

**5.500 INTERCONNECTION PROCEDURES FOR PROPOSED ELECTRIC GENERATION RESOURCES**

**5.501 Applicability.** This Rule applies to all proposed interconnections of Generation Resources within the State of Vermont which are not (i) lawfully subject to ISO-NE interconnection rules or successor rules approved by FERC, or (ii) subject to the Board's net metering rule (Rule 5.100), for which the interconnection provisions of those rules will govern. This Rule does not apply to facilities within the State of Vermont that were interconnected or had obtained all necessary approvals for interconnection with electric power transmission or distribution systems prior to 60 business days after the effective date of this Rule.

**5.502 Definitions**

- (1) Affected System – any electric system that is either directly or indirectly connected to the Interconnecting Utility's electric system that could be adversely affected by the interconnection and parallel operation of the Interconnection Requester's Generation Resource.
- (2) Application – a request for interconnection initiated by the completed Standard Application Form provided by the Board for the interconnection of Generation Resources, the \$300 Application fee, documentation of site control, and information regarding certification or Underwriters Laboratory listing of the Interconnection Requester's Generation Resource. The Board may revise the Standard Application Form from time to time, as necessary.
- (3) Automatic Disconnect Device – an electronic or mechanical switch used to isolate a circuit or piece of equipment from a source of power without the need for human intervention.
- (4) Board – the Vermont Public Service Board.
- (5) Disconnect (verb) – To isolate a circuit or equipment from a source of power. If isolation is accomplished with a solid-state device, "disconnect" shall mean to cease the transfer of power.
- (6) Disconnection – the state of a circuit or equipment being disconnected from a source of power.
- (7) Distribution Level Study – a System Impact Study conducted at the distribution level.
- (8) Emergency – a situation in which continued interconnection of a Generation Resource is imminently likely to result in significant disruption of service or endanger life or property.
- (9) Facilities Study – a study to determine which Interconnection Facilities or System Upgrades are necessary for interconnection of the Generation Resource.

- (10) Facilities Study Report - contains the results of the Facilities Study, and is transmitted to the Interconnection Requester in accordance with Section 5.507(G)(3).
- (11) Fast Track – the process for establishing an interconnection for certain qualifying Generation Resources in accordance with Section 5.506 of this Rule.
- (12) Fast Track Screening Criteria – the screening criteria for Generation Resources set forth in Section 5.505(B) of this Rule.
- (13) Feasibility Study – a study consisting of initial engineering analyses regarding the feasibility of interconnecting the Generation Resource, if the Generation Resource is not eligible for Fast Track.
- (14) Feasibility Study Report - contains the results of the Feasibility Study, and other information pursuant to Sections 5.507(E)(6)(a) through (c).
- (15) FERC – the Federal Energy Regulatory Commission.
- (16) Generation Resource – a facility that produces electric energy from other energy sources.
- (17) IEEE – Institute of Electrical and Electronics Engineers, Inc.
- (18) Interconnecting Utility – Electric utility with which the Interconnection Requester proposes to interconnect a Generation Resource.
- (19) Interconnection Agreement – an agreement between an Interconnecting Utility and Interconnection Requester regarding the interconnection and parallel operation of a Generation Resource. The Interconnection Agreement is accompanied by or includes Technical Requirements and Operator Protocols.
- (20) Interconnection Facilities – all facilities and equipment between the Generation Resource and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generation Resource to the Interconnecting Utility's distribution or transmission system. Interconnection Facilities are sole-use facilities and shall not include System Upgrades.
- (21) Interconnection Requester – person or entity who proposes to interconnect a Generation Resource with an Interconnecting Utility.
- (22) Interconnection Queue – The list of Applications for the interconnection of Generation Resources, in order based upon the date- and time-stamp of complete Applications, maintained by each Interconnection Utility.
- (23) ISO-NE – Independent System Operator of New England, Inc.

- (24) Operator Protocols - an agreement between the Interconnection Requester and the Interconnecting Utility pertaining to the operation and maintenance of the Generation Resource.
- (25) Point of Interconnection – The point at which the interconnection between the Interconnecting Utility's system and the Interconnection Requester's equipment interface occurs.
- (26) PSB – the Vermont Public Service Board.
- (27) Radial Feeder – a distribution line that branches out from a substation and is normally not connected to another substation or another circuit sharing a common supply of electric power.
- (28) Scoping Meeting – an optional meeting between the Interconnecting Utility and the Interconnection Requester to discuss the results of the review of the Fast Track Screening Criteria, and how to proceed with the interconnection request.
- (29) Standard Application Form - the form included as Attachment 1 to this Rule, as may be amended by the Board from time to time.
- (30) System Impact Study – any study or studies performed by an Interconnection Utility or a designated third party to ensure the safety, reliability, and stability of the electric power system with respect to the interconnection of Generation Resources.
- (31) System Impact Study Report - contains the results of the System Impact Study, and other information pursuant to Sections 5.507(F)(4)(a) through (c).
- (32) System Upgrades – the additions, modifications, and upgrades to the distribution system and/or transmission system at or beyond the Point of Interconnection to facilitate interconnection of the Generation Resource. System Upgrades do not include Interconnection Facilities.
- (33) Technical Requirements - an agreement between the Interconnection Requester and the Interconnecting Utility designed to provide protection to the public and to the personnel and equipment of the Interconnection Requester and Interconnecting Utility from the physical and financial risks associated with the interconnection and parallel operation of the proposed Generation Resource. The interconnection Technical Requirements accomplish this task through including, but not limited to, ensuring the installation of proper protective devices and metering equipment, and establishing performance criteria to minimize the probability that the Generation Resource will reduce the quality of service on the Interconnecting Utility's system.
- (34) This Rule – PSB Rule 5.500: Interconnection Procedures For Proposed Electric Generation Resources.

- (35) Transmission Level Study – a System Impact Study conducted at the transmission level.

### **5.503 General Procedures**

- (A) Applications for proposed Generation Resources that are determined to be complete in accordance with Section 5.504, and which satisfy all of the Fast Track Screening Criteria of Section 5.505(B), shall follow the Fast Track process specified in Section 5.506. Complete Applications for proposed Generation Resources that do not meet all of the Fast Track Screening Criteria shall be evaluated through the appropriate Feasibility, System Impact, and/or Facilities Studies as set forth in Section 5.507 of this Rule. The Standard Application Form is included as Attachment 1 to this Rule.
- (B) After providing an opportunity for comment to the Department of Public Service, electric utilities, and other affected parties, the Board will provide model documents, which may be used by the Interconnecting Utility and Interconnection Requester, for the following: Feasibility Study Agreement, System Impact Study Agreement, Facilities Study Agreement, Interconnection Agreement, Technical Requirements, and Operator Protocols. However, the Interconnecting Utility and Interconnection Requester may also voluntarily enter into different arrangements. In the event that these parties are unable to agree upon the terms of an agreement to be reached under this Rule, either party may petition the Board under Section 5.508(D) of this Rule for resolution of the dispute.
- (C) The time deadlines specified in this Rule are maximum times. To avoid unnecessary delay of the Generation Resource project, the Interconnecting Utility is encouraged to complete each task in less time than allotted, to the extent feasible.
- (D) A flow chart for the interconnection procedures specified in this Rule is included in Appendix A. The flow chart is provided for informational purposes only, and is not part of this Rule.

### **5.504 Application Submittal and Determination of Complete Application**

- (A) Pre-Application. To assist an Interconnection Requester in the interconnection process, the Interconnecting Utility shall designate an employee or office from which information on the application process can be obtained through an informal request by the Interconnection Requester presenting a proposed project. When responding to the first such informal request, the Interconnecting Utility shall inform the Interconnection Requester of, and how to access, this Rule. System information provided to Interconnection Requesters should include relevant existing system studies, existing interconnection studies, and other existing materials useful to an understanding of an interconnection at a particular point on the Interconnecting Utility's electric system. The Interconnecting Utility shall comply with reasonable requests for such information. Prior to the Interconnection Requester's filing an Application, the Interconnecting Utility shall inform the Interconnection Requester of its view on whether the interconnection of the

proposed Generation Resource is governed by this Rule, Rule 5.100, or the interconnection requirements of the ISO-NE or successor rules approved by FERC, and the basis for that view.

- (B) Application. The Interconnection Requester shall complete and submit to the Interconnecting Utility the Standard Application Form, provided by the Board, for single-phase or three-phase equipment of any size. In addition to the Standard Application Form, the Interconnection Requester shall include the following items and information in an Application:
- (1) The \$300 Application fee. The Application fee shall be non-refundable, unless the Application is withdrawn within five business days of submittal.
  - (2) Documentation of site control, which may be demonstrated through:
    - (a) Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing a Generation Resource;
    - (b) An option to purchase or acquire a leasehold site for such purpose; or
    - (c) An exclusivity or other business relationship between the Generation Resource and the entity having the right to sell, lease or grant the Generation Resource the right to possess or occupy a site for such purpose.
  - (3) Information regarding certification or Underwriters Laboratory listing of the Interconnection Requester's Generation Resource.
- (C) The Interconnecting Utility shall date- and time-stamp Applications upon receipt. The original date- and time-stamp applied to the Application at the time of its original submission for interconnection shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in this Rule and for inclusion in the Interconnecting Utility's Interconnection Queue.
- (D) Initial notifications by Interconnecting Utility
- (1) The Interconnecting Utility shall provide the Interconnection Requester with a notification of receipt within 5 business days of receiving the Interconnection Requester's Application.
  - (2) The Interconnecting Utility shall notify the Interconnection Requester within 10 business days of the receipt of the Application as to whether the Application is complete or incomplete.
    - (a) If the Application is complete, the Interconnecting Utility shall notify the

Affected Systems in accordance with the same interconnection notification protocols that would apply if the Application were subject to FERC jurisdiction, and shall place the Application in the Interconnecting Utility's Interconnection Queue.

- (b) If the Application is incomplete, the Interconnecting Utility shall provide, along with the Notice that the Application is incomplete, a written list detailing all information that must be provided to complete the Application. The Interconnection Requester shall have 10 business days after receipt of the Notice to submit the listed information or to request an extension of time to provide such information. If the Interconnection Requester does not provide the listed information or a request for an extension of time within the 10-business day deadline, the Application shall be deemed withdrawn. An Application will be complete upon submission of the listed information to the Interconnecting Utility.
- (E) Each Interconnecting Utility shall maintain an Interconnection Queue. The Interconnecting Utility shall assign each complete Application a position in the Interconnection Queue based upon the date- and time-stamp of the Interconnection Requester's Application. The date- and time-stamp of the Application will be used to determine the cost responsibility for any System Upgrades necessary to accommodate the interconnection. At the Interconnecting Utility's option, interconnection requests may be studied serially or in clusters for the purpose of the System Impact Study.
- (F) Modification of Application. Any material modification to machine data or equipment configuration or to the Point of Interconnection not agreed to in writing by the Interconnecting Utility and the Interconnection Requester may be deemed by the Interconnecting Utility as a withdrawal of the Application and may require submission of a new Application, unless proper notification of each party by the other and a reasonable time to cure the problems created by the changes are undertaken. This provision shall apply during the process described in Sections 5.505 through 5.508 of this Rule.

#### **5.505 Fast Track Screening Process**

- (A) Within 15 business days after the Interconnecting Utility notifies the Interconnection Requester it has received a complete Application, the Interconnecting Utility shall perform a review of the Application under the Fast Track Screening Criteria set forth below, shall notify the Interconnection Requester of the results, and shall include with the notification copies of the analysis and data underlying the Interconnecting Utility's determinations under the Fast Track Screening Criteria.
- (B) Fast Track Screening Criteria
  - (1) The Interconnection Requester's proposed Generation Resource meets the applicable codes and standards of Section 5.510 or is a certified equipment

package under Section 5.511.

- (2) The proposed interconnection point is not at transmission voltage (i.e., not over 23 kV line to line or 13.28 kV line to neutral).
- (3) For interconnection to a Radial Feeder, the aggregated generation, including the proposed Generation Resource, on the circuit will not exceed 15% of the line section annual peak load as most recently measured at the substation. A line section is that portion of a distribution system connected to a customer bounded by Automatic Disconnect Devices or the end of the distribution line.
- (4) The aggregated generation, including the proposed Generation Resource, on a distribution circuit will not contribute more than 10% to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed interconnection point.
- (5) The aggregated generation, including the proposed Generation Resource, on a distribution circuit will not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or customer equipment on the system to exceed 85% of the short-circuit interrupting capability; nor is the Generation Resource proposed for a circuit that already exceeds 85% of the short-circuit interrupting capability.
- (6) For interconnection of a proposed single-phase or effectively-grounded three-phase Generation Resource where the primary distribution system is three-phase, four-wire, the Generation Resource will be connected line-to-neutral. For interconnection of a proposed single-phase or three-phase Generation Resource where the primary distribution system is three-phase, three-wire, the Generation Resource will be connected line-to-line.
- (7) Voltage drop due to starting the proposed generator is within acceptable limits, meaning that inrush current, due to starting the proposed Generation Resource up to once per hour, is not greater than 3% of the available fault current. Voltage drop due to starting the proposed Generation Resource more than once per hour meets a tighter inrush-current tolerance, to be determined by the Interconnecting Utility.
- (8) For any single Generation Resource, the available utility short circuit current at the Point of Interconnection divided by the rated output current of the Generation Resource is no less than:
  - (a) 50 for Generation Resources of less than 100 kW;
  - (b) 40 for Generation Resources from 100 kW to less than 500 kW; and

- (c) 20 for Generation Resources equal to or greater than 500 kW.
- (9) Aggregate generation, including the Generation Resource, on a circuit will not exceed 2 MVA in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four busses from the point of interconnection).
- (10) No System Upgrades, in excess of limited preparations that do not necessitate a Facilities Study, are required to facilitate the interconnection of the Generation Resource.
- (11) For interconnection of the proposed Generation Resource to the load side of spot network protectors, the proposed Generation Resource utilizes inverter-based equipment and aggregate generation, including proposed Generation Resource, will not exceed the smaller of 5% of a spot network's maximum load or 50 kW. Synchronous generators cannot be connected to a secondary network.
- (12) If the Generation Resource is to be connected on a shared, single-phase secondary, aggregate generation capacity on the shared secondary, including the proposed generation, will not exceed 20 kVA.
- (13) If the Generation Resource is single-phase and 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 of more than 20% of the service transformer nameplate.

### **5.506 Applications Eligible for Fast Track**

- (A) Applications for proposed Generation Resources shall be eligible for Fast Track if the proposed Generation Resource satisfies all of the Fast Track Screening Criteria. At the time the Interconnecting Utility notifies the Interconnection Requester of the results of the review of the Fast Track Screening Criteria, if the Application is eligible for Fast Track, the Interconnecting Utility shall present the Interconnection Requester with the option of Fast Tracking the Application. If limited and low cost preparations are required to Fast Track the proposed Generation Resource, a good-faith cost estimate shall accompany the notification that the requested interconnection can be Fast Tracked. If the Interconnection Requester indicates in response to this notification that it does not want to proceed further, the Application will be considered withdrawn.
- (B) If mutually agreed upon, a Scoping Meeting to discuss available options may be scheduled and held within 10 business days of the Interconnecting Utility notifying the Interconnection Requester of the results of the review of the Fast Track Screening Criteria.
- (C) Applications that qualify for Fast Track shall not require Feasibility, System Impact, or

Facilities Studies, and shall proceed directly to the Interconnection Agreement in accordance with Section 5.506(D).

(D) Interconnection Agreement

- (1) If the proposed Generation Resource is eligible for Fast Track, the Application shall be approved and the Interconnecting Utility shall provide the Interconnection Requester an executable Interconnection Agreement before holding a Scoping Meeting if a Scoping Meeting is to be held, within 5 business days of a decision not to hold a Scoping Meeting, or, if applicable, within 5 business days of confirmation that the Interconnection Requester has agreed to make the necessary limited preparations at the Interconnection Requester's expense, whichever is later.
- (2) The Board will provide a model Interconnection Agreement and associated Technical Requirements and Operator Protocols. However, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into different arrangements.

**5.507 Applications Not Eligible for Fast Track**

- (A) Applications for proposed Generation Resources shall not be eligible for Fast Track if the proposed Generation Resource does not satisfy all of the Fast Track Screening Criteria.
- (B) For those Proposed Generation Resources that are not eligible for Fast Track, the codes and standards listed in Section 5.510 shall be met to the extent that they are applicable to the proposed Generation Resource.
- (C) If mutually agreed upon, a Scoping Meeting to discuss available options may be scheduled and held within 10 business days of the Interconnecting Utility notifying the Interconnection Requester of the results of the review of the Fast Track Screening Criteria. The purpose of the Scoping Meeting may be to review existing studies relevant to the Interconnection Requester's interconnection Application, and/or to further discuss whether the Interconnecting Utility should perform a Feasibility Study, or proceed directly to a System Impact Study or to a Facilities Study.
- (D) If the Interconnecting Utility and the Interconnection Requester agree to proceed with the interconnection Application and agree that a Feasibility Study should be performed, the procedures of Section 5.507(E) shall apply. If the Interconnecting Utility and the Interconnection Requester agree to proceed with the interconnection Application, but agree not to perform a Feasibility Study and to proceed directly to a System Impact Study or a Facilities Study, the procedures at Sections 5.507(F) or 5.507(G), respectively, shall apply. If mutually agreed upon by the Interconnection Requester and the Interconnecting Utility, the Feasibility, System Impact, and/or Facilities Studies may be combined for the purpose of achieving cost and/or time savings.

(E) Feasibility Study

- (1) Within 5 business days after the close of the Scoping Meeting, or after the date of the decision not to hold a Scoping Meeting, the Interconnecting Utility shall provide the Interconnection Requester an executable Feasibility Study Agreement including an outline of the scope of the study and a good faith estimate of the cost to perform the study. In order to remain in the Interconnecting Utility's Interconnection Queue, the Interconnection Requester must return, within 15 business days, an executed Feasibility Study Agreement along with a deposit of the lesser of fifty percent of estimated Feasibility Study costs or \$1,000. A model Feasibility Study Agreement will be provided by the Board; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into a different arrangement.
- (2) A Feasibility Study shall include the following analyses:
  - (a) Initial identification of any instances where the short-circuit capability limits of any protective device (circuit breaker, recloser, fuse, etc.) would be exceeded as a result of the interconnection;
  - (b) Initial identification of any thermal overload or voltage limit violations resulting from the interconnection;
  - (c) Initial review of grounding requirements and system protection; and
  - (d) Description and non-binding estimated cost of facilities required to interconnect the facility to an electric distribution power system or directly to a transmission system and to address the identified short-circuit and power-flow issues.
- (3) A Feasibility Study shall model the impact of the Generation Resource regardless of purpose, in order to avoid the further expense and interruption of operation for reexamination of feasibility and impacts if the Interconnection Requester later changes the purpose for which the Generation Resource is being installed.
- (4) A Feasibility Study shall include the feasibility of any interconnection at a proposed project site where there could be multiple potential Points of Interconnection, as requested by the Interconnection Requester.
- (5) In performing the Feasibility Study, the Interconnecting Utility shall rely, to the extent reasonably practicable, on existing studies of recent vintage. The Interconnection Requester shall not be charged for such existing studies; however, the Interconnection Requester shall be responsible for charges associated with any new study or modifications to existing studies that are reasonably necessary to perform the Feasibility Study.

- (6) Feasibility Study Report and Cost Reconciliation
- (a) Once a Feasibility Study is completed, the Interconnecting Utility shall prepare a Feasibility Study Report, which describes the results of the Feasibility Study, and transmit it to the Interconnection Requester. Barring unusual circumstances outside of the Interconnecting Utility's control, the Interconnecting Utility shall complete a Feasibility Study, and transmit the Feasibility Study Report to the Interconnection Requester, within 30 business days of the Interconnection Requester's agreement to conduct a Feasibility Study.
- (b) The Feasibility Study Report shall also include cost estimates for the Distribution Level System Impact Study, Transmission Level System Impact Study, and Facilities Study, to the extent that any of these studies are determined by the Feasibility Study to be required.
- (c) The Feasibility Study Report shall also include a request that the Interconnection Requester, after reviewing the results of the Feasibility Study, notify the Interconnecting Utility regarding whether the Interconnection Requester would like to proceed with the interconnection Application. If the Interconnection Requester decides not to proceed with the Application, or if the Interconnection Requester does not notify the Interconnecting Utility within 15 business days, the Interconnecting Utility may consider the Application withdrawn.
- (d) Cost reconciliation. Within 15 business days of submittal of the Feasibility Study Report, the Interconnecting Utility shall provide to the Interconnection Requester an invoice that includes a breakdown of the actual cost to perform the Feasibility Study. The Interconnection Requester must pay the full cost of the Feasibility Study. The Interconnecting Utility shall base all study fees on actual costs, which include, but are not limited to, salaries, overheads, and out-of-pocket costs including costs billed by other entities for new studies or portions thereof which the Interconnecting Utility does not itself perform [see 5.507(H)]. If the cost of the Feasibility Study exceeds the deposit, the Interconnection Requester must pay the invoiced amount (cost of the Feasibility Study minus the deposit), without interest, within 25 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the cost of the Feasibility Study, the Interconnecting Utility shall refund such excess, without interest, within 15 business days of submittal of the Feasibility Study Report.
- (7) If a Feasibility Study shows no potential adverse impacts on the electric system, and no additional facilities are required, the Interconnecting Utility shall send the Interconnection Requester an executable Interconnection Agreement within 5

business days after receiving confirmation from the Interconnection Requester that it would like to proceed with the interconnection. A model Interconnection Agreement and associated Technical Requirements and Operator Protocols will be provided by the Board; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into different arrangements.

- (8) If a Feasibility Study shows no potential adverse impacts on the electric system, but additional facilities are required, the Interconnecting Utility shall send the Interconnection Requester an executable Facilities Study Agreement, including an outline of the scope of the study and a good-faith estimate of the cost to perform the study, pursuant to Section 5.507(G), within 5 business days after receiving confirmation from the Interconnection Requester that it would like to proceed with the interconnection. The Board will provide a model Facilities Study Agreement; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into a different arrangement.
- (9) If a Feasibility Study shows the potential for adverse impacts on either the distribution system or the transmission system, the review process shall proceed to the System Impact Study, and the Interconnecting Utility shall send the Interconnection Requester an executable System Impact Study Agreement, including an outline of the scope of the study and a good-faith estimate of the cost to perform the study, pursuant to Section 5.507(F), within 5 business days after receiving confirmation from the Interconnection Requester that it would like to proceed with the interconnection. The executable System Impact Study Agreement shall specify whether it and the cost estimate are for a Distribution Level Study, Transmission Level Study, or both. The Board will provide a model System Impact Study Agreement; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into a different arrangement.

(F) System Impact Study

- (1) In order to remain in the Interconnecting Utility's Interconnection Queue, the Interconnection Requester must return, within 15 business days, an executed System Impact Study Agreement along with a deposit equivalent to the estimated cost of the study. A model System Impact Study Agreement will be provided by the Board; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into a different arrangement.
- (2) A System Impact Study includes two sub-studies: a Transmission Level Study and a Distribution Level Study. One or both of the sub-studies may be performed, depending on the specific circumstances of the Application and the findings of the Scoping Meeting and/or Feasibility Study. If the Scoping Meeting or Feasibility Study identifies potential adverse impacts on the distribution system, a Distribution Level Study shall be performed. If the Scoping Meeting, Feasibility Study, or Distribution Level Study identifies potential adverse impacts on the

transmission system, a Transmission Level Study shall be performed.

- (a) The Distribution Level System Impact Study shall consist of a distribution load-flow study, an analysis of equipment-interrupting ratings, protection coordination study, voltage drop and flicker studies, protection and set point coordination studies, and grounding reviews, and the impact on system operation, as necessary.
  - (b) The Transmission Level System Impact Study shall consist of a short-circuit analysis, a stability analysis, a power-flow analysis, voltage-drop and flicker studies, protection and set-point-coordination studies, and grounding reviews, as necessary.
- (3) The purpose of the System Impact Study shall be to identify and specify the impacts to electric transmission and/or distribution system stability and reliability that would result if the proposed Generation Resource were interconnected without project modifications or system modifications, focusing on the adverse impacts identified in the Scoping Meeting or Feasibility Study, and to identify and study any additional potential impacts. The System Impact Study shall consider all generating facilities that:
- (a) Are directly interconnected to the Interconnecting Utility's electric transmission or distribution system;
  - (b) Are interconnected to Affected Systems and may have an impact on the Interconnection Requester's Application; and
  - (c) Have a pending Application with an earlier position in the Interconnection Queue to interconnect to the electric transmission and/or distribution systems.
- (4) System Impact Study Report and Cost Reconciliation
- (a) Once a System Impact Study is completed, the Interconnecting Utility shall prepare a System Impact Study Report and transmit it to the Interconnection Requester. Barring unusual circumstances outside of the Interconnecting Utility's control, the System Impact Study determined to be necessary by the Feasibility Study or Scoping Meeting shall be completed and transmitted to the Interconnection Requester within 45 business days from receipt of the System Impact Study agreement and deposit if a Feasibility Study was performed, and 60 days from receipt of the System Impact Study agreement and deposit if a Feasibility Study was not performed.
  - (b) The System Impact Study Report shall state the assumptions upon which

the System Impact Study is based, state the results of the analyses, and provide the requirements for, or potential impediments to, providing the requested interconnection service, including a preliminary indication of the cost and length of time that would be necessary to correct any problems identified in those analyses and to implement the interconnection. The System Impact Study shall provide a list of facilities that are required as a result of the Interconnection Requester's Application and a non-binding good-faith estimate of cost responsibility and a non-binding good-faith estimate of time to construct.

- (c) The System Impact Study Report shall also include a request that the Interconnection Requester, after reviewing the results of the System Impact Study, notify the Interconnecting Utility regarding whether the Interconnection Requester would like to proceed with the interconnection Application. If the Interconnection Requester decides not to proceed with the Application, or if the Interconnection Requester does not notify the Interconnecting Utility within 15 business days, the Interconnecting Utility may consider the Application withdrawn.
- (d) Cost reconciliation. Within 15 business days of submittal of the System Impact Study Report, the Interconnecting Utility shall provide to the Interconnection Requester an invoice that includes a breakdown of the actual cost to perform the System Impact Study. The Interconnection Requester must pay the full cost of the System Impact Study. The Interconnecting Utility shall base all study fees on actual costs, which include, but are not limited to, salaries, overheads, and out-of-pocket costs including costs billed by other entities for new studies or portions thereof which the Interconnecting Utility does not itself perform [see 5.507(H)]. If the cost of the System Impact Study exceeds the deposit, the Interconnection Requester must pay the invoiced amount (cost of the System Impact Study minus the deposit), without interest, within 25 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the cost of the System Impact Study, the Interconnecting Utility shall refund such excess, without interest, within 15 business days of submittal of the System Impact Study Report.
- (5) If, while conducting the System Impact Study outlined in the executed System Impact Study Agreement, the Interconnecting Utility determines that studies beyond those contained in the executed System Impact Study Agreement are required (for instance, if the Feasibility Study recommended that a Distribution Level Study be conducted, and, during the course of conducting the Distribution Level Study, the Interconnecting Utility determined that a Transmission Level Study is also required), the Interconnecting Utility shall, within 5 business days of making that determination, send the Interconnection Requester a supplemental System Impact Study Agreement, including an outline of the scope of the

supplemental study and a good faith estimate of the cost to perform the supplemental study. In order to remain under consideration for interconnection, the Interconnection Requester must return an executed supplemental System Impact Study Agreement within 15 business days with a deposit equivalent to the estimated cost of the supplemental study. Barring unusual circumstances outside of the Interconnecting Utility's control, a supplemental System Impact Study shall be completed and transmitted to the Interconnection Requester within 45 business days of the receipt of the supplemental System Impact Study Agreement. The report and cost reconciliation shall follow the procedures detailed in Section 5.507(F)(4)(b) through (d), above.

- (6) In instances where a Feasibility Study or a System Impact Study shows potential for adverse impacts on the transmission system, within 5 business days following transmittal of the Feasibility Study Report or System Impact Study report, the Interconnecting Utility shall notify the Affected Systems in accordance with the same interconnection notification protocols that would apply if the Application were subject to FERC jurisdiction.
- (7) Where transmission systems and electric power distribution systems have separate owners, such as is the case with transmission-dependent utilities, whether investor-owned or not, the Interconnection Requesters may apply to the nearest transmission utility providing transmission service to the transmission-dependent utility to request project coordination if that transmission utility is notified in accordance with the same interconnection notification protocols that would apply if the Application were subject to FERC jurisdiction.
- (8) If a System Impact Study shows that no additional facilities are required, the Interconnecting Utility shall send the Interconnection Requester an executable Interconnection Agreement within 15 business days after receiving confirmation from the Interconnection Requester that it would like to proceed with the interconnection. A model Interconnection Agreement and associated Technical Requirements and Operator Protocols will be provided by the Board; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into different arrangements.
- (9) If a System Impact Study shows that additional facilities are required, the Interconnecting Utility shall send the Interconnection Requester an executable Facilities Study Agreement, including an outline of the scope of the study and a good-faith estimate of the cost to perform the study, pursuant to Section 5.507(G), within 5 business days after receiving confirmation from the Interconnection Requester that it would like to proceed with the interconnection. The Board will provide a model Facilities Study Agreement; however, the Interconnecting Utility and the Interconnection Requester may voluntarily enter into a different arrangement.

(G) Facilities Study

- (1) In order to remain in the Interconnecting Utility's Interconnection Queue, the Interconnection Requester must return, within 30 business days, an executed Facilities Study Agreement along with a deposit equivalent to the estimated cost of the study. The Interconnection Requester may also request an extension of time within the 30 business days.
- (2) Facilities Study Preparation. Transmission-system and/or distribution-system interconnection design for any required Interconnection Facilities and/or System Upgrades shall be performed under a Facilities Study agreement between the Interconnection Requester and the Interconnecting Utility. The Interconnecting Utility may contract with consultants, including contractors acting on behalf of the Interconnecting Utility, to perform the bulk of the activities required under the Facilities Study agreement. In some cases, the Interconnection Requester and the Interconnecting Utility may reach agreement allowing the Interconnection Requester to separately arrange for the design of some of the required Interconnection Facilities and/or System Upgrades. In such cases, facilities design shall be reviewed, and modified as necessary by the Interconnecting Utility, prior to acceptance under the provisions of the Facilities Study Agreement. If the parties agree to separately arrange for design and construction, the Interconnecting Utility shall make sufficient information available to the Interconnection Requester to permit the Interconnection Requester to obtain an independent design and cost estimate for any necessary facilities. This provision shall not prohibit the Interconnecting Utility and the Interconnection Requester from reaching agreement to protect information one or the other deems confidential, and shall not require the Interconnecting Utility to disclose information it is otherwise obliged not to disclose or affect the Board's authority to compel or restrict disclosure of information.
- (3) System Upgrades. In cases where System Upgrades are required, the Facilities Study shall be completed and a Facilities Study Report transmitted to the Interconnection Requester within 45 days of the receipt of the Facilities Study Agreement. In cases where no System Upgrades are required, and the required facilities are limited to Interconnection Facilities, the Facilities Study shall be completed and a Facilities Study Report transmitted to the Interconnection Requester within 30 business days. The Facilities Study Report shall include a good-faith estimate of the cost of any recommended System Upgrades or Interconnection Facilities.
- (4) Cost reconciliation. Within 15 business days of submittal of the Facilities Study Report, the Interconnecting Utility shall provide to the Interconnection Requester an invoice that includes a breakdown of the actual cost to perform the Facilities Study. The Interconnection Requester must pay the full cost of the Facilities Study. The Interconnecting Utility shall base all study fees on actual costs, which

include, but are not limited to, salaries, overheads, and out-of-pocket costs including costs billed by other entities for new studies or portions thereof which the Interconnecting Utility does not itself perform [see 5.507(H)]. If the cost of the Facilities Study exceeds the deposit, the Interconnection Requester must pay the invoiced amount (cost of the Facilities Study minus the deposit), without interest, within 25 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the cost of the Facilities Study, the Interconnecting Utility shall refund such excess, without interest, within 15 business days of submittal of the Facilities Study Report.

- (5) Costs of Facilities and Cost Responsibility. Where additional facilities, Interconnection Facilities, or System Upgrades are required to permit the interconnection of a Generation Resource, the Interconnection Requester shall bear the entire cost of such facilities. Within 30 days of final collection of all material, labor, contractor, permitting, and other costs incurred by the Interconnecting Utility in construction, testing, and commissioning of the Interconnection Facilities and System Upgrades, the Interconnecting Utility shall provide the Interconnection Requester with an invoice. The Interconnection Requester must pay all such costs that exceed the deposit within 30 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the Interconnecting Utility shall return such excess, without interest, within 30 business days of receipt of the invoice or resolution of any dispute.
- (6) Grouping of Facilities. An Interconnecting Utility may propose to group facilities required for more than one Interconnection Requester in order to minimize facilities' costs through economies of scale, but any Interconnection Requester may require the installation of facilities required for its own Generation Resource if it is willing to pay the costs of those facilities.
- (H) Notification Prior to Exceeding Cost Estimate. For any study for which these Rules require the Interconnection Requester to bear costs, the Interconnecting Utility shall, prior to exceeding a previously-provided cost estimate, promptly notify the Interconnection Requester if study costs are likely to exceed the previously-provided estimate and shall provide the Requester with a revised total estimated cost for the study. The Interconnecting Utility shall proceed with completing the study unless and until requested to cease processing the Application by the Interconnection Requester, in which case the Requester shall be responsible for all study costs incurred to date and the Application shall be deemed withdrawn.
- (I) Pursuant to 5.507(E)(6)(d), 5.507(F)(4)(d), and 5.507(G)(4), for those portions, if any, of the study fees for the Feasibility, System Impact, and Facilities Studies which the Interconnecting Utility bills to the Interconnection Requester and for which the Interconnecting Utility could also recover in its rates, the Interconnecting Utility shall book this income separately.

**5.508 Terms Applicable to All Interconnection Applications**

- (A) The interconnection of all Generation Resources shall include a utility-accessible, lockable, visible, load-break disconnect switch at the Point of Interconnection.
- (B) Interconnection Agreement. Upon completion of the necessary studies, if any, the Application shall be approved and the Interconnecting Utility shall provide the Interconnection Requester an executable Interconnection Agreement with necessary attachments within 5 business days for Fast Track Application, or 15 business days for all other Applications, following the determination that the Interconnection Requester wishes to proceed with the project and confirmation that the Interconnection Requester has agreed to pay the costs of all necessary System Upgrades, and to install Interconnection Facilities at the Interconnection Requester's expense. The Interconnection Requester shall return the executed Interconnection Agreement within one calendar year or the Interconnection Requester's Application shall be deemed withdrawn and the Interconnection Requester shall lose Interconnection Queue position. The Interconnection Requester bears all risk if, during the period between completion of Studies and the return of the executed Interconnection Agreement, (i) network conditions change such that the Studies' results are no longer valid and the Studies need to be revisited and updated at the Interconnection Requester's cost and (ii) the cost estimate for System Upgrades and Interconnection Facilities is no longer valid, except to the extent that these changed circumstances are known or could reasonably have been foreseen by the Interconnecting Utility.
- (C) Reasonable Efforts. The Interconnecting Utility shall make reasonable efforts to meet all time frames provided in this Rule unless the Interconnecting Utility and the Interconnection Requester agree to a different schedule. If an Interconnecting Utility cannot meet a deadline provided herein, it shall notify the Interconnection Requester, explain the reason for the failure to meet the deadline and provide an estimated time by which it will complete the applicable interconnection procedure. The Interconnecting Utility shall maintain records, subject to audit, of all Generation Resource Applications received, the times required to complete Application approvals and disapprovals and justification for the actions taken on the Applications. If costs arise from delay despite reasonable efforts of the Interconnecting Utility, these costs shall be borne by the Interconnection Requester. If costs arise from delay resulting from a lack of reasonable efforts on the part of the Interconnecting Utility, such costs shall be borne by the Interconnecting Utility.
- (D) Dispute Resolution. If a dispute arises at any time during these procedures, either the Interconnection Requester or the Interconnecting Utility may seek immediate resolution by written petition to the Board, with copies to the other party and the Vermont Department of Public Service, stating the issues in dispute. Pursuit of dispute resolution shall not affect an Interconnection Requester's Application with regard to consideration for interconnection, nor position in an Interconnection Queue.

- (E) Interconnection Metering. Any metering necessitated by the interconnection of the Generation Resource shall be installed at the Interconnection Requester's expense in accordance with the Interconnecting Utility's reasonable specifications.
- (F) Commissioning. Commissioning tests of an Interconnection Requester's installed equipment shall be performed pursuant to applicable codes and standards as identified by the parties in the Interconnection Agreement. The Interconnecting Utility shall be given 10 business days' written notice, or as otherwise mutually agreed by the Parties, of the tests and may have one or more of its representatives present to witness the commissioning tests.

### **5.509 Disconnection**

- (A) The following requirements shall govern disconnection from the electrical system of a Generation Resource that was interconnected under these Procedures. These requirements apply to such Generation Resources only and do not supplant Board Rules 3.300 and 3.400 relating to utility disconnection in general.
- (B) The Interconnection Requester retains the option to disconnect temporarily from the Interconnecting Utility's system at any time. Such temporary disconnection shall not be a termination of any Interconnection Agreement unless the Interconnection Requester exercises its termination rights under such agreement.
- (C) In the event an Interconnecting Utility needs to perform an Emergency disconnection of a Generation Resource, the Interconnecting Utility shall notify the Interconnection Requester within 24 hours after the disconnection.
  - (1) If the Emergency is not caused by the Generation Resource, the Interconnecting Utility shall assist the Interconnection Requester with reconnecting the Generation Resource upon cessation of the Emergency.
  - (2) If the Emergency is caused by the Generation Resource, the Interconnecting Utility shall communicate the nature of the problem to the Interconnection Requester within 5 days, and work with the Interconnection Requester to resolve the problem. If the problem has not been resolved within 30 days of an Emergency disconnection, the Interconnecting Utility shall file a disconnection petition with the Board. In any proceeding on such a petition, the Interconnecting Utility shall bear the burden of proof to demonstrate the reasonableness of disconnection.
- (D) Non-Emergency disconnections shall follow the same procedure as Emergency disconnections outlined above, except that the Interconnecting Utility shall give written notice of the disconnection no earlier than 10 days and no later than 7 days prior to the first date on which disconnection of the Generation Resource may occur. Such notice shall communicate the reason for disconnection to the Interconnection Requester and the

expected duration of the disconnection. An Interconnecting Utility may obtain, at the discretion of the Interconnection Requester, an Interconnection Requester's written agreement to notice requirements for non-Emergency disconnections which are different from those set forth in these procedures, provided that the Interconnecting Utility first advises the Interconnection Requester of its rights under this rule.

- (E) An Interconnection Requester whose Generation Resource is involuntarily disconnected may file a complaint with the Board at any time following disconnection. The Board may hold a hearing to determine whether the Generation Resource should be reconnected to the Interconnecting Utility. In the event of the filing of such a complaint, the Interconnecting Utility shall bear the burden of proof to demonstrate the reasonableness of disconnection.

**5.510 Codes and Standards.** When any listed version of the following codes and standards is superseded by a revision approved by the standards-making organization, then the revision shall be applied under Section 5.505. Applications that are date-and-time-stamped on or before six months after the revision date may follow the previous version of the standard, unless an immediate threat to safety and reliability exists that requires the retrofit of all similarly situated equipment. Applications that are date-and-time-stamped later than six months after the revision date must follow the revised standard.

- (A) IEEE P1547 Standard for Interconnecting Distributed Resources with Electric Power Systems as adopted and successor or related IEEE-approved standards.
- (B) UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems.
- (C) IEEE Standard 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems.
- (D) NFP A 70 (2002) National Electrical Code.
- (E) IEEE Standard C37.90.1-1989 (R1994) IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems.
- (F) IEEE Standard C37.90.2 (1995) IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers.
- (G) IEEE Standard C37.108-1989 (R2002) IEEE Guide for the Protection of Network Transformers.
- (H) IEEE Standard C57.12.44-2000 IEEE Standard Requirements for Secondary Network Protectors.
- (I) IEEE Standard C62.41.2-2002 IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits.

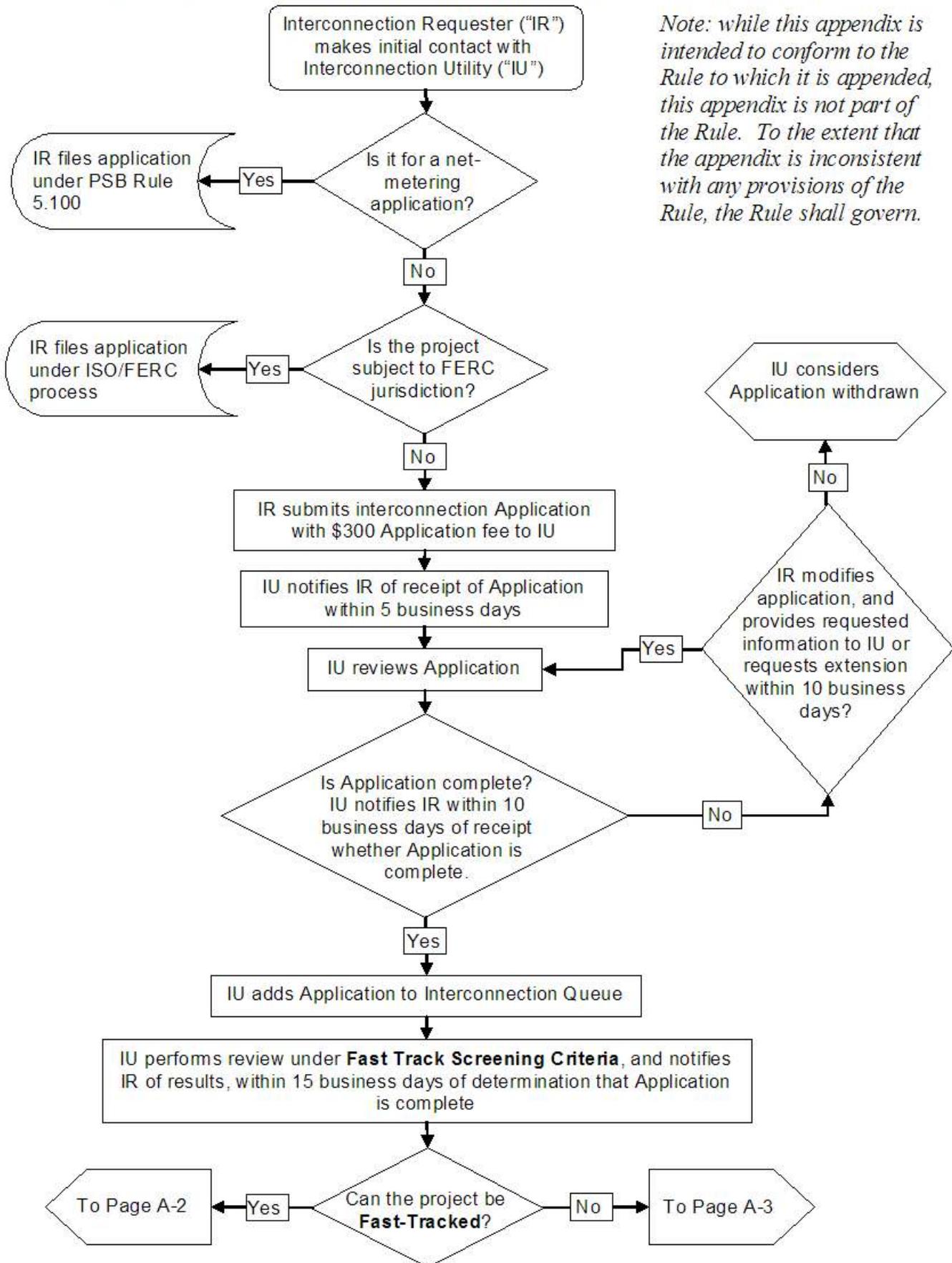
- (J) IEEE Standard C62.45-1992 (R2002) IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits.
- (K) ANSI C84.1-1995 Electric Power Systems and Equipment - Voltage Ratings (60 Hertz).
- (L) IEEE Standard 100-2000 IEEE Standard Dictionary of Electrical and Electronic Terms.
- (M) NEMA MG 1-1998, Motors and Small Resources, Revision 3.
- (N) IEEE Standard 519-1992 IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems.

### **5.511 Certification of Generation Resource Equipment Packages**

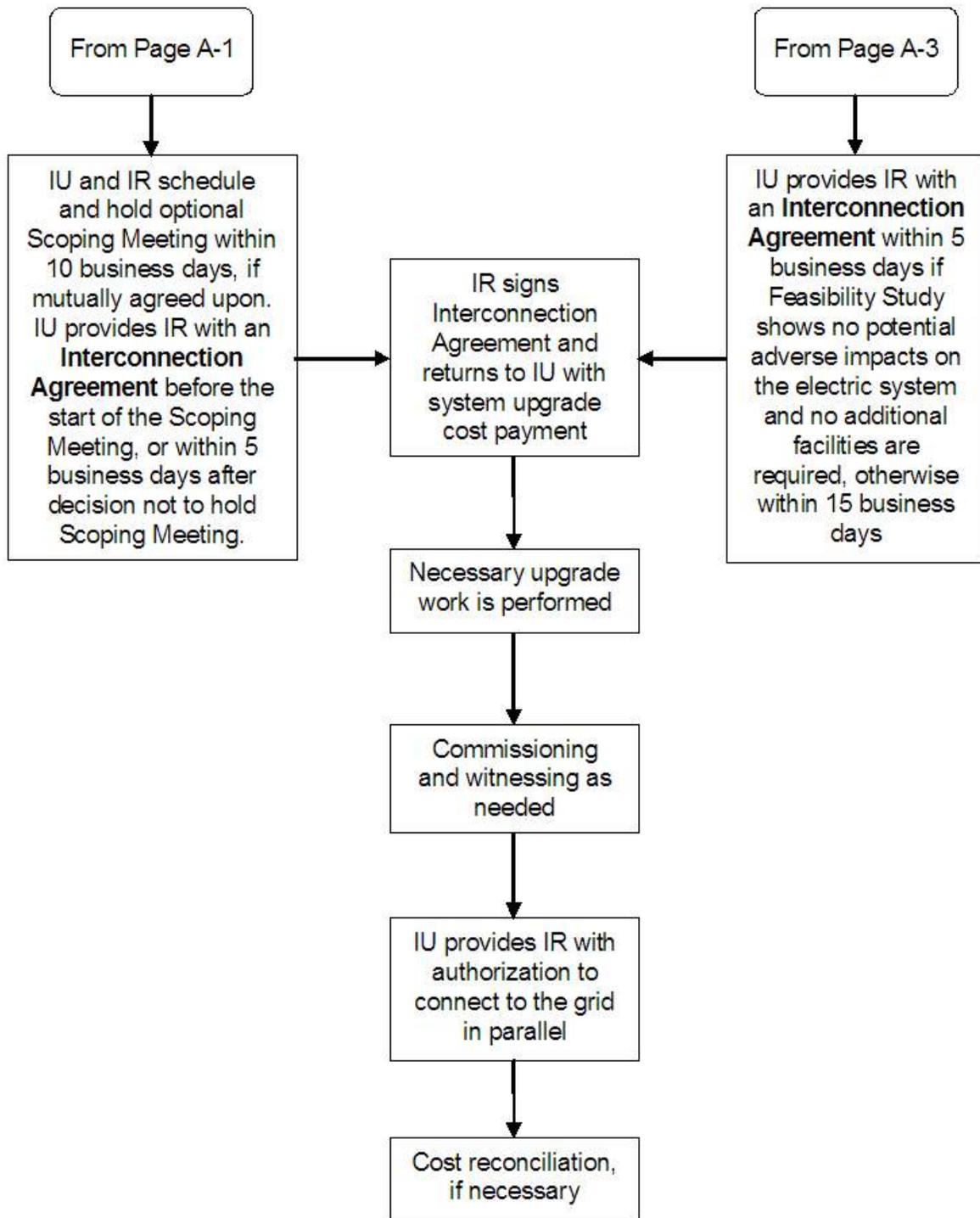
- (A) A Generation Resource equipment package shall be considered certified for interconnected operation to an electric power distribution system if it has been approved under the certification process described below.
- (B) An equipment package shall be considered certified for interconnected operation if it has been submitted, tested and listed by a nationally recognized testing and certification laboratory or approved by the U.S. Department of Energy for continuous utility interactive operation in compliance with the applicable Codes and Standards listed in Section 5.510, above. An "equipment package" shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated Generation Resource. If the equipment package has been tested and listed as an integrated package which includes a Generation Resource, it shall not require further design review, testing or additional equipment to meet the certification requirements. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then an Interconnection Requester must demonstrate to the Interconnecting Utility that the Generation Resource being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. If the Generation Resource combined with the equipment package is consistent with the testing and listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements. A certified equipment package does not include equipment provided by the Interconnecting Utility, nor does certification necessarily exempt an equipment package or Generation Resource from commissioning testing required for installation and operation.

**Appendix A to PSB Rule 5.500: Interconnection Procedure Flow Chart**

*Note: while this appendix is intended to conform to the Rule to which it is appended, this appendix is not part of the Rule. To the extent that the appendix is inconsistent with any provisions of the Rule, the Rule shall govern.*



Appendix A to PSB Rule 5.500: Interconnection Procedure Flow Chart (continued)



**Appendix A to PSB Rule 5.500: Interconnection Procedure Flow Chart (continued)**

