IOWA UTILITIES BOARD
Policy Development Section

Docket No.:NOI-2014-0001
Memo Date: August 5, 2015

TO: The Board

FROM: Brenda Biddle
Parveen Baig
Gary Stump

SUBJECT: Recommendation for Revisions to the Board's Chapter 45 Rules

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I. Background

On January 7, 2014, the Board began an inquiry into distributed generation (DG), inviting interested parties to comment on broad general questions related to DG. Initial comments were received from over 170 interested parties, including utilities, utility associations, environmental groups, renewable energy advocates, energy-related organizations, businesses, and individuals. Because of the breadth of topics identified by participants in the initial comments, the Board issued an order on May 12, 2014, focusing the inquiry on the topics of net metering;[1] interconnection of DG (including safety and reliability); and customer awareness/protection. The Board requested the parties respond to specific questions outlined in the order with responses due on June 24, 2014.

After reviewing the comments, the Board issued an order on September 19, 2014, which contained additional questions regarding net metering and interconnection and asked the participants to reply to each other's comments; the responses to the Board's questions and reply comments were due on October 24, 2014.

On December 22, 2014, the Board issued an order soliciting proposed changes to the Board's chapter 45 interconnection rules (199 IAC 45) and requested that the utilities provide actual cost and supporting data to justify revising interconnection fees. Additionally, the Board requested that MidAmerican Energy Company (MidAmerican) propose specific language to revise the notification requirement in Iowa Code § 476.6A that may be used for future legislative action. Responses and comments were due February 16, 2015. Comments were filed by MidAmerican, Interstate Power and Light Company (IPL), the Iowa Association of Electric Cooperatives (IAEC) and the Alliance for Solar Choice (TASC). The Environmental Law and Policy Center (ELPC), the Iowa Environmental Council (IEC), and the Interstate Renewable Council, Inc. (IREC) filed joint comments (jointly, Environmental Commenters).

On March 12, 2015, the Board issued an order soliciting reply comments on the changes to the interconnection rules proposed by participants. Reply comments were due April 7, 2015. Reply comments were filed by MidAmerican, the IAEC, TASC, the Office of Consumer Advocate (OCA), a division of the Iowa Department of Justice, and the Environmental Commenters. IPL filed a letter in lieu of reply comments. MidAmerican, IPL, the ELPC and the IEC (Joint Commenters) also filed joint reply comments.

On May 1, 2015, Governor Branstad signed House File 548, an act that amended Iowa Code chapter 476 (adding Iowa Code § 476.58) and requires the Board to adopt administrative rules relating to the safety of distributed electric generation facilities. House File 548 is included in Appendix A for reference.

[1] Avoided cost issues are the subject of a separate investigatory docket, Docket No. INU-2014-0001.

Staff proposes to include changes to Iowa Administrative Code (IAC) chapters 15 and 45 that relate to House File 548.

II. Legal Standards

A summary of the interconnection statutes and Board rules is provided below.

Qualified Facilities[2] (QF) and Alternate Energy Production[3] (AEP) Interconnection Policy

The Energy Policy Act of 2005[4] required state commissions to consider implementing the Public Utility Regulatory Policies Act Interconnection Standard (PURPA Standard), which required utilities to interconnect any customer's on-site generation (i.e., DG) with the utility's local distribution system, based on Institute of Electrical and Electronics Engineers (IEEE) Standard 1547 and establish non-discriminatory practices and procedures that promote the best practices for interconnection of DG. In an order issued April 25, 2007 (Docket No. NOI-06-4), the Board noted that the PURPA Standard had three parts. The first part required the Board to consider broadening its interconnection requirements to include all forms of customer-owned on-site generation, not just QFs or AEP facilities. The Board declined to adopt this part of the PURPA Standard but continued examining it as part of its ongoing inquiry. The second part of the PURPA Standard required the Board to consider adoption of IEEE Standard 1547. The Board noted that it had considered and adopted this standard in a prior rule making (Docket No. RMU-04-6). The third part of the PURPA Standard required the Board to consider revising its interconnection rules to reflect current best practices for interconnection agreements and procedures. The Board declined to adopt this part of the PURPA Standard but continued examining it as part of its ongoing inquiry.

As a result of its inquiry, the Board initiated a rule making (Docket No. RMU-2009-0008) to further consider the PURPA Standard. On May 26, 2010, the Board adopted final interconnection rules for QFs and AEP facilities rather than all forms of on-site generation. The Board clarified that the technical standards of interconnection would be based on IEEE Standard 1547 (i.e., involving revisions to rule 15.10 applicable to all utilities, and an identical parallel new rule 45.3 applicable only to rate-regulated utilities), and that the rules

[2] "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.
[3] "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.
[4] 42 United States Code chapter 149 §15801 et seq.

incorporating current best practices for interconnection agreements and procedures (199 IAC 45) would apply to rate-regulated utilities only.

The Board's chapter 45 interconnection rules (199 IAC 45) are designed to offer standardized and streamlined requirements, forms, and procedures for smaller facilities, and to make the interconnection process more transparent and less complex for larger facilities. The rules provide four levels of review, with the level of review based largely on the size of the interconnected facility.

Rule 45.13 requires rate-regulated utilities to file annual reports providing information about each of the utilities' completed interconnection requests, including the final outcome.

III. Summary of Comments with Staff Analysis

The Board adopted the current interconnection rules (199 IAC 45) in 2010. These rules were based largely on Illinois' rules and the Federal Energy Regulatory Commission (FERC) Small Generator Interconnection Procedures (SGIP).[5] FERC updated the SGIP in November 2013 to reflect current best practices. Early comments from participants in this inquiry suggested that the Board should update its interconnection rules to incorporate best practices found in the new FERC SGIP. Throughout this docket the Board has requested input on possible revisions to the chapter 45 rules.

The December 22, 2014, Board order asked participants to propose specific rule changes to 199 IAC 45 that incorporate additional standards for a) pre-application, site control, supplemental review, and confidentiality; b) testing of existing customer-owned generation; c) periodic inspection of DG interconnections; and d) conducting cluster studies and approval of an interconnection request for a neighborhood service area or new development. The participants' positions related to each section are summarized below. References to 199 IAC 45 sections are based on the current rules and do not include final renumbering of rules that would occur based on staff's proposed revisions. Staff analysis of each topic with staff's proposed recommendation follows the summary of the parties' positions.

Pre-application Request

The FERC SGIP allows for a pre-application process, including a $300 fee paid to the utility for the time it has spent to respond to the applicant and captures the information required so a review could be completed by the host utility. The applicant receives sufficient information to determine whether to continue with the comprehensive application process for a particular location.

[5] The SGIP included standards based on best practices was originally adopted by FERC in 2005.

IPL believes its proposed pre-application procedure will allow the host utility to determine whether the applicant should continue with the comprehensive application process for the specified location. IPL's proposal, based on the FERC SGIP pre-application process, requires the customer to pay a $300 fee and allows 20 days for the utility to produce a pre-application report for the customer.

MidAmerican supports IPL's proposed pre-application procedure but suggests expanding the specific site to include multiple proposed individual interconnections in close proximity. MidAmerican recommends the Board adopt the 20-day timeframe since a 10-day period, as proposed by the Environmental Commenters, may be difficult to comply with if the utility needs clarification from the customer prior to providing the report.

The IAEC does not believe a formal pre-application process is required and is concerned that formalizing the process would make it more cumbersome and structured. A formal pre-application process could be viewed as less user-friendly than the current process where an interested customer simply talks to utility personnel about a proposed project and potential concerns. The IAEC believes the Board's current rules are adequate and no changes are needed.

The Environmental Commenters proposed a pre-application process (similar to IPL's proposal) which would increase the transparency for generators and should reduce the workload of the utility. Under the Environmental Commenters' proposal customers would pay a $300 fee for the pre-application process, and the utility would have ten days to provide the information to the customers. The Environmental Commenters believe the timeframe and fee are appropriate for the effort required to provide the information. Furthermore, the Environmental Commenters suggest that a standardized pre-application report request form would make the process more streamlined across utilities and provided a model form developed by IREC. TASC is supportive of the Environmental Commenters' proposed pre-application report and believes the pre-application process will reduce the overall volume of interconnection requests and will help the existing distribution system be used more efficiently.

In reply comments, the Joint Commenters supported the 20-day timeline in IPL's proposal and agreed to include MidAmerican's proposed additional language that accounts for projects that include multiple proposed interconnections.

OCA is supportive of the proposed pre-application reports for both smaller and larger generators. OCA agrees that the pre-application report provisions will promote transparency and minimize the number of unviable applicants.

Staff Analysis

A well designed pre-application process will capture the essential information that will allow the host utility to complete a review of the proposed project. This also allows the applicant to receive information to determine whether to continue with the comprehensive application process.

MidAmerican's suggestion to review multiple proposed interconnections in close proximity at one specific site is reasonable and would be economical because generally DG installations in close proximity would impact the same distribution system (feeder lines, substations, etc.) and reviewing multiple requests together would allow the utility to gage the aggregated effect of multiple DG installations with a single effort versus conducting multiple evaluations of the same distribution system. For example, such an aggregated review would provide a complete analysis where a neighborhood plans to install rooftop solar in individual homes or a college plans to install wind turbines to serve multiple buildings.

The IAEC believes a formal pre-application process would make the process more cumbersome and structured. Staff disagrees. A pre-application process can be designed to incorporate the rural electric cooperatives' (RECs) current processes where an interested customer simply talks to utility personnel about a proposed project and potential concerns. It will be up to the RECs to design the pre-application procedures that are reasonable for them.

Several commenters support a pre-application report and a 20-day timeline for the report. The 20-day timeline provides a reasonable amount of time for the utility to conduct a preliminary assessment of the proposed project. IPL proposed a $300 fee paid by the customer for the pre-application evaluation and report. Most commenters did not question this fee. Staff agrees with IPL's proposal.

IPL proposed a list of information that would be provided in the pre-application report. Much of this information is confidential and is essential for the operation of the distribution system. Staff does not believe that the information provided in the pre-application report needs to be specified in the rules. The rules should be flexible to allow the utilities the ability to specify what information will be included in their pre-application report for a particular site.

The following proposed rules are drafted based on the above discussion.

New Section: 199-45.X(476) Pre-application Request.

45.X(1) The utility shall designate an employee or office from which information on the application process and on an Affected System can be obtained through informal requests from the

Applicant presenting a proposed project for a specific site, which may include multiple proposed individual interconnections in close proximity and related to one project such as a residential or commercial development proposing roof-top solar on each premise. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet Web site. Electric system information provided to the Applicant should include relevant available system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's electric distribution system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information from the Applicant.

45.X(2) In addition to the information described in section 45.X(1), which may be provided in response to an informal request, an Applicant may submit a formal written request form along with a non-refundable fee of $300 for a pre-application report on a proposed project at a specific site. The utility shall provide the pre-application data described in section 45.X(1) to the Applicant within 20 business days of receipt of the completed request form and payment of the $300 fee. The pre-application report produced by the utility is non-binding, does not confer any rights, to the Applicant and the Applicant must still successfully apply to interconnect to the utility's system. The written pre-application report request form shall include the information in sections 45.X(2)"a" through 45.X(2)"h" below to clearly and sufficiently identify the location of the proposed Point of Interconnection

a. Proposed Distributed Generation Facility contact information, including name, address, phone number, and email address.

b. Project location (street address with nearby cross streets and town)

c. Meter number, pole number, or other equivalent information identifying proposed Point of Interconnection, if available.

d. Generator Type (e.g., solar, wind, combined heat and power, etc.).

e. Size (alternating current kW).

f. Single or three phase generator configuration.

g. Stand-alone generator (no onsite load, not including station service – Yes or No?).

h. Is new service requested? Yes or No? If there is existing service, include the customer account number, site minimum and maximum current or proposed electric loads in kW (if available) and specify if the load is expected to change.

45.X(3) Using the information provided in the pre-application report request form in section 45.X(2), the utility will identify the

substation/area bus, bank or circuit likely to serve the proposed Point of Interconnection. This selection by the utility does not necessarily indicate, after application of the screens or study, that this would be the circuit to which the distributed generation facility ultimately connects or that interconnection will occur. The Applicant must request additional pre-application reports if information about multiple Points of Interconnection is requested.

45.X(4) The pre-application report need only include readily available data. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed generator in the event that data is not readily available.

Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre-application report that represents the best available information at the time of reporting.

Site Control

The FERC SGIP attempts to clarify the applicant's ownership or right to control a site for a proposed DG facility at the beginning of the interconnection process which may help avoid issues and delays later in the process.

IPL proposed to include site-control language in 199 IAC 45.5(6) (General Requirements). The proposed language is similar to that found in the FERC SGIP.

MidAmerican has no objection to including site-control language and agrees that 199 IAC 45.5(6) is the appropriate place for this addition.

The IAEC concurs that it is important for a prospective interconnection customer to be able to demonstrate some degree of site control and does not object to including site-control language in 199 IAC 45.

The Environmental Commenters do not believe that a rule change is necessary for third-party owned systems to continue to interconnect. However, they said that adopting the FERC SGIP language would clarify what is needed for a party to demonstrate site control under Iowa's interconnection rules. The Environmental Commenters proposed site-control language that was also based on the FERC SGIP and similar to that drafted by IPL. However, in reply comments the Environmental Commenters noted that they do not agree with IPL's suggestion to delete the introductory clause, "When an applicant is not currently a customer of the utility at the proposed site," because it will make Iowa's interconnection rules less transparent and could create unnecessary confusion.

In reply comments, the IAEC supported the suggested rule changes and did not object to the Environmental Commenters' proposed language. OCA also generally supports the proposed language and states that the language drafted by the Environmental Commenters is more consistent with the terms used in the FERC SGIP. Additionally, OCA questioned IPL's reasoning for eliminating the introductory clause. Absent a persuasive reason for change, OCA favors the limiting application of this rule to circumstances in which an applicant is not currently a customer of the utility at the proposed site.

Staff Analysis

All commenters agree that additional rules regarding the demonstration of site control for a proposed DG installation should be adopted. The Environmental Commenters initially recommended no change but acknowledged that IPL's proposed revision would make the current rules more explicit about what is needed for a party to demonstrate site control. Staff agrees that the proposed revisions would make processing of the application less complex and will help avoid ownership issues that may arise later in the interconnection process. Clarifying potential issues in the beginning would avoid delays in completing the interconnection process.

Staff agrees with IPL's proposal to delete the introductory sentence, "When an applicant is not currently a customer of the utility at the proposed site." This sentence required only those applicants, who were not current customers, to demonstrate site control. This sentence can be deleted because the proposed rules now require all applicants whether they are a current customer or not to demonstrate site control. Additionally, the proposed rules clarify what is needed to demonstrate site control.

IPL's proposed rules regarding how to demonstrate site control are reasonable and are not contested by commenters.

The following proposed rules are drafted based on the above discussion.

45.5(6) ~~When an applicant is not currently a customer of the utility at the proposed site, the~~ The ~~a~~Applicant shall provide, upon utility request, proof of the ~~a~~Applicant's legal right to control the site~~, as evidenced by the applicant's name on a property tax bill, deed, lease agreement or other legally binding contract~~. Site control may be demonstrated through:

a. Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the distributed generation facility;

b. An option to purchase or acquire a leasehold site for such purpose; or

c. Exclusivity or other business relationship between the

> Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for such purpose.

Supplemental Review

For Level 2 expedited review, the current rule says:

> "For interconnection of a proposed distributed generation facility to a radial distribution circuit, the total distributed generation connected to the distribution circuit, including the proposed generation facility, may not exceed 15 percent of the maximum load normally supplied by the distribution network."[6]

However, the rules allow for additional review if the facility does not meet the 15 percent screen. Rule 199 IAC 45.9(6) states:

> "Additional review may be appropriate when a distributed generation facility fails to meet one or more of the Level 2 screens. The utility shall offer to perform additional review to determine whether there are minor modifications to the distributed generation facility or electric distribution system that would enable the interconnection to be made safely and so that it will not cause adverse system impacts."

If the facility fails the Level 2 screens, the applicant has the choice to discontinue the project or pursue the project by completing the Level 4 application and studies. The FERC SGIP adopted a supplemental review process that incorporates a 100 percent of minimum load screen to reduce the number of projects that are required to conduct additional studies.

IPL proposed adding a section to rule 45.9[7] (Level 2 expedited review) which clarifies the supplemental review process and would help Level 2 applications avoid being moved to Level 4. IPL's additions are similar to the FERC SGIP supplemental review provision.

MidAmerican notes that IPL requested, and the Board granted, three waivers in 2014 where the 15 percent of maximum normal load screen could not be met. MidAmerican does not object to IPL's proposed supplemental review process for

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[6] 199 IAC 45.9(1)(a)
[7] Staff Note: IPL's proposed changes to 199 IAC 45.9 related to supplemental review are included in Appendix B.

Level 2 review but notes that it has not experienced a need for these additional screens. MidAmerican also supports a minimum load screen.

The IAEC does not believe it is necessary to mandate supplemental reviews or customer deposits that would interfere with the current cooperative process related to interconnections. The IAEC is not aware of any of its members having an issue that would require the use of the SGIP supplemental review process to get the matter resolved.

The Environmental Commenters state that the 15 percent of maximum normal load screen is not perfect and screens out projects that could otherwise be interconnected safely and quickly. The Environmental Commenters believe that this may occur more frequently with higher penetrations of distributed generation. The FERC and several other states have adopted a supplemental review process that incorporates a 100 percent minimum load screen[8] which would help projects avoid having to be moved to Level 4 review.

The Environmental Commenters propose to revise the Level 2 review to have the 15 percent of maximum normal load screen be the initial screen and use the 100 percent minimum load screen only when circuits have higher penetration levels of DG. The use of the minimum load screen is a more accurate method to evaluate system risk and in most cases the utilities are capable of adequately measuring minimum load data on their circuits. The proposal also indicates that the minimum load measurement utilized should take into account the type of generator needing to interconnect. For instance, with a solar photovoltaic system, the proposed screen should utilize the daytime minimum load rather than the absolute minimum load to reflect that this system only generates during the daytime. The use of the minimum load as a supplemental screen will also help to keep the interconnection process moving and would not trigger projects being moved to a Level 4 review or require the utilities to request a waiver when the 15 percent screen is exceeded. Additionally, the minimum load screen would not pose unreasonable risks or system constraints for the utilities.

The Environmental Commenters propose two additional supplemental review screens to address power quality, safety, and reliability (voltage and power quality screen and safety and reliability screen). These screens provide utilities with the ability to address unique circumstances that might require further study.

TASC supports the Environmental Commenters' proposal for a supplemental review process that considers the minimum load instead of peak load.

In reply comments, the Joint Commenters agreed to the language proposed by IPL, and believe that the supplemental review process will provide clarity and will

[8] Staff Note: Adoption of a 100 percent minimum load screen would allow projects at least twice as large as before to interconnect without moving to the next level.

allow projects that do not need Level 4 review to proceed in a structured and transparent manner.

The IAEC in its reply comments encouraged the Board to keep the review process simple and avoid standards based on technology distinctions that would thwart the principle of treating all member consumers equally.

OCA agrees with the proposed adoption of a more structured and transparent review process but believes the supplemental review process should also apply to Level 1 review in instances when a new facility would result in or contribute to total distributed generation being more than 15 percent peak load normally served by the distribution circuit.

Staff Analysis

IPL proposed a supplemental review process to the Level 2 review. MidAmerican stated that it had not experienced the need to develop a supplemental review process but supports IPL's proposal. The IAEC does not support a supplemental review process and encourages the Board to keep the review process simple. The Environmental Interveners support supplemental review with additional screens and with newly defined criteria based on minimum load, technology, safety, and power quality. OCA supports the additional supplemental review process not only for Level 2 but also recommends adding the supplemental review process to Level 1.

The supplemental review process proposed here would add an additional layer of review which is not supported by all parties. Furthermore, it is not clear that a supplemental review process will add clarity to the process given that the current rules include the following language related to additional review:

- Allow additional review when a DG facility fails to meet one or more of the Level 2 screens.
- Additional review is to determine whether there are minor modifications to the distributed generation facility or electric distribution system that would enable the interconnection to be made safely and so that it will not cause adverse system impacts.
- The utility shall provide the applicant with a nonbinding estimate for the costs of additional review and the costs of minor modifications to the electric distribution system. The utility shall undertake the additional review only after the applicant pays for the additional review. The utility shall undertake the modifications only after the applicant pays for the modifications.

IPL proposed detailed revisions to the rules that include written agreements between host utility and applicant, new timelines, new screening criteria, and applicant's cost responsibility for additional review. Commenters have not fully explained why such detailed revisions are needed. Staff notes that since the current rules allow for additional review, it may be appropriate to revise the current rules to allow the host utility to specify how the utility plans to conduct additional review, if necessary. The individual host utility can adopt additional details of the review process, timelines, and criteria related to minimum load, voltage and power quality, and safety and reliability screens. Staff believes that it is not necessary to adopt such details that will apply to all utilities given that the impacts of such significant changes are unknown. Generally, it is reasonable to allow utilities the flexibility to evaluate individual DG systems since different utility systems have different system designs and can incorporate DG interconnections at different penetration levels. Adoption of such details would add complexity to the rules without providing verifiable benefits. In addition, the utility can request a waiver for unusual circumstances.

The following proposed rules are drafted based on the above discussion.

> **45.9(6)(a)** Additional review may be appropriate when a distributed generation facility fails to meet one or more of the Level 2 screens. The utility shall offer to perform additional review to determine whether there are minor modifications to the distributed generation facility or electric distribution system that would enable the interconnection to be made safely and so that it will not cause adverse system impacts. The utility shall provide the ~~a~~Applicant with a nonbinding estimate for the costs of additional review and the costs of minor modifications to the electric distribution system. The utility shall undertake the additional review only after the ~~a~~Applicant pays for the additional review. The utility shall undertake the modifications only after the ~~a~~Applicant pays for the modifications. If the utility adopts an additional review process the utility shall define the steps and screens used in that process.

Confidentiality

IPL proposed to address confidentiality by including a comprehensive definition of confidential information in 199 IAC 45.1 (Definitions). IPL suggests that the definition will provide clarity and allow for mutual and more direct conversation without the use of a separate Non-Disclosure Agreement.

MidAmerican states that the Board's rules currently do not address confidentiality of DG applicant information and defer to the Board whether it is necessary to have such a provision. MidAmerican has no objection to incorporating confidentiality provisions in 199 IAC 45 and suggests the language be placed in 199 IAC 45.4 (Interconnection requests). Both IPL's and MidAmerican's

proposed language addressing confidentiality is based on Section 4.5 of the FERC SGIP.

The IAEC does not believe it is necessary to include confidentiality provisions in 199 IAC 45. Additionally, the IAEC suggests that including such provisions could impose unwanted liability exposure on parties to the application. In reply comments the IAEC reiterated its opposition and further said, "Where nothing in the rules prevent the applicant from requesting confidential treatment, it is not reasonable to impose additional administrative costs on utilities by requiring special measures to ensure confidentiality for materials which the applicant *may not* deem confidential."

OCA believes having a rule to address confidentiality is unnecessary at this time since the utilities already have protocols for the treatment of the DG applicant's information. Additionally, OCA said that the information considered confidential under IPL's proposal may be broader than what is allowed by Iowa's public records law, Iowa Code chapter 22. Furthermore, IPL's proposal also provides for remedies for violations of the confidential provisions and it is not clear that the Board needs or has the authority to establish such remedies for a breach in confidentiality terms.

The Environmental Commenters did not address confidentiality in the initial comments but in reply comments said that the confidentiality language would be a reasonable protection for interconnection customers. The Environmental Commenters prefer including the language in 199 IAC 45.4 (Interconnection Requests).

TASC supports the inclusion of the language since it appears that it will eliminate the need for the use of a separate Non-Disclosure Agreement which should increase efficiency, reduce costs, and reduce the time for the interconnection process.

Staff Analysis

OCA and the IAEC believe having a rule to address confidentiality is unnecessary at this time. MidAmerican defers this decision to the Board. IPL believes adding a definition for confidentiality to the current rules would add clarity. The Environmental Commenters and TASC support the addition of a confidentiality definition. IPL and TASC believe that inclusion of confidentiality language would eliminate the need for a separate Non-Disclosure Agreement.

Staff agrees with OCA and the IAEC in that the inclusion of a rule to address confidentiality is unnecessary at this time since the utilities already have protocols for the treatment of the DG applicant's information. Additionally, information considered confidential under IPL's proposal may be broader than what is allowed by Iowa's public records law, Iowa Code chapter 22. IPL's

proposal also provides for remedies for violations of the confidential provisions and it is not clear that the Board needs or has the authority to establish such remedies for a breach in confidentiality terms in interconnection procedures and agreements between DG customers, developers and host utilities.

Based on the above discussion, staff proposes no amendments related to confidentiality.

Testing of Existing Customer-Owned Generation and Periodic Inspection of DG Interconnections

IPL proposed revisions to chapter 45 that were based on the IREC's Model Interconnection Procedures for Supplemental Facility Testing. These provisions outline testing and periodic inspection for existing customer-owned generation to enhance the safe operation of DG interconnections. IPL proposed adding Supplemental Facility Testing to 199 IAC 45.9 as follows:

> **45.9 (476) Supplemental Facility Testing.**
> Once an interconnection has been approved under this rule, the utility shall not require an Applicant to test its facility except for the following:
> - For Levels 2 and 3, an annual test in which the Applicant's facility is disconnected from the utility's equipment to ensure that the generator stops delivering power to the grid, and any manufacturer recommended testing.
> - For Level 4, all interconnection-related protective functions and associated batteries shall be periodically tested at intervals specified by the manufacturer, system integrator, or authority that has jurisdiction over the interconnection. Periodic test reports or a log for inspection shall be maintained.
>
> A utility shall have the right to inspect an Applicant's facility before and after interconnection approval is granted, at reasonable hours and with reasonable prior notice provided to the Applicant. If the utility discovers the Applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electric system, the utility may require disconnection of the Applicant's facility until it complies with this subchapter.

MidAmerican proposes the Board amend Rule 45.6(2) to clarify that testing is required and to limit additional witness tests that a utility may conduct.

> **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, or additional interconnection

equipment modification to meet the requirements for expedited review; however, ~~nothing in this subrule shall preclude the need for an interconnection installation evaluation~~ the applicant shall conduct all commissioning tests, or periodic testing as specified by IEEE Standard 1547, Sections 5.3, 5.4, and 5.5.~~,~~ The utility may conduct additional witness tests, but no more frequently than annually. ~~or for a witness test conducted by a utility.~~

MidAmerican also recommends that the Board amend 199 IAC 45.3(4) to clarify certain testing and to allow appropriate inspections.

45.3(4) *Inspections and testing.* The operator of the distributed generation facility shall adopt a program of inspection and testing of the generator and its appurtenances and the interconnection facilities in order to determine necessity for replacement and repair. Such a program should include all periodic tests and maintenance prescribed by the manufacturer. If the periodic testing of interconnection-related protective functions is not specified by the manufacturer, it should occur at least every five years. For levels 2 and 3, an annual test in which the applicant's facility is disconnected from the utility's equipment to ensure that the generator stops delivering power to the grid shall be conducted. For Levels 2-4 interconnections, all interconnection-related protective functions shall be periodically tested and a system that depends upon a battery for trip power shall be checked and logged once per month for proper voltage. Once every five years, the battery must be either replaced or a discharge test performed. Representatives of the utility shall have access at all reasonable hours and with reasonable prior notice to applicant to the interconnection equipment specified in subrule 45.3(2) for inspection and testing. If the utility discovers the applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electrical system, the utility may require disconnection of the applicant's facility until it complies with this chapter.

The IAEC believes that its members would have the right to conduct an inspection or require an inspection under the provisions of its existing model tariff. Inspections should be allowed and utilized at the discretion of the utility rather than as a requirement which may increase the customer's cost. In reply comments, the IAEC support the adoption of MidAmerican's proposal for certain inspection and testing standards for rate-regulated utilities.

The Environmental Commenters did not provide initial comments related to the testing or periodic inspection of existing customer-owned generation facilities. However, in reply comments the Environmental Commenters argue that IPL did

not justify its recommended changes. Furthermore, IPL made significant changes to IREC's model rules. The Environmental Commenters recommended that the Board adopt IREC's model rule without modification (see below) if additional testing is warranted.

> **45.9 (476) Supplemental Facility Testing.**
> Once an interconnection has been approved under this rule, the utility may require an Applicant to test its facility except that the utility may require any manufacturer-recommended test and require the following:
> - For Levels 2 and 3, an annual test in which the Applicant's facility is disconnected from the utility's equipment to ensure that the generator stops delivering power to the grid.
> - For Level 4, all interconnection-related protective functions and associated batteries shall be periodically tested at intervals specified by the manufacturer, system integrator, or authority that has jurisdiction over the interconnection. Periodic test reports or a log for inspection shall be maintained
>
> A utility shall have the right to inspect an Applicant's facility before and after interconnection approval is granted, at reasonable hours and with reasonable prior notice provided to the Applicant. If the utility discovers the Applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electric system, the utility may require disconnection of the Applicant's facility until it complies with this subchapter.

Also in reply comments, the Environmental Commenters supported MidAmerican's proposed changes to 199 IAC 45.6(2) and stated the revisions better reflect IEEE Standard 1547 related to the periodic and limited witness tests that a utility may conduct. However, the Environmental Commenters believe that MidAmerican's draft language for 199 IAC 45.3(4) changes discretionary testing to mandatory testing and do not believe MidAmerican has demonstrated the need for this requirement. If the Board believes additional clarification and specification of Iowa's testing and inspection rules is necessary, the Environmental Commenters recommend making the testing discretionary.

TASC addressed MidAmerican's proposed changes to 199 IAC 45.6(2) in its reply comments. TASC disagrees with the proposed changes because additional testing requirements would be imposed, including mandatory tests for and replacement of batteries for Levels 2-4 systems. MidAmerican's proposed language is more onerous for all three levels, and MidAmerican failed to justify the need for these changes. TASC did not take a position on IPL's suggestion to include the Supplemental Facility Testing section but noted that IPL failed to

demonstrate how the proposed change will enhance the safe operation or what problem it attempts to address.

In reply comments, OCA supported periodic testing according to manufacturer guidelines but did not support the proposed sub-rules requiring annual tests for Levels 2-3. These tests would increase the financial burden on the owners of the DG facilities and would reduce the benefits of owning DG. OCA also argued that if the manufacturer does not specify periodic testing of interconnection-related protective functions, the five-year standard proposed by MidAmerican appears reasonable.

Staff Analysis

The commenters agree a utility has the right to inspect a DG facility before and after the interconnection is complete and the DG facility is operational. All commenters support testing of facilities. However, there is disagreement over mandatory versus discretionary testing and a specific schedule for testing. No data regarding actual installations has been introduced in the record that supports specific testing schedules. MidAmerican and IPL introduced revisions to the existing rules, but it is not clear how these detailed rule changes will enhance operational safety and resolve operational issues that impact utility distribution systems.

Staff agrees with OCA that periodic testing in accordance with manufacturers' guidelines is reasonable and annual tests for Levels 2-3 could be burdensome for DG owners. Staff agrees with OCA that if the manufacturer does not specify periodic testing of interconnection-related protective functions, the five-year standard proposed by MidAmerican appears reasonable. Staff also believes that if the host utility experiences operational and interconnection issues with a DG facility then it would be reasonable for the utility to conduct witness tests to identify and alleviate operational and interconnection problems. However, such tests should be conducted no more frequently than annually. Staff agrees with MidAmerican's recommendation that the rules should be amended to include a requirement for periodic testing of a system that depends upon a battery for trip power and such systems shall be checked and logged.

To add clarity to current rules and based on above discussion staff recommends the following rule amendments:

> **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, or additional interconnection equipment modification to meet the requirements for expedited review; however, ~~nothing in this subrule shall preclude the need for an interconnection installation evaluation~~, the Applicant shall conduct all commissioning tests, or periodic testing as specified by

IEEE Standard 1547, Sections 5.3, 5.4, and 5.5.~~,~~ The utility may conduct additional witness tests, but no more frequently than annually. ~~or for a witness test conducted by a utility.~~

45.3(4) *Inspections and testing.* The operator of the distributed generation facility shall adopt a program of inspection and testing of the generator and its appurtenances and the interconnection facilities in order to determine necessity for replacement and repair. Such a program should include all periodic tests and maintenance prescribed by the manufacturer. If the periodic testing of interconnection-related protective functions is not specified by the manufacturer, it should occur at least every five years. All interconnection-related protective functions shall be periodically tested and a system that depends upon a battery for trip power shall be checked and logged. Representatives of the utility shall have access at all reasonable hours to the interconnection equipment specified in subrule 45.3(2) for inspection and testing with reasonable prior notice to Applicant. If the utility discovers the Applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electrical system, the utility may require disconnection of the Applicant's facility until it complies with this chapter.

Cluster Study or Approval of Neighborhood Service Area or New Development Requests

MidAmerican suggests the Board expand the allowable types of pre-application reports to include one on residential or commercial developments for multiple DG facilities. The study would need to be qualified to reflect that it was accurate as of the date it was performed in case the development was delayed or extended such that conditions changed.

The IAEC could envision approval of customer-owned DG facilities at multiple premises within a neighborhood as part of one application but does not believe it would be appropriate for that application to secure capacity on the utility's system indefinitely. In order to protect the rights of other customers in the same vicinity, the approval should expire and require a new application for facilities not connected within a certain amount of time. Furthermore, the IAEC recommends that those requesting the cluster study or neighborhood application be required to provide some evidence of site control.

In reply comments, the IAEC said that it does not support the pre-application process or expanding that process, but would be willing to conduct a cluster study or approve a cluster application if such approval was limited to a short period of time and if evidence of site control is demonstrated.

Staff Analysis

MidAmerican and the IAEC support cluster studies if approval of such studies is limited to a period of time. Staff agrees that a time limit on a specific site based on multiple projects is appropriate because it would be unreasonable to allow applicants to reserve capacity on a utility's system indefinitely. Staff believes that allowing a group interconnection request by a developer for a new development and a group study to analyze the request would be beneficial for the developer, the customer, and the utility. It would also alleviate the situation where the first part of the development consumes the available capacity of the system and limits the remaining installations unless the remaining installations fund upgrades to the system. Based on the above discussion, staff recommends the following rule amendments:

> **45.4(1)** Applicant seeking to interconnect a distributed generation facility shall submit an interconnection request to the utility that owns the electric distribution system to which interconnection is sought. Applicants shall identify in the application if they are representing a group of customers that are located in the same vicinity and whether the application requires a group interconnection study. Applicants shall use interconnection request forms approved by the board.

Other Proposed Changes

Remove the No-Construction Screen

The Environmental Commenters propose removing the technical screen in sections 45.1, 45.7, 45.8, 45.9, and 45.10 which does not allow projects to receive expedited review if construction of any facilities by the utility is required to accommodate the project. The screens were intended to give the utilities time to determine what construction is needed and allow the utilities to estimate the construction costs that the applicant would be required to pay. The Environmental Commenters believe that this screen is causing projects to pay for the full Level 4 study process even if there are no safety, reliability, or power quality concerns warranting further review.

The Environmental Commenters propose deleting the following language: "No construction of facilities by an utility shall be required to accommodate the distribution generation facility;"[9] "The utility shall not be required to construct any facilities on its own system to accommodate the distributed generation facility's interconnection;"[10] and "Except as permitted by additional review in subrule 45.9(6), the utility shall not be required to construct any facilities on its own

[9] 199 IAC 45.7(1)(e), 45.7(3)(a)(6), 45.7(3)(b)(5) (current procedures).
[10] 199 IAC 45.8(1)(e) (current procedures).

system to accommodate the distributed generation facility's interconnection."[11] They propose allowing the utility varying timeframes to respond to projects based on the project passing all other expedited review screens and whether the project requires no modifications (5 days), only minor system modifications (15 days), or more than minor system modifications (20 days). Furthermore, the Environmental Commenters recommend a definition for "Minor System Modifications" be included in 199 IAC 45.1 and that the definition be based on IREC's Model Interconnection Procedures.

> "*Minor system modifications*" means modifications to a utility's electric distribution system located between the service tap on the distribution circuit and the meter serving the interconnection customer, or other minor system changes that the utility estimates will entail less than four hours of work and $1000 in materials. Such modifications may include, for example, changing the fuse in a fuse holder cut-out or changing the settings in a circuit recloser.

The Environmental Commenters' proposed approach would be consistent across Levels 1-3 and promotes clarity within the procedures. The Environmental Commenters acknowledge that the utilities may have to develop a process for determining cost estimates in a timely manner but suggest that developing this process could free-up employees that are currently required to conduct unnecessary system impact and facility studies due to the no-construction screen.

MidAmerican believes the definition for Minor System Modifications reasonably includes only very minor upgrades such as to the service tap or transformer. MidAmerican does not support eliminating the no-construction screen for Level 1 because the need for construction of any kind indicates some adverse impact is expected and a more thorough review is required.

OCA agrees with the Environmental Commenters that the no-construction language should be removed and that the proposed amendments for Levels 1-3 review would allow the utility to determine safety, reliability, and cost assessment. OCA believes eliminating the no-construction screen will allow DG applicants to avoid unnecessary and costly studies. OCA also agrees with the definition of Minor System Modifications proposed by the Environmental Commenters. However, OCA disagrees with the Environmental Commenters on the timeframe of the system modification assessment. OCA said that rather than relying on the 15-day timeline for Level 1 and Level 2 technical reviews, the timeframe for the assessment should be established based on the amount of time that is reasonably needed to conduct a technical assessment when system modifications are needed.

[11] 199 IAC 45.9(1)(j) (current procedures).

Staff Analysis

The Environmental Commenters propose removing the technical screen in several sections of chapter 45, which they believe prevents projects from receiving expedited review if construction of any facilities by the utility is required. OCA agrees with the Environmental Commenters and believes that eliminating the no-construction screen will allow DG applicants to avoid unnecessary and costly studies. OCA adds that the timeframe for the assessment should be based on the amount of time reasonably needed to do the assessment. MidAmerican does not support eliminating the no-construction screen for Level 1. Staff is supporting a rule amendment that allows for a pre-application review process that can flag whether any adverse impact on the system is expected and if a more thorough review is required. The technical screens are designed to identify specific impacts and are an important piece of the overall process. Staff believes that removal of the technical screens is unnecessary and no rule changes are recommended at this time.

The Environmental Commenters also recommend including a definition for “Minor System Modifications” in 199 IAC 45.1 and that the definition be based on IREC’s Model Interconnection Procedures which specifies amount of time (less than four hours) and/or cost of the modification as well as some specific modifications. MidAmerican said that the definition of Minor System Modifications is reasonable and includes only minor upgrades such as service taps or transformer. However, individual utility distribution systems are designed based on different criteria and use equipment with different operating characteristics and operating criteria. Staff believes that it is not reasonable to include a specific definition of Minor System Modifications in the rules as it would not allow the host utility to be flexible in defining the minor modifications. Also, a modification that can be categorized as minor in one application may not be classified as a minor modification in a different application. Staff is proposing no rule change related to this issue.

Refine the Level 2 Size

The Environmental Commenters recommend including the following table in 199 IAC 45.7(2) which would expand Level 2 eligibility to account for the increasing demand for access to expedited interconnection procedures.

Level 2 Eligibility for Inverter-Based Systems		
Line Voltage	Level 2 Eligibility Regardless of Location	Level 2 Eligibility on a Mainline* and < 2.5 Electrical Circuit Miles from Substation**
< 5 kV	< 500 kVA	< 500 kVA
> 5 kV and < 15 kV	< 2 MVA	< 3 MVA
> 15 kV and < 30 kV	< 3MVA	< 4 MVA
> 30 kV and < 69 kV	< 4 MVA	< 5 MVA

*For purposes of this table, a mainline is the three-phase backbone of a circuit. It will typically constitute lines with wire sizes of 4/0 American wire gauge, 336.4 kcmil, 397.5 kcmil, 477 kcmil and 795 kcmil.
** An Applicant can determine this information about its proposed interconnection location in advance by requesting a pre-application report pursuant to section 45.X.

The Environmental Commenters argue that there are technical factors, other than size, that are important to consider when determining whether the project needs further study. The proposed approach recognizes the differences between the operation of inverter-based systems and synchronous, induction machines. Therefore, the table would apply only to the inverter-based systems while the original 2 MW limit would remain in play for synchronous, induction machines.

MidAmerican has no objections to the Level 2 review level, including the addition of the Level 2 eligibility table in 45.7(2).

OCA agrees with the Environmental Commenters' suggestion to increase the capacity limitation for Level 2 review according to the connecting system's voltage level and distance to a substation. OCA notes that the last row of the proposed table is meaningless because most of the 34.5 kV systems on IPL's system are being replaced by 69 kV systems in the next few years.

Staff Analysis

The Environmental Commenters proposed an approach to Level 2 review based on a table that recognizes the differences between the operation of inverter-based systems and synchronous, induction machines. The table would apply only to the inverter-based systems while the original 2 MW limit would remain in play for synchronous, induction machines. MidAmerican and OCA agree. Staff also agrees that this approach is reasonable and recommends that 199 IAC 45.7(2) be amended as follows:

45.7(2) A utility shall use Level 2 procedures for evaluating interconnection requests when:

a. The ~~a~~Applicant has filed a Level 2 application; and

b. Level 2 eligibility for inverter-based systems can be based on the following table. For purposes of this table, a mainline is the three-phase backbone of a circuit; and

Line Voltage	Level 2 Eligibility Regardless of Location	Level 2 Eligibility on a Mainline and < 2.5 Electrical Circuit Miles from Substation
< 5 kV	< 500 kVA	< 500 kVA
> 5 kV and < 15 kV	< 2 MVA	< 3 MVA
> 15 kV and < 30 kV	< 3MVA	< 4 MVA
> 30 kV and < 69 kV	< 4 MVA	< 5 MVA

~~The nameplate capacity rating is 2 MVA or less; and~~

c. The interconnection equipment proposed for the distributed generation facility is lab-certified; and

d. The proposed interconnection is to a radial distribution circuit or a spot network limited to serving one customer; and

e. No construction of facilities by the utility shall be required to accommodate the distributed generation facility, other than minor modifications provided for in subrule 45.9(6).

Increase the Level 1 Size Limit

The Environmental Commenters suggest increasing the size limit of Level 1 from 10 kVA to 25 kVA[12], which would allow more projects to benefit from the efficient Level 1 process while still ensuring system safety and reliability. The efficiency of the Level 1 process benefits both customers installing DG and the utilities. Additionally, the Environmental Commenters state that the technical screens in Level 1 would ensure that generators attempting to interconnect do not cause any safety, reliability or power quality impacts. This proposed change would affect 199 IAC 45.7(1)(b).

MidAmerican notes that the screen currently in 45.8(1)(c) limits aggregate generation on a single-phase shared secondary line to 20 kVA and believes the Level 1 threshold should be limited to 20 kVA so the application won't fail because it exceeds that screening threshold.

OCA recommends the Level 1 size limit be increased to 20 kVA which would include some of the systems recently installed by Iowa farmers. OCA said that the 25 kVA limit would conflict with 199 IAC 45.8(1)(c).

[12] The Environmental Intervenors would also recommend changing 199 IAC 45 references to size from kVA to MW or kW (in most instances) to be consistent with the FERC SGIP.

Staff Analysis

The Environmental Commenters suggest increasing the size limit of Level 1 from 10 kVA to 25 kVA. OCA and MidAmerican recommend increasing the limit to 20 kVA because the 25 kVA limit would conflict with 199 IAC 45.8(1)(c). OCA states that the 20 kVA limit would include some of the recent installations in Iowa. Staff agrees that increasing the limit to 20 kVA is reasonable. Based on the above discussion, it is recommended that the Level 1 limit be increased from 10 kVA to 20 kVA and the rule be amended as follows:

> **45.7(1)(b)** The distributed generation facility has a nameplate capacity rating of ~~10 kVA~~ 20 kVA or less; and

Staff also recommends the Level 1 Standard Application Form and Interconnection Agreement also be changed to reflect the increase from 10 kVA to 20 kVA.

Require Electronic Submittal and Improve Utility Web sites

The Environmental Commenters maintain that the utilities should be required to implement the following recommendations to promote a more streamlined, efficient process:

- Allow interconnection applications to be submitted through a utility's Web site;
- Develop a Web site dedicated to interconnection procedures that includes at least the procedures and their attachments in an electronically searchable format, the interconnection application forms in a format that allows for electronic entry of data, the interconnection agreements, and the point of contact for submission of interconnection requests; and
- Allow electronic signatures to be used for interconnection applications.

These recommendations would affect 199 IAC 45.4(3), 45.4(4) and 45.5(11) as shown below.

> **45.4(3)** ~~Interconnection requests may be submitted electronically, if agreed to by the parties~~ Each utility shall allow interconnection requests to be submitted through the utility's Web site.
>
> **45.4(4)** Each utility shall allow electronic signatures to be used for interconnection requests.
>
> **45.5(11)** Each utility shall dedicate a page on their Web site to interconnection procedures. That page shall be able to be reached

by no more than three logical, prominent hyperlinks from the utility's home page. The relevant Web site page shall include:

a. The utility's interconnection procedures and attachments in an electronically searchable format,

b. The utility's interconnection Application forms in a format that allows for electronic entry of data,

c. The utility's interconnection agreements, and

d. The utility's point of contact designated pursuant to 45.6(3), including email and phone number.

MidAmerican has no objection to allowing the applicant to include an electronic signature to the extent permitted by Iowa law. Currently MidAmerican allows applicants to submit their applications via e-mail but is unsure what the Environmental Commenters mean by allowing interconnection applications to be submitted "through the utility's Web site."

MidAmerican is concerned about the level of detail in the proposed rule (199 IAC 45.5(11)) and believes the revisions are preferential by making DG information more accessible than other information. MidAmerican believes it generally satisfies the proposed requirements – expect for the fillable forms (45.5(11)(b)). MidAmerican suggests that if included, a better placement for the proposed 45.5(11) would be as 45.4(5) and that 45.5(11)(c) should reference the utility's interconnection agreement forms, to clarify that it does not include all interconnection agreements entered into with customers.

OCA believes the Environmental Commenters' proposed changes to 199 IAC 45.4(3), 45.4(4), and 45.5(11) are necessary to make the information and application process more efficient and streamlined.

Staff Analysis

Staff does not believe the changes proposed by the Environmental Commenters are necessary. Staff has reviewed MidAmerican's and IPL's current Web sites and found that information regarding DG and interconnection is reasonably accessible to customers. Furthermore, both utilities appear to provide forms for Level 1 applications that can be completed (filled out) electronically and IPL appears to provides a form for Levels 2-4 than can be completed electronically. Staff suggests the Board encourage MidAmerican to provide a form for Levels 2-4 that can be filled out electronically, but staff does not believe the rules need to be changed to require compliance. Staff is proposing no rule change related to this issue.

Retention of Level 1 Review Order Position for Denied Applicants

The Environmental Commenters propose that 199 IAC 45.8(2)(f) be amended to allow Level 1 applicants whose application has failed the review screens to retain

its review order position as long as the applicant makes a new interconnection request under the study process within 15 business days. This would allow the applicant to address any utility concerns without losing their place in review order and is consistent with existing provisions for Levels 2 and 3.

OCA concurs with the Environmental Commenters that an applicant should be allowed to keep its review level for 15 days after it has failed its review screen.

Staff Analysis

Staff agrees that it is reasonable to allow an applicant to retain its review order if the applicant decides to submit an interconnection request under Levels 2-4 procedures within 15 business days. Based on the above discussion, staff recommends the following rule amendments:

> **45.8(2)(f)** If a distributed generation facility is not approved under a Level 1 review, and the utility's reasons for denying Level 1 status are not subject to dispute, the ~~a~~Applicant may submit a new interconnection request for consideration under Level 2, Level 3, or Level 4 procedures. The review order position assigned to the Level 1 interconnection request shall be retained, provided the request is made by the Applicant within 15 business days after notification that the Level 1 interconnection request is denied.

Include Storage in DG Facility Definition

The Environmental Commenters propose amending the definition of DG facilities to include storage facilities capable of injecting electricity into the grid. This change would affect 199 IAC 45.1 and 45.17 Appendix D. The Environmental Commenters believe the change will improve transparency and clarify the rules.

> "Distributed generation facility" means a qualifying facility ~~or,~~ an AEP facility, and/or the equipment used by an interconnection customer to store electricity for later injection into the electric distribution system.

MidAmerican states that any revisions to 199 IAC 45 should not preclude the utility from studying the effect that energy withdrawn by a storage device may have on the electric distribution system, nor preclude the utility from making determinations based on the outcome of these studies.

OCA believes the suggestion to include storage in the definition of distributed generation is consistent with the FERC SGIP definition. OCA suggested that adopting this definition could potentially promote storage as a DG resource.

Staff Analysis

The current definition of a distributed generation facility for chapters 15 and 45 includes a qualifying facility or an AEP facility[13] and neither definition specifically includes or precludes storage facilities. The FERC SGIP defines a small generating facility as, "The Interconnection Customer's device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities." Participants have not fully vetted the advantages and disadvantages of revising this definition. Staff does not recommend revising the definition at this time but proposes that the merits of revising this definition be discussed at a future workshop.

Update Reporting Requirements

The Environmental Commenters suggest changes to the 199 IAC 45.13 reporting requirements to account for the addition of pre-application reports and supplemental review to the rules. They believe that the changes would also improve transparency of the interconnection process and would not require significant additional effort from the utilities. Furthermore, the proposed reporting requirements would help all understand if the rules are working effectively and help inform the need for future policy changes.

MidAmerican advocates that the Board consider consolidating or eliminating other required reports before adding another reporting requirement. Currently there are five reports filed on DG, qualifying facility and alternate energy production facilities. These reports are required by 199 IAC 45.13(2), 199 IAC 15.3, 199 IAC 15.11(4), 199 IAC 15.22(4) and 199 IAC 15.18.[14]

Additionally, MidAmerican suggests 199 IAC 45.13(2) reflect the final approval date rather than the date the facility began operation since a utility may not be able to determine the operational date. MidAmerican also proposes that the

[13] 199 IAC 45 provides the following definitions: "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. "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.

[14] MidAmerican's reply comments, page 7, specifically reference 15.18 (476B) Certification of eligibility for wind energy tax credits under Iowa Code chapter 476B. However, there are no reporting requirements under 15.18. Staff believes MidAmerican meant to reference 15.17(4) which require rate regulated utilities to file a report (on or before April 1 of each year) of program activity for the previous calendar year for the utility's Alternate Energy Purchase Program.

reports cover only the prior calendar year information since a party can review information for prior years on the Board's electronic filing system.

OCA generally agrees with the revisions proposed by the Environmental Commenters. It is reasonable for such facilities to include the resource capacity by fuel type on a non-confidential basis. OCA believes such information is useful for assessing DG participation and the impact of policies.

Staff Analysis

Staff acknowledges that the Board's rules in chapters 15 and 45 require utilities to file multiple reports that include information related to DG. Staff believes that it is important for the current rule revisions to focus on the technical standards for interconnection and implementing House File 548. Staff believes that it would be beneficial to review all reporting requirements related to DG interconnection requests or related areas in a separate rulemaking which would allow staff and participants an opportunity to review all reports and determine whether a single report format can be created to gather required information. Furthermore, staff suggests incorporating the DG data that was collected and discussed as part of this docket into those reporting requirements. Staff is proposing no rule change related to this issue.

Interconnection Fees

In comments dated June 24, 2014, IPL suggested the Board increase the interconnection application fees for Level 1 and Level 2 installations to $250.[15] The Board's September 19, 2014, order asked participants to comment on IPL's suggestion to increase the application fees. In an effort to gather additional cost data, the Board asked IPL and MidAmerican to provide actual costs and supporting data that would justify revisions to DG interconnection fees in the December 22, 2014, order. Municipal utilities and electric cooperatives were also encouraged to provide similar data, if available.

IPL reported that it had completed a Lean Six Sigma project that identified the average number of hours a distribution engineer spent processing Level 1 and Level 2 standard interconnection applications. The findings in the table below are based on more than 600 DG installations.

[15] Current interconnection fees are: Level 1 - $50; Level 2 - $100 plus $1.00 per kVA; Level 3 - $500 plus $2.00 per kVA and Level 4 - $1,000 plus $2.00 per kVA.

Activity	**Level 1** Application Distribution Engineer		**Level 2** Application Distribution Engineer	
	Hours	Cost(s)[16]	Hours	Cost(s[17])
Application Review	0.40	$18.40	0.40	$18.40
Screening Review per IAC 45	0.40	$18.40	0.40	$18.40
Communication with Customer	0.30	$13.80	0.40	$18.40
Communication with Administrator	0.40	$18.40	0.40	$18.40
Facility Study			0.30	$13.80
Managing Facility Improvements			0.80	$36.80
Meter Request	0.40	$18.40	0.40	$18.40
Interconnection Attachments			0.30	$13.80
Communication with Meter Tech	0.40	$18.40	0.40	$18.40
Total before Witness Test	**2.30**	**$105.80**	**3.80**	**$174.80**
Witness Test	2.70	$124.20	2.80	$128.80
Subtotal	**5.00**	**$230.00**	**6.60**	**$303.60**

In addition, IPL identified that on average Level 1 applications required 2.5 hours of administrative time ($53) and Level 2 applications require 4.0 hours ($81). The administrative time is to process the applications and set up manual billing. IPL estimated the total cost to process a Level 1 application to be $158.80 and $283.00 to process a Level 1 application with a witness test. Level 2 applications cost approximately $255.80 to process and approximately $385 for a Level 2 application with a witness test.

MidAmerican stated that actual supporting data is not available because its engineering personnel are not required to record the time spent reviewing individual interconnection requests. Going forward, MidAmerican plans to track costs associated with specific interconnection requests so that detailed data would be available for use in a future rulemaking or rate proceeding. However, MidAmerican believes fees should be based on the cost to provide service, not on an estimate that can only be changed in a formal rule making. MidAmerican also believes DG interconnection fees could be established in a general rate case or through an automatic adjustment to rates.

MidAmerican provided the following table in its October 24, 2014, comments. The table provides MidAmerican's estimate of time and costs for interconnecting Level 1 and Level 2 applications.

[16] The cost is based on a direct hourly rate of $46. The hourly rate does not include costs for employee pensions and benefits, time paid not worked, payroll taxes, etc.
[17] Ibid.

Activity	Level 1 Interconnections (Inverter based UL741 certified)		Level 2 Interconnections (Inverter based UL741 certified)	
	Hours	Cost(s)[18]	Hours	Cost(s[19])
Review Application, Queue Administration	1.50	$75.00	2.00	$100.00
Request for additional information/ clarifications & further review	2.50	$125.00	2.50	$125.00
Engineering screens and documentation	2.00	$100.00	4.00	$200.00
Contract administration (preparation of agreement, records)	1.00	$50.00	2.00	$100.00
Contract administration (management review & signatures of agreement and certificate of completion)	1.00	$50.00	1.00	$50.00
Meter Coordination	0.50	$25.00	0.50	$25.00
Witness Test Coordination, travel, completion (average rural & urban)	3.75	$188.00	3.25	$163.00
Meter processing request & installation	2.50	$125.00	2.50	$125.00
Final documentation (records & mapping)	1.00	$50.00	1.00	$50.00
Mapping generator installation	1.00	$50.00	1.00	$50.00
Manual billing – initial set-up	3.33	$150.00	3.30	$50.00
Total to Accommodate Initial Installation	**20.1**	**$968.00**	**23.10**	**$1,138**

In reply comments, MidAmerican recommended the Board increase fees to at least the levels demonstrated by IPL and consider using loaded wages rather than the direct hourly rate.

The IAEC advocates that the costs imposed on a utility should be borne by those who impose the costs. The IAEC supports fees that more closely reflect the utility's actual cost to process the interconnection application. The current interconnection fees do not adequately cover the utility's cost to provide the interconnection service.

The Environmental Commenters believe that the interconnection fees should enable a utility to recover its reasonable costs. However, the utility should manage the process efficiently to keep costs down. As the number of interconnections increase, the utilities should become more experienced and costs should decrease. The Environmental Commenters recommend the Board require the utilities to demonstrate what steps they have taken to actively reduce costs before changing the interconnection fees. Furthermore the Environmental Commenters suggest that the utilities continue to track costs after the rules have been revised and while they gain experience with additional interconnections. Then, the issue can be re-evaluated based on additional data and more substantive experience.

[18] The cost is based on a direct hourly rate of $46. The hourly rate is not "loaded" since it does not include costs for employee pensions and benefits, time paid not worked, payroll taxes, etc.
[19] Ibid.

TASC advocates that the interconnection application fees be based on demonstrated costs. According to TASC, MidAmerican has failed to provide cost data, and TASC believes MidAmerican's estimates warrant additional scrutiny since they are three to six times larger than IPL's data. TASC believes that a standard fee (based on demonstrated costs) should apply to standard Level 1 and Level 2 interconnection application requests. Additionally TASC states that IPL's data fails to support its proposed $250 fee for both Level 1 and Level 2 since a Level 1 review is only $159 if there is no witness test. TASC notes that IPL does not provide data on the frequency of witness tests and it is not accurate to assume that a witness test will be completed for each interconnection. Finally, TASC says that additional efficiencies and cost savings will be realized if the Board amends the rules to include online application submissions and accepting signatures.

OCA agrees that the application fees should have some relationship to the actual cost of processing the interconnection application but believes the fees for processing these applications should be similar among utilities. OCA states that the Board's rule-making process can be a sensible avenue for developing uniform fees and interconnection requirements. OCA also notes that IPL's data suggests that costs for processing Level 1 applications are greater than $50 but the data does not support a fee of $250 for Level 1 applications. Furthermore, OCA suggests that the utilities may experience a reduction in costs as they gain more experience and efficiency in processing applications.

Staff Analysis

Staff notes that there is substantial variation in the cost data provided by MidAmerican and IPL. This variation makes it difficult for staff to propose cost-based interconnection fees which apply to both utilities. Additionally, staff has proposed adding a pre-application process which will cost the DG facility owner $300. The proposed pre-application process may decrease the utility's time and associated costs to review the interconnection applications. Therefore, staff is proposing no change to the interconnection fees.

Iowa Code § 476.6A

> **476.6A - Alternate energy production facilities - notification requirements.**
>
> 1. On and after January 1, 2013, the owner of an alternate energy production facility, as defined in section 476.42, which when constructed or installed will be attached to an electric transmission or distribution line or attached to equipment which is attached to an electric transmission or distribution line, who has not entered into a power purchase agreement with a public utility, shall be subject to the notification requirements of subsection 2.

2. No later than thirty days prior to commencement of the construction or installation of an alternate energy production facility as described in subsection 1, the owner of the facility shall provide written notice to the public utility within whose service territory the facility is to be located of the owner's intent to construct or install the facility, the type of facility to be constructed or installed, and the date that the facility is anticipated to commence operation.

In response to the Board's December 22, 2014, order soliciting proposed rule changes regarding certain interconnection issues, MidAmerican said that the statute (Iowa Code 476.6A) and Board chapter 45 rules do not align. Since the Board rules were in place first, MidAmerican recommended that the law be amended to reference the Board's interconnection rules for those customers served by rate-regulated utilities and the law should defer to applicable interconnection rules for non-rate regulated utilities. The Board asked MidAmerican (and others) to provide specific language needed to revise the notification requirement in Iowa Code 476.6A that could be used for future legislative action.

MidAmerican believes the Board intends for the interconnection agreement to be in place by the time the customer begins construction on the DG facility. MidAmerican notes that if an application proceeds in accordance with the maximum timelines set forth in chapter 45, the process takes more than 30 days for Levels 2-4 review. A Level 1 application takes nearly 30 days and could take as many as 45 days if a witness test is conducted. MidAmerican proposes to change the 30 days to 45 days and make other clarifying changes to Iowa Code § 476.6A as follows:

1. On and after January 1, 2013, the owner of an alternate energy production facility, as defined in section 476.42, which when constructed or installed will be attached to an electric transmission or distribution line or attached to equipment which is attached to an electric transmission or distribution line, who has not entered into a power purchase agreement with a public utility <u>accommodating the interconnection of the facility</u>, shall be subject to the notification requirements of subsection 2.
2. No later than ~~thirty~~ <u>forty-five calendar</u> days prior to commencement of the construction or installation of an alternate energy production facility as described in subsection 1, the owner of the facility shall provide written notice to the public utility within whose service territory the facility is to be located of the owner's intent to construct or install the facility, the type of facility to be constructed or installed, and the date that the facility is anticipated to commence operation. <u>The owner of the</u>

> facility shall follow the interconnection process of the public utility accommodating the interconnection of the facility.

IPL supports an extension of the notification requirements and also supports efforts for increased public awareness of the notification period and/or a penalty for noncompliance.

The IAEC also supports a longer notice period and believes a 45 or 60-day period would be more appropriate.

The Environmental Commenters do not think it is necessary or appropriate to add a penalty for noncompliance of the notification requirements.

TASC does not support MidAmerican's proposal to change the advance notice requirement from 30 days to 45 days. The statute requires notification "no later than thirty days prior to commencement of the construction," and TASC believes that it is irrelevant that the interconnection process may take longer than 30 days. TASC said that it is unclear how amending the statutes will result in improved customer comprehension of the interconnection timeline or increase public awareness. TASC also argues that the statute does not support IPL's suggestion for penalties for noncompliance. TASC recommends the Board reject the proposals.

OCA agrees that the interconnection process should ordinarily be completed prior to a new DG facility being installed, but OCA does not agree that the notification period prescribed in § 476.6A needs to be changed. Many of the DG installations are Level 1 which MidAmerican acknowledges can be completed within the 30-day statutory notice period. OCA finds no compelling reason to extend the notice period to 45 days.

Staff Analysis

Staff is not convinced that statutory changes are necessary. Staff believes that it is important to raise the awareness of the 30-day notification requirement and has included that information in the Board's Consumer Informational Guide for On-Site Generation. Additionally, staff notes that the utility may become aware of some projects sooner due to the pre-application process.

House File 548

House File 548 was signed by Governor Branstad on May 1, 2015. The legislation amended Iowa Code chapter 476 (adding Iowa Code § 476.58) and requires the Board to adopt administrative rules relating to the safety of distributed electric generation facilities. House File 548 requires that DG facility owners install a disconnection device that is visible and adjacent to the electric meter for all facilities placed in service on or after July 1, 2015. For installations

placed in service prior to July 1, 2015, the DG facility owner must install a permanent placard at the electric meter that identifies the location of any disconnection devices for the DG facility. Additionally, the legislation requires DG facility owners to notify the local fire department of the location of the DG facilities.

Staff Analysis

House File 548 included definitions for disconnection device and electric meter. These definitions are currently not included in 199 IAC chapter 15 or 45. Staff proposes to include definitions for disconnection device and electric meter in chapters 15 and 45 as follows:

"Disconnection device" means a lockable visual disconnect or other disconnection device capable of disconnecting and de-energizing the residual voltage in a distributed generation facility.
"Electric meter" means a device used by an electric utility that measures and registers the integral of an electrical quantity with respect to time.

Staff proposes the following revisions for 199 IAC 45.3 and corresponding revisions to 199 IAC 15.10(3)-(7):

45.3(2) *Interconnection facilities. (Corresponds to 199 IAC 15.10(3))*

a. ~~The utility may require the~~ A distributed generation facility placed in service after July 1, 2015 is required to ~~have the capability to be isolated from the utility, either by means of a lockable, visible-break isolation device accessible by the utility, or by means of a lockable isolation~~ install a disconnection device~~. whose status is indicated and is accessible by the utility. If an isolation device is required by the utility,~~ ~~t~~The device shall be installed, owned, and maintained by the owner of the distributed generation facility and shall be easily visible and adjacent to an interconnection customer's electric meter.~~located electrically between the distributed generation facility and the point of interconnection. A draw-out type of circuit breaker accessible to the utility with a provision for padlocking at the drawn-out position satisfies the requirement for an isolation device.~~ For installations placed in service prior to July 1, 2015, the customer shall be required to provide and attach a permanent placard at the electric meter that clearly identifies the presence and location of disconnection devices for the distributed generation facilities on the property. If no disconnection device is present, the placard shall state, "no disconnection device."

b. The interconnection shall include overcurrent devices on the facility to automatically disconnect the facility at all currents that exceed the full-load current rating of the facility.

c. Distributed generation facilities with a design capacity of 100 kVA or less must be equipped with automatic disconnection upon loss of electric utility-supplied voltage.

d. Those facilities that produce a terminal voltage prior to the closure of the interconnection shall be provided with synchronism-check devices to prevent closure of the interconnection under conditions other than a reasonable degree of synchronization between the voltages on each side of the interconnection switch.

45.3(3) *Access. (Corresponds to 199 IAC 15.10(4))* If ~~an isolation~~ a disconnection device is required ~~by the utility~~, both the operator of the distributed generation facility and the utility shall have access to the ~~isolation~~ disconnection device at all times. For distributed generation facilities installed prior to July 1, 2015, ~~A~~an interconnection customer may elect to provide the utility with access to a~~n isolation~~ disconnection device that is contained in a building or area that may be unoccupied and locked or not otherwise accessible to the utility by installing a lockbox provided by the utility that allows ready access to the ~~isolation~~disconnection device. The lockbox shall be in a location determined by the utility to be accessible by the utility. The interconnection customer shall permit the utility to affix a placard in a location of the utility's choosing that provides instructions to utility operating personnel for accessing the ~~isolation~~disconnection device. If the utility needs to isolate the distribution generation facility, the utility shall not be held liable for any damages resulting from the actions necessary to isolate the generation facility.

45.3(4) *Inspections. (Corresponds to 199 IAC 15.10(5))* The operator of the distributed generation facility shall adopt a program of inspection of the generator and its appurtenances and the interconnection facilities in order to determine necessity for replacement and repair. Representatives of the utility shall have access at all reasonable hours to the interconnection equipment specified in subrule 45.3(2) for inspection and testing.

45.3(5) *Emergency disconnection. (Corresponds to 199 IAC 15.10(6))* In the event that an electric utility or its customers experience problems of a type that could be caused by the presence of alternating currents or voltages with a frequency higher than 60 Hertz, the utility shall be permitted to open and lock the interconnection switch pending a complete investigation of the problem. Where the utility believes the condition creates a hazard to the public or to property, the disconnection may be made without prior notice. However, the utility shall notify the operator of the

distributed generation facility by written notice and, where possible, verbal notice as soon as practicable after the disconnections.
45.3(6) *Notification. (Corresponds to 199 IAC 15.10(7))* Owners of interconnected distributed generation facilities are required to notify local paid or volunteer fire departments via U.S. mail of the location of distributed generation facilities and the associated disconnection device when the distributed generation facility is placed in service. The owner is required to provide any information related to the distributed generation facility as required by local fire department including but not limited to:

- Site map showing property address, service point from utility company, distributed generation disconnect location(s), distributed generation facility location(s), if applicable the location of rapid shut down and battery disconnect(s), property owner's emergency contact information or owner's representative, utility company's emergency phone number, and size of distributed generation system.
- Information to access the disconnection device.
- Statement from owner verifying the distributed generation system was installed in accordance with the current state adopted National Electrical Code.

IV. Recommendation

Staff recommends the Board direct General Counsel to draft an order under the current NOI docket that proposes the revisions reflected to 199 IAC chapter 45 as found in Appendix C and to 199 IAC chapter 15 as found in Appendix D. Staff also proposes to schedule a workshop to allow participants and staff an opportunity to discuss the proposed revisions prior to initiating a rulemaking.

RECOMMENDATION APPROVED **IOWA UTILITIES BOARD**

/bkb

/s/ Geri D. Huser *8-11-15*
Date

/s/ Elizabeth S. Jacobs *8-13-15*
Date

/s/ Nick Wagner *8/19/15*
Date

Appendix A – House File 548

AN ACT
REQUIRING THE IOWA UTILITIES BOARD TO ADOPT ADMINISTRATIVE RULES RELATING TO THE SAFETY OF DISTRIBUTED ELECTRIC GENERATION FACILITIES

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF IOWA:

Section 1. NEW SECTION. **476.58 Safety of distributed generation facilities - disconnection device required - rules.**

1. For purposes of this section:
   a. "Disconnection device" means a lockable visual disconnect or other disconnection device capable of disconnecting and de-energizing the residual voltage in a distributed generation facility.
   b. "Distributed generation facility" means any of the following:
      (1) A cogeneration facility or a small power production facility that is a qualifying facility under 18 C.F.R. pt. 292, subpt. B, used by an interconnection customer to generate electricity that operates in parallel with the electric distribution system, and that typically includes an electric generator and the equipment required to interconnect safely with the electric distribution system or local electric power system.
      (2) An alternate energy production facility as defined in section 476.42.
      (3) A small hydro facility as defined in section 476.42.
   c. "Electric distribution system" means the facilities and equipment owned and operated by an electric utility that are used to transmit electricity to ultimate usage points from interchanges with higher voltage transmission networks which transport bulk power over long distances and that generally operate at less than one hundred kilovolts of electricity.
   d. "Electric meter" means a device used by an electric utility that measures and registers the integral of an electrical quantity with respect to time.
   e. "Electric utility" means a public utility that furnishes electricity to the public for compensation.
   f. "Interconnection customer" means a person that interconnects a distributed generation facility to an electric distribution system.
2. Consistent with the board's safety jurisdiction pursuant to section 476.1, the board shall adopt rules pursuant to chapter 17A relating to the safe installation and operation of interconnections between distributed generation facilities and electric distribution systems. The rules shall include but not be limited to the following:
   a. For installations placed in service on or after July 1, 2015, a requirement that a disconnection device be installed at a location that is easily visible and adjacent to an interconnection customer's electric meter. For installations placed in service prior to July 1, 2015, a requirement that an interconnection customer provide and attach a permanent placard at the

electric meter that clearly identifies the presence and location of disconnection devices for distributed generation facilities on the property.

b. A requirement that interconnection customers notify local paid or volunteer fire departments of the location of distributed generation facilities and associated disconnection devices upon completion of installation and procedures for such notifications.

c. Procedures for electric utilities to deny or disconnect service for safety reasons to a person who does not comply with rules adopted pursuant to this subsection.

3. Procedures and requirements provided in rules adopted pursuant to subsection 2 shall apply to all electric utilities and all interconnection customers in this state. However, only those rule provisions concerning interconnections between distributed generation facilities and electric distribution systems and safety issues shall apply to utilities over which the board's jurisdiction is limited by section 476.1A or 476.1B.

4. This section shall not be construed to expand the board's jurisdiction over a utility over which the board's jurisdiction is limited by section 476.1A or 476.1B. This House File 548, p. 3 section shall not be construed to authorize the board to require that an installation or connection of a distributed generation facility, disconnection device, or interconnection between a distributed generation facility and an electric distribution system be performed by a licensed electrician, installer, or professional engineer. This section shall not be construed to require inspection of a distributed generation facility, disconnection device, or interconnection between a distributed generation facility and an electric distribution system pursuant to chapter 103.

Appendix B – IPL's Proposed Revisions for Supplemental Review

45.9(6)

a. Additional review may be appropriate when a distributed generation facility fails to meet one or more of the Level 2 screens. The utility shall offer to perform additional review to determine whether there are minor modifications to the distributed generation facility or electric distribution system that would enable the interconnection to be made safely and so that it will not cause adverse system impacts. To accept the offer of a supplemental review, the Applicant shall agree in writing, and submit a deposit for the estimated costs of the supplemental review in the amount of the utility's good faith non-binding estimate of the costs of such review, both within 15 Business Days of the offer. If the written agreement and deposit have not been received by the utility within that timeframe, the Interconnection Request shall continue to be evaluated under the applicable study process unless it is withdrawn by the Applicant.

~~The utility shall provide the applicant with a nonbinding estimate for the costs of additional review and the costs of minor modifications to the electric distribution system. The utility shall undertake the additional review only after the applicant pays for the additional review. The utility shall undertake the modifications only after the applicant pays for the modifications.~~

b. The Applicant may specify the order in which the utility will complete the screens in section "d".

c. The Applicant shall be responsible for the utility's actual costs for conducting the supplemental review. The Applicant must pay any review costs that exceed the deposit within 20 Business Days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 Business Days of the invoice without interest.

d. Within 30 Business Days following receipt of the deposit for a supplemental review, the utility shall:

1. Perform a supplemental review using the screens set forth below;
2. Notify in writing the Applicant of the results; and
3. Include with the notification copies of the analysis and data underlying the utility's determinations under the screens.

e. Unless the Applicant provided instructions for how to respond to the failure of any of the supplemental review screens below at the time the Applicant accepted the offer of supplemental review, the utility shall notify the Applicant following the failure of any of the screens, or if it is unable to perform the screen in section 1 below, within two Business Days of making such determination to obtain the Applicant's permission to: (1) continue evaluating the proposed interconnection under this section e; (2) terminate the supplemental review and continue evaluating the Small Generating Facility; or (3) terminate the supplemental review upon withdrawal of the Interconnection Request by the Applicant.

1. Minimum Load Screen: Where 12 months of line section minimum load data (including onsite load but not station service load served by the proposed Small Generating Facility) are available, can be calculated, can be estimated from existing data, or determined from a power flow model, the aggregate Generating

Facility capacity on the line section is less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed Small Generating Facility. If minimum load data is not available, or cannot be calculated, estimated or determined, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under section “d” above.

A. The type of generation used by the proposed Small Generating Facility will be taken into account when calculating, estimating, or determining circuit or line section minimum load relevant for the application of screen. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (i.e. 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems), while all other generation uses absolute minimum load.

B. When this screen is being applied to a Small Generating Facility that serves some station service load, only the net injection into the utility’s electric system will be considered as part of the aggregate generation.

C. Utility will not consider as part of the aggregate generation for purposes of this screen generating facility capacity known to be already reflected in the minimum load data.

2. Voltage and Power Quality Screen: In aggregate with existing generation on the line section: (1) the voltage regulation on the line section can be maintained in compliance with relevant requirements under all system conditions; (2) the voltage fluctuation is within acceptable limits as defined by Institute of Electrical and Electronics Engineers (IEEE) Standard 1453, or utility practice similar to IEEE Standard 1453; and (3) the harmonic levels meet IEEE Standard 519 limits.

3. Safety and Reliability Screen: The location of the proposed Small Generating Facility and the aggregate generation capacity on the line section do not create impacts to safety or reliability that cannot be adequately addressed without application of the Study Process. The utility shall give due consideration to the following and other factors in determining potential impacts to safety and reliability in applying this screen.

A. Whether the line section has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).

B. Whether the loading along the line section is uniform or even.

C. Whether the proposed Small Generating Facility is located in close proximity to the substation (i.e., less than 2.5 electrical circuit miles), and whether the line section from the substation to the Point of Interconnection is a Mainline rated for normal and emergency ampacity.

D. Whether the proposed Small Generating Facility incorporates a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time.

E. Whether operational flexibility is reduced by the proposed Small Generating Facility, such that transfer of the line section(s) of the Small Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues.

F. Whether the proposed Small Generating Facility employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, or voltage quality.

f. If the proposed interconnection passes the supplemental screens in sections 45.9(6)”e”(1), 45.9(6)”e”(2), and 45.9(6)”e”(3) above, the Interconnection Request shall be approved and the utility will provide the Applicant with an executable interconnection agreement within the timeframes established in sections “g” and “h” below. If the proposed interconnection fails any of the supplemental review screens and the Applicant does not withdraw its Interconnection Request, it shall continue to be evaluated under the Level 4 Study Process consistent with section 45.11 below.

g. If the proposed interconnection passes the supplemental screens in sections 45.9(6)”e”(1), 45.9(6)”e”(2), and 45.9(6)”e”(3) above and does not require construction of facilities by the utility on its own system, the interconnection agreement shall be provided within ten Business Days after the notification of the supplemental review results.

h. If interconnection facilities or minor modifications to the utility's system are required for the proposed interconnection to pass the supplemental screens in sections 45.9(6)”e”(1), 45.9(6)”e”(2), and 45.9(6)”e”(3) above, and the Applicant agrees to pay for the modifications to the utility’s electric system, the interconnection agreement, along with a non-binding good faith estimate for the interconnection facilities and/or minor modifications, shall be provided to the Applicant within 15 Business Days after receiving written notification of the supplemental review results.

i. If the proposed interconnection would require more than interconnection facilities or minor modifications to the utility’s system to pass the supplemental screens in sections 45.9(6)”e”(1), 45.9(6)”e”(2), and 45.9(6)”e”(3) above, the utility shall notify the Applicant, at the same time it notifies the Applicant with the supplemental review results, that the Interconnection Request shall be evaluated under the Level 4 Study Process unless the Applicant withdraws its Small Generating Facility.

Appendix C – Proposed Chapter 45 Rule Revisions

CHAPTER 45
ELECTRIC INTERCONNECTION OF DISTRIBUTED GENERATION FACILITIES

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 Standard Certificate of Completion in Appendix B (199—45.16~~5~~(476)) 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 ~~a~~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."

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

"Distributed generation facility" means a qualifying facility or an AEP 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.

"Draw-out type circuit breaker" means a switching device capable of making, carrying and breaking currents under normal and abnormal circuit conditions such as those of a short circuit. A draw-out type circuit breaker can be physically removed from its enclosure creating a visible break in the circuit. The draw-out type circuit breaker shall be capable of being locked in the open, drawn-out position.

"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."

"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 ~~a~~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—45.12~~1~~(476).

"Lab-certified" means a designation that the interconnection equipment meets the requirements set forth in rule 199—45.7~~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 April 9, 2014. 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.

"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 ~~a~~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 of IEEE Standard 1547.

"Standard distributed generation interconnection agreement" means the Standard Distributed Generation Interconnection Agreements in Appendix A (199—45.15~~4~~(476)) and Appendix D (199—45.18~~7~~(476)) applicable to interconnection requests for distributed generation facilities.

"UL Standard 1741" means the standard titled "Inverters, Converters, and Controllers for Use in Independent Power Systems," 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 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. All verified tests are to be performed in accordance with the test procedures specified by IEEE Standard 1547.1.

199—45.2(476) Scope.

45.2(1) This chapter applies to utilities, and distributed generation facilities seeking to operate in parallel with utilities, provided the facilities are not subject to the interconnection requirements of the Federal Energy Regulatory Commission (FERC), the MidcontinentMidwest Independent Transmission System Operator, Inc. (MISO), or the Mid-Continent Area Power Pool (MAPP).

45.2(2) If the nameplate capacity of the facility is greater than 10 MVA, the interconnection customer and the utility shall start with the Level 4 review process and agreements under rules 199—45.121(476), 199—45.187(476), 199—45.198(476), 199—45.20219(476), and 199—45.2110(476), and modify the process and agreements as needed by mutual agreement. In addition, the interconnection customer and the utility shall start with the technical standards under rule 199—45.3(476) and modify the standards as needed by mutual agreement. If the interconnection customer and the utility cannot reach mutual agreement, the interconnection customer may seek resolution through the rule 199—45.132(476) dispute process.

199—45.3(476) Technical standards. The technical standard to be used in evaluating interconnection requests governed by this chapter is IEEE Standard 1547, unless otherwise noted.

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, 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 519-1992; 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 70-20082014.

45.3(2) *Interconnection facilities.*

a. ~~The utility may require the~~ A distributed generation facility placed in service after July 1, 2015 is required to ~~have the capability to be isolated from the utility, either by means of a lockable, visible-break isolation device accessible by the utility, or by means of a lockable isolation~~ include a disconnection device. ~~whose status is indicated and is accessible by the utility. If an isolation device is required by the utility, t~~The device shall be installed, owned, and maintained by the owner of the distributed generation facility and shall be easily visible and adjacent to an interconnection customer's electric meter.~~located electrically between the distributed generation facility and the point of interconnection. A draw-out type of circuit breaker accessible to the utility with a provision for padlocking at the drawn-out position satisfies the requirement for an isolation device.~~ For installations placed in service prior to July 1, 2015, the customer shall be required to provide and attach a permanent placard at the electric meter that clearly identifies the presence and location of disconnection devices for the distributed generation facilities on the property. If no disconnection device is present, the placard shall state, "no disconnection device."

b. The interconnection shall include overcurrent devices on the facility to automatically disconnect the facility at all currents that exceed the full-load current rating of the facility.

c. Distributed generation facilities with a design capacity of 100 kVA or less must be equipped with automatic disconnection upon loss of electric utility-supplied voltage.

d. Those facilities that produce a terminal voltage prior to the closure of the interconnection shall be provided with synchronism-check devices to prevent closure of the interconnection under conditions other than a reasonable degree of synchronization between the voltages on each side of the interconnection switch.

45.3(3) *Access.* If ~~an isolation~~ a disconnection device is required by the utility, both the operator of the distributed generation facility and the utility shall have access to the ~~isolation~~ disconnection device at all times. For distributed generation installations prior to July 1, 2015, ~~A~~an interconnection customer may elect to provide the utility with access to ~~an isolation~~ a disconnection device that is contained in a building or area that may be unoccupied and locked or not otherwise accessible to the utility by installing a lockbox provided by the utility that allows ready access to the ~~isolation~~ disconnection device. The lockbox shall be in a location determined by the utility to be accessible by the utility. The interconnection customer shall permit the utility to affix a placard in a location of the utility's choosing that provides instructions to utility operating personnel for accessing the ~~isolation~~ disconnection device. If the utility needs to isolate the distribution generation facility, the utility shall not be held liable for any damages resulting from the actions necessary to isolate the generation facility.

45.3(4) *Inspections.* The operator of the distributed generation facility shall adopt a program of inspection and testing of the generator and its appurtenances and the interconnection facilities in order to determine necessity for replacement and repair. Such a program should include all periodic tests and maintenance prescribed by the manufacturer. If the periodic testing of interconnection-related protective functions is not specified by the manufacturer, it should occur at least every five years. All interconnection-related protective functions shall be periodically tested and a system that depends upon a battery for trip power shall be checked and logged. Representatives of the utility shall have access at all reasonable hours to the interconnection equipment specified in subrule 45.3(2) for inspection and testing with reasonable prior notice to Applicant. If the utility discovers the Applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electrical system, the utility may require disconnection of the Applicant's facility until it complies with this chapter.

45.3(5) *Emergency disconnection.* In the event that an electric utility or its customers experience problems of a type that could be caused by the presence of alternating currents or voltages with a frequency higher than 60 Hertz, the utility shall be permitted to open and lock the interconnection switch pending a complete investigation of the problem. Where the utility believes the condition creates a hazard to the public or to property, the disconnection may be made without prior notice. However, the utility shall notify the operator of the distributed generation facility by written notice and, where possible, verbal notice as soon as practicable after the disconnections.

45.3(6) Notification. Owners of interconnected distributed generation facilities are required to notify local paid or volunteer fire departments via U.S. mail of the location of distributed generation facilities and the associated disconnection device when the distributed generation facility is placed in service. The owner is required to provide any information related to the DG facility as required by that fire department including but not limited to:

- Site map showing property address, service point from utility company, distributed generation disconnect location(s), module location(s), if applicable location of rapid shut

down and battery disconnect(s), property owners emergency contact information or owners representative, utilities companies emergency phone number, and size of system.

- Information to access the disconnection device.
- Statement from owner verifying the distributed generation system was installed in accordance with the current state adopted National Electrical Code.

199-45.4(476) Pre-application Request.

45.4(1) The utility shall designate an employee or office from which information on the application process and on an Affected System can be obtained through informal requests from the Applicant presenting a proposed project for a specific site, which may include multiple proposed individual interconnections in close proximity and related to one project such as a residential or commercial development proposing roof-top solar on each premise. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet Web site. Electric system information provided to the Applicant should include relevant available system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's electric distribution system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information.

45.4(2) In addition to the information described in section 45.4(1), which may be provided in response to an informal request, an Applicant may submit a formal written request form along with a non-refundable fee of $300 for a pre-application report on a proposed project at a specific site. The utility shall provide the pre-application data described in section 45.4(1) to the Applicant within 20 business days of receipt of the completed request form and payment of the $300 fee. The pre-application report produced by the utility is non-binding, does not confer any rights, and the Applicant must still successfully apply to interconnect to the utility's system. The written pre-application report request form shall include the information in sections 45.4(2)"a" through 45.4(2)"h" below to clearly and sufficiently identify the location of the proposed Point of Interconnection

a. Proposed Distributed Generation Facility contact information, including name, address, phone number, and email address.

b. Project location (street address with nearby cross streets and town)

c. Meter number, pole number, or other equivalent information identifying proposed Point of Interconnection, if available.

d. Generator Type (e.g., solar, wind, combined heat and power, etc.).

e. Size (alternating current kW).

f. Single or three phase generator configuration.

g. Stand-alone generator (no onsite load, not including station service – Yes or No?).

h. Is new service requested? Yes or No? If there is existing service, include the customer account number, site minimum and maximum current or proposed electric loads in kW (if available) and specify if the load is expected to change.

45.4(3) Using the information provided in the pre-application report request form in section 45.4(2), the utility will identify the substation/area bus, bank or circuit likely to serve the proposed Point of Interconnection. This selection by the utility does not necessarily indicate, after application of the screens and/or study, that this would be the circuit to which the distributed generation facility ultimately connects or that interconnection will occur. The Applicant must request additional pre-application reports if information about multiple Points of Interconnection is requested.

45.4(4) The pre-application report need only include readily available data. A pre-application report request does not obligate the utility to conduct a study or other analysis

of the proposed generator in the event that data is not readily available.

Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre- application report that represents the best available information at the time of reporting

199—45.54 (476) Interconnection requests.

45.54(1) Applicants seeking to interconnect a distributed generation facility shall submit an interconnection request to the utility that owns the electric distribution system to which interconnection is sought. Applicants shall identify in the application if they are representing a group of customers that are located in the same vicinity and whether the application requires a group interconnection study. Applicants shall use interconnection request forms approved by the board.

45.54(2) Utilities shall specify the fee by level that the aApplicant shall remit to process the interconnection request. The fee shall be specified in the interconnection request forms. Utilities may charge a fee by level that aApplicants must remit in order to process an interconnection request. The utilities shall not charge more than the fees specified in the Standard Application Forms in Appendix A (199—45.154(476)) and Appendix C (199—45.176(476)).

45.54(3) Interconnection requests may be submitted electronically, if agreed to by the parties.

199—45.65(476) General requirements.

45.65(1) When an interconnection request for a distributed generation facility includes multiple energy production devices at a site for which the aApplicant seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate nameplate capacity of the multiple devices.

45.65(2) When an interconnection request is for an increase in capacity for an existing distributed generation facility, the interconnection request shall be evaluated on the basis of the new total nameplate capacity of the distributed generation facility.

45.65(3) The utility shall designate a point of contact and provide contact information on the utility's Web site. The point of contact shall be able to direct aApplicant questions concerning interconnection request submissions and the interconnection request process to knowledgeable individuals within the utility.

45.65(4) The information that the utility makes available to potential aApplicants can include previously existing utility studies that help aApplicants understand whether it is feasible to interconnect a distributed generation facility at a particular point on the utility's electric distribution system. However, the utility can refuse to provide the information to the extent that providing it violates security requirements or confidentiality agreements, or is contrary to state or federal law. In appropriate circumstances, the utility may require a confidentiality agreement prior to release of this information.

45.65(5) When an interconnection request is deemed complete by the utility, any modification that is not agreed to by the utility requires submission of a new interconnection request.

45.65(6) When an applicant is not currently a customer of the utility at the proposed site, theThe aApplicant shall provide, upon utility request, proof of the aApplicant's legal right to control the site, evidenced by the applicant's name on a property tax bill, deed, lease agreement or other legally binding contract. Site control may be demonstrated through:

a. Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the distributed generation facility;

b. An option to purchase or acquire a leasehold site for such purpose; or

c. Exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for such purpose.

45.65(7) To minimize the cost to interconnect multiple distributed generation facilities, the utility or the ~~a~~Applicant may propose a single point of interconnection for multiple distributed generation facilities located at an interconnection customer site that is on contiguous property. If the ~~a~~Applicant rejects the utility's proposal for a single point of interconnection, the ~~a~~Applicant shall pay any additional cost to provide a separate point of interconnection for each distributed generation facility. If the utility, without written technical explanation, rejects the customer's proposal for a single point of interconnection, the utility shall pay any additional cost to provide separate points of interconnection for each distributed generation facility.

45.65(8) Any metering required for a distributed generation interconnection shall be installed, operated, and maintained in accordance with the utility's metering rules filed with the board under 199—subrule 20.2(5), and inspection and testing practices adopted under rule 199—20.6(476). Any such metering requirements shall be identified in the Standard Distributed Generation Interconnection Agreement executed between the interconnection customer and the utility.

45.65(9) Utility requirements for monitoring and control of distributed generation facilities are permitted only when the nameplate capacity rating is greater than 1 MVA. Monitoring and control requirements shall be reasonable, consistent with the utility's published requirements, and shall be clearly identified in the interconnection agreement between the interconnection customer and the utility. Transfer trip shall not be considered utility monitoring and control when required and installed to protect the electric distribution system or an affected system against adverse system impacts.

45.65(10) The utility may require a witness test after the distributed generation facility is constructed. The ~~a~~Applicant shall provide the utility with at least 15 business days' notice of the planned commissioning test for the distributed generation facility. The ~~a~~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 ~~a~~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 ~~a~~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 ~~a~~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 ~~a~~Aapplicant remains obligated to satisfy the interconnection test specifications and requirements set forth in IEEE Standard 1547, Section 5. The ~~a~~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.

199—45.76(476) Lab-certified equipment. An interconnection request may be eligible for expedited interconnection review under rule 199—45.98(476), 199—45.109(476), or 199—45.1110(476) (as described in rule 199—45.87(476)) if the distributed generation facility uses interconnection equipment that is lab-certified.

45. 76 (1) Interconnection equipment shall be deemed to be lab-certified if:

a. The interconnection equipment has been successfully tested in accordance with IEEE Standard (as appropriate for lab testing) or complies with UL Standard 1741, as

demonstrated by any NRTL recognized by OSHA to test and certify interconnection equipment; and

b. The interconnection equipment has been labeled and is publicly listed by the NRTL at the time of the interconnection application; and

c. The ~~a~~Applicant's proposed use of the interconnection equipment falls within the use or uses for which the interconnection equipment was labeled and listed by the NRTL; and

d. The generator, other electric sources, and interface components being utilized are compatible with the interconnection equipment and are consistent with the testing and listing specified by the NRTL for this type of interconnection equipment.

45.~~7~~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, or additional interconnection equipment modification to meet the requirements for expedited review; however, ~~nothing in this subrule shall preclude the need for an interconnection installation evaluation,~~ the Applicant shall conduct all commissioning tests, or periodic testing as specified by IEEE Standard 1547, Sections 5.3, 5.4, and 5.5. The utility may conduct additional witness tests, but no more frequently than annually. ~~or for a witness test conducted by a utility.~~

199—45.~~8~~7(476) Determining the review level. A utility shall determine whether an interconnection request should be processed under the Level 1, 2, 3, or 4 procedures by using the following screens.

45.~~8~~7(1) A utility shall use Level 1 procedures to evaluate all interconnection requests to connect a distributed generation facility when:

a. The ~~a~~Applicant has filed a Level 1 application; and

b. The distributed generation facility has a nameplate capacity rating of ~~10~~20 kVA or less; and

c. The distributed generation facility is inverter-based; and

d. The customer interconnection equipment proposed for the distributed generation facility is lab-certified; and

e. No construction of facilities by the utility shall be required to accommodate the distributed generation facility.

45.~~8~~7(2) A utility shall use Level 2 procedures for evaluating interconnection requests when:

a. The ~~a~~Applicant has filed a Level 2 application; and

b. Level 2 eligibility for inverter based systems can be based on the following table. For purposes of this table, a mainline is the three-phase backbone of a circuit; and

Line Voltage	Level 2 Eligibility Regardless of Location	Level 2 Eligibility on a Mainline and < 2.5 Electrical Circuit Miles from Substation
< 5 kV	< 500 kVA	< 500 kVA
> 5 kV and < 15 kV	< 2 MVA	< 3 MVA
> 15 kV and < 30 kV	< 3MVA	< 4 MVA
> 30 kV and < 69 kV	< 4 MVA	< 5 MVA

~~The nameplate capacity rating is 2 MVA or less; and~~

c. The interconnection equipment proposed for the distributed generation facility is lab-certified; and

d. The proposed interconnection is to a radial distribution circuit or a spot network limited to serving one customer; and

e. No construction of facilities by the utility shall be required to accommodate the distributed generation facility, other than minor modifications provided for in subrule 45.10~~9~~(6).

45.8~~7~~(3) A utility shall use Level 3 review procedures for evaluating interconnection requests to area networks and radial distribution circuits where power will not be exported based on the following criteria.

a. For interconnection requests to the load side of an area network, the following criteria shall be satisfied to qualify for a Level 3 expedited review:

(1) The ~~a~~Applicant has filed a Level 3 application; and

(2) The nameplate capacity rating of the distributed generation facility is 50 kVA or less; and

(3) The proposed distributed generation facility uses a lab-certified inverter-based equipment package; and

(4) The distributed generation facility will use reverse power relays or other protection functions that prevent the export of power into the area network; and

(5) The aggregate of all generation on the area network does not exceed the lower of 5 percent of an area network's maximum load or 50 kVA; and

(6) No construction of facilities by the utility shall be required to accommodate the distributed generation facility.

b. For interconnection requests to a radial distribution circuit, the following criteria shall be satisfied to qualify for a Level 3 expedited review:

(1) The ~~a~~Applicant has filed a Level 3 application; and

(2) The aggregated total of the nameplate capacity ratings of all of the generators on the circuit, including the proposed distributed generation facility, is 10 MVA or less; and

(3) The distributed generation facility will use reverse power relays or other protection functions that prevent power flow onto the electric distribution system; and

(4) The distributed generation facility is not served by a shared transformer; and

(5) No construction of facilities by the utility on its own system shall be required to accommodate the distributed generation facility.

45.8~~7~~(4) A utility shall use the Level 4 study review procedures for evaluating interconnection requests when:

a. The ~~a~~Applicant has filed a Level 4 application; and

b. The nameplate capacity rating of the small generation facility is 10 MVA or less; and

c. Not all of the interconnection equipment or distributed generation facilities being used for the application are lab-certified.

199—45.9~~8~~(476) Level 1 expedited review. A utility shall use the Level 1 interconnection review procedures for an interconnection request that meet the requirements specified in subrule 45.8~~7~~(1). A utility may not impose additional requirements on Level 1 reviews that are not specifically authorized under this rule or rule 199—45.3(476) unless the ~~a~~Applicant agrees.

45.9~~8~~(1) The utility shall evaluate the potential for adverse system impacts using the following screens, which shall be satisfied:

a. For interconnection of a proposed distributed generation facility to a radial distribution circuit, the total distributed generation connected to the distribution circuit, including the proposed distributed generation facility, may not exceed 15 percent of the maximum load normally supplied by the distribution circuit.

b. For interconnection within a spot network, the distributed generation facility must use a minimum import relay or other protective scheme that will ensure that power

imported from the utility to the network will, during normal utility operations, remain above 1 percent of the network's maximum load over the past year, or will remain above a point reasonably set by the utility in good faith. At the utility's discretion, the requirement for minimum import relays or other protective schemes may be waived and alternative screening criteria may be applied.

c. When a proposed distributed generation facility is to be interconnected on a single-phase shared secondary line, the aggregate generation capacity on the shared secondary line, including the proposed distributed generation facility, shall not exceed 20 kVA.

d. When a proposed distributed generation facility is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition may not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.

e. The utility shall not be required to construct any facilities on its own system to accommodate the distributed generation facility's interconnection.

45.9~~8~~(2) The Level 1 interconnection shall use the following procedures:

a. The ~~a~~Applicant shall submit an interconnection request using the appropriate Standard Application Form in Appendix A (199—45.15~~4~~(476)) along with the Level 1 application fee.

b. Within seven business days after receipt of the interconnection request, the utility shall inform the ~~a~~Applicant whether the interconnection request is complete. If the request is incomplete, the utility shall specify what information is missing and the ~~a~~Applicant has ten business days after receiving notice from the utility to provide the missing information or the interconnection request shall be deemed withdrawn.

c. Within 15 business days after the utility notifies the ~~a~~Applicant that its interconnection request is complete, the utility shall verify whether the distributed generation facility passes all the relevant Level 1 screens.

d. If the utility determines and demonstrates that a distributed generation facility does not pass all relevant Level 1 screens, the utility shall provide a letter to the ~~a~~Applicant explaining the reasons that the facility did not pass the screens.

e. Otherwise, the utility shall approve the interconnection request and provide to the ~~a~~Applicant a signed version of the standard "Conditional Agreement to Interconnect Distributed Generation Facility" in Appendix A (199—45.15~~4~~(476)) subject to the following conditions:

(1) The distributed generation facility has been approved by local or municipal electric code officials with jurisdiction over the interconnection;

(2) The Standard Certificate of Completion in Appendix B (199—45.16~~5~~(476)) has been returned to the utility. Completion of local inspections may be designated on inspection forms used by local inspecting authorities;

(3) The witness test has either been successfully completed or waived by the utility in accordance with Section (2)(c)(ii) of the Terms and Conditions for Interconnection in Appendix A (199—45.15~~4~~(476)); and

(4) The ~~a~~Applicant has signed the standard "Conditional Agreement to Interconnect Distributed Generation Facility" in Appendix A (199—45.15~~4~~(476)). When an ~~a~~Applicant does not sign the agreement within 30 business days after receipt of the agreement from the utility, the interconnection request is deemed withdrawn unless the ~~a~~Applicant requests to have the deadline extended for no more than 15 business days. An initial request for extension shall not be denied by the utility, but subsequent requests may be denied.

f. If a distributed generation facility is not approved under a Level 1 review, and the utility's reasons for denying Level 1 status are not subject to dispute, the ~~a~~Applicant may submit a new interconnection request for consideration under Level 2, Level 3, or Level 4 procedures.

199—45.10~~9~~(476) Level 2 expedited review. A utility shall use the Level 2 review procedure for interconnection requests that meet the Level 2 criteria in subrule 45.8~~7~~(2). A utility may not impose additional requirements for Level 2 reviews that are not specifically authorized under this rule or rule 199—45.3(476) or subrule 45.6~~5~~(9) unless the ~~a~~Applicant agrees.

45.10~~9~~(1) The utility shall evaluate the potential for adverse system impacts using the following screens, which shall be satisfied:

a. For interconnection of a proposed distributed generation facility to a radial distribution circuit, the total distributed generation connected to the distribution circuit, including the proposed distributed generation facility, may not exceed 15 percent of the maximum normal load normally supplied by the distribution circuit.

b. For interconnection of a proposed distributed generation facility within a spot network, the proposed distributed generation facility must be inverter-based and use a minimum import relay or other protective scheme that will ensure that power imported from the utility to the network will, during normal utility operations, remain above 1 percent of the network's maximum load over the past year, or will remain above a point reasonably set by the utility in good faith. At the utility's discretion, the requirement for minimum import relays or other protective schemes may be waived and alternative screening criteria may be applied.

c. The proposed distributed generation facility, in aggregation with other generation on the distribution circuit, may not contribute more than 10 percent to the distribution circuit's maximum fault current at the point on the primary line nearest the point of interconnection.

d. Any proposed distributed generation facility, in aggregate with other generation on the distribution circuit, shall not cause any electric utility distribution devices to be exposed to fault currents exceeding 90 percent of their short-circuit interrupting capability. Interconnection of a non-inverter-based distributed generation facility may not occur under Level 2 if equipment on the utility's distribution circuit is already exposed to fault currents of between 90 and 100 percent of the utility's equipment short-circuit interrupting capability. However, if fault currents exceed 100 percent of the utility's equipment short-circuit interrupting capability even without the distributed generation being interconnected, the utility shall replace the equipment at its own expense, and interconnection may proceed under Level 2.

e. When a customer-generator facility is to be connected to 3-phase, 3-wire primary utility distribution lines, a 3-phase or single-phase generator shall be connected phase-to-phase.

f. When a customer-generator facility is to be connected to 3-phase, 4-wire primary utility distribution lines, a 3-phase or single-phase generator shall be connected line-to-neutral and shall be grounded.

g. When the proposed distributed generation facility is to be interconnected on a single-phase shared secondary line, the aggregate generation capacity on the shared secondary line, including the proposed distributed generation facility, may not exceed 20 kVA.

h. When a proposed distributed generation facility is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition may not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.

i. A distributed generation facility, in aggregate with other generation interconnected to the distribution side of a substation transformer feeding the circuit where the distributed generation facility proposes to interconnect, may not exceed 10 MVA in an area where there are transient stability limitations to generating units located in the general electrical

vicinity, as publicly posted by the Mid-Continent Area Power Pool (MAPP), the ~~Midwest~~ Midcontinent Independent Transmission System Operator, Inc. (MISO), or the Midwest Reliability Organization (MRO).

j. Except as permitted by additional review in subrule 45.10~~9~~(6), the utility shall not be required to construct any facilities on its own system to accommodate the distributed generation facility's interconnection.

45.10~~9~~(2) The Level 2 interconnection shall use the following procedures:

a. The ~~a~~Applicant submits an interconnection request using the appropriate Standard Application Form in Appendix C (199—45.17~~6~~(476)) along with the Level 2 application fee.

b. Within ten business days after receiving the interconnection request, the utility shall inform the ~~a~~Applicant as to whether the interconnection request is complete. If the request is incomplete, the utility shall specify what materials are missing and the ~~a~~Applicant has ten business days to provide the missing information or the interconnection request shall be deemed withdrawn.

c. After an interconnection request is deemed complete, the utility shall assign a review order position based upon the date that the interconnection request is determined to be complete. The utility shall then inform the ~~a~~Applicant of its review order position.

d. If, after determining that the interconnection request is complete, the utility determines that it needs additional information to evaluate the distributed generation facility's adverse system impact, it shall request this information. The utility may not restart the review process or alter the ~~a~~Applicant's review order position because it requires the additional information. The utility can extend the time to finish its evaluation only to the extent of the delay required for receipt of the additional information. If the additional information is not provided by the ~~a~~Applicant within 15 business days, the interconnection request shall be deemed withdrawn.

e. Within 20 business days after the utility notifies the ~~a~~Applicant it has received a completed interconnection request, the utility shall:

(1) Evaluate the interconnection request using the Level 2 screening criteria; and

(2) Provide the ~~a~~Applicant with the utility's evaluation, including a written technical explanation. If a utility does not have a record of receipt of the interconnection request and the ~~a~~Applicant can demonstrate that the original interconnection request was delivered, the utility shall complete the evaluation of the interconnection request within 20 business days after ~~a~~Applicant's demonstration.

45.10~~9~~(3) When a utility determines that the interconnection request passes the Level 2 screening criteria, or the utility determines that the distributed generation facility can be interconnected safely and will not cause adverse system impacts, even if it fails one or more of the Level 2 screening criteria, it shall provide the ~~a~~Applicant with the Standard Distributed Generation Interconnection Agreement in Appendix D (199—45.18~~7~~ (476)) within three business days of the date the utility makes its determination.

45.10~~9~~(4) Within 35 business days after issuance by the utility of the Standard Distributed Generation Interconnection Agreement, the ~~a~~Applicant shall sign and return the agreement to the utility. If the ~~a~~Applicant does not sign and return the agreement within 35 business days, the interconnection request shall be deemed withdrawn unless the ~~a~~Applicant requests a 15-business-day extension in writing before the end of the 35-day period. The initial request for extension may not be denied by the utility. When the utility conducts an additional review under the provisions of subrule 45.10~~9~~(6), the interconnection of the distributed generation facility shall proceed according to milestones agreed to by the parties in the Standard Distributed Generation Interconnection Agreement.

45.10~~9~~(5) The Standard Distributed Generation Interconnection Agreement is not final until:

a. All requirements in the agreement are satisfied;

b. The distributed generation facility is approved by the electric code officials with jurisdiction over the interconnection;

c. The ~~a~~Applicant provides the Standard Certificate of Completion in Appendix B (199—45.16~~5~~ (476)) to the utility. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and

d. The witness test has either been successfully completed or waived by the utility in accordance with Article 2.1.1 of the Standard Distributed Generation Interconnection Agreement.

45.10~~9~~(6) Additional review may be appropriate when a distributed generation facility fails to meet one or more of the Level 2 screens. The utility shall offer to perform additional review to determine whether there are minor modifications to the distributed generation facility or electric distribution system that would enable the interconnection to be made safely and so that it will not cause adverse system impacts. The utility shall provide the ~~a~~Applicant with a nonbinding estimate for the costs of additional review and the costs of minor modifications to the electric distribution system. The utility shall undertake the additional review only after the ~~a~~Applicant pays for the additional review. The utility shall undertake the modifications only after the ~~a~~Applicant pays for the modifications. If the utility adopts an additional review process the utility shall define the steps and screens.

45.10~~9~~(7) If the distributed generation facility is not approved under a Level 2 review, the utility shall provide the ~~a~~Applicant with written notification explaining its reasons for denying the interconnection request. The ~~a~~Applicant may submit a new interconnection request for consideration under a Level 4 interconnection review. The review order position assigned to the Level 2 interconnection request shall be retained, provided that the request is made by the ~~a~~Applicant within 15 business days after notification that the current interconnection request is denied.

199—45.11~~0~~(476) Level 3 expedited review. A utility shall use the Level 3 expedited review procedure for an interconnection request that meets the criteria in subrule 45.8~~7~~(3) or 45.8~~7~~(4). A utility may not impose additional requirements for Level 3 reviews not specifically authorized under this rule or rule 199—45.3(476) unless the ~~a~~Applicant agrees.

45.11~~0~~(1) A Level 3 interconnection shall use the following procedures:

a. The ~~a~~Aapplicant shall submit an interconnection request using the appropriate Standard Application Form in Appendix C (199—45.17~~6~~(476)) along with the Level 3 application fee.

b. Within ten business days after receiving the interconnection request, the utility shall inform the ~~a~~Applicant as to whether the interconnection request is complete. If the request is incomplete, the utility shall specify what materials are missing and the ~~a~~Applicant has ten business days to provide the missing information, or the interconnection request shall be deemed withdrawn.

c. After an interconnection request is deemed complete, the utility shall assign a review order position to it based upon the date the interconnection request is determined to be complete. The utility shall then inform the ~~a~~Applicant of its review order position.

d. If, after determining that the interconnection request is complete, the utility determines that it needs additional information to evaluate the distributed generation facility's adverse system impact, the utility shall request this information. The utility may not restart the review process or alter the ~~a~~Applicant's review order position because it requires the additional information. The utility can extend the time to finish its evaluation only to the extent the delay is required for receipt of the additional information. If this additional information is not provided by the ~~a~~Applicant within 15 business days, the interconnection request shall be deemed withdrawn.

e. Interconnection requests meeting the requirements set forth in paragraph 45.8~~7~~(3)*"a"* for nonexporting distributed generation facilities interconnecting to an area network shall be presumed to be appropriate for interconnection. The utility shall process the interconnection requests using the following procedures:

(1) The utility shall evaluate the interconnection request under Level 2 interconnection review procedures as set forth in subrule 45.10~~9~~(1) except that the utility has 25 business days to evaluate the interconnection request against the screens to determine whether interconnecting the distributed generation facility to the utility's area network has any potential adverse system impacts.

(2) If the Level 2 screens for area networks identify potential adverse system impacts, the utility may determine at its sole discretion that it is inappropriate for the distributed generation facility to interconnect to the area network under Level 3 review, and the interconnection request is denied. The ~~a~~Applicant may submit a new interconnection request for consideration under Level 4 procedures at the review order position assigned to the Level 3 interconnection request, if the request is made within 15 business days after notification that the current application is denied.

f. For interconnection requests that meet the requirements of paragraph 45.8~~7~~(3)*"b"* for nonexporting distributed generation facilities interconnecting to a radial distribution circuit, the utility shall evaluate the interconnection request under the Level 2 expedited review in subrule 45.10~~9~~(1), except for the screen in paragraph 45.10~~9~~(1)*"a."*

45.11~~0~~(2) For a distributed generation facility that satisfies the criteria in paragraph 45.11~~0~~(1)*"e"* or 45.11~~0~~(1)*"f,"* the utility shall approve the interconnection request and provide the Applicant with the Standard Distributed Generation Interconnection Agreement in Appendix D (199—45.18~~7~~(476)) ~~for the applicant to sign~~ within three business days of the date the utility makes its determination.

45.11~~0~~(3) Within 35 business days after issuance by the utility of the Standard Distributed Generation Interconnection Agreement, the ~~a~~Applicant shall complete, sign, and return the agreement to the utility. If the ~~a~~Applicant does not sign the agreement within 35 business days, the request shall be deemed withdrawn, unless the ~~a~~Applicant requests a 15-business-day extension in writing before the end of the 35-day period. An initial request for extension may not be denied by the utility. After the agreement is signed by the parties, interconnection of the distributed generation facility shall proceed according to any milestones agreed to by the parties in the Standard Distributed Generation Interconnection Agreement.

45.11~~0~~(4) The Standard Distributed Generation Interconnection Agreement shall not be final until:

a. All requirements in the agreement are satisfied; and

b. The distributed generation facility is approved by the electric code officials with jurisdiction over the distributed generation facility; and

c. The ~~a~~Applicant provides the Standard Certificate of Completion in Appendix B (199—45.16~~5~~(476)) to the utility; and

d. The witness test has either been successfully completed or waived by the utility in accordance with Article 2.1.1 of the Standard Distributed Generation Interconnection Agreement.

45.11~~0~~(5) If the distributed generation facility is not approved under a Level 3 review, the utility shall provide the ~~a~~Applicant with written notification explaining its reasons for denying the interconnection request. The ~~a~~Applicant may submit a new interconnection request for consideration under a Level 4 interconnection review. The review order position assigned to the Level 3 interconnection request shall be retained, provided that the request is made within 15 business days after notification that the current interconnection request is denied.

199—45.12~~1~~(476) Level 4 review. A utility shall use the following Level 4 study review procedures for an interconnection request that meets the criteria in subrule 45.8~~7~~(4).

45.12~~1~~(1) The ~~a~~Applicant submits an interconnection request using the appropriate Standard Application Form in Appendix C (199—45.17~~6~~(476)) along with the Level 4 application fee.

45.12~~1~~(2) Within ten business days after receipt of an interconnection request, the utility shall notify the ~~a~~Applicant whether the request is complete. When the interconnection request is not complete, the utility shall provide the ~~a~~Applicant with a written list detailing the information required to complete the interconnection request. The ~~a~~Applicant has ten business days to provide the required information or the interconnection request is considered withdrawn. The parties may agree to extend the time for receipt of the additional information. The interconnection request is deemed complete when the required information has been provided by the ~~a~~Applicant, or the parties have agreed that the ~~a~~Applicant may provide additional information at a later time.

45.12~~1~~(3) After an interconnection request is deemed complete, the utility shall assign a review order position to it based upon the date the interconnection request is determined to be complete. When assigning a review order position, a utility may consider whether there are any other interconnection projects on the same distribution circuit. If there are other interconnection projects on the same distribution circuit, the utility may consider them together. If a utility assigns a review order position based on the existence of interconnection projects on the same distribution circuit, the utility shall notify the ~~a~~Applicant of that fact when it assigns the review order position. The review order position of an interconnection request is used to determine the cost responsibility for the facilities necessary to accommodate the interconnection. The utility shall notify the ~~a~~Applicant as to its position in the review order. If the interconnection request is subsequently amended, it shall receive a new review order position based on the date that it was amended.

45.12~~1~~(4) Level 4 study review procedures. After the interconnection request has been assigned to the review order, a Level 4 study review shall be conducted:

a. Waiver or combination of standard Level 4 study review procedures. By mutual agreement of the parties in writing, the scoping meeting, feasibility study, system impact study, or facilities study in paragraph 45.12~~1~~(4)*"b"* may be waived or combined with other studies. Otherwise, the standard Level 4 study review procedures in paragraph 45.12~~1~~(4)*"b"* shall apply.

b. Standard Level 4 study review procedures.

(1) Scoping meeting. Unless waived or combined with other studies pursuant to paragraph 45.12~~1~~(4)*"a,"* a scoping meeting shall be held with the ~~a~~Applicant on a mutually agreed-upon date and time, after the utility has notified the ~~a~~Applicant that the Level 4 interconnection request is deemed complete, or after the ~~a~~Applicant has requested that its interconnection request proceed under Level 4 review after failing the requirements of a Level 1, Level 2, or Level 3 review. The purpose of the meeting is to review the interconnection request, any existing studies relevant to the interconnection request, and the results of any Level 1, Level 2, or Level 3 screening criteria.

(2) Feasibility study. Unless waived or combined with other studies pursuant to paragraph 45.12~~1~~(4)*"a,"* an interconnection feasibility study (subrule 45.12~~1~~(5)) shall be performed.

1. The utility shall provide the ~~a~~Applicant a copy of the Standard Interconnection Feasibility Study Agreement in Appendix E (199—45.19~~8~~(476)) or a mutually agreed-upon alternative form, plus a description of the study and a nonbinding estimate of the cost to perform the study.

2. The utility shall provide the study agreement and information no later than 10 business days after the following have occurred, as applicable:

- Receipt of a complete interconnection request; and
- The scoping meeting (if held).

3. If the ~~a~~Applicant does not sign and return the study agreement with payment of the estimated costs of the study within 15 business days, the application shall be deemed withdrawn.

(3) System impact study. Unless waived or combined with other studies pursuant to paragraph 45.12~~1~~(4)*"a,"* an interconnection system impact study (subrule 45.12~~1~~(6)) shall be performed.

1. The utility shall provide the ~~a~~Applicant a copy of the Standard Interconnection System Impact Study Agreement in Appendix F (199—45.20~~19~~ (476)) or a mutually agreed-upon alternative form, plus an outline of the scope of the study and a nonbinding estimate of the cost to perform the study.

2. The utility shall provide the study agreement and information no later than 10 business days after the following have occurred, as applicable:

- Receipt of a complete interconnection request;
- The scoping meeting (if held); and
- Transmittal of the interconnection feasibility study (if performed).

3. If the ~~a~~Applicant does not sign and return the study agreement with payment of the estimated costs of the study within 15 business days, the application shall be deemed withdrawn.

(4) Facilities study. Unless waived or combined with other studies pursuant to paragraph 45.12~~1~~(4)*"a,"* an interconnection facilities study (subrule 45.12~~1~~(7)) shall be performed.

1. The utility shall provide the ~~a~~Applicant a copy of the Standard Interconnection Facilities Study Agreement in Appendix G (199—45.21~~20~~ (476)) or a mutually agreed-upon alternative form, plus an outline of the scope of the study and a nonbinding estimate of the cost to perform the study.

2. The utility shall provide the study agreement and information no later than 10 business days after the following have occurred, as applicable:

- Receipt of a complete interconnection request;
- The scoping meeting (if held);
- Transmittal of the interconnection feasibility study (if performed); and
- Transmittal of the interconnection system impact study (if performed).

3. If the ~~a~~Applicant does not sign and return the study agreement with payment of the estimated costs of the study within 15 business days, the application shall be deemed withdrawn.

45.11(5) Interconnection feasibility study.

a. Unless waived or combined with other studies by agreement of the parties pursuant to paragraph 45.12~~1~~(4)*"a,"* the interconnection feasibility study shall include any necessary analyses for the purpose of identifying potential adverse system impacts to the utility's electric system that would result from the interconnection from among the following:

(1) Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection;

(2) Initial identification of any thermal overload or voltage limit violations resulting from the interconnection; and

(3) Initial review of grounding requirements and system protection.

b. Before performing the study, the utility shall provide the ~~a~~Applicant a description of the study and a nonbinding estimate of the cost to perform the study.

c. If an ~~a~~Applicant requests that the interconnection feasibility study evaluate multiple potential points of interconnection, additional evaluations may be required. Additional

evaluations shall be paid for by the ~~a~~Applicant.

d. An interconnection system impact study is not required when the interconnection feasibility study concludes that there is no adverse system impact, or when the study identifies an adverse system impact but the utility is able to identify a remedy without the need for an interconnection system impact study.

e. Either party can require that the Standard Interconnection Feasibility Study Agreement in Appendix E (199—45.19~~8~~(476)) be used. However, if both parties agree, an alternative form can be used.

45.12~~1~~(6) Interconnection system impact study. An interconnection system impact study evaluates the impact of the proposed interconnection on both the safety and reliability of the utility's electric distribution system. The study identifies and details the system impacts that interconnecting the distributed generation facility to the utility's electric system have if there are no system modifications. It focuses on the potential or actual adverse system impacts identified in the interconnection feasibility study, including those that were identified in the scoping meeting. The study shall consider all other distributed generation facilities that, on the date the interconnection system impact study is commenced, are directly interconnected with the utility's system, have a pending higher review order position to interconnect to the electric distribution system, or have signed an interconnection agreement.

a. Unless waived or combined with other studies by agreement of the parties pursuant to paragraph 45.12~~1~~(4)*"a,"* an interconnection system impact study shall be performed when either a potential adverse system impact is identified in the interconnection feasibility study, or an interconnection feasibility study has not been performed. Before performing the study, the utility shall provide the ~~a~~Applicant an outline of the scope of the study and a nonbinding estimate of the cost to perform the study. The interconnection system impact study shall include any pertinent elements from among the following:

(1) A load flow study;
(2) Identification of affected systems;
(3) An analysis of equipment interrupting ratings;
(4) A protection coordination study;
(5) Voltage drop and flicker studies;
(6) Protection and set point coordination studies;
(7) Grounding reviews; and
(8) Impact on system operation.

b. An interconnection system impact study shall consider any necessary criteria from among the following:

(1) A short-circuit analysis;
(2) A stability analysis;
(3) Alternatives for mitigating adverse system impacts on affected systems;
(4) Voltage drop and flicker studies;
(5) Protection and set point coordination studies; and
(6) Grounding reviews.

c. The final interconnection system impact study shall provide the following:

(1) The underlying assumptions of the study;
(2) The results of the analyses;
(3) A list of any potential impediments to providing the requested interconnection service;
(4) Required distribution upgrades; and
(5) A nonbinding estimate of cost and time to construct any required distribution upgrades.

d. Either party can require that the Standard Interconnection System Impact Study

Agreement in Appendix F (199—45. 45.2019(476)) be used. However, if both parties agree, an alternative form can be used.

45.121(7) Interconnection facilities study. Unless waived or combined with other studies by agreement of the parties pursuant to paragraph 45.121(4)*"a,"* an interconnection facilities study shall be performed as follows:

a. Before performing the study, the utility shall provide the aApplicant an outline of the scope of the study and a nonbinding estimate of the cost to perform the study.

b. The interconnection facilities study shall estimate the cost of the equipment, engineering, procurement and construction work, including overheads, needed to implement the conclusions of the interconnection feasibility study and the interconnection system impact study. The interconnection facilities study shall identify:

(1) The electrical switching configuration of the equipment, including transformer, switchgear, meters and other station equipment;

(2) The nature and estimated cost of the utility's interconnection facilities and distribution upgrades necessary to accomplish the interconnection; and

(3) An estimate for the time required to complete the construction and installation of the interconnection facilities and distribution upgrades.

c. The utility may agree to permit an aApplicant to arrange separately for a third party to design and construct the required interconnection facilities. In such a case, when the aApplicant agrees to separately arrange for design and construction, and to comply with security and confidentiality requirements, the utility shall make all relevant information and required specifications available to the aApplicant to permit the aApplicant to obtain an independent design and cost estimate for the facilities, which shall be built in accordance with the utility's specifications.

d. Upon completion of the interconnection facilities study, and after the aApplicant agrees to pay for the interconnection facilities and distribution upgrades identified in the interconnection facilities study, the utility shall provide the Applicant with the Standard Distributed Generation Interconnection Agreement in Appendix D (199—45.187(476)) for the applicant to sign within three business days of the date the utility makes its determination.

e. In the event that distribution upgrades are identified in the interconnection system impact study that shall be added only in the event that customers with higher review order positions not yet interconnected eventually complete and interconnect their generation facilities, the aApplicant may elect to interconnect without paying the estimate for such upgrades at the time of the interconnection, provided that the aApplicant pays for such upgrades prior to commencement of construction of such upgrades to be completed by the time the customer with higher review order position is ready to interconnect. If the aApplicant does not pay for such upgrades at that time, the utility shall require the aApplicant to immediately disconnect its distributed generation facility to accommodate the customer with higher review order position.

f. Either party can require that the Standard Interconnection Facilities Study Agreement in Appendix G (199—45.2120(476)) be used. However, if both parties agree, an alternative form can be used.

45.121(8) When a utility determines, as a result of the studies conducted under a Level 4 review, that it is appropriate to interconnect the distributed generation facility, the utility shall provide the aApplicant with the Standard Distributed Generation Interconnection Agreement in Appendix D (199—45.187(476)). If the interconnection request is denied, the utility shall provide the aApplicant with a written explanation as to its reasons for denying interconnection. If denied, the interconnection request does not retain its position in the review order.

45.121(9) Within 30 business days after receipt of the Standard Distributed Generation

Interconnection Agreement, the ~~a~~Applicant shall provide all necessary information required of the ~~a~~Applicant by the agreement, and the utility shall develop all other information required of the utility by the agreement. After completing the agreement with the additional information, the utility will transmit the completed agreement to the ~~a~~Applicant. Within 30 business days after receipt of the completed agreement, the ~~a~~Aapplicant shall sign and return the completed agreement to the utility. If the ~~a~~Applicant does not sign and return the agreement within 30 business days after receipt, the interconnection request shall be deemed withdrawn, unless the ~~a~~Applicant requests in writing to have the deadline extended by no more than 15 business days, prior to the expiration of the 30-business-day period. The initial request for extension may not be denied by the utility. If the ~~a~~Applicant does not sign and return the agreement after the 15-business-day extension, the interconnection request shall be deemed withdrawn. If withdrawn, the interconnection request does not retain its position in the review order. When construction is required, the interconnection of the distributed generation facility shall proceed according to milestones agreed to by the parties in the Standard Distributed Generation Interconnection Agreement.

45.12~~1~~(10) The Standard Distributed Generation Interconnection Agreement is not final until:

a. The requirements of the agreement are satisfied; and

b. The distributed generation facility is approved by electric code officials with jurisdiction over the interconnection; and

c. The ~~a~~Applicant provides the Standard Certificate of Completion in Appendix B (199—45.16~~5~~(476)) to the utility. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and

d. The witness test has either been successfully completed or waived by the utility in accordance with Article 2.1.1 of the Standard Distributed Generation Interconnection Agreement in Appendix D (199—45.18~~7~~(476)).

199—45.13~~2~~(476) Disputes.

45.13~~2~~(1) A party shall attempt to resolve all disputes regarding interconnection promptly and in a good-faith manner. A party shall provide prompt written notice of the existence of the dispute, including sufficient detail to identify the scope of the dispute, to the other party in order to attempt to resolve the dispute in a good-faith manner.

45.13~~2~~(2) An informal meeting between the parties shall be held within ten business days after receipt of the written notice. Persons with decision-making authority from each party shall attend such meeting. In the event said dispute involves technical issues, persons with sufficient technical expertise and familiarity with the issue in dispute from each party shall also attend the informal meeting. If the parties agree, such a meeting may be conducted by teleconference.

45.13~~2~~(3) Subsequent to the informal meeting referred to in subrule 45.13~~2~~(2), a party may seek resolution of any disputes through the 199—Chapter 6 complaint procedures of the board. Dispute resolution under these procedures will initially be conducted informally under rules 199—6.2(476) through 199—6.4(476) to reach resolution with minimal cost and delay. If any party is dissatisfied with the outcome of the informal process, the party may file a formal complaint with the board under rule 199—6.5(476).

45.13~~2~~(4) Pursuit of dispute resolution shall not affect an interconnection ~~a~~Applicant with regard to consideration of an interconnection request or an interconnection ~~a~~Applicant's position in the utility's interconnection review order.

199—45.1~~4~~3(476) Records and reports.

45.1~~4~~3(1) For each completed interconnection request received by the utility, the utility shall maintain records of the following for a minimum of three years:

a. The total nameplate capacity and fuel type of the distributed generation facility;

b. The level of review received (Level 1, Level 2, Level 3, or Level 4); and

c. Whether the interconnection was approved or denied.

45.1~~4~~3(2) Beginning May 1, 2011, each utility shall file a nonconfidential annual report detailing the information required in subrule 45.1~~4~~3(1) for the previous calendar year.

45.1~~4~~3(3) Each utility shall retain copies of studies it performs to determine the feasibility of, system impacts of, or facilities required by the interconnection of any distributed generation facility. The utility shall provide the ~~a~~Applicant copies of any studies performed in analyzing the ~~a~~Applicant's interconnection request upon ~~a~~Applicant request. However, a utility has no obligation to provide any future ~~a~~Applicants any information regarding prior interconnection requests to the extent that providing the information would violate security requirements or confidentiality agreements, or is contrary to state or federal law. In appropriate circumstances, the utility may require a confidentiality agreement prior to release of this information.

199—45.154(476) Appendix A – Level 1 standard application form and distributed generation interconnection agreement.

LEVEL 1
STANDARD APPLICATION FORM AND INTERCONNECTION AGREEMENT

Interconnection Request Application Form and
Conditional Agreement to Interconnect
(For Lab-Certified Inverter-Based Distributed Generation Facilities ~~10~~20 kVA or Smaller)

AN APPLICATION FEE OF $50.00 MUST BE SUBMITTED WITH THE APPLICATION

Interconnection Applicant Contact Information

Name: _____

Mailing Address: _____

City: _____State: _____ Zip: _____

Telephone (Daytime): _____ (Evening) _____

Facsimile Number: _____ E-mail Address:_____

Alternate Contact Information (if different from Applicant)

Name: _____

Mailing Address: _____

City: _____State: _____ Zip: _____

Telephone (Daytime): _____ (Evening) _____

Facsimile Number: _____ E-mail Address:_____

Equipment Contractor

Name: _____

Mailing Address: _____

City: _____State: _____ Zip: _____

Telephone (Daytime): _____ (Evening) _____

Facsimile Number: _____ E-mail Address: _____

License Number (if applicable): _____

Active License? (if applicable) _____Yes _____No

Electrical Contractor (if different from Equipment Contractor)

Name: _____

Mailing Address: _____

City: _____State: _____ Zip: _____

Telephone (Daytime): _____ (Evening) _____

Facsimile Number: _____ E-mail Address: _____

License Number (if applicable): _____

Active License? (if applicable) _____Yes _____No

Does this application require a cluster study_____Yes_____No

Is the Interconnection Customer requesting Net Metering in accordance with Iowa Utilities Board rule 199 IAC 15.11(5) and the utility's net metering or net billing tariff?
_____Yes _____No

Intent of Generation

_____Net Metering (Unit will operate in parallel and will export power to utility pursuant to Iowa Utilities Board rule 199 IAC 15.11(5) and the utility's net metering or net billing tariff)

_____Self-Use and Sales to the Utility (Unit will operate in parallel and may export and sell excess power to utility pursuant to Iowa Utilities Board rule 199 IAC 15.5 and the utility's tariff)

_____Other (Please explain): _____
_____

Distributed Generation Facility ("Facility") Information

Facility Address: _____
City: _____State: _____ Zip: _____
Utility serving Facility site: _____
Account Number of Facility site (existing utility customers): _____
Inverter Manufacturer: _____ Model: _____

Is the inverter lab-certified as that term is defined in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation (199 IAC 45.1)?
_____Yes _____No

(If yes, attach manufacturer's technical specifications and label information from a nationally recognized testing laboratory.)

Generation Facility Nameplate Rating: _____(kW) _____(kVA) _____ (AC Volts)

Energy Source: Wind _____ Solar _____ Biomass _____ Hydro _____ Diesel _____
Natural Gas _____ Fuel Oil _____ Other _____

Energy Converter Type: Wind Turbine _____ Photovoltaic Cell _____ Fuel Cell _____
Reciprocating Engine _____ Other: _____

Commissioning Test Date: _____

(If the Commissioning Test Date changes, the interconnection customer must inform the utility as soon as it is aware of the changed date.)

Insurance Disclosure

The attached terms and conditions contain provisions related to liability and indemnification and should be carefully considered by the interconnection customer. The interconnection customer shall carry general liability insurance coverage, such as, but not limited to, homeowner's insurance.

Other Facility Information

One Line Diagram - A basic drawing of an electric circuit in which one or more conductors are represented by a single line and each electrical device and major component of the installation, from the generator to the point of interconnection, are noted by symbols.

One Line Diagram attached: _____ Yes

Plot Plan - A map showing the distributed generation facility's location in relation to streets, alleys, or other geographic markers.

Plot Plan attached: _____ Yes

Customer Signature

I hereby certify that: (1) I have read and understand the terms and conditions, which are attached hereto by reference; (2) I hereby agree to comply with the attached terms and conditions; and (3) to the best of my knowledge, all of the information provided in this application request form is complete and true.

Applicant Signature: ____

Title: __________________________________ Date: ______________________

••

This Application Form and Interconnection Agreement is comprised of: 1) the Level 1 Standard Application Form and Interconnection Agreement; 2) the Attachment of Terms and Conditions for Interconnection; and 3) the Certificate of Completion.

<u>NOTE</u>: If the Certificate of Completion is not completed and returned to the utility within 12 months following the utility's dated conditional agreement to interconnect below, this Application Form and Interconnection Agreement will automatically terminate and be of no further force and effect.

••

Conditional Agreement to Interconnect Distributed Generation Facility

Receipt of the application fee is acknowledged and, by its signature below, the utility has determined the interconnection request is complete. Interconnection of the distributed generation facility is conditionally approved contingent upon the attached terms and conditions of this Agreement, the return of the attached Certificate of Completion, duly executed verification of electrical inspection and successful witness test.

Utility Signature: _____ Date: _____

Name: _____Title: _____

ATTACHMENT
Level 1: Standard Interconnection Agreement

Terms and Conditions for Interconnection

1) Construct ion of the Distributed Generation Facility. The interconnection customer may proceed to construct (including operational testing not to exceed 2 hours) the distributed generation facility, once the conditional Agreement to interconnect a distributed generation facility has been signed by the utility.

2) Final Interconnection and Operation. The interconnection customer may operate the distributed generation facility and interconnect with the utility's electric distribution system after all of the following have occurred:

   a) Electrical Inspection: Upon completing construction, the interconnection customer shall cause the distributed generation facility to be inspected by the local electrical inspection authority, who shall establish that the distributed generation facility meets local code requirements.
   b) Certificate of Completion: The interconnection customer shall provide the utility with a copy of the Certificate of Completion with all relevant and necessary information fully completed by the interconnection customer, as well as an inspection form from the local electrical inspection authority demonstrating that the distributed generation facility passed inspection.
   c) The utility has completed its witness test as per the following:
      i) The interconnection customer shall provide the utility at least 15 business days' notice of the planned commissioning test for the distributed generation facility. Within 10 business days after the commissioning test, the utility may, upon reasonable notice and at a mutually convenient time, conduct a witness test of the distributed generation facility to ensure that all equipment has been appropriately installed and operating as designed and in accordance with the requirements of IEEE 1547.
      ii) If the utility does not perform the witness test within the 10 business days after the commissioning test or such other time as is mutually agreed to by the Parties, the witness test is deemed waived, unless the utility cannot do so for good cause. In these cases, upon utility request, the interconnection customer shall agree to another date for the test within 10 business days after the original scheduled date.

3) IEEE 1547. The distributed generation facility shall be installed, operated and tested in accordance with the requirements of The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 3 Park Avenue, New York, NY 10016-5997, Standard 1547 (2003) "Standard for Interconnecting Distributed Resources with Electric Power Systems," as well as any applicable federal, state, or local laws, regulations, codes, ordinances, orders, or similar directives of any government or other authority having jurisdiction.

4) Access. The utility must have access to the ~~isolation~~ disconnection device or disconnect switch and metering equipment of the distributed generation facility at all times. When practical, the utility shall provide notice to the customer prior to using its right of access.

5) Metering. Any required metering shall be installed pursuant to the utility's metering rules filed with the Iowa Utilities Board under subrule 199 IAC 20.2(5).

6) Disconnection. The utility may disconnect the distributed generation facility upon any of the following conditions, but must reconnect the distributed generation facility once the condition is cured:
   a) For scheduled outages, provided that the distributed generation facility is treated in the same manner as utility's load customers;
   b) For unscheduled outages or emergency conditions;
   c) If the distributed generation facility does not operate in a manner consistent with this Agreement or the applicable requirements of 199 IAC Chapter 15 or 45;
   d) Improper installation or failure to pass the witness test;
   e) If the distributed generation facility is creating a safety, reliability, or power quality problem;
   f) The interconnection equipment used by the distributed generation facility is de-listed by the Nationally Recognized Testing Laboratory that provided the listing at the time the interconnection was approved;
   g) Unauthorized modification of the interconnection facilities or the distributed generation facility; or
   h) Unauthorized connection to the utility's electric system.

7) Indemnification. The interconnection customer shall indemnify and defend the utility and the utility's directors, officers, employees, and agents from all claims, damages and expenses, including reasonable attorney's fees, to the extent resulting from the interconnection customer's negligent installation, operation, modification, maintenance, or removal of its distributed generation facility or interconnection facilities, or the interconnection customer's willful misconduct or breach of this Agreement. The utility shall indemnify and defend the interconnection customer and the interconnection customer's directors, officers, employees, and agents from all claims, damages, and expenses, including reasonable attorney's fees, to the extent resulting from the utility's negligent installation, operation, modification, maintenance, or removal of its interconnection facilities or electric distribution system, or the utility's willful misconduct or breach of this Agreement.

8) Insurance. The interconnection customer shall provide the utility with proof that it has a current homeowner's insurance policy or other general liability policy.

9) Limitation of Liability. Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever , provided that in no event shall death, bodily injury or third-party claims be construed as indirect or consequential damages.

10) Termination. This Agreement will remain in effect until terminated and may be terminated under the following conditions:
   a) By interconnection customer - The interconnection customer may terminate this interconnection agreement by providing written notice to the utility. If the interconnection customer ceases operation of the distributed generation facility, the interconnection customer must notify the utility.

b) By the utility - The utility may terminate this Agreement without liability to the interconnection customer if the interconnection customer fails to remedy a violation of terms of this Agreement within 30 calendar days after notice, or such other date as may be mutually agreed to in writing prior to the expiration of the 30 calendar day remedy period. The termination date may be no less than 30 calendar days after the interconnection customer receives notice of its violation from the utility.

11) Modification of Distributed Generation Facility. The interconnection customer must receive written authorization from the utility before making any changes to the distributed generation facility that could affect the utility's distribution system. If the interconnection customer makes such modifications without the utility's prior written authorization, the utility shall have the right to disconnect the distributed generation facility.

12) Permanent Disconnection. In the event the Agreement is terminated, the utility shall have the right to disconnect its facilities or direct the interconnection customer to disconnect its distributed generation facility.

13) Disputes. Each Party agrees to attempt to resolve all disputes regarding the provisions of this Agreement that cannot be resolved between the two Parties pursuant to the dispute resolution provisions found in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.13~~2~~).

14) Governing Law, Regulatory Authority, and Rules. The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Iowa. Nothing in this Agreement is intended to affect any other agreement between the utility and the interconnection customer.

15) Survival Rights. This Agreement shall remain in effect after termination to the extent necessary to allow or require either Party to fulfill rights or obligations that arose under the Agreement.

16) Assignment/Transfer of Ownership of the Distributed Generation Facility. This Agreement shall terminate upon the transfer of ownership of the distributed generation facility to a new owner unless the transferring owner assigns the Agreement to the new owner, the new owner agrees in writing to the terms of this Agreement, and the transferring owner so notifies the utility in writing prior to the transfer of ownership.

17) Definitions. Any term used herein and not defined shall have the same meaning as the defined terms used in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1).

18) Notice. The Parties may mutually agree to provide notices, demands, comments, or requests by electronic means such as e-mail. Absent agreement to electronic communication, or unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement shall be deemed properly given when receipt is confirmed after notices are delivered in person, delivered by recognized national courier service, or sent by first-class mail, postage prepaid, return receipt requested, to the person specified below:

If Notice is to Interconnection Customer:

Use the contact information provided in the interconnection customer's application. The interconnection customer is responsible for notifying the utility of any change in the contact party information, including change of ownership.

If Notice is to Utility:

Use the contact information provided below. The utility is responsible for notifying the interconnection customer of any change in the contact party information.

Name: _____

Mailing Address: _____

City: _____State: _____ Zip: _____

Telephone (Daytime): _____ (Evening) _____

Facsimile Number: _____ E-mail Address: _____

19. Interruptions. The utility is not responsible for any lost opportunity or other costs incurred by the interconnection customer as a result of an interruption of service.

199—45.1~~65~~6(476) Appendix B – Standard certificate of completion.

CERTIFICATION OF COMPLETION
(To be completed and returned to the utility when installation is complete and final electric inspector approval has been obtained – Use contact information provided on the utility's web page for generator interconnection to obtain mailing address/facsimile number/e-mail address)

Interconnection Customer Information

Name: ____
Mailing Address: ____
City: __________________________________State: _____________ Zip: _____________
Telephone (Daytime): ___________________ (Evening) __________________________
Facsimile Number: __________________E-mail Address :_________________________

Installer: ___________________________________ Check if owner-installed _________

Name: ____
Mailing Address: ____
City: __________________________________State: _____________ Zip: _____________
Telephone (Daytime): ___________________ (Evening) __________________________
Facsimile Number: __________________E-mail Address: _________________________

Final Electric Inspection and Interconnection Customer Signature

The distributed generation facility is complete and has been approved by the local electric inspector having jurisdiction. A signed copy of the electric inspector's form indicating final approval is attached. The interconnection customer acknowledges that it shall not operate the distributed generation facility until receipt of the final acceptance and approval by the utility as provided below.

Signed: ____ Date: ____________________
(Signature of interconnection customer)

Printed Name: ____

Check if copy of signed electric inspection form is attached: ________
Check if copy of as-built documents are attached (projects larger than 20 ~~10~~ kVA only): ___

••

Acceptance and Final Approval for Interconnection (for utility use only)

The interconnection agreement is approved and the distributed generation facility is approved for interconnected operation upon the signing and return of this Certificate of Completion by utility:

Electric Distribution Company waives Witness Test? (Initial) Yes (_____) No (_____)

If not waived, date of successful Witness Test: _____ Passed: (Initial) (_____)

Utility Signature: _____ Date: _____

Printed Name: _____ Title: _____

199—45.17~~6~~(476) Appendix C – Levels 2 to 4: standard application form.

LEVELS 2 TO 4:
STANDARD INTERCONNECTION REQUEST APPLICATION FORM
(For Distributed Generation Facilities 10 MVA or less)

Interconnection Customer Contact Information
Name: _____
Mailing Address: _____
City: _____State: _____ Zip: _____
Telephone (Daytime): _____ (Evening) _____
Facsimile Number: _____ E-mail Address: _____

Alternate Contact Information (if different from Applicant)
Name: _____
Mailing Address: _____
City: _____State: _____ Zip: _____
Telephone (Daytime): _____ (Evening) _____
Facsimile Number: _____ E-mail Address: _____

Facility Address (if different from above): _____
City: _____State: _____ Zip: _____
Utility serving Facility site: _____
Account Number of Facility site (existing utility customers): _____
Inverter Manufacturer: _____ Model: _____

Equipment Contractor
Name: _____
Mailing Address: _____
City: _____State: _____ Zip: _____
Telephone (Daytime): _____ (Evening) _____
Facsimile Number: _____ E-mail Address:_____

Electrical Contractor (if different from Equipment Contractor):
Name: _____
Mailing Address: _____
City: _____State: _____ Zip: _____
Telephone (Daytime): _____ (Evening) _____
Facsimile Number: _____ E-mail Address: _____
License Number (if applicable): _____
Active License? (if applicable) _____Yes _____No

Electric Service Information for Customer Facility where Generator will be Interconnected

Capacity: _____ (Amps) Voltage: _____ (Volts)
Type of Service: _____ Single Phase _____ Three Phase

If 3-Phase Transformer, Indicate Type:
Primary Winding _____ Wye_____ Delta
Secondary Winding _____ Wye_____ Delta

Transformer Size: _____ Impedance: _____

Does this application require a cluster study _____ Yes _____ No

Intent of Generation

_____ Offset Load (Unit will operate in parallel, but will not export power to utility)

_____ Net Metering (Unit will operate in parallel and will export power to utility pursuant to Iowa Utilities Board rule 199 IAC 15.12~~1~~(5) and the utility's net metering or net billing tariff)

_____ Self-Use and Sales to the Utility (Unit will operate in parallel and may export and sell excess power to utility pursuant to Iowa Utilities Board rule 199 IAC 15.5 and the utility's tariff)

_____ Wholesale Market Transaction (Unit will operate in parallel and participate in MISO or other wholesale power markets pursuant to separate requirements and agreements with MISO or other transmission providers, and applicable rules of the Federal Energy Regulatory Commission)

_____ Back-up Generation (Units that temporarily operate in parallel with the electric distribution system for more than 100 milliseconds)

Note: Back-up units that do not operate in parallel for more than 100 milliseconds do not need an interconnection agreement.

Generator & Prime Mover Information

Energy Source (Hydro, Wind, Solar, Process Byproduct, Biomass, Oil, Natural Gas, Coal, etc.):_____

Energy Converter Type (Wind Turbine, Photovoltaic Cell, Fuel Cell, Steam Turbine, etc.): _____

Generator Size:_____kW or_____kVA Number of Units: _____
Total Capacity:_____kW or_____kVA

Generator Type (Check one):
_____ Induction _____ Inverter _____ Synchronous _____ Other:_____

Requested Procedure Under Which to Evaluate Interconnection Request

Please indicate below which review procedure applies to the interconnection request. The review procedure used is subject to confirmation by the utility.

_____ Level 2 - Lab-certified interconnection equipment with an aggregate electric nameplate capacity less than or equal to 2 MVA. Lab-certified is defined in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1). (Application fee is $100 plus $1.00 per kVA.)

_____ Level 3 - Distributed generation facility does not export power. Nameplate capacity rating is less than or equal to 50 kVA if connecting to area network or less than or equal to 10 MVA if connecting to a radial distribution feeder. (Application fee amount is $500 plus $2.00 per kVA.)

_____ Level 4 - Nameplate capacity rating is less than or equal to 10 MVA and the distributed generation facility does not qualify for a Level 1, Level 2, or Level 3 review, or the distributed generation facility has been reviewed but not approved under a Level 1, Level 2, or Level 3 review. (Application fee amount is $1,000 plus $2.00 per kVA, to be applied toward any subsequent studies related to this application.)

Note: Descriptions for interconnection review categories do not list all criteria that must be satisfied. For a complete list of criteria, please refer to Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45).

Distributed Generation Facility Information:

Commissioning Test Date: _____

List interconnection components/systems to be used in the distributed generation facility that are lab-certified.

Component/System	NRTL Providing Label & Listing
1.	
2.	
3.	
4.	
5.	

Please provide copies of manufacturer brochures or technical specifications.

Energy Production Equipment/Inverter Information:

____ Synchronous____ Induction_____ Inverter _____ Other:_____

Rating: _____kW Rating:_____ kVA

Rated Voltage: _____Volts

Rated Current: _____Amps

System Type Tested (Total System):_____ Yes _____ No; attach product literature

For Synchronous Machines:

Note: Contact utility to determine if all the information requested in this section is required for the proposed distributed generation facility.

Manufacturer: _____

Model No.: _____ Version No.: _____

Submit copies of the Saturation Curve and the Vee Curve

_____ Salient _____ Non-Salient

Torque: _____ lb-ft Rated RPM: _____ Field Amperes: _____ at rated generator voltage and current and % PF over-excited

Type of Exciter: _____

Output Power of Exciter: _____

Type of Voltage Regulator: _____

Locked Rotor Current: _____ Amps Synchronous Speed: _____RPM

Winding Connection: _____ Min. Operating Freq./Time: _____

Generator Connection: _____ Delta _____ Wye _____ Wye Grounded

Direct-axis Synchronous Reactance (Xd) _____ ohms

Direct-axis Transient Reactance: (X'd) _____ ohms

Direct-axis Sub-transient Reactance: (X'd) _____ ohms

Negative Sequence Reactance: _____ ohms

Zero Sequence Reactance: _____ ohms

Neutral Impedance or Grounding Resister (if any): _____ohms

For Induction Machines:

Note: Contact utility to determine if all the information requested in this section is required for the proposed distributed generation facility.

Manufacturer: _____

Model No.: _____Version No.: _____

Locked Rotor Current: _____ Amps

Rotor Resistance (Rr): _____ ohms Exciting Current: _____Amps

Rotor Reactance (Xr): _____ohms Reactive Power Required: _____

Magnetizing Reactance (Xm): _____ohms_____ VARs (No Load)

Stator Resistance (Rs): _____ohms _____ VARs (Full Load)

Stator Reactance (Xs): _____ohms

Short Circuit Reactance (Xd): _____ohms

Phases: _____ Single _____ Three-Phase

Frame Size: _____ Design Letter: _____ Temp. Rise: _____ °C.

Reverse Power Relay Information (Level 3 Review Only):

Manufacturer: _____

Relay Type: _____Model Number: _____

Reverse Power Setting: _____

Reverse Power Time Delay (if any): _____

Additional Information For Inverter-Based Facilities

Inverter Information:

Manufacturer: _____ Model: _____

Type: _____ Forced Commutated_____ Line Commutated
Rated Output: _____ Watts_____ Volts
Efficiency: _____ % Power Factor: _____%
Inverter UL1741 Listed: _____ Yes_____ No

DC Source/Prime Mover

Rating: _____ kW Rating: _____ kVA
Rated Voltage: _____ Volts
Open Circuit Voltage (if applicable): _____ Volts
Rated Current: _____ Amps
Short Circuit Current (if applicable): _____ Amps

Other Facility Information

One Line Diagram - A basic drawing of an electric circuit in which one or more conductors are represented by a single line and each electrical device and major component of the installation, from the generator to the point of interconnection, are noted by symbols.

One Line Diagram attached: _____ Yes

Plot Plan - A map showing the distributed generation facility's location in relation to streets, alleys, or other geographic markers.

Plot Plan attached: _____ Yes

Customer Signature

I hereby certify that all the information provided in this Interconnection Request Application Form is true.

Applicant Signature: _____

Title: _____ Date: _____

An application fee is required before the application can be processed. Please verify that the appropriate fee is included with the application:
Amount: _____

Utility Acknowledgement:

Receipt of the application fee is acknowledged and this interconnection request is complete.

Utility Signature: _____ Date: _____

Printed Name: _____ Title: _____

199—45.1~~8~~7(476) Appendix D – Levels 2 to 4: standard distributed generation interconnection agreement.

LEVELS 2 TO 4:
STANDARD INTERCONNECTION AGREEMENT
(For Distributed Generation Facilities with a capacity of 10 MVA or less)

This agreement ("Agreement") is made and entered into this _____ day of _____, by and between _____ ("interconnection customer"), as an individual person, or as a _____ organized and existing under the laws of the State of _____, and _____, ("utility"), a _____ existing under the laws of the State of Iowa. Interconnection customer and utility each may be referred to as a "Party," or collectively as the "Parties."

Recitals:

Whereas, interconnection customer is proposing to install or direct the installation of a distributed generation facility, or is proposing a generating capacity addition to an existing distributed generation facility, consistent with the interconnection request application form completed by interconnection customer on _____; and

Whereas, the interconnection customer will operate and maintain, or cause the operation and maintenance of, the distributed generation facility; and

Whereas, interconnection customer desires to interconnect the distributed generation facility with utility's electric distribution system.

Now, therefore, in consideration of the premises and mutual covenants set forth in this Agreement, the Parties covenant and agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 This Agreement shall be used for all approved interconnection requests for distributed generation facilities that fall under Levels 2, 3, and 4 according to the procedures set forth in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45).

1.2 This Agreement governs the terms and conditions under which the distributed generation facility will interconnect to, and operate in parallel with, the utility's electric distribution system.

1.3 This Agreement does not constitute an agreement to purchase or deliver the interconnection customer's power.

1.4 Nothing in this Agreement is intended to affect any other agreement between the utility and the interconnection customer.

1.5 Terms used in this Agreement are defined in Attachment 1 hereto or in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1) unless otherwise noted.

1.6 Responsibilities of the Parties

1.6.1 The Parties shall perform all obligations of this Agreement in accordance with all applicable laws, regulations, codes, ordinances, orders, or similar directives of any government or other authority having jurisdiction.

1.6.2 The utility shall construct, own, operate, and maintain its interconnection facilities in accordance with this Agreement.

1.6.3 The interconnection customer shall construct, own, operate, and maintain its distributed generation facility and interconnection facilities in accordance with this Agreement.

1.6.4 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facilities that it now owns or subsequently may own unless otherwise specified in the attachments to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair, and condition of its respective lines and appurtenances on its respective sides of the point of interconnection.

1.6.5 The interconnection customer agrees to design, install, maintain, and operate its distributed generation facility so as to minimize the likelihood of causing an adverse system impact on the electric distribution system or any other electric system that is not owned or operated by the utility.

1.7 Parallel Operation Obligations

Once the distributed generation facility has been authorized to commence parallel operation, the interconnect ion customer shall abide by all operating procedures established in IEEE Standard 1547 and any other applicable laws, statutes or guidelines, including those specified in Attachment 4 of this Agreement.

1.8 Metering

The interconnection customer shall be responsible for the cost to purchase, install, operate, maintain, test, repair, and replace metering and data acquisition equipment specified in Attachments 5 and 6 of this Agreement.

1.9 Reactive Power

1.9.1 Interconnect ion customers with a distributed generation facility larger than or equal to 1 MVA shall design their distributed generation facilities to maintain a power factor at the point of interconnection between .95 lagging and .95 leading at all times. Interconnection customers with a distributed generation facility smaller than 1 MVA shall design their distributed generation facility to maintain a power factor at the point of interconnection between .90 lagging and .90 leading at all times.

1.9.2 Any utility requirements for meeting a specific voltage or specific reactive power schedule as a condition for interconnection shall be clearly specified

in Attachment 4. Under no circumstance shall the utility's additional requirements for voltage or reactive power schedules be outside of the agreed-upon operating parameters defined in Attachment 4.

1.9.3 If the interconnection customer does not operate the distributed generation facility within the power factor range specified in Attachment 4, or does not operate the distributed generation facility in accordance with a voltage or reactive power schedule specified in Attachment 4, the interconnection customer is in default, and the terms of Article 6.5 apply.

1.10 Standards of Operations

The interconnection customer must obtain all certifications, permits, licenses, and approvals necessary to construct, operate, and maintain the facility and to perform its obligations under this Agreement. The interconnection customer is responsible for coordinating and synchronizing the distributed generation facility with the utility's system. The interconnection customer is responsible for any damage that is caused by the interconnect ion customer's failure to coordinate or synchronize the distributed generation facility with the electric distribution system. The interconnection customer agrees to be primarily liable for any damages resulting from the continued operation of the distributed generation facility after the utility ceases to energize the line section to which the distributed generation facility is connected. In Attachment 4, the utility shall specify the shortest reclose time setting for its protection equipment that could affect the distributed generation facility. The utility shall notify the interconnection customer at least 10 business days prior to adopting a faster reclose time on any automatic protective equipment, such as a circuit breaker or line recloser, that might affect the distributed generation facility.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection

The interconnection customer shall test and inspect its distributed generation facility including the interconnection equipment prior to interconnection in accordance with IEEE Standard 1547 (2003) and IEEE Standard 1547.1 (2005). The interconnection customer shall not operate its distributed generation facility in parallel with the utility's electric distribution system without prior written authorization by the utility as provided for in Articles 2.1.1-2.1.3.

2.1.1 The utility shall perform a witness test after construction of the distributed generation facility is completed, but before parallel operation, unless the utility specifically waives the witness test. The interconnection customer shall provide the utility at least 15 business days' notice of the planned commissioning test for the distributed generation facility. If the utility performs a witness test at a time that is not concurrent with the commissioning test, it shall contact the interconnection customer to schedule the witness test at a mutually agreeable time within 10 business days after the scheduled commissioning test designated on the application. If the utility does not perform the witness test within 10 business days after the commissioning test, the witness test is deemed waived unless the Parties mutually agree to extend the date for scheduling the witness test, or

unless the utility cannot do so for good cause, in which case, the Parties shall agree to another date for scheduling the test within 10 business days after the original scheduled date. If the witness test is not acceptable to the utility, the interconnection customer has 30 business days to address and resolve any deficiencies. This time period may be extended upon agreement in writing between the utility and the interconnection customer. If the interconnection customer fails to address and resolve the deficiencies to the satisfaction of the utility, the applicable cure provisions of Article 6.5 shall apply. The interconnection customer shall, if requested by the utility, provide a copy of all documentation in its possession regarding testing conducted pursuant to IEEE Standard 1547.1.

2.1.2 If the interconnection customer conducts interim testing of the distributed generation facility prior to the witness test, the interconnection customer shall obtain permission from the utility before each occurrence of operating the distributed generation facility in parallel with the electric distribution system. The utility may, at its own expense, send qualified personnel to the distributed generation facility to observe such interim testing, but it cannot mandate that these tests be considered in the final witness test. The utility is not required to observe the interim testing or precluded from requiring the tests be repeated at the final witness test.

2.1.3 After the distributed generation facility passes the witness test, the utility shall affix an authorized signature to the certificate of completion and return it to the interconnection customer approving the interconnection and authorizing parallel operation. The authorization shall not be conditioned or delayed.

2.2 Commercial Operation

The interconnection customer shall not operate the distributed generation facility, except for interim testing as provided in Article 2.1, until such time as the certificate of completion is signed by all Parties.

2.3 Right of Access

The utility must have access to the ~~isolation~~ disconnection device or disconnect switch and metering equipment of the distributed generation facility at all times. When practical, the utility shall provide notice to the customer prior to using its right of access.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date

This Agreement shall become effective upon execution by all Parties.

3.2 Term of Agreement

This Agreement shall become effective on the effective date and shall remain in effect unless terminated in accordance with Article 3.3 of this Agreement.

3.3 Termination

3.3.1 The interconnection customer may terminate this Agreement at any time by giving the utility 30 calendar days' prior written notice.

3.3.2 Either Party may terminate this Agreement after default pursuant to Article 6.5.

3.3.3 The utility may terminate, upon 60 calendar days' prior written notice, for failure of the interconnection customer to complete construction of the distributed generation facility within 12 months after the in-service date as specified by the Parties in Attachment 2, which may be extended by mutual written agreement between the Parties prior to the expiration of the 12-month period.

3.3.4 The utility may terminate this Agreement, upon 60 calendar days' prior written notice, if the interconnection customer has abandoned, cancelled, permanently disconnected or stopped development, construction, or operation of the distributed generation facility, or if the interconnection customer fails to operate the distributed generation facility in parallel with the utility's electric system for three consecutive years.

3.3.5 Upon termination of this Agreement, the distributed generation facility will be disconnected from the utility's electric distribution system. Terminating this Agreement does not relieve either Party of its liabilities and obligations that are owed or continuing when the Agreement is terminated.

3.3.6 If the Agreement is terminated, the interconnection customer loses its position in the interconnection review order.

3.4 Temporary Disconnection

A Party may temporarily disconnect the distributed generation facility from the electric distribution system in the event one or more of the following conditions or events occurs:

3.4.1 Emergency conditions - Shall mean any condition or situation: (1) that in the judgment of the Party making the claim is likely to endanger life or property; or (2) that the utility determines is likely to cause an adverse system impact, or is likely to have a material adverse effect on the utility's electric distribution system, interconnection facilities or other facilities, or is likely to interrupt or materially interfere with the provision of electric utility service to other customers; or (3) that is likely to cause a material adverse effect on the distributed generation facility or the interconnection equipment. Under emergency conditions, the utility or the interconnection customer may suspend interconnection service and temporarily disconnect the distributed generation facility from the electric distribution system without giving notice to the other Party, provided that it gives notice as soon as practicable thereafter. The utility must notify the interconnection customer when it becomes aware of any conditions that might affect the interconnection customer's operation of the distributed generation facility. The

interconnection customer shall notify the utility when it becomes aware of any condition that might affect the utility's electric distribution system. To the extent information is known, the notification shall describe the condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Scheduled maintenance, construction, or repair - the utility may interrupt interconnection service or curtail the output of the distributed generation facility and temporarily disconnect the distributed generation facility from the utility's electric distribution system when necessary for scheduled maintenance, construction , or repairs on utility's electric distribution system. To the extent possible, the utility shall provide the interconnection customer with notice five business days before an interruption. The utility shall coordinate the reduction or temporary disconnection with the interconnection customer; however, the interconnection customer is responsible for out-of-pocket costs incurred by the utility for deferring or rescheduling maintenance, construction, or repair at the interconnection customer's request.

3.4.3 Forced outages - The utility may suspend interconnection service to repair the utility's electric distribution system. The utility shall provide the interconnection customer with prior notice, if possible. If prior notice is not possible, the utility shall, upon written request, provide the interconnection customer with written documentation, after the fact, explaining the circumstances of the disconnection.

3.4.4 Adverse system impact - The utility must provide the interconnection customer with written notice of its intention to disconnect the distributed generation facility, if the utility determines that operation of the distributed generation facility creates an adverse system impact. The documentation that supports the utility's decision to disconnect must be provided to the interconnection customer. The utility may disconnect the distributed generation facility if, after receipt of the notice, the interconnection customer fails to remedy the adverse system impact within 12 days, unless emergency conditions exist, in which case, the provisions of Article 3.4.1 apply. The utility may continue to leave the generating facility disconnected until the adverse system impact is corrected to the satisfaction of both the utility and the adversely-impacted customer.

3.4.5 Modification of the distributed generation facility - The interconnection customer must receive written authorization from the utility prior to making any change to the distributed generation facility, other than a minor equipment modification. If the interconnection customer modifies its facility without the utility's prior written authorization, the utility has the right to disconnect the distributed generation facility until such time as the utility concludes the modification poses no threat to the safety or reliability of its electric distribution system.

3.4.6 Unauthorized connection to the utility's electric distribution system.

3.4.7 Failure of the distributed generation facility to operate in accordance with this Agreement or the applicable requirements of 199 IAC Chapter 15 or 45.

3.4.8 The utility is not responsible for any lost opportunity or other costs incurred by interconnection customer as a result of an interruption of service under Article 3.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The interconnection customer shall pay for the cost of the interconnection facilities itemized in Attachment 3. The utility shall identify the additional interconnection facilities necessary to interconnect the distributed generation facility with the utility's electric distribution system, the cost of those facilities, and the time required to build and install those facilities, as well as an estimated date of completion of the building or installation of those facilities.

4.1.2 The interconnect ion customer is responsible for its expenses, including overheads, associated with owning, operating, maintaining, repairing, and replacing its interconnection equipment.

4.2 Distribution Upgrades

The utility shall design, procure, construct, install, and own any distribution upgrades. The actual cost of the distribution upgrades, including overheads, shall be directly assigned to the interconnect ion customer w hose distributed generation facility caused the need for the distribution upgrades.

Article 5. Billing, Payment, Milestones, and Financial Security

5.1 Billing and Payment Procedures and Final Accounting (Applies to additional reviews conducted under a Level 2 review and Level 4 reviews)

5.1.1 The utility shall bill the interconnection customer for the design, engineering, construction, and procurement costs of utility-provided interconnection facilities and distribution upgrades contemplated by this Agreement as set forth in Attachment 3. The billing shall occur on a monthly basis, or as otherwise agreed to between the Parties. The interconnection customer shall pay each billing invoice within 30 calendar days after receipt, or as otherwise agreed to between the Parties, if a balance due is showing after any customer deposit funds have been expended.

5.1.2 Within 90 calendar days after completing the construction and installation of the utility's interconnection facilities and distribution upgrades described in Attachments 2 and 3 to this Agreement, the utility shall provide the interconnection customer with a final accounting report of any difference between: (1) the actual cost incurred to complete the construction and installation of the utility's interconnection facilities and distribution upgrades; and (2) the interconnection customer's previous deposit and aggregate

payments to the utility for the interconnection facilities and distribution upgrades. If the interconnection customer's cost responsibility exceeds its previous deposit and aggregate payments, the utility shall invoice the interconnection customer for the amount due and the interconnection customer shall make payment to the utility within 30 calendar days. If the interconnection customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement , the utility shall refund to the interconnect ion customer an amount equal to the difference within 30 calendar days after the final accounting report. Upon request from the interconnection customer, if the difference between the budget estimate and the actual cost exceeds 20%, the utility will provide a written explanation for the difference.

5.1.3 If a Party disputes any portion of its payment obligation pursuant to this Article 5, the Party shall pay in a timely manner all non-disputed portions of its invoice, and the disputed amount shall be resolved pursuant to the dispute resolution provisions contained in Article 8. A Party disputing a portion of an Article 5 payment shall not be considered to be in default of its obligations under this Article.

5.2 Interconnection Customer Deposit

At least 20 business days prior to the commencement of the design, procurement, installation, or construction of the utility's interconnection facilities and distribution upgrades, the interconnection customer shall provide the utility with a deposit equal to 100% of the estimated, nonbinding cost to procure, install, or construct any such facilities. However, when the estimated date of completion of the building or installation of facilities exceeds three months from the date of payment of the deposit, pursuant to Article 4.1.1 of this Agreement, this deposit may be held by the utility and will accrue interest in accordance with 199 IAC 20.4(4), with any interest to inure to the benefit of the interconnection customer.

Article 6. Assignment, Limitation on Damages, Indemnity, Force Majeure, and Default

6.1 Assignment

This Agreement may be assigned by either Party with the prior consent of the other Party. If the interconnection customer attempts to assign this Agreement, the assignee must agree to the terms of this Agreement in writing and such writing must be provided to the utility. Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason of the assignment. An assignee is responsible for meeting the same obligations as the assignor.

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate (including mergers, consolidations, or transfers or a sale of a substantial portion of the Party's assets, between the Party and another entity), of the assigning Party that has an equal or greater credit rating and the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement.

6.1.2 The interconnect ion customer can assign this Agreement, without the consent of the utility, for collateral security purposes to aid in providing financing for the distributed generation facility.

6.2 Limitation on Damages

Except for cases of gross negligence or willful misconduct, the liability of any Party to this Agreement shall be limited to direct actual damages, including death, bodily injury, third- party claims, and reasonable attorney's fees, and all other damages at law are waived. Under no circumstances, except for cases of gross negligence or willful misconduct, shall any Party or its directors, officers, employees, and agents, or any of them, be liable to another Party, whether in tort, contract, or other basis in law or equity for any special, indirect, punitive, exemplary, or consequential damages, including lost profits, lost revenues, replacement power, cost of capital, or replacement equipment. This limitation on damages shall not affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement. The provisions of this Article 6.2 shall survive the termination or expiration of the Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 The interconnection customer shall indemnify and defend the utility and the utility's directors, officers, employees, and agents, from all claims, damages, and expenses, including reasonable attorney's fees, to the extent resulting from the interconnection customer's negligent installation, operation, modification, maintenance, or removal of its distributed generation facility or interconnection facilities, or the interconnection customer's willful misconduct or breach of this Agreement.

6.3.3 The utility shall indemnify and defend the interconnection customer and the interconnection customer's directors, officers, employees, and agents from all claims, damages, and expenses, including reasonable attorney's fees, to the extent resulting from the utility's negligent installation, operation, modification, maintenance, or removal of its interconnection facilities or electric distribution system, or the utility's willful misconduct or breach of this Agreement.

6.3.4 Within 5 business days after receipt by an indemnified Party of any claim or notice that an action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply has commenced, the indemnified Party shall notify the indemnifying Party of such fact. The failure to notify, or a delay in notification, shall not affect a Party's indemnification obligation unless that failure or delay is materially prejudicial to the indemnifying Party.

6.3.5 If an indemnified Party is entitled to indemnification under this Article as a result of a claim, and the indemnifying Party fails, after notice and

reasonable opportunity to proceed under this Article, to assume the defense of such claim, that indemnified Party may, at the expense of the indemnifying Party, contest, settle, or consent to the entry of any judgment with respect to, or pay in full, the claim.

6.3.6 If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this Article, the amount owing to the indemnified person shall be the amount of the indemnified Party's actual loss, net of any insurance or other recovery by the indemnified Party.

6.4 Force Majeure

6.4.1 As used in this Article , a force majeure event shall mean any act of God, labor disturbance, act of the public enemy, war , acts of terrorism, insurrection, riot, fi re, storm or flood, explosion, breakage, or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation or restriction imposed by governmental , military, or lawfully established civilian authorities (e.g., MISO), or any other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing by the Party claiming force majeure.

6.4.2 If a force majeure event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the force majeure event ("Affected Party") shall notify the other Party of the existence of the force majeure event as soon as reasonably possible. The notification will specify the circumstances of the force majeure event, its expected duration (if known), and the steps that the Affected Party is taking and will take to mitigate the effects of the event on its performance (if known). If the initial notification is verbal, it must be followed up with a written notification promptly thereafter. The Affected Party shall keep the other Party informed on a periodic basis of developments relating to the force majeure event until the event ends. The Affected Party may suspend or modify its obligations under this Agreement without liability only to the extent that the effect of the force majeure event cannot be otherwise mitigated.

6.5 Default

6.5.1 No default shall exist when the failure to discharge an obligation results from a force majeure event as defined in this Agreement, or the result of an act or omission of the other Party.

6.5.2 A Party shall be in default ("Default") of this Agreement if it fails in any material respect to comply with, observe, or perform, or defaults in the performance of, any covenant or obligation under this Agreement and fails to cure the failure within 60 calendar days after receiving written notice from the other Party. Upon a default of this Agreement, the non-defaulting Party shall give written notice of the default to the defaulting Party. Except as provided in Article 6.5.3, the defaulting Party has 60 calendar days after receipt of the default notice to cure the default; provided, however, if the default cannot be cured within 60 calendar days, the defaulting Party shall

commence the cure within 20 calendar days after original notice and complete the cure within six months from receipt of the default notice; and, if cured within that time, the default specified in the notice shall cease to exist.

6.5.3 If a Party has assigned this Agreement in a manner that is not specifically authorized by Article 6.1, fails to provide reasonable access pursuant to Article 2.3, and is in default of its obligations pursuant to Article 7, or if a Party is in default of its payment obligations pursuant to Article 5 of this Agreement, the defaulting Party has 30 days from receipt of the default notice to cure the default.

6.5.4 If a default is not cured as provided for in this Article, or if a default is not capable of being cured within the period provided for in this Article, the non-defaulting Party shall have the right to terminate this Agreement without liability by written notice, and be relieved of any further obligation under this Agreement and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due under this Agreement , plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article shall survive termination of this Agreement.

Article 7. Insurance

7.1 For distributed generation facilities with a nameplate capacity less than 1 MVA, the interconnection customer shall carry general liability insurance coverage, such as, but not limited to, homeowner's insurance.

7.2 For distributed generation facilities with a nameplate capacity of 1 MVA or above, the interconnection customer shall carry sufficient insurance coverage so that the maximum comprehensive/general liability coverage that is continuously maintained by the interconnection customer during the term shall be not less than $2,000,000 for each occurrence, and an aggregate, if any, of at least $4,000,000. The utility, its officers, employees, and agents shall be added as an additional insured on this policy. The interconnection customer agrees to provide the utility with at least 30 calendar days' advance written notice of cancellation, reduction in limits, or non-renewal of any insurance policy required by this Article.

Article 8. Dispute Resolution

8.1 Parties shall attempt to resolve all disputes regarding interconnection as provided in this Article in a good faith manner.

8.2 If there is a dispute between the Parties about an interpretation of the Agreement, the aggrieved Party shall issue a written notice to the other Party to the agreement that specifies the dispute and the Agreement articles that are disputed.

8.3 A meeting between the Parties shall be held within ten business days after receipt of the written notice. Persons with decision-making authority from each Party shall attend the meeting. If the dispute involves technical issues, persons with sufficient technical expertise and familiarity with the issue in dispute from each Party shall also attend the meeting. If the Parties agree, the meeting may be conducted by teleconference.

8.4 After the first meeting, each Party may seek resolution through the Iowa Utilities Board Chapter 6 complaint procedures (199 IAC 6). Dispute resolution under these procedures will initially be conducted informally under 199 IAC 6.2 through 64 to minimize cost and delay. If any Party is dissatisfied with the outcome of the informal process, the Party may file a formal complaint with the Board under 199 IAC 6.5.

8.5 Pursuit of dispute resolution may not affect an interconnection request or an interconnection ~~a~~Applicant's position in the utility's interconnection review order.

8.6 If the Parties fail to resolve their dispute under the dispute resolution provisions of this Article, nothing in this Article shall affect any Party's rights to obtain equitable relief, including specific performance, as otherwise provided in this Agreement

Article 9. Miscellaneous

9.1 Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Iowa, without regard to its conflicts of law principles. This Agreement is subject to all applicable laws and regulations. Each Party expressly reserves the right to seek change in, appeal, or otherwise contest any laws, orders, or regulations of a governmental authority. The language in all parts of this Agreement shall in all cases be construed as a whole, according to its fair meaning, and not strictly for or against the utility or interconnection customer, regardless of the involvement of either Party in drafting this Agreement

9.2 Amendment

Modification of this Agreement shall be only by a written instrument duly executed by both Parties.

9 3 No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations in this Agreement assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

9.4 Waiver

9.4.1 Except as otherwise provided in this Agreement, a Party's compliance with any obligation, covenant, agreement, or condition in this Agreement may be

waived by the Party entitled to the benefits thereof only by a written instrument signed by the Party granting the waiver, but the waiver or failure to insist upon strict compliance with the obligation, covenant, agreement, or condition shall not operate as a waiver of, or estoppel with respect to, any subsequent or other failure.

9.4.2 Failure of any Party to enforce or insist upon compliance with any of the terms or conditions of this Agreement, or to give notice or declare this Agreement or the rights under this Agreement terminated, shall not constitute a waiver or relinquishment of any rights set out in this Agreement, but the same shall be and remain at all times in full force and effect, unless and only to the extent expressly set forth in a written document signed by that Party granting the waiver or relinquishing any such rights. Any waiver granted, or relinquishment of any right, by a Party shall not operate as a relinquishment of any other rights or a waiver of any other failure of the Party granted the waiver to comply with any obligation, covenant, agreement, or condition of this Agreement.

9.5 Entire Agreement

Except as provided in Article 9.1, this Agreement, including all attachments and the completed standard Certificate of Completion (199 IAC 45.16~~5~~), constitutes the entire Agreement between the Parties with reference to the subject matter of this Agreement, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants that constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

9.6 Multiple Counterparts

This Agreement may be executed in two or more counter parts, each of which is deemed an original, but all constitute one and the same instrument.

9.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties, or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power, or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

9.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other governmental authority, (1) that portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by the ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9 Environmental Releases

Each Party shall notify the other Party of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the distributed generation facility or the interconnection facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided that Party makes a good faith effort to provide the notice no later than 24 hours after that Party becomes aware of the occurrence , and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

9.10 Subcontractors

Nothing in this Agreement shall prevent a Party from using the services of any subcontractor it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing services and each Party shall remain primarily liable to the other Party for the performance of the subcontractor.

9.10.1 A subcontract relationship does not relieve any Party of any of its obligations under this Agreement. The hiring Party remains responsible to the other Party for the acts or omissions of its subcontractor. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of the hiring Party.

9.10.2 The obligations under this Article cannot be limited in any way by any limitation of subcontractor's insurance.

Article 10. Notices

10.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national courier service, or sent by first-class mail, postage prepaid, to the person specified below:

If Notice is to Interconnection Customer:

Interconnection Customer: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____ E-mail: _____

If Notice is to Utility:

Utility: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____ E-mail: _____

Alternative Forms of Notice:

Any notice or request required or permitted to be given by either Party to the other Party and not required by this Agreement to be in writing may be given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out above.

10.2 Billing and Payment

Billings and payments shall be sent to the contacts specified for Notices in Article 10. 1 above, unless a different address is set out below:

If Billing or Payment is to Interconnection Customer:

Interconnection Customer: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____

If Billing or Payment is to Utility:

Utility: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____

10.3 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications that may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities. If no such operating representative is designated below, such notices will be sent to the contacts listed in Article 10.1 above.

Interconnection Customer's Operating Representative:

Name: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____

Utility's Operating Representative:

Name: _____
Attention: _____
Address: _____
City: _____ State: _____ Zip: _____

10.4 Changes to the Notice Information

Either Party may change this notice information by giving five business days' written notice before the effective date of the change.

Article 11. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Interconnection Customer:

Name: _____

Title: _____

Date: _____

For the Utility:

Name: _____

Title: _____

Date: _____

ATTACHMENT 1
Levels 2 To 4: Standard Interconnection Agreement

Definitions

Adverse system impact - 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 - An AEP facility as defined in 199 IAC 15 (Iowa Utilities Board Chapter 15 rules on Cogeneration and Small Power Production), 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.

Applicable laws and regulations - All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments , directives, or judicial or administrative orders, permits and other duly authorized actions of any governmental authority, having jurisdiction over the Parties.

Commissioning test - Tests applied to a distributed generation facility by the ~~a~~Applicant after construction is completed to verify that the facility does not create adverse system impacts. At a minimum, the scope of the commissioning tests performed shall include the commissioning test specified IEEE Standard 1547 Section 5.4 "Commissioning tests."

Distributed generation facility - A qualifying facility or an AEP facility.

Distribution upgrades - A required addition or modification to the utility's electric distribution system at or beyond the point of interconnection to accommodate the interconnection of a distributed generation facility. Distribution upgrades do not include interconnection facilities.

Electric distribution system - The facilities and equipment 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 carry less than 100 kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in 3.1.6.1 of IEEE standard 1547.

Facilities study - An engineering study conducted by the utility to determine the required modifications to the utility's electric distribution system, including the cost and the time required to build and install the modifications, as necessary to accommodate an interconnection request.

Force majeure event - Any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage, or accident to machinery or equipment through no direct, indirect, or contributory act of a Party, any order, regulation, or restriction imposed by governmental, military, or lawfully established civilian authorities (e.g., MISO), or any other cause beyond a Party's control. A force majeure event does not include an act of gross negligence or intentional wrongdoing by the Party claiming force majeure.

Governmental authority - Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that this term does not include the interconnection customer, utility, or any affiliate of either.

IEEE Standard 1547 - The Institute of Electrical and Electronics Engineers, Inc. (IEEE), 3 Park Avenue, New York, NY 10016-5997, Standard 1547 (2003), "Standard for Interconnecting Distributed Resources with Electric Power Systems."

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

Interconnection agreement or Agreement - The agreement between the interconnection customer and the utility. The interconnection agreement governs the connection of the distributed generation facility to the utility's electric distribution system and the ongoing operation of the distributed generation facility after it is connected to the utility's electric distribution system.

Interconnection customer - The entity entering into this Agreement for the purpose of interconnecting a distributed generation facility to the utility's electric distribution system.

Interconnection equipment - A group of components or an integrated system connecting an electric generator with a local electric power system or an electric distribution system that includes 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 - 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 and the point of interconnection, including modification, additions, or upgrades that are 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 - An interconnection customer's request, on the required form, for the interconnection of a new distributed generation facility, or to increase the capacity or change the operating characteristics of an existing distributed generation facility that is interconnected with the utility's electric distribution system.

Interconnection study - Any of the following studies, as determined to be appropriate by the utility: the interconnection feasibility study, the interconnection system impact study, and the interconnection facilities study.

Iowa standard distributed generation interconnection rules - The most current version of the procedures for interconnecting distributed generation facilities adopted by the Iowa Utilities Board. See Iowa Utilities Board Chapter 45 rules on Electric Interconnection of

Distributed Generation Facilities (199 IAC 45).

Parallel operation or Parallel - The state of operation that occurs when a distributed generation facility is connected electrically to the electric distribution system for longer than 100 milliseconds.

Point of interconnection -The point where the distributed generation facility is electrically connected to the electric distribution system. Point of interconnection has the same meaning as the term "point of common coupling" defined in 3. 1.13 of IEEE Standard 1547.

Qualifying facility - 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.

Utility - Any electric utility that is subject to rate regulation by the Iowa Utilities Board.

Witness test - For lab-certified equipment, verification (either by an on-site observation or review of documents) by the utility 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 have been adequately performed. For interconnection equipment that has not been lab-certified, the witness test shall also include verification by the utility of the on-site design tests required by IEEE Standard 1547 Section 5.1 and verification by the utility of production tests required by IEEE Standard 1547 Section 5.2. All tests verified by the utility are to be performed in accordance with the test procedures specified by IEEE Standard 1547.1.

ATTACHMENT 2
Levels 2 To 4: Standard Interconnection Agreement

Construction Schedule, Proposed Equipment & Settings

This attachment is to be completed by the interconnection customer and shall include the following:

1. The construction schedule for the distributed generation facility.

2. A one-line diagram indicating the distributed generation facility, interconnection equipment, interconnection facilities, metering equipment, and distribution upgrades.

3. Component specifications for equipment identified in the one-line diagram.

4. Component settings.

5. Proposed sequence of operations.

6. A three-line diagram showing current potential circuits for protective relays.

7. Relay tripping and control schematic diagram.

8. A plot plan showing the distributed generation facility's location in relation to streets, alleys, address or other geographical markers.

ATTACHMENT 3
Levels 2 To 4: Standard Interconnection Agreement

Description, Costs and Time Required to Build and Install the Utility's Interconnection Facilities

This attachment is to be completed by the utility and shall include the following:

1. Required interconnection facilities, including any required metering.

2. An estimate of itemized costs charged by the utility for interconnection, including overheads, based on results from prior studies.

3. An estimate for the time required to build and install the utility's interconnection facilities based on results from prior studies and an estimate of the date upon which the facilities will be completed.

ATTACHMENT 4
Levels 2 To 4: Standard Interconnection Agreement

Operating Requirements for Distributed Generation Facilities Operating in Parallel

The utility shall list specific operating practices that apply to this distributed generation interconnection and the conditions under which each listed specific operating practice applies

ATTACHMENT 5
Levels 2 To 4: Standard Interconnection Agreement

Monitoring and Control Requirements

This attachment is to be completed by the utility and shall include the following:

1. The utility's monitoring and control requirements must be specified, along with a reference to the utility's written requirements documents from which these requirements are derived.

2. An internet link to the requirements documents.

ATTACHMENT 6
Levels 2 To 4: Standard Interconnection Agreement

Metering Requirements

This attachment is to be completed by the utility and shall include the following:

1. The metering requirements for the distributed generation facility.

2. Identification of the appropriate metering rules filed with the Iowa Utilities Board under subrule 199 IAC 20.2(5), and inspection and testing practices adopted under rule 199 IAC 20.6 that establish these requirements.

3. An internet link to these rules and practices.

ATTACHMENT 7
Levels 2 To 4: Standard Interconnection Agreement

As-Built Documents

This attachment is to be completed by the interconnection customer and shall include the following:

When it returns the certificate of completion to the utility, the interconnection customer shall provide the utility with documents detailing the as-built status of the following.

1. A one-line diagram indicating the distributed generation facility, interconnection equipment, interconnection facilities, and metering equipment.

2. Component specifications for equipment identified in the one-line diagram.

3. Component settings.

4. Proposed sequence of operations.

5. A three-line diagram showing current potential circuits for protective relays.

6. Relay tripping and control schematic diagram.

199—45.19~~8~~(476) Appendix E – Standard interconnection feasibility study agreement.

INTERCONNECTION FEASIBILITY STUDY AGREEMENT

This agreement ("Agreement") is made and entered into this _____ day of _____, by and between _____ ("interconnection customer"), as an individual person, or as a _____ organized and existing under the laws of the State of _____, and _____, ("utility"), a _____ existing under the laws of the State of Iowa. Interconnection customer and utility each may be referred to as a "Party," or collectively as the "Parties."

Recitals:

Whereas, interconnection customer is proposing to develop a distributed generation facility, or modify an existing distributed generation facility, consistent with the interconnection request application form completed by interconnection customer on _____; and

Whereas, interconnection customer desires to interconnect the distributed generation facility with utility's electric distribution system; and

Whereas, the interconnection customer has requested the utility to perform an interconnection feasibility study to assess the feasibility of interconnecting the proposed distributed generation facility to the utility's electric distribution system;

Now, therefore, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. All terms defined in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1) shall have the meanings indicated in that rule when used in this Agreement.
2. Interconnection customer elects and utility shall cause to be performed an interconnection feasibility study consistent with Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1~~2~~1).
3. The scope of the interconnection feasibility study shall be based upon the information set forth in the interconnection request application form and Attachment A to this Agreement.
4. The interconnection feasibility study shall be based on the technical information provided by interconnection customer in the interconnection request application form, as modified with the written agreement of the Parties. Utility has the right to request additional technical information from interconnection customer during the course of the interconnection feasibility study. If the interconnection customer modifies its interconnection request, the time to complete the interconnection feasibility study may be extended by the utility.
5. In performing the study, utility shall rely on existing studies of recent vintage to the extent practical. The interconnection customer will not be charged for such existing studies; however, interconnection customer is responsible for the cost of applying any existing study to the interconnection customer specific requirements and for any new study that the utility performs.

6. The interconnection feasibility study report must provide the following information:
   6.1 Identification of any equipment short circuit capability limits exceeded as a result of the interconnection,
   6.2 Identification of any thermal overload or voltage limit violations resulting from the interconnection, and
   6.3 A description and nonbinding estimated cost of facilities required to interconnect the distributed generation facility to utility's electric distribution system as required under Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.12~~1~~(5)"a").
7. Interconnection customer shall provide a study deposit equal to 100% of the estimated nonbinding study costs at least 20 business days prior to the date upon which the study commences.
8. The interconnection feasibility study shall be completed and the results shall be transmitted to interconnection customer within 45 business days after this Agreement is signed by the Parties or the complete study deposit is received by the utility, whichever occurs later. If the interconnection customer's study request involves more than one point of interconnection and configuration, the time to complete the interconnection feasibility study may be extended by the utility.
9. Study fees shall be based on actual costs and will be invoiced to interconnection customer after the study is transmitted to interconnection customer. The invoice must include an itemized listing of employee time and costs expended on the study.
10. Interconnection customer shall pay any actual study costs that exceed the deposit without interest within 30 calendar days on receipt of the invoice. Utility shall refund any excess deposit amount without interest within 30 calendar days after the invoice.

In witness whereof, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Insert name of interconnection customer]

Signed: _____

Name (Printed): _____ Title: _____

[Insert name of utility]

Signed: _____

Name (Printed): _____ Title: _____

ATTACHMENT A
Interconnection Feasibility Study Agreement

Assumptions Used in Conducting the Interconnection Feasibility Study

The interconnection feasibility study will be based upon the information in the interconnection request application form, agreed upon on _____:

1. Point of interconnection and configuration to be studied.

_____

_____

_____

_____

_____

_____

2. Alternative points of interconnection and configurations to be studied.

_____

_____

_____

_____

_____

_____

Note: 1 and 2 are to be completed by the interconnection customer. Any additional assumptions (explained below) may be provided by either the interconnection customer or the utility.

_____

_____

_____

_____

_____

_____

199—45.2019(476) Appendix F – Standard interconnection system impact study agreement.

INTERCONNECTION SYSTEM IMPACT STUDY AGREEMENT

This agreement ("Agreement") is made and entered into this _____ day of _____, by and between _____ (‘‘interconnection customer’’), as an individual person, or as a _____ organized and existing under the laws of the State of _____, and _____, ("utility"), a _____ existing under the laws of the State of Iowa. Interconnection customer and utility each may be referred to as a ‘‘Party,’’ or collectively as the ‘‘Parties.’’

Recitals:

Whereas, interconnection customer is proposing to develop a distributed generation facility or modifying an existing distributed generation facility consistent with the interconnection request application form completed by interconnection customer on _____; and

Whereas, interconnection customer desires to interconnect the distributed generation facility to utility’s electric distribution system; and

Whereas, utility has completed an interconnection feasibility study and provided the results of said study to interconnection customer (this recital to be omitted if the Parties have agreed to forego the interconnection feasibility study); and

Whereas, interconnection customer has requested utility to perform an interconnection system impact study to assess the impact of interconnecting the distributed generation facility to utility’s electric distribution system;

Now, therefore, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. All terms defined in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1) shall have the meanings indicated in that rule when used in this Agreement.
2. Interconnection customer elects and utility shall cause to be performed an interconnection system impact study consistent with Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.121).
3. The scope of the interconnection system impact study shall be based upon the information set forth in the interconnection request application form and in Attachment A to this Agreement.
4. The interconnection system impact study shall be based upon the interconnection feasibility study and the technical information provided by interconnection customer in the interconnection request application form. Utility reserves the right to request additional technical information from interconnection customer. If interconnection customer modifies its proposed point of interconnection, interconnection request,

or the technical information provided therein is modified, the time to complete the interconnection system impact study may be extended.

5. The interconnection system impact study report shall provide the following information:
   - 5.1 Identification of any equipment short circuit capability limits exceeded as a result of the interconnection,
   - 5.2 Identification of any thermal overload or voltage limit violations resulting from the interconnection,
   - 5.3 Identification of any instability or inadequately damped response to system disturbances resulting from the interconnection, and
   - 5.4 Description and nonbinding estimated cost of facilities required to interconnect the distributed generation facility to utility's electric distribution system and to address the identified short circuit, thermal overload, voltage, and instability issues as required under Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.12~~1~~(5)"b").
6. Interconnection customer shall provide a study deposit equal to 100% of the estimated nonbinding study costs at least 20 business days prior to the date upon which the study commences.
7. The interconnection system impact study, if required, shall be completed and the results transmitted to interconnection customer within 45 business days after this Agreement is signed by the Parties or the complete study deposit is received by the utility, whichever occurs later. If the interconnection customer's study request involves more than one point of interconnection and configuration, the time to complete the interconnection system impact study may be extended by the utility.
8. Study fees shall be based on actual costs and shall be invoiced to interconnection customer after the study is transmitted to interconnection customer. The invoice shall include an itemized listing of employee time and costs expended on the study.
9. Interconnection customer shall pay any study costs that exceed the deposit within 30 calendar days after receipt of the invoice. Utility shall refund any excess deposit amount within 30 calendar days of the invoice.

In witness thereof, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Insert name of interconnection customer]

Signed: _____

Name (Printed): _____ Title: _____

[Insert name of utility]

Signed: _____

Name (Printed): _____ Title: _____

ATTACHMENT A
Interconnection System Impact Study Agreement

Assumptions Used in Conducting the Interconnection System Impact Study

The interconnection system impact study shall be based upon the results of the interconnection feasibility study, subject to any modifications in accordance with Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.12~~1~~), and the following assumptions:

1. Point of interconnection and configuration to be studied.

_____

_____

_____

_____

_____

2. Alternative points of interconnection and configurations to be studied.

_____

_____

_____

_____

_____

Note: 1 and 2 are to be completed by the interconnection customer. Any additional assumptions (explained below) may be provided by either the interconnection customer or the utility.

_____

_____

_____

_____

_____

_____

199—45.2~~1~~0(476) Appendix G – Standard interconnection facilities study agreement.

INTERCONNECTION FACILITIES STUDY AGREEMENT

This agreement ("Agreement") is made and entered into this _____ day of _____, by and between _____ (‘‘interconnection customer’’), as an individual person, or as a _____ organized and existing under the laws of the State of _____, and _____, ("utility"), a _____ existing under the laws of the State of Iowa. Interconnection customer and utility each may be referred to as a ‘‘Party,’’ or collectively as the ‘‘Parties.’’

Recitals:

Whereas, interconnection customer is proposing to develop a distributed generation facility or modifying an existing distributed generation facility consistent with the interconnection request application form completed by interconnection customer on _____; and

Whereas, interconnection customer desires to interconnect the distributed generation facility with utility’s electric distribution system; and

Whereas, utility has completed an interconnection system impact study and provided the results of said study to interconnection customer; and

Whereas, interconnection customer has requested utility to perform an interconnection facilities study to specify and estimate the cost of the equipment, engineering, procurement and construction work needed to interconnect the distributed generation facility;

Now, therefore, in consideration of and subject to the mutual covenants contained in this Agreement, the Parties agree as follows:

1. All terms defined in Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.1) shall have the meanings indicated in that rule when used in this Agreement.
2. Interconnection customer elects and utility shall cause to be performed an interconnection facilities study consistent with Iowa Utilities Board Chapter 45 rules on Electric Interconnection of Distributed Generation Facilities (199 IAC 45.11).
3. The scope of the interconnection facilities study shall be determined by the information provided in Attachment A to this Agreement.
4. An interconnection facilities study report (1) shall provide a description, estimated cost of distribution upgrades, and a schedule for required facilities to interconnect the distributed generation facility to utility’s electric distribution system; and (2) shall address all issues identified in the interconnection system impact study (or identified in this study if the system impact study is combined herein).
5. Interconnection customer shall provide a study deposit of 100% of the estimated nonbinding study costs at least 20 business days prior to the date upon which the study commences.

6. In cases where no distribution upgrades are required, the interconnection facilities study shall be completed and the results shall be transmitted to interconnection customer within 15 business days after this Agreement is signed by the Parties. In cases where distribution upgrades are required, the interconnection facilities study shall be completed and the results shall be transmitted to interconnection customer within 35 business days after this Agreement is signed by the Parties or the complete study deposit is received by the utility, whichever occurs later.
7. Study fees shall be based on actual costs and will be invoiced to interconnection customer after the study is transmitted to interconnection customer. The invoice shall include an itemized listing of employee time and costs expended on the study.
8. Interconnection customer shall pay any actual study costs that exceed the deposit within 30 calendar days on receipt of the invoice. Utility shall refund any excess deposit amount within 30 calendar days after the invoice.

In witness whereof, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Insert name of interconnection customer]

Signed: _____

Name (Printed): _____ Title: _____

[Insert name of utility]

Signed: _____

Name (Printed): _____ Title: _____

ATTACHMENT A
Interconnection Facilities Study Agreement

Minimum Information that the Interconnection Customer Must Provide with the Interconnection Facilities Study Agreement

Provide location plan and simplified one-line diagram of the distributed generation facilities.

For staged projects, please indicate size and location of planned additional future generation.

On the one-line diagram, indicate the generation capacity attached at each metering location. (Maximum load on Current Transformer/Potential Transformer (CT/PT)).

On the one-line diagram, indicate the location of auxiliary power. (Minimum load on CT/PT) Amps.

One set of metering is required for each generation connection to the utility's electric distribution system.

Number of generation connections: _____

Will an alternate source of auxiliary power be available during CT/PT maintenance?
Yes _____ No _____

Will a transfer bus on the generation side of the metering require that each meter set be designed for the total distributed generation capacity? Yes _____No _____
(Please indicate on the one-line diagram.)

What type of control system or Programmable Logic Controllers (PLC) will be located at the distributed generation facility?
_____

What protocol does the control system or PLC use? _____

Please provide a scale drawing of the site. Indicate the point of interconnection, distribution line, and property lines.

Number of third-party easements required for utility's interconnection facilities: _____

.....

To be Completed in Coordination with the Utility

Is the distributed generation facility located in utility's service area?

Yes _____No _____

If No, please provide name of local provider: _____

Please provide the following proposed schedule dates:

Begin construction date: _____

Generator step-up transformers receive back feed power date: _____

Commissioning testing date: _____

Witness testing date: _____

Commercial operation date: _____

Appendix D – Proposed Chapter 15 Rule Revisions

The following definitions would be included in **199—15.1(476) Definitions.**

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

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

199—15.10(476) Standards for interconnection, safety, and operating reliability. For purposes of this rule, "electric utility" or "utility" means both rate-regulated and non-rate-regulated electric utilities.

15.10(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, 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 519-1992; 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-~~2008~~2014.

15.10(2) *Modifications required.* Rescinded IAB 7/23/03, effective 8/27/03.

15.10(3) *Interconnection facilities.*

a. T~~he utility may require the~~ A distributed generation facility placed in service after July 1, 2015 is required to ~~have the capability to be isolated from the utility, either by means of a lockable, visible-break isolation device accessible by the utility, or by means of a lockable isolation~~ include a disconnection device. ~~whose status is indicated and is accessible by the utility. If an isolation device is required by the utility, t~~The device shall be installed, owned, and maintained by the owner of the distributed generation facility and shall be easily visible and adjacent to an interconnection customer's electric meter.~~located electrically between the distributed generation facility and the point of interconnection. A draw-out type of circuit breaker accessible to the utility with a provision for padlocking at the drawn-out position satisfies the requirement for an isolation device.~~ For installations placed in service prior to July 1, 2015, the customer shall be required to provide and attach a permanent placard at the electric meter that clearly identifies the presence and location of disconnection devices for the distributed generation facilities on the property. If no disconnection device is present, the placard shall state, "no disconnection device."

b. The interconnection shall include overcurrent devices on the facility to automatically disconnect the facility at all currents that exceed the full-load current rating of the facility.

c. Distributed generation facilities with a design capacity of 100 kVA or less must be equipped with automatic disconnection upon loss of electric utility-supplied voltage.

d. Those facilities that produce a terminal voltage prior to the closure of the interconnection shall be provided with synchronism-check devices to prevent closure of the interconnection under conditions other than a reasonable degree of synchronization between the voltages on each side of the interconnection switch.

15.10(4) *Access.* If ~~an isolation~~ a disconnection device is required by the utility, both the operator of the distributed generation facility and the utility shall have access to the ~~isolation~~ disconnection device at all times. For distributed generation installations prior to July 1, 2015, ~~A~~an interconnection customer may elect to provide the utility with access to ~~an isolation~~ disconnection device that is contained in a building or area that may be unoccupied and locked or not otherwise accessible to the utility by installing a lockbox provided by the utility that allows ready access to the ~~isolation~~ disconnection device. The lockbox shall be in a location determined by the utility to be accessible by the utility. The interconnection customer shall permit the utility to affix a placard in a location of the utility's choosing that provides instructions to utility operating personnel for accessing the ~~isolation~~ disconnection device. If the utility needs to isolate the distribution generation facility, the utility shall not be held liable for any damages resulting from the actions necessary to isolate the generation facility.

15.10(5) *Inspections.* The operator of the distributed generation facility shall adopt a program of inspection and testing of the generator and its appurtenances and the interconnection facilities in order to determine necessity for replacement and repair. Such a program should include all periodic tests and maintenance prescribed by the manufacturer. If the periodic testing of interconnection-related protective functions is not specified by the manufacturer, it should occur at least every five years. All interconnection-related protective functions shall be periodically tested and a system that depends upon a battery for trip power shall be checked and logged. Representatives of the utility shall have access at all reasonable hours and with reasonable prior notice to applicant to the interconnection equipment specified in subrule 45.3(2) for inspection and testing. If the utility discovers the applicant's facility is not in compliance with the requirements of IEEE Standard 1547, and the noncompliance adversely affects the safety or reliability of the electrical system, the utility may require disconnection of the applicant's facility until it complies with this chapter.

15.10(6) *Emergency disconnection.* In the event that an electric utility or its customers experience problems of a type that could be caused by the presence of alternating currents or voltages with a frequency higher than 60 Hertz, the utility shall be permitted to open and lock the interconnection switch pending a complete investigation of the problem. Where the utility believes the condition creates a hazard to the public or to property, the disconnection may be made without prior notice. However, the utility shall notify the operator of the distributed generation facility by written notice and, where possible, verbal notice as soon as practicable after the disconnections.

15.10(7) Notification. Owners of interconnected distributed generation facilities are required to notify local paid or volunteer fire departments via U.S. mail of the location of distributed generation facilities and the associated disconnection device when the distributed generation facility is placed in service. The owner is required to provide any information related to the DG facility as required by that fire department including but not limited to:

- Site map showing property address, service point from utility company, distributed generation disconnect location(s), module location(s), if applicable location of rapid shut down and battery disconnect(s), property owners emergency contact information or owners representative, utilities companies emergency phone number, and size of system.
- Information to access the disconnection device.
- Statement from owner verifying the DG system was installed in accordance with the current state adopted National Electrical Code.