value	V	0.1	1min
	Minimum Cell Voltage Position	dec	1	1min
	Maximum Cell Temperature Value	Deg C	0.001	1min
	Maximum Cell Temperature Position	dec	1	1min
	Minimum Cell Temperature Value	Deg C	0.001	1min
	Minimum Cell Temperature Position	dec	1	1min
	Rack DC Switch Status	bit	1	1min
	Rack DC Switch Position	bit	1	1min
Container	Ambient Tempreture (measured from at least 3 points external to each container)	Deg C	0.001	1min
Inverter	Active Power Setpoint	kW	0.1	1min
	Reactive Power Setpoint	kVAR	0.1	1min
	Measured Active Power Per Phase (Pa,Pb,Pc)	kW	0.1	1min
	Measured Reactive Power Per Phase (Qa,Qb,Qc)	kVAR	0.1	1min
	Measured Apparent Power Per Phase (Sa,Sb,Sc)	kVA	0.1	1min
	AC Phase to line voltage (Van,Vbn,Vcn)	V	0.1	1min
	AC Phase Current (Ian,Ibn,Icn)	A	0.1	1min
	DC Voltage	V	0.1	1min
	DC Current	A	0.1	1min
	Alarms	bit	1	1sec
	Mode of Operation	dec	1	1min
Switchgear	Breaker position for all ways of swgr	bit	1	1sec
	Swgr relay voltage, current and power points	V,A,kW,kVAR, kVA	0.1	1min

Original Cost Estimate	Current Cost Estimate
[BEGIN CONFIDENTIAL]	
[redacted]	[redacted]
[END CONFIDENTIAL]	

*Cost estimates include generation and transmission facilities costs.

Task Status/Estimate	Original CPCN Filing Estimate[1]	Current
Limited Notice to Proceed	March 2019	July 2019
Interconnection Agreement	August 2019	March 2020
Begin Construction	September 2019	March 2020
Commercial Operation	January 2020	September 2020

[1] The Hot Springs CPCN application was filed on October 8, 2018. The CPCN order was issued on May 10, 2019.

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC's Hot Springs Microgrid Project Semiannual Progress Report, 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:

David T. Drooz, Chief Counsel
Tim Dodge, Staff Attorney
Dianna Downey, Staff Attorney
Public Staff
North Carolina Utilities Commission
4326 Mail Service Center
Raleigh, NC 27699-4300
david.drooz@psncuc.nc.gov
dianna.downey@psncuc.nc.gov

Peter Ledford, General Counsel
Benjamin W. Smith, Regulatory Counsel
NC Sustainable Energy Assoc.
4800 Six Forks Road, Suite 300
Raleigh, NC 27609
peter@energync.org
ben@energync.org

This the 19th day of November, 2019.

By: _____

Lawrence B. Somers
Deputy General Counsel
Duke Energy Corporation
P.O. Box 1551/NCRH 20
Raleigh, North Carolina 27602
Tel 919.546.6722
bo.somers@duke-energy.com