ARC 4645C

UTILITIES DIVISION[199]

Adopted and Filed

Rule making related to interconnection standards

The Utilities Board hereby amends Chapter 45, "Electric Interconnection of Distributed Generation Facilities," Iowa Administrative Code.

Legal Authority for Rule Making

This rule making is adopted under the authority provided in Iowa Code sections 474.5, 476.2, and 476.58.

State or Federal Law Implemented

This rule making implements, in whole or in part, Iowa Code sections 476.1, 476.8, and 476.58.

Purpose and Summary

The purpose of this rule making is to update the Board's interconnection rules to be consistent with updated standards, including the new Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 1547. The amendments update references to the new IEEE Standard 1547 and to sections of the standard that have been changed or deleted. The Board is not aware of any substantive requirements created by the new standard. The Board issued an order adopting amendments on August 6, 2019. The order is available on the Board's electronic filing system, efs.iowa.gov, under Docket No. RMU-2018-0002.

Public Comment and Changes to Rule Making

Notice of Intended Action for this rule making was published in the Iowa Administrative Bulletin on February 13, 2019, as **ARC 4284C**. An Amended Notice of Intended Action was published in the Iowa Administrative Bulletin on April 24, 2019, as **ARC 4407C** to allow for an oral presentation. An oral presentation was held on May 21, 2019.

MidAmerican Energy Company (MidAmerican); the Office of Consumer Advocate (OCA), a division of the Iowa Department of Justice; and Interstate Power and Light Company (IPL) filed statements of position. MidAmerican and IPL were supportive of the Board's proposal to update references to the IEEE 2018 Standard. Both MidAmerican and IPL also supported updating the NFPA 70-2014 Standard to the NFPA 70-2017 Standard. MidAmerican also suggested changing the title of IEEE 1547 to reflect the title of IEEE 1547-2018. The OCA had several questions regarding the costs of adopting IEEE 1547-2018 and requested that an oral presentation be held to explore the questions. An Amended Notice of Intended Action was published and an oral presentation was held as described above. At the oral presentation, the OCA's questions regarding the cost to implement the rules were answered by MidAmerican and IPL.

The following changes have been made since publication of the Notices: The Board updated the reference to the NFPA 70-2014 Standard to the NFPA 70-2017 Standard and updated the title of IEEE 1547 to reflect the title of IEEE 1547-2018, based upon stakeholder comments.

Adoption of Rule Making

This rule making was adopted by the Utilities Board on August 6, 2019.

Fiscal Impact

After analysis and review, the Board tentatively concludes that the amendments will have no effect on the expenditure of public moneys within the state of Iowa.

Jobs Impact

After analysis and review of this rule making, no impact on jobs has been found.

Waivers

Any person who believes that the application of the discretionary provisions of this rule making would result in hardship or injustice to that person may petition the Board for a waiver of the discretionary provisions, if any.

Review by Administrative Rules Review Committee

The Administrative Rules Review Committee, a bipartisan legislative committee which oversees rule making by executive branch agencies, may, on its own motion or on written request by any individual or group, review this rule making at its regular monthly meeting or at a special meeting. The Committee's meetings are open to the public, and interested persons may be heard as provided in Iowa Code section 17A.8(6).

Effective Date

This rule making will become effective on October 2, 2019.

The following rule-making actions are adopted:

ITEM 1. Amend rule 199—45.1(476) as follows:

199—45.1(476) Definitions. Terms defined in the Public Utility Regulatory Policies Act of 1978 (PURPA), 16 U.S.C. 2601 et seq., shall have the same meaning for purposes of these rules as they have under PURPA, unless further defined in this chapter.

"Adverse system impact" means a negative effect that compromises the safety or reliability of the electric distribution system or materially affects the quality of electric service provided by the utility to other customers.

"AEP facility" means an AEP facility, as defined in 199—Chapter 15, used by an interconnection customer to generate electricity that operates in parallel with the electric distribution system. An AEP facility typically includes an electric generator and the interconnection equipment required to interconnect safely with the electric distribution system or local electric power system.

"Affected system" means an electric system not owned or operated by the utility reviewing the interconnection request that could suffer an adverse system impact from the proposed interconnection.

"Applicant" means a person (or entity) who has submitted an interconnection request to interconnect a distributed generation facility to a utility's electric distribution system.

"Area network" means a type of electric distribution system served by multiple transformers interconnected in an electrical network circuit, generally used in large, densely populated metropolitan areas.

"Board" means the Iowa utilities board.

"Business day" means Monday through Friday, excluding state and federal holidays.

"Calendar day" means any day, including Saturdays, Sundays, and state and federal holidays.

"Certificate of completion" means the Certificate of Completion form that contains information about the interconnection equipment to be used, its installation, and local inspections.

"Commissioning test" means a test applied to a distributed generation facility by the applicant after construction is completed to verify that the facility does not create adverse system impacts and performs to the submitted specifications. At a minimum, the scope of the commissioning tests performed shall

include the commissioning test specified in Institute of Electrical and Electronics Engineers, Inc. (IEEE), Standard 1547, Section ~~5.4 "Commissioning tests."~~ 11 "Test and Verification Requirements."

"Disconnection device" means a lockable visual disconnect or other disconnection device capable of isolating, disconnecting, and de-energizing the residual voltage in a distributed generation facility.

"Distributed generation facility" means a qualifying facility, an AEP facility, or an energy storage facility.

"Distribution upgrade" means a required addition or modification to the electric distribution system to accommodate the interconnection of the distributed generation facility. Distribution upgrades do not include interconnection facilities.

"Electric distribution system" means the facilities and equipment owned and operated by the utility and used to transmit electricity to ultimate usage points such as homes and industries from interchanges with higher voltage transmission networks that transport bulk power over longer distances. The voltage levels at which electric distribution systems operate differ among areas but generally operate at less than 100 kilovolts of electricity. "Electric distribution system" has the same meaning as the term "Area EPS," as defined in Section 3.1.~~6.1~~ of IEEE Standard 1547.

"Electric meter" means a device used by an electric utility that measures and registers the integral of an electrical quantity with respect to time.

"Fault current" is the electrical current that flows through a circuit during an electrical fault condition. A fault condition occurs when one or more electrical conductors contact ground or each other. Types of faults include phase to ground, double-phase to ground, three-phase to ground, phase-to-phase, and three-phase. Often, a fault current is several times larger in magnitude than the current that normally flows through a circuit.

"IEEE Standard 1547" is the Institute of Electrical and Electronics Engineers, Inc., 3 Park Avenue, New York, NY 10016-5997, Standard 1547 ~~(2003) "Standard for Interconnecting Distributed Resources with Electric Power Systems."~~ (2018) "Standard for Interconnection and Interoperability of Distributed Energy Resources and Associated Electric Power System Interfaces."

"IEEE Standard 1547.1" is the IEEE Standard 1547.1 (2005) "Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems."

"Interconnection customer" means a person or entity that interconnects a distributed generation facility to an electric distribution system.

"Interconnection equipment" means a group of components or an integrated system owned and operated by the interconnection customer that connects an electric generator with a local electric power system, as that term is defined in Section 3.1.~~6.2~~ of IEEE Standard 1547, or with the electric distribution system. Interconnection equipment is all interface equipment including switchgear, protective devices, inverters, or other interface devices. Interconnection equipment may be installed as part of an integrated equipment package that includes a generator or other electric source.

"Interconnection facilities" means facilities and equipment required by the utility to accommodate the interconnection of a distributed generation facility. Collectively, interconnection facilities include all facilities and equipment between the distributed generation facility's interconnection equipment and the point of interconnection, including any modifications, additions, or upgrades necessary to physically and electrically interconnect the distributed generation facility to the electric distribution system. Interconnection facilities are sole-use facilities and do not include distribution upgrades.

"Interconnection request" means an applicant's request, in a form approved by the board, for interconnection of a new distributed generation facility or to change the capacity or other operating characteristics of an existing distributed generation facility already interconnected with the electric distribution system.

"Interconnection study" is any study described in rule 199—45.11(476).

"Lab-certified" means a designation that the interconnection equipment meets the requirements set forth in rule 199—45.6(476).

"Line section" is that portion of an electric distribution system connected to an interconnection customer's site, bounded by automatic sectionalizing devices or the end of the distribution line, or both.

"Local electric power system" means facilities that deliver electric power to a load that is contained entirely within a single premises or group of premises. "Local electric power system" has the same meaning as that term as defined in Section 3.1~~.6.2~~ of IEEE Standard 1547.

"Nameplate capacity" is the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer and usually indicated on a nameplate physically attached to the power production equipment.

"Nationally recognized testing laboratory" or *"NRTL"* means a qualified private organization that meets the requirements of the Occupational Safety and Health Administration's (OSHA) regulations. See 29 CFR 1910.7 as amended through February 22, 2017. NRTLs perform independent safety testing and product certification. Each NRTL shall meet the requirements as set forth by OSHA in its NRTL program.

"Parallel operation" or *"parallel"* means a distributed generation facility that is connected electrically to the electric distribution system for longer than 100 milliseconds continuously.

"Point of interconnection" has the same meaning as the term "point of common coupling" as defined in Section 3.1~~.13~~ of IEEE Standard 1547.

"Primary line" means an electric distribution system line operating at greater than 600 volts.

"Qualifying facility" means a cogeneration facility or a small power production facility that is a qualifying facility under 18 CFR Part 292, Subpart B, used by an interconnection customer to generate electricity that operates in parallel with the electric distribution system. A qualifying facility typically includes an electric generator and the interconnection equipment required to interconnect safely with the electric distribution system or local electric power system.

"Radial distribution circuit" means a circuit configuration in which independent feeders branch out radially from a common source of supply.

"Review order position" means, for each distribution circuit or line section, the order of a completed interconnection request relative to all other pending completed interconnection requests on that distribution circuit or line section. The review order position is established by the date that the utility receives the completed interconnection request.

"Scoping meeting" means a meeting between representatives of the applicant and utility conducted for the purpose of discussing interconnection issues and exchanging relevant information.

"Secondary line" means an electric distribution system line, or service line, operating at 600 volts or less.

"Shared transformer" means a transformer that supplies secondary voltage to more than one customer.

"Spot network" means a type of electric distribution system that uses two or more inter-tied transformers to supply an electrical network circuit. A spot network is generally used to supply power to a single customer or a small group of customers. "Spot network" has the same meaning as the term "spot network" as defined in Section ~~4.1.4~~ 9 "DER on distribution secondary grid/area/street (grid) networks and spot networks" of IEEE Standard 1547.

"UL Standard 1741" means the standard titled "Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources," January 28, 2010, edition, Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

"Utility" means an electric utility that is subject to rate regulation by the Iowa utilities board.

"Witness test" for lab-certified equipment means a verification either by an on-site observation or review of documents that the interconnection installation evaluation ~~required by IEEE Standard 1547, Section 5.3~~ and the commissioning test required by IEEE Standard 1547, Section ~~5.4~~ 11 have been adequately performed. For interconnection equipment that has not been lab-certified, the witness test shall also include verification of the on-site design tests ~~as required by IEEE Standard 1547, Section 5.1~~ and ~~verification of~~ production tests required by IEEE Standard 1547, Section ~~5.2~~ 11. All verified tests are to be performed in accordance with the test procedures specified by IEEE Standard 1547.1.

ITEM 2. Amend subrule 45.3(1) as follows:

45.3(1) *Acceptable standards.* The interconnection of distributed generation facilities and associated interconnection equipment to an electric utility system shall meet the applicable provisions of the publications listed below:

a. ~~Standard for Interconnecting Distributed Resources with Electric Power Systems~~ Standard for Interconnection and Interoperability of Distributed Energy Resources and Associated Electric Power System Interfaces, IEEE Standard 1547. For guidance in applying IEEE Standard 1547, the utility may refer to:

(1) IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems—IEEE Standard 519-2014; and

(2) IEC/TR3 61000-3-7 Assessment of Emission Limits for Fluctuating Loads in MV and HV Power Systems.

b. Iowa Electrical Safety Code, as defined in 199—Chapter 25.

c. National Electrical Code, ANSI/NFPA 70-~~2014~~ 2017.

ITEM 3. Amend subrule 45.5(10) as follows:

45.5(10) The utility may require a witness test after the distributed generation facility is constructed. The applicant shall provide the utility with at least 15 business days' notice of the planned commissioning test for the distributed generation facility. The applicant and utility shall schedule the witness test at a mutually agreeable time. If the witness test results are not acceptable to the utility, the applicant shall be granted 30 business days to address and resolve any deficiencies. The time period for addressing and resolving any deficiencies may be extended upon the mutual agreement of the utility and the applicant prior to the end of the 30 business days. An initial request for extension shall not be denied by the utility; subsequent requests may be denied. If the applicant fails to address and resolve the deficiencies to the utility's satisfaction, the interconnection request shall be deemed withdrawn. Even if the utility or an entity approved by the utility does not witness a commissioning test, the applicant remains obligated to satisfy the interconnection test specifications and requirements set forth in IEEE Standard 1547, Section ~~5~~ 11. The applicant shall, if requested by the utility, provide a copy of all documentation in its possession regarding testing conducted pursuant to IEEE Standard 1547.1.

ITEM 3. Amend subrule 45.6(2) as follows:

45.6(2) Lab-certified interconnection equipment shall not require further design testing or production testing, as specified by IEEE Standard 1547, ~~Sections 5.1 and 5.2~~ Section 11, or additional interconnection equipment modification to meet the requirements for expedited review; however, the applicant shall conduct all commissioning tests or periodic testing as specified by IEEE Standard 1547, ~~Sections 5.3, 5.4, and 5.5~~ Section 11. The utility may conduct additional witness tests, but no more frequently than annually.

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EDITOR'S NOTE: For replacement pages for IAC, see IAC Supplement 8/28/19.