**BEFORE**

**THE PUBLIC UTILITIES COMMISSION OF OHIO**

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| In the Matter of the Commission’s Review of Chapter 4901:1-22 of the Ohio Administrative Code Regarding Interconnection Services. | )) Case No. 18-884-EL-ORD)) |

**COMMENTS**

**BY**

**THE OFFICE OF THE OHIO CONSUMERS' COUNSEL,**

**I. INTRODUCTION**

The Public Utilities Commission of Ohio’s (“PUCO”) interconnection rules (Ohio Adm. Code 4901:1-22) should protect customers who want to generate their own energy (for example, through rooftop solar) and connect their energy source (often referred to as a “distributed energy resource” or “DER”) to the electric grid. The rules should also protect those consumers who do not, or cannot, generate their own energy, and thus are not cost causers.

The Office of the Ohio Consumers’ Counsel (“OCC”) appreciates the opportunity to provide comments on the rules. These comments contain recommendations for the benefit of Ohio’s 4.3 million residential consumers.

**II. RECOMMENDATIONS**

**A. Background Regarding the IEEE 1547 Standard**

In its Entry soliciting comments, the PUCO asked parties to consider whether and to what extent certain standards (IEEE 1547-2018) should be adopted for purposes of the PUCO’s interconnection rules.

IEEE is the Institute of Electrical and Electronics Engineers.[[1]](#footnote-2) It describes itself as, among other things, the “leading developer of industry standards in a broad range of technologies that drive the functionality, capabilities, and interoperability of a wide range of products and services.”[[2]](#footnote-3) One of those standards is standard 1547, which relates to the interconnection of distributed energy resources to the electrical grid.

Standard 1547 was originally established in 2003 (and thus referred to as IEEE 1547-2003). At the time, very few customers were generating their own electricity, so the standard was focused primarily on “ensuring that DERs did not interfere with the normal operations of the distribution system’s regulation and protection systems.”[[3]](#footnote-4) For example, under the 2003 standard, distributed energy resources were prohibited from actively regulating voltage and were required to trip on abnormal voltage or frequency.[[4]](#footnote-5)

In 2014, the standard was amended (and thus referred to as IEEE 1547a-2014). Under the amended 2014 standard, voltage regulation by distributed energy resources was no longer prohibited, and distributed energy resources were not required to trip on abnormal voltage or frequency. Instead, they were permitted, but not required, to “ride through” these events and to provide frequency response.[[5]](#footnote-6)

The 2018 standard (IEEE 1547-2018) goes one step further, affirmatively requiring distributed energy resources to (i) be capable of actively regulating voltage (*i.e.*, assisting the utility in addressing situations where voltage on the system is too high or too low), (ii) be capable of frequency response (*i.e.*, assisting the utility in stabilizing frequency), and (iii) ride through abnormal voltage and frequency events (*i.e.*, continue to stay connected to the grid, even when the grid is experiencing issues with voltage or frequency).[[6]](#footnote-7)

**B. The PUCO should require a cost-benefit analysis to determine whether the IEEE 1547-2018 standard—which might result in higher costs for Ohio consumers—should be adopted.**

Before the PUCO adopts rules that might require compliance with IEEE 1547-2018, it should require a cost-benefit analysis by the PUCO Staff or an outside consultant. The first step in determining whether IEEE 1547-2018 is right for Ohio is to determine what types of benefits the standard will provide to customers, the quantification of those benefits (in current dollars), and the cost to customers of implementing the standard.

For example, potential costs of implementing IEEE 1547-2018 could include upgrades to electric distribution utilities’ systems to accommodate voltage regulation and frequency response. According to a FERC Staff Report, if the new IEEE standard is adopted, “it would be the responsibility of the utility to build the required communication infrastructure to make use of this capability.”[[7]](#footnote-8) In Ohio, the “responsibility of the utility” usually translates into costs for consumers. Additionally, it is not clear whether Ohio’s current and future grid modernization investments are already designed with such communication infrastructure in mind, or whether additional investments would be necessary on top of the hundreds of millions already spent (and charged to customers) on grid modernization in Ohio.

The PUCO should also consider the potential for stranded costs if the IEEE 1547-2018 standard is implemented too soon or turns out to be not needed. Very few customers in Ohio generate their own electricity, with 5,000 customers using distributed energy resources—just 0.1% of all customers.[[8]](#footnote-9) If utilities and consumers invest in new technology to comply with the IEEE 1547-2018 standard now, but distributed energy resource growth continues only gradually in Ohio, there may be no demonstrated benefits from advanced capabilities like ride-through before the devices meeting the new standard are obsolete or beyond their useful life. As just one example, inverters have a useful life of seven to ten years, meaning the new device meeting the updated IEEE standards could need to be replaced before it was even needed in the first place.[[9]](#footnote-10)

Further, the cost-benefit analysis should address the potential costs and benefits to those customers who will not install distributed energy resources. These customers might incur costs in the form of paying utility riders for grid modernization upgrades. They might also receive at least some benefits, to the extent distributed energy resources are able to provide system-wide benefits. The cost-benefit analysis should separately analyze not only the aggregate costs and benefits, but the costs and benefits to non-participating customers. Non-participating customers will almost certainly remain in the majority for the foreseeable future, so their interests must be considered.

It might make sense for states with substantial quantities of distributed energy resources (like California and Hawaii) to adopt a more advanced standard like IEEE 1547-2018. California, for example, has one million solar installations with more than 26,000 MW solar installed.[[10]](#footnote-11) But it could be premature to do so in Ohio where adoption of distributed energy resources has been more gradual (just 5,000 customers). A cost-benefit analysis, as a pre-cursor to adoption of the standard, with reasonable projections about future distributed energy resource adoption in Ohio, could provide valuable information about whether to adopt IEEE 1547-2018, whether to adopt the interim IEEE 1547a-2014 standard (which allows but does not mandate advanced grid functionality for distributed energy resources), or to adopt some other standard.

**C. The rules should require utilities to regularly disclose to the PUCO Staff and Ohio Consumers’ Counsel all complaints they receive from consumers regarding the interconnection process.**

In the past, there have been instances where utilities did not cooperate with customers wanting to interconnect, ultimately resulting in formal PUCO complaints.[[11]](#footnote-12) Without the filing of such a formal complaint case, however, there is limited transparency regarding consumer issues with interconnection. Accordingly, the PUCO should amend Rule 4901:1-22-12 to require utilities to regularly disclose to the PUCO Staff and OCC all instances in which a consumer contacts the utility regarding a complaint or other dispute related to interconnection, even if such complaint does not become a formal complaint under R.C. 4905.26.

**III. CONCLUSION**

To date, the PUCO’s interconnection rules have worked well for the relatively few residential consumers who have installed distributed energy resources at their homes. Before requiring more advanced capabilities for residential distributed energy resources, the PUCO should evaluate whether the cost to consumers—including consumers who will not or cannot install distributed energy resources at their homes—outweighs the potential benefits.

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing Comments was served on the persons stated below via electronic transmission, this 13th day of March 2020.

 /s/ *Christopher Healey*

 Christopher Healey

 Assistant Consumers' Counsel

The PUCO’s e-filing system will electronically serve notice of the filing of this document on the following parties:

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1. *See* [www.ieee.org](http://www.ieee.org). [↑](#footnote-ref-2)
2. *See* <https://www.ieee.org/standards/index.html>. [↑](#footnote-ref-3)
3. Guide to the IEEE 1547-2018 Standard and its Impacts on Cooperatives at 3 (Mar. 2019), *available at* <https://www.cooperative.com/programs-services/bts/Documents/Reports/NRECA-Guide-to-IEEE-1547-2018-March-2019.pdf>. [↑](#footnote-ref-4)
4. *See* IEEE Standards Association, IEEE Std 1547-2018, Bulk System Opportunities from New Distributed Energy Resource Interconnection and Interoperability Standards, presentation dated Jan. 8-9, 2019, *available at* <https://www.nerc.com/comm/PC/System%20Planning%20Impacts%20from%20Distributed%20Energy%20Re/IEEE%20SCC21_1547_Overview_NERC_SPIDERWG_01072019.pdf>. [↑](#footnote-ref-5)
5. *Id.* [↑](#footnote-ref-6)
6. *Id.* [↑](#footnote-ref-7)
7. *See* FERC Staff Report, Distributed Energy Resources – Technical Considerations for the Bulk Power System (Feb. 2018), *available at* <https://www.ferc.gov/legal/staff-reports/2018/der-report.pdf>. [↑](#footnote-ref-8)
8. *See* Case No. 18-1596-EL-GRD, Current-State Assessment Report of [FirstEnergy] at 4 (Apr. 1, 2019) (1,500 DER customers for FirstEnergy); The Dayton Power and Light Company’s Current-State Assessment for Distribution System Planning (Apr. 1, 2019) (460 DER customers for DP&L); AEP Ohio PowerForward Initial Assessment Report at 42 (Apr. 1, 2019) (2,000 DER customers for AEP); Duke Energy Ohio Distribution System Planning Current State Assessment at 10 (Apr. 1, 2019) (1,096 DER customers for Duke). [↑](#footnote-ref-9)
9. *See* FERC Staff Report, Distributed Energy Resources – Technical Considerations for the Bulk Power System (Feb. 2018) (estimated seven-year useful life); *Extending Solar Energy System Lifetime with Power Electronics* (10-year useful life), *available at* <https://www.energy.gov/eere/solar/articles/extending-solar-energy-system-lifetime-power-electronics>. [↑](#footnote-ref-10)
10. *See* <https://www.seia.org/state-solar-policy/california-solar>. [↑](#footnote-ref-11)
11. *See, e.g.*, Case No. 09-429-EL-CSS. [↑](#footnote-ref-12)