

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 101
DOCKET NO. E-100, SUB 101B

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

)	
In the Matter of)	INITIAL COMMENTS OF THE
Petition for Approval of Revisions to)	PUBLIC STAFF
Generator Interconnection)	
Standards)	

NOW COMES THE PUBLIC STAFF – North Carolina Utilities Commission (“Public Staff”), by and through its Executive Director, Christopher J. Ayers, and responds to the filings made March 15, 2022, by Duke Energy Progress, LLC (“DEP”), and Duke Energy Carolinas, LLC (“DEC”), (together, “Duke”), and Virginia Electric and Power Company d/b/a Dominion Energy North Carolina (“DENC”) (all three together, the “Utilities”) on the annual status update regarding the Utilities respective implementation of IEEE Standard 1547-2018.

1. On March 2, 2021, the Commission issued an order, scheduling annual updates of the Utilities implementation status of IEEE Standard 1547-2018. The Commission also requested a presentation of the implementation of the IEEE Standard 1547-2018 by Duke on April 12, 2021.

2. On March 15, 2021, the Utilities and NCEMC filed their initial IEEE Standard 1547-2018 presentations.

3. On April 12, 2021, the Utilities and NCEMC made their respective presentations on the IEEE Standard 1547-2018 implementation.

4. On November 22, 2021, the Commission issued an order requiring comments on the Utilities' implementation of the IEEE Standard 1547, addressing generator ride-through capabilities and inverter settings, as well as requiring the Public Staff, and inviting other interested parties, to file comments.

5. On March 15, 2022, the Utilities filed their annual updates on the IEEE Standard 1547-2018 implementation ("Updates"). These Updates included the Utilities expected next steps.

6. The purpose of IEEE Standard 1547-2018 is to establish minimum performance requirements for inverter-based distributed energy resources.

7. The IEEE Standard 1547-2018 has not been updated in the last year.

8. Based upon the Utilities' initial responses and discussions during the Technical Standards Review Group ("TSRG") meetings, the Public Staff supports the Utilities' continuing efforts to incorporate and implement the IEEE Standard 1547-2018.

9. The Public Staff supports DENC's statement, which should be applicable to Duke as well, that "any utilization of DER ride-through and/or voltage regulation functionalities should be at Dominion Energy's discretion and evaluated based on system needs on a case-by-case basis."¹

¹ DENC's Petition for Approval of Revisions to Generator Interconnection Standards Annual IEEE 1547-2018 Report, Attachment A at 1, filed March 15, 2022, in Docket No. E-100, Sub 101B.

10. IEEE Standard 1547-2018 certified inverters may become commercially available in mid to late 2022. Given the existing inverter-based resources connected to the system that are not IEEE Standard 1547-2018 certified, it is unclear from the Updates how or if the Utilities are going to evaluate existing devices connected to the system. Duke stated that “they do not intend to implement the new functions...for existing inverters as it is not the Companies’ practice to apply new standards retroactively.”² However, Duke goes on to state, “certain functions, including voltage and frequency tripping, have existed throughout all versions of 1547... [and since] revision of pre-existing settings is not considered implementation of a new function, those requirements will apply to existing inverters.”³ The Public Staff asked Duke for clarification on these statements, and from Duke’s response the Public Staff believes that if existing inverters connected to the system do not have specific functions, e.g., voltage and frequency tripping per the guidelines of IEEE Standard 1547-2018, Duke will not retroactively enforce or make the existing devices and inverters meet these requirements. Duke will only apply the IEEE Standard 1547-2018 requirements that each inverter was designed, built, and tested to meet at the time of interconnection. Duke also will only impose voltage and frequency tripping standards retroactively because tripping standards have historically been included in all three versions of IEEE Standard 1547 (2003, 2014, 2018) and the Interconnection Agreement between Duke and the interconnection customers. The

² Duke’s Annual IEEE Standard 1547-2018 Implementation Guidelines Filing at 5, filed on March 15, 2022, in Docket No. E-100, Subs 101 and 101B.

³ *Id.*

Public Staff believes the Utilities are ultimately responsible for the electrical grid (planning, operation, maintenance, etc.) and requiring changes to existing inverters may have legal or contractual issues, which are beyond the scope of these comments.

11. Also, it is unclear if the Utilities will require inverter-based resources connected in 2023 and beyond to be IEEE Standard 1547-2018 compliant. While it is possible that the Utilities will not require existing or non-compliant inverters to meet IEEE Standard 1547-2018, the inverters may still contain the ability to perform the same functions as compliant inverters, thus limiting risks to the electrical system. Thousands of megawatts of inverter-based resources are in the interconnection study review process in the Carolinas and Virginia, and there is a shift from distribution to transmission interconnection. To the extent that the Utilities believe it would be Good Utility Practice to allow only IEEE Standard 1547-2018 certified inverters after 2022, the Utilities should make this request clear to interconnection customers and the Commission. Further, if changes to the North Carolina Interconnection Procedures are necessary, the Utilities should file proposed revisions as soon as possible.

12. Duke stated in its comments, “[i]t is likely that the requirement for new inverters to be IEEE 1547-2018 compliant will be aligned with an annual cluster study enrollment, potentially in 2023 or 2024, as the market availability of these inverters comes into focus.”⁴ The Public Staff acknowledges the current uncertainty of the market availability of certified inverters. The Public Staff,

⁴ *Id.* at 3.

however, notes that the proposed 2022 Solar Procurement Request for Proposals will use the 2022 Definitive Interconnection System Impact Study (“DISIS”) with an expected commercial operation date of selected resources in ~2026, pending the Commission’s ruling on the matter. The Public Staff is concerned that waiting to require certified inverters until a 2023 or even 2024 enrollment window opens may impose potential risks to the electrical system. However, as stated previously, these risks may be relatively low given that current inverters that are not IEEE Standard 1547-2018 compliant may still offer some of the required functionality of voltage ride through and tripping.

13. Duke initiated a Smart Inverter Pilot Project (“Pilot Project”) with certain solar developers in late 2020 to “utilize smart inverter functions in order to resolve certain technical issues that would otherwise necessitate additional interconnection upgrades for the downsizing of a facility.”⁵ The Public Staff recommends that Duke file a report on the Pilot Project on or before July 31, 2022. The report should provide (1) a summary of the timeline of the Pilot Project; (2) an explanation of any findings; (3) a list of the steps taken for large-scale adoption of smart inverters in the current and ongoing annual DISIS processes; and (4) identification of any other factors that hindered the Pilot Project, such as a lack of participation. The Public Staff further recommends that Duke report on whether its own solar facilities would be candidates for the Pilot Project.

14. Duke initiated the Pilot Project through the TSRG in part to assist the interconnection of generators with inverters that are compliant with IEEE Standard

⁵ *Id.*

1547-2018. Given the current time requirements of the annual DISIS process, the Public Staff is uncertain whether Duke can provide the final results of the Pilot Project to the applicable stakeholders in time for the 2022 or 2023 DISIS.

Respectfully submitted this the 14th day of April 2022.

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CERTIFICATE OF SERVICE

I certify that a copy of these Initial Comments of the Public Staff has been served on all parties of record or their attorneys, or both, in accordance with Commission Rule R1-39, by United States Mail, first class or better; by hand delivery; or by means of facsimile or electronic delivery upon agreement of the receiving party.

This the 14th day of April 2022.

Electronically submitted
/s/Robert B. Josey
Staff Attorney