

Need to tie to language in current Alt Energy/Co-gen rule, 170 IAC 4-4.1 , and pending Net metering rule.

Interconnection Standards Outline

A) Definitions

B) General Interconnection Application Provisions

- 1) Each investor-owned electric utility (IOU) shall provide the following three procedures for applications for interconnection of customer-generator facilities:
 - a. Simplified – An IOU shall use this review procedure for applications to connect inverter-based customer-generator facilities, which have a power rating of 10 kW or less, and which meet the certification requirements of C. Simplified interconnection review procedures are set forth at D.
 - b. Expedited – An IOU shall use this review procedure for applications to connect customer-generated facilities with a power rating of 2 MW or less, which meet the certification requirements at C. Expedited interconnection review procedures are set forth at E.
 - c. Standard – An IOU shall use this review procedure for applications to connect customer-generated facilities to their distribution system, which do not qualify for either the simplified or expedited interconnection review procedures. Standard interconnection review procedures are set forth at F.
- 2) Each IOU shall designate a contact person or office from which an applicant can obtain basic application forms and information through an informal process.
- 3) Each IOU shall use Commission approved interconnection application and interconnection agreement forms.

C) Certification of customer-generator facilities

- 1) In order to qualify for the simplified and the expedited interconnection review procedures described at D and E, a customer-generator facility must be certified as complying with the following standards, as applicable:
 - a. IEEE 1547
 - b. UL 1741
- 2) An equipment package shall be considered certified for interconnection operation if it has been tested and listed by a nationally recognized testing and certification laboratory in compliance with these standards identified at C(1) above.
- 3) If the equipment package has been tested and listed in accordance with this section as an integrated package, which includes a generator or other electric source, the equipment package shall be deemed certified, and the IOU shall not require further design review, testing or additional equipment certification.
- 4) If the equipment package includes only the interface components, an interconnection applicant must show that the generator or other electric source being utilized with the

equipment package is compatible with the equipment package and consistent with the testing and listing performed by the nationally recognized testing and certification laboratory. If the generator or electric source being utilized with the equipment package is consistent with the testing and listing performed by the nationally recognized testing and certification laboratory, the equipment package shall be deemed certified, and the IOU shall not require further design review, testing or additional equipment certification.

5) The IOU may require the applicant to include a disconnect switch as a supplement to the equipment package.

D) Simplified interconnection review

1) Each IOU shall adopt a simplified interconnection review procedure. The IOU shall use the simplified review procedure for an application to interconnect a customer-generator facility that meets all of the following criteria:

1. It is Inverter-based;
2. Has a capacity of 10 kW or less; and
3. It is certified in accordance with section C above.

2) For a customer-generator facility described in (1), the IOU shall approve interconnection under the simplified review if all of the applicable requirements at (3) through (7) below are met. An IOU shall not impose additional requirements not specifically authorized under this section.

3) If a customer-generator facility is to be connected to a radial distribution circuit, the aggregate generation capacity connected to the shared secondary, including the proposed capacity, shall not exceed 5% of the total circuit total annual peak load as most recently measured at the substation.

4) The aggregate generation capacity on the distribution circuit to which the customer-generator facility will interconnect, including its capacity, shall not contribute more than 10% to the circuit's maximum fault current at the point on which the primary level that is nearest the proposed point of common coupling.

5) If a customer-generator facility is to be connected to a single phase shared secondary, the aggregate generation capacity connected to the shared secondary, including the proposed capacity, shall not exceed 20 kVA.

6) If a single-phase customer-generator facility is to be interconnected on a center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service more than 20% of nameplate rating of the service transformer.

7) The customer-generator facility point of common coupling shall not be on a transmission line, a spot network, or an area network.

8) Within three business days after receiving an application for simplified interconnection review, the IOU shall provide notification of receipt to the applicant.

9) The IOU shall notify the applicant within 10 business days after receiving an application for simplified interconnection review as to whether the application is complete or incomplete. If the application is incomplete, the notification shall include a list detailing of all the information needed to complete the application.

10) Within fifteen business days after the IOU notifies the applicant that the application is complete, the IOU shall notify the applicant that;

- a. The customer-generator facility meets all of the criteria at 3 through 7 above that apply to the facility, and the interconnection will be finally approved upon completion of the process set forth at 11 through 13 below; or
- b. The customer-generator facility has failed to meet one or more of the applicable criteria at (3) through (7) above, and the interconnection application is denied.

11) If approved, the IOU shall within five business days after sending the notice of approval under 10(a) do the following;

- a. Notify the applicant if an IOU inspection of the customer-generator facility for compliance with this chapter is required prior to starting operation of the facility, and
- b. Execute and send to the applicant a simplified interconnection agreement.

12) An applicant that receives an interconnection agreement under (11) above shall execute the agreement and return it to the IOU at least five business days prior to starting operation of the customer-generator facility. The applicant shall indicate the anticipated start date for operation of the customer-generator facility. If the IOU requires an inspection of the customer-generator facility, the applicant shall not begin operating the facility until completion of the inspection.

13) Upon receipt of the executed interconnection agreement and satisfactory completion of the inspection if required, the IOU shall approve the interconnection, conditioned on approval by the electric code officials with jurisdiction of the interconnection.

14) If an application for simplified interconnection review is denied because it does not meet one or more of the applicable requirements in this section, an applicant may resubmit the application under expedited or standard interconnection review procedure as appropriate.

E) Expedited interconnection review

1) Each IOU shall adopt an expedited interconnection review procedure. The IOU shall use the expedited review procedure for an application to interconnect a customer-generator facility that meets both of the following criteria:

1. It has a capacity of 2 MW or less, and
2. It is certified in accordance with section C above.

2) For a customer-generator facility described in (1), the IOU shall approve interconnection under the expedited review if all of the applicable requirements at (3) through (14) below are met. An IOU shall not impose additional requirements not specifically authorized under this section.

3) If a customer-generator facility is to be connected to a radial distribution circuit, the aggregate generation capacity connected to the shared secondary, including the proposed capacity, shall not exceed 15% of the total circuit total annual peak load as most recently measured at the substation; nor will it exceed 15% of a distribution circuit line section annual peak load.

4) The aggregate generation capacity on the distribution circuit to which the customer-generator facility will interconnect, including its capacity, shall not contribute more than

10% to the circuit's maximum fault current at the point on which the primary level that is nearest the proposed point of common coupling.

5) If a customer-generator facility is to be connected to a single phase shared secondary, the aggregate generation capacity connected to the shared secondary, including the proposed capacity, shall not exceed 20 kVA.

6) If a single-phase customer-generator facility is to be interconnected on a center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service more than 20% of nameplate rating of the service transformer.

7) The aggregate generation capacity on the distribution circuit to which the customer-generator facility will interconnect, including its capacity, shall not cause any distribution protective equipment, or customer equipment on the distribution system, to exceed 90% of the short-circuit interrupting capability of the equipment. In addition, a customer-generator facility shall not be connected to a circuit that already exceeds 90% of the short circuit interrupting capability prior to interconnection of the facility.

8) If there are known or posted transient stability limits to generating units located in the general electrical vicinity of the proposed point of common coupling (e.g. 3 or 4 transmission voltage level busses), the aggregate generation capacity, including the proposed facility, connected to the distribution low voltage side of the substation transformer feeding the distribution circuit containing the point of common coupling shall not exceed 10 MW.

9) If a customer-generator facility is to be connected to three-phase, three wire primary IOU distribution lines, a three-phase or single phase generator shall be connected phase to phase.

10) If a customer-generator facility is to be connected to three-phase, four wire primary IOU distribution lines, a three-phase or single phase generator shall be connected line to neutral and shall be effectively grounded.

11) The customer-generator facility point of common coupling shall not be on a transmission line.

12) If a customer-generator facility is to be connected to the load side of spot network protectors, the proposed facility must utilize an inverter-based equipment package, and together with the aggregated other inverter-based generation, will not exceed the smaller of 5% of a spot network's maximum load or 50 kW.

13) If a customer-generator facility is to be connected to any network, the proposed facility must utilize a protective scheme that will ensure that its current flow will not affect the network protective devices including reverse power relays or a comparable function. Synchronous customer-generator facilities cannot be interconnected to a secondary network.

14) If a customer-generator facility that is an induction generator or utilizes inverter-based protective functions, both of which include reverse power relays functions, the proposed facility, in aggregate with other generation interconnected on the load side of the network protective devices, will not exceed the lesser of 10% of the minimum load on the network or 50 kW.

15) Within three business days after receiving an application for simplified interconnection review, the IOU shall provide notification of receipt to the applicant.

16) The IOU shall notify the applicant within 10 business days after receiving an application for simplified interconnection review as to whether the application is complete or incomplete. If the application is incomplete, the notification shall include a list detailing all of the information needed to complete the application.

17) Within fifteen business days after the IOU notifies the applicant that the application is complete, the IOU shall perform an initial review to determine if the applicable requirements of 3 through 14 above are met. During the initial review the IOU may, at its own expense, conduct any studies or tests it deems necessary to evaluate the proposed interconnection. The initial review shall result in one of the following determinations:

- a. The customer-generator facility meets the applicable requirements in 3 through 14 above. In this case, the IOU shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth at 18 through 20 below. Within five business days after this notice, the IOU shall provide the applicant with an executable interconnection agreement;
- b. The customer-generator facility has failed to meet one or more of the applicable requirements in 3 through 14 above, but the IOU has nevertheless determined that the customer-generator facility can be interconnected consistent with safety, reliability, and power quality. In this case, the IOU shall notify the applicant that the interconnection will be finally approved upon completion of the process set forth at 18 through 20 below. Within five business days after this notice, the IOU shall provide the applicant with an executable interconnection agreement;
- c. The customer-generator facility has failed to meet one or more of the applicable requirements in 3 through 14 above, but the initial review indicates that additional review may enable the IOU to determine that the customer-generator facility can be interconnected consistent with safety, reliability, and power quality. In such a case, the IOU shall offer to perform additional review to determine whether minor modifications to the electrical distribution system would enable the interconnection to be made consistent with safety, reliability, and power quality. The IOU shall provide to the applicant a non-binding, good faith estimate of the costs of such additional review, and/or such minor modifications. The IOU shall undertake the additional review or modifications only after the applicant consents to pay for the review and/or modifications; or
- d. The customer-generator facility has failed to meet one or more of the applicable requirements in (3) through (14) above, and the initial review indicates that additional review would not enable the IOU to determine that the customer-generator facility can be interconnected consistent with safety, reliability, and power quality. In such a case, the IOU shall notify the applicant that the interconnection application has been denied, and shall provide an explanation of the reason(s) for the denial, including a list of additional information and/or modifications to the customer-generator's facility, which would be required in order to obtain an approval under expedited interconnection procedures.

18) An applicant that receives an interconnection agreement under 17(a) or (b) above shall:

- a. Execute the agreement and return it to the IOU at least ten business days prior to starting operation of the customer-generator facility; and

- b. Indicate to the IOU the anticipated start date for operation of the customer-generator facility.
- 19) The IOU may require an inspection of a customer-generator facility for compliance with this subchapter prior to operation, and may require and arrange for witness of commissioning tests as set forth in IEEE 1547. The IOU shall schedule any inspections or tests under this section promptly and within a reasonable time after submittal of the application. The applicant shall not begin operating the customer-generator facility until after the inspection and testing is completed.
- 20) For an applicant that receives an interconnection agreement under 17(a) or (b) above, approval of interconnected operation of the customer-generator facility shall be conditioned on all of the following occurring:
 - a. The interconnection has been approved by the electrical code official with jurisdiction over the interconnection;
 - b. Any IOU inspection and or witnessing of commissioning tests arranged under (19) above are successfully completed; and
 - c. The planned start date provided by the applicant under (18) above has passed.
- 21) If an application for expedited interconnection review is denied because it does not meet one or more of the applicable requirements in this section, an applicant may resubmit the application under the standard interconnection review procedure as appropriate.

F) Standard Interconnection Review

- 1) Each IOU shall adopt a standard interconnection review procedure. The IOU shall use the standard review procedure for an application to interconnect a customer-generator facility that is connected to their distribution system and does not meet the requirements of D or E.
- 2) The IOU shall conduct an initial review of the application and shall offer the applicant the opportunity to meet with IOU staff to discuss the application.
- 3) The IOU shall provide an impact study agreement to the applicant, which shall include a good faith estimate of the cost for an impact study to be performed by the IOU.
- 4) If the proposed interconnection may affect electric transmission or delivery systems other than that controlled by the IOU, operators of these systems may require additional studies to determine the impact of the interconnection on these systems, the IOU shall coordinate the studies but shall not be responsible for their timing. The applicant shall be responsible for the costs of any such additional studies required by another affected system. Such studies shall be conducted only after the applicant has provided written authorization.
- 5) After the applicant has executed the impact study agreement and has paid the IOU the amount of the good faith estimate required under (3) above, the IOU shall conduct the impact study and notify the applicant of the results as follows:
 - a. If the impact study indicates that only insubstantial modifications to the IOU's electric distribution system are necessary to accommodate the proposed interconnection, the IOU shall send the applicant an interconnection agreement

that details the scope of the necessary modifications and an estimate of their cost;
or

b. If the impact study indicates that substantial modifications to the IOU's electric distribution system are necessary to accommodate the proposed interconnection, the IOU shall provide an estimate of the cost of the modifications, which shall be accurate to within plus or minus 25%. In addition, the IOU shall offer to conduct a facilities study at the applicant's expense, which will identify the types and cost of equipment needed to safely interconnect the applicant's customer-generator facility.

6) If the applicant requests a facilities study under 5(b) above, the IOU shall provide a facilities study agreement. The facilities study agreement shall describe the work to be undertaken in the facilities study and shall include a good faith estimate of the cost to the applicant for completion of the study. Upon execution by the applicant of the facilities study agreement, the IOU shall conduct a facilities study, which shall identify the facilities necessary to safely interconnect the customer-generator facility with the IOU's electric distribution system, the cost of those facilities, and the time required to build and install those facilities.

7) Upon completion of the facilities study, the IOU shall provide the applicant with the results of the study and an executable interconnection agreement. The agreement shall list the conditions and facilities necessary to safely interconnect the customer-generator facility with the IOU's electric distribution system, the cost of those facilities, and the time required to build and install those facilities.

8) If the applicant wishes to interconnect, it shall execute the interconnection agreement, provide a deposit of not more than 50% of the cost of the facilities identified in the facilities study, complete installation of the customer-generator facility, and agree to pay the IOU the amount required for the facilities needed to interconnect as identified in the facilities study.

9) Within 15 business days after notice from the applicant that the customer-generator facility has been installed, the IOU shall inspect the customer-generator facility and shall arrange to witness any commissioning tests required under IEEE 1547. The IOU and the applicant shall select a date by mutual agreement for the IOU to witness commissioning tests.

10) Provided the customer-generator facility passes any required commissioning tests satisfactorily, the IOU shall notify the applicant in writing, within three business days after the tests, of one of the following:

- a. The interconnection is approved and the customer-generator facility may begin operation; or
- b. The facilities study identified necessary construction that has not been completed, the date upon which the construction will be completed and the date when the customer-generator facility may begin operation.

11) If the commissioning tests are not satisfactory, the customer-generator shall repair or replace the unsatisfactory equipment and reschedule a commissioning test pursuant to 9 above.

G. Interconnection Fees

- 1) An IOU shall not charge an application or other fee to an applicant that requests simplified interconnection review. However, if an application for simplified interconnection review is denied because it does not meet the requirements for simplified interconnection review, and the applicant resubmits the application under another review procedure, the IOU may impose a fee for the resubmitted application, consistent with this section.
- 2) For an expedited interconnection review, the IOU may charge fees up to \$50 plus \$1 per kW of the customer-generator facility's capacity, plus the cost of any minor modifications to the electric distribution system or additional review, if required under E(17)(c). Costs for minor modifications or additional review shall be based on IOU estimates and shall be subject to a case by case review by the Commission or its designee. Costs for engineering work done as part of any additional review shall not exceed \$100 per hour.
- 3) For a standard interconnection review, the IOU may charge fees up to \$100 plus \$2 per kW of the customer-generator facility's capacity, as well as charges for actual time spent on any impact and/or facilities studies required under F. Costs for engineering work done as part of any impact or facilities study shall not exceed \$100 per hour. If the IOU must install facilities in order to accommodate the interconnection of the customer-generator facility, the cost of such facilities shall be the responsibility of the applicant.

H. Requirements after approval of an interconnection

1) An IOU shall have the right to inspect a customer-generator's facility after interconnection approval is granted, at reasonable hours and with reasonable prior notice to the customer-generator. If the IOU discovers that the customer-generator's facility is not in compliance with the requirements of this subchapter, and the non-compliance adversely affects the safety or reliability of the electric distribution system, the IOU may require the customer-generator to disconnect the customer-generator facility until compliance is achieved.