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Executive Summary

Interconnection and the challenges discussed in this report are technical and complex. At a minimum, Duke Energy Carolinas, LLC (DEC) and Duke Energy Progress, LLC (DEP) (collectively Duke Energy) are required to comply with the South Carolina Generator Interconnection Procedures (SCGIP). Should the Public Service Commission of South Carolina (PSC or Commission) require a more thorough investigation, the Office of Regulatory Staff (ORS) recommends the Commission open a docket to specifically examine the technical issues contributing to Duke Energy's interconnection queue challenges. This would allow interested parties, such as independent power producers, an opportunity to participate. Due to the technical complexity, interested parties could retain experts to assist in the examination and review; however, any costs resulting from a review of these issues or implementation of these or other remedies should not be borne by rate payers.

ORS provides these comments for Commission consideration regarding the investigation of, and report on, Duke Energy's status of the queue.

In summary, ORS provides the following recommendations:

1. Open a docket to specifically examine the technical issues contributing to Duke Energy's interconnection queue challenges;
2. Require Duke Energy to strictly adhere to the SCGIP timelines;
3. Require Duke Energy cease all practices not identified in the SCGIP;
4. Allow other interested parties an opportunity in this Docket to investigate and provide comments to the Commission on Duke Energy's Interconnection Report; and,
5. Require Duke Energy to pursue the remedies identified in the Interconnection Report and include updates on these remedies in the required quarterly update reports to the Commission and ORS detailing, at a minimum, the following items:
    a. current status of implementation of the remedy;
    b. actions taken by Duke Energy during the quarter to implement and/or monitor the remedy (i.e. meetings, resources);
    c. cost incurred by Duke Energy to implement and conduct the remedy;
    d. impact of the remedy on the queue backlog; and,
    e. other information as required by the Commission.

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Introduction and Purpose

In Order No. 2018-803(A) issued on December 12, 2018, the Commission required Duke Energy to file a report (Interconnection Report) with the Commission within thirty (30) days.

The Commission requested information on the following subjects:

1. Status of Duke Energy's interconnection queue;
2. Reasons for the backlog;
3. Duke Energy's plan to remedy the problem;
4. Indicate which projects bid into the Competitive Procurement of Renewable Energy (CPRE) Program, which projects were selected as CPRE winners, and which projects bid into CPRE but were not selected;
5. Identify the intervals for every significant milestone for every queued ahead non-CPRE project, if requested by the ORS; and,
6. Provide aggregate statistics on CPRE and non-CPRE projects.

In the same Order, the Commission also requested ORS to "follow up with an investigation and also report on the status of the queue within thirty (30) days of the date of the Utilities' report." On December 21, 2018, ORS requested Duke Energy include interval statistics in their report to the Commission. Duke Energy filed the Interconnection Report on January 11, 2019. On February 8, 2019, ORS notified the Commission of its intention to file the ORS Report no later than February 15, 2019.

In its investigation and report, ORS reviewed comments on Duke Energy's CPRE Waiver Petition, Duke Energy's Interconnection Report and discovery responses received from Duke Energy regarding current queue management practices and the proposed CPRE Program.

Investigation of Duke Energy's Interconnection Report

ORS reviewed Duke Energy's Interconnection Report and finds it contains the information required by Order No. 2018-803(A). Duke Energy also provided the detailed interval statistics as requested by ORS. CPRE project information was not provided by Duke Energy as requested because the Independent Administrator has not yet completed its evaluation of the participating projects.

Duke Energy's Report on the Status of the Queues and ORS's Review and Update on Queue Status

Duke Energy provided an Interconnection Queue Status Report as of December 31, 2018 (Queue

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Report) as Attachment 1 of the Interconnection Report which includes South Carolina (SC) projects in DEC and DEP service territories. Duke Energy maintains separate jurisdictional queues for North Carolina (NC) and SC projects for queue assignment and queue priority. Duke Energy maintains a single, unified interconnection queue for purposes of assigning available grid capacity between state and Federal Energy Regulatory Commission (FERC)-jurisdictional projects.[1] Duke Energy indicates that SC, NC, and FERC interconnection requests can be collectively interdependent on one another.[2]

The Queue Report provides information on projects in SC and indicates older projects in the System Impact Study (SIS) stage are the cause for delay in the study of more recent projects. ORS's review indicates the majority of projects in the Queue Report that are active in the SIS stage, entered the queue in 2015 and 2016 and are designated by Duke Energy as interdependent. This may explain, in part, the number of projects that entered the queue in 2017 and 2018 that are designated as "on hold" and "interdependent" in the SIS process.

The Queue Report does not provide sufficient information for ORS to determine the specific reasons why projects that entered the queue in 2015 and 2016 are still under review, nor does it provide a complete picture of all projects in Duke Energy's queues that trigger the interdependent status of SC projects.

Drivers of Queue Challenges

Duke Energy states the primary drivers for the challenges in the interconnection queues are:

1. the volume of Interconnection Requests (IR);
2. the number of interdependent projects that are "on hold;"
3. the limitations of the serial study process; and,
4. the transmission congestion in DEC and DEP service territories.[3]

ORS reviewed Duke Energy's positions on these issues and finds the failure of Duke Energy to strictly adhere to the SCGIP for processing SC interconnection requests significantly contributes to the queue backlog and delays.

Volume of Interconnection Requests

The serial queue process is designed to process any volume of IRs. The SCGIP addresses the intake and queue assignment process for IRs and the study process for individual projects. The

[1] *Interconnection Report p.12*
[2] *Interconnection Report p.16*
[3] *Interconnection Report p.13*

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interconnection customer is responsible for the IR and associated risks and impacts based on when the IR enters the queue and the area of the system proposed for the interconnection. The SCGIP offers interconnection customers the ability to request a Pre-application Report to identify and assess risks prior to the generation of an IR and subsequent queue assignment. The concern raised by Duke Energy regarding high IR volume is not unique to Duke Energy or to SC. Other utilities in SC have experienced an increase in IRs and Duke Energy's IR volume in NC has also increased. This trend is occurring across the country as the renewable industry matures.

Act 236 established renewable goals for a utility that voluntarily participates in an approved Distributed Energy Resource Program (DER Program). Both DEC and DEP voluntarily petitioned the Commission for approval of their DER Programs[4]. The collective utility-scale goals required under the DER Programs for Duke Energy is 53 MW. As of June 14, 2018, in DEP's DER Program update to the Commission provided in Docket 2018-1-E, DEP had met its utility-scale goal of 13 MW. As of July 27, 2018, in DEC's DER Program update to the Commission provided in Docket 2018-3-E, DEC had executed 5 interconnection agreements totaling 10.6 MW towards its utility-scale goal of 40 MW. The DER Program's goals are minimal and manageable.

Number of Interdependent Projects that are "On Hold"

Duke Energy blames the queue backlog on the waiting period for interconnection customer action or response.[5] Although Duke Energy cannot control the number of new IRs that enter the queue, Duke Energy's Interconnection Report indicates a number of Duke Energy's attempts to hold customers accountable to deadlines, in order to minimize downstream impacts of delays on later-queued interdependent projects, resulted in complaints and disputes.[6] In an effort to reduce the possibility of complaints and disputes, Duke Energy has historically informally provided interconnection customers short "cure periods" for missed deadlines during the SIS process. A cure period is not expressly required under the SCGIP.[7] In fact, lack of adherence to the timelines and procedures cause a domino effect within the interconnection queue which triggers delays for other interconnection customers.

Duke Energy voluntarily offers interconnecting customers *"mitigation options*" during the SIS phase. These mitigation offers provide interconnection customers with multiple feasible interconnection options, including options to reduce the size of the project in order to meet Duke Energy's technical standards and/or to "mitigate" some or potentially all facility upgrade costs to

[4] *DEC Docket No. 2015-55-E; DEP Docket No. 2015-53-E*
[5] *Interconnection Report p.12*
[6] *Interconnection Report p.15*
[7] *Interconnection Report p.15*

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support the interconnection.[8] ORS determined the mitigation offerings are in direct conflict with Sections1.4 and 4.3.3 of the SCGIP.

Section 4 Study Process does not provide procedures for a utility to offer modifications to the IR, nor does it allow an interconnection customer request for modification outside of Section 1.4 Modification of the Interconnection Request. SCGIP Section 1.4 places the burden of modification request on the interconnection customer not the utility. The utility is required to determine if the modification request is material and then process the modification request in accordance with Section 1.4.

Duke Energy's responsibility under Section 4.3.3 is not to offer options to reduce upgrade costs to interconnection customers, but to evaluate the impact of the proposed IR on the reliability of the electric system. The SCGIP requires the SIS report to provide the interconnection customer with the results of the study as outlined in the SIS agreement. The practice of offering *"mitigation options"* does not comply with the SCGIP.

Duke Energy identifies a "*voluntary study option"* in the second step of the SIS process where an interconnection customer may pursue its own right-of-way or select a Line Voltage Regulator Review (LVR) option within 15 business days of notification from the utility.[9] Duke Energy did not reference a specific SCGIP Section that details the procedures for a voluntary study option. ORS does not find the voluntary study option to be included in SCGIP Sections 4 and 5 - the SIS Agreement or the Facilities Study Agreement. Duke Energy does not follow the SCGIP when Duke Energy offers voluntary study options to interconnecting customers. This practice contributes to the queue delays and backlog.

Limitations of the Serial Study Process and Transmission/Distribution Congestion

The serial process as designed may create delays for later-queued IRs to begin the study process, specifically for IRs deemed as "interdependent" on other IRs in the same proximity of the distribution and transmission systems.

According to the SCGIP, any upgrades as determined during the study process, and the associated costs, are the responsibility of the interconnection customer. Duke Energy identified areas of the distribution and transmission systems that are constrained with current interconnected solar projects[10]. This congestion impacts the study results for subsequent IRs in

[8] *Interconnection Report p.10*
[9] *Interconnection Report p.12*
[10] *Interconnection Report p. 9*

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the distribution and transmission systems. The study results for those projects that are in areas of congestion indicate significant estimated facility upgrade costs are required to facilitate interconnection to provide reliable service. The next interconnection customer in the queue may trigger a significant facility upgrade. The impacted interconnection customer will determine the feasibility of the IR upon receipt of the SIS result. It is the interconnecting customer's responsibility to respond to the utility within the timeframe allowed in the SCGIP and either withdraw the project or return the signed Facilities Study Agreement. The Interconnection Report indicates Duke Energy offers an interconnecting customer cost-sharing or other cost mitigation options that are not included within the SCGIP. This practice contributes to the queue delays and backlog.

The failure of Duke Energy to strictly adhere to the SCGIP for SC projects is a primary driver which contributes to queue backlog and delays. Duke Energy's actions to provide voluntary options and mitigation to the interconnecting customer is well beyond the scope of the SCGIP and adversely impacts other SC IRs. While Duke Energy cannot control interconnecting customers' behavior and decisions, Duke Energy is equipped to manage the interconnection queue in a manner that complies with the SCGIP.

Plans to Remedy the Queue Challenges

In the Interconnection Report, Duke Energy proposes several remedies to mitigate primary drivers of the queue challenges which include:

1. Manage the volume of IRs through resource management and technology investments;
2. Hold interconnection customers accountable for deadlines under the SCGIP by supporting only a single cure period;
3. Consider revisions to the SCGIP;
4. Assign costs associated with any required upgrade(s) to the IR that triggers the upgrade(s);
5. Form a NC/SC Distributed Energy Resource Technical Standards Review Group ("TSRG");
6. Assign account managers to IRs; and,
7. Provide bi-weekly updates to online queue reports.

Several of the remedies proposed by Duke Energy, such as adherence to the deadlines and assignment of costs to IRs, already exist under the SCGIP. Any additional resources or technology investments made to remedy the queue backlog should be funded by Duke Energy or by interconnecting customers. Duke Energy implemented some of the measures including an

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increase in resources for processing IRs, quarterly meetings of the TSRG, and bi-weekly updates to the online queue reports. However, based on the Interconnection Report, ORS is unable to determine if these remedies have reduced the queue backlog since implementation. Adherence to the SCGIP as approved by the Commission is critical for the efficient, and effective management of the IRs in the queue.

Commission and ORS Jurisdiction

Duke Energy indicates in the Interconnection Report they have received a number of informal disputes regarding IRs and Duke Energy's attempts to reduce, or mitigate, such disputes through various means outside the scope of the SCGIP.[11] However, the SCGIP provides a robust process for dispute resolution in Section 6.2 Disputes as indicated below:

> 6.2 Disputes
>
> 6.2.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this section.
>
> 6.2.2 In the event of a dispute, either Party shall provide the other Party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute.
>
> 6.2.3 If the dispute has not been resolved within ten (10) Business Days after receipt of the notice, either Party may contact the Office of Regulatory Staff for assistance in informally resolving the dispute. If the Parties are unable to informally resolve the dispute, either Party may then file a formal complaint with the Commission.
>
> 6.2.4 Each Party agrees to conduct all negotiations in good faith.

ORS provides informal dispute resolution services under Section 6.2 and provides technical assistance to inquiries from interconnection customers and Duke Energy regarding various interconnection issues since Commission approval of the SCGIP. In addition, since 2016, ORS hosted numerous informal discussions on topics including, but not limited to: SIS criteria, technical standards implemented by Duke Energy, Legally Enforceable Obligation requirements, IRs for on-site generation, and clarification of contract demand and nameplate capacity requirements used to properly size generating facilities.

To date, ORS has assisted in the informal resolution of five (5) Notice of Disputes (NOD) as

[11] *Interconnection Report p.11 and p.15*

identified in Section 6.2.2 of the SCGIP. One NOD included forty-four (44) different projects across DEC's and DEP's SC queues. Two (2) complaints relating to the implementation of the SCGIP were filed at the Commission, Docket Nos. 2017-332-E and 2017-351-E. Both dockets are currently held in abeyance at the request of the interconnecting customer and Duke Energy.

In Docket No. 2015-362-E, the Commission initiated a workshop to hear concerns regarding implementation of the SCGIP with comments filed and presentations made by various stakeholders. Several allowable *ex parte* briefings have also been conducted with the Commission by various stakeholders to provide educational opportunities pertaining to topics including interconnection. The Commission states in Order No. 2016-191 that Duke Energy and the interconnecting customers may petition the Commission at any time for a review and revision of the SCGIP.[12]

Conclusion

Interconnection and the challenges discussed in this report are technical and complex. Duke Energy operates balancing authorities across NC and SC which enhance the challenges of implementing and enforcing varying interconnection standards to provide safe and reliable service. At a minimum, Duke Energy should strictly comply with the SCGIP and enforce the process and timelines as prescribed therein.

[12] *Docket No. 2015-362-E; p.8*

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