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| **ERCOT Planning Guide**  **Section 5:** **Generator Interconnection or Modification**  **June 1, 2025** |

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# 5 GenErator INTERCONNECTION or Modification

5.1 Introduction

(1) Section 5, Generator Interconnection or Modification, defines the requirements and processes used to facilitate new or modified generation interconnections with the ERCOT System. The requirements outlined in Section 5 are designed to:

(a) Facilitate studies to identify potential system limitations associated with the proposed interconnection of new or modified generators to the ERCOT System and to determine the facilities required to interconnect new or modified generators to the ERCOT System;

(b) Ensure that the interconnection of the new or modified generation is accomplished in a manner that maintains the reliability of the ERCOT System and complies with the North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, this Planning Guide, the Operating Guides, and any Applicable Legal Authority (ALA);

(c) Specify the communications required between Interconnecting Entities (IEs), Distribution Service Providers (DSPs), Transmission Service Providers (TSPs), and ERCOT;

(d) Provide for the best available information on future capacity additions for use in identifying, forecasting, and analyzing both short- and long-range ERCOT capabilities, demands, and reserves; and

(e) Provide ERCOT accurate data about new and modified generators to ensure that ERCOT and stakeholders have the information necessary for planning purposes.

5.2 General Provisions

***5.2.1 Applicability***

(1) The requirements in Section 5, Generator Interconnection or Modification, apply to the following:

(a) Any Entity proposing to interconnect any generator with an aggregate nameplate capacity of one MW or greater, including but not limited to any Generation Resource or Energy Storage Resource (ESR), to the ERCOT System;

(b) Any Entity proposing to interconnect a Settlement Only Generator (SOG) to the ERCOT System; or

(c) Any Resource Entity seeking to modify a Generation Resource, ESR, or SOG that is connected to the ERCOT System by:

(i) Increasing the real power rating from that shown in the latest Resource Registration data by one MW or greater within a single year;

(ii) Changing the inverter, turbine, generator, or power converter associated with a facility with an aggregate real power rating of ten MW or greater, unless the replacement is in-kind;

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| ***[PGRR118: Replace paragraph (ii) above with the following upon system implementation of NPRR1246:]***  (ii) Changing the inverter, turbine, generator, battery modules, or power converter associated with a facility with an aggregate real power rating of ten MW or greater, unless the replacement is in-kind; |

(iii) Modifying any control settings or equipment of Inverter-Based Resources (IBRs) that impact the dynamic response (such as voltage, frequency, and current injections) at the Point of Interconnection (POI) in a manner that is deemed to require further study in accordance with the process outlined in paragraph (5) of Section 5.5, Generator Commissioning and Continuing Operations;

(iv) Changing or adding a POI to a facility with an aggregate real power rating of ten MW or greater; or

(v) Increasing the aggregate nameplate capacity of a generator less than ten MW to ten MW or greater.

(2) For the purposes of Section 5, the term “generator” includes but is not limited to a Generation Resource, SOG, and ESR.

(3) For the purposes of determining the appropriate requirements in Section 5, a generator is considered a “large generator” if it currently has or is proposed to have an aggregate nameplate capacity of ten MW or greater. A generator is considered a “small generator” if it currently has or is proposed to have an aggregate nameplate capacity of less than ten MW.

(4) Notwithstanding paragraph (3), above, if a Resource Entity is proposing to increase the real power rating of an existing generator by one MW or greater but less than ten MW, that generator shall be considered a small generator for the purposes of the interconnection process described in Section 5.

(5) Notwithstanding paragraphs (3) and (4), above, if a Resource Entity is proposing to increase a generator’s real power rating by ten MW or more, or is proposing to increase a generator’s real power rating from less than ten MW to ten MW or more, that generator shall be considered a large generator for the purposes of the interconnection process described in Section 5.

(6) For the purposes of determining the appropriate requirements in Section 5, ERCOT may require two or more separate generator interconnection requests to the same substation to follow the interconnection process applicable to the large generators, if, following the proposed change, those generators would have an aggregate nameplate capacity of ten MW or greater, and the projects are proposed by the same Entity or Affiliates.

(7) For a new or modified generator that has been designated as a Self-Limiting Facility or as a component of a Self-Limiting Facility, the categorization of the generator as a small generator or large generator pursuant to paragraphs (3) through (5) above shall be determined using the Self-Limiting Facility’s established limit on the total MW Injection, or if applicable, the proposed increase in that value instead of the nameplate capacity of the Self-Limiting Facility.

5.2.2 Initiation of Generator Interconnection or Modification

(1) Any Entity subject to paragraph (1) of Section 5.2.1, Applicability, must initiate a Generator Interconnection or Modification (GIM) by submitting a completed request and providing all requested information and documentation through the online Resource Integration and Ongoing Operations (RIOO) system and paying the Generation Interconnection Fee described in the ERCOT Fee Schedule in the ERCOT Protocols.

(2) An Entity is not eligible to initiate or maintain a GIM if the Entity or any other owner of the project meets any of the company ownership (including affiliations) or headquarters criteria listed in Texas Business and Commerce Code, Sections 113.002(a)(2)(A)-(b)(2)(B) or 2274.0102(a)(2)(A)-(b)(2)(B), added by Act of June 18, 2021, 87th Leg., R.S., Ch. 975 (S.B. 2116). Any Entity that seeks to initiate a GIM shall submit an attestation Section 8, Attachment D, Attestation Regarding Compliance with the Lone Star Infrastructure Protection Act, confirming that the Entity does not meet any of the company ownership (including affiliations) or headquarters criteria listed in Texas Business and Commerce Code, Sections 113.002(a)(2)(A)-(b)(2)(B) or 2274.0102(a)(2)(A)-(b)(2)(B).

(3) An Entity is not eligible to initiate or maintain a GIM if the real property to be utilized by or for the project is owned or controlled, in whole or in part, by an Entity that meets any of the prohibited company ownership (including affiliations) or headquarters criteria identified in the Lone Star Infrastructure Protection Act, Texas Business and Commerce Code, Sections 113**.**002(a)(2)(A)-(b)(2)(B) or 2274.0102(a)(2)(A)-(b)(2)(B), added by Act of June 18, 2021, 87th Leg., R.S., Ch. 975 (S.B. 2116). The Interconnecting Entity (IE) must provide an attestation Section 8, Attachment D, confirming that such prohibited ownership or control does not apply to the real property.

(4) For the purposes of submitting a GIM:

(a) MW values should be determined at the generator terminals;

(b) If generation is serving new or existing Load then this must be identified in the RIOO request; and

(c) The latitude, longitude, and county are those of the station that includes the main power transformer for the subject facility.

(d) Failure to supply any required data may delay ERCOT processing of the interconnection application and studies and result in project cancellation.

(5) Payment of the Generation Interconnection Fee and all other related fees payable to ERCOT must be made using an Automated Clearing House (ACH) e-check or credit card via the RIOO system. This fee is non-refundable and must be paid even if ERCOT waives the Security Screening Study described in Section 5.3.1, Security Screening Study, or cancels the project due to failure to submit complete project information. The fee must be paid for each additional interconnection request (INR) even if a fee has previously been paid for another INR associated with the same generator.

(6) Upon receiving the application, ERCOT will assign the project a unique identification number (INR number) according to the following convention:

yrINRxxxx

where: yr is the year the generation is anticipated to be commissioned

INR indicates it is an interconnection request

xxxx is a sequence number beginning with 0001 (reset for each year)

(7) The proposed Commercial Operations Date for large generators meeting paragraph (1)(a) of Section 5.2.1 must be at least 15 months after the date the application is submitted or it will not be accepted. If conditions allow, the Commercial Operations Date can be changed after submission.

(8) ERCOT will notify the IE within ten days if the GIM application fails to include the applicable fees or the information that is necessary for the GIM application to be approved.

(9) If the IE fails to respond to ERCOT’s inquiries within ten Business Days, the GIM application will be deemed incomplete and returned to the IE using the online RIOO system. The IE will be notified that action is required via a RIOO system automated email.

(10) Once the application has been deemed materially complete, ERCOT will notify the IE of receipt of the completed application within ten Business Days.

(11) An ERCOT-designated point of contact will be assigned to oversee the interconnection study process and answer questions concerning the interconnection process. Once assigned, the ERCOT-designated point of contact will contact the IE and will be the primary ERCOT contact for the IE.

(12) Prior to the initial contact from the ERCOT-designated point of contact, an IE may direct questions concerning the GIM process to [ResourceIntegrationDepartment@ercot.com](mailto:ResourceIntegrationDepartment@ercot.com). All GIM-related email communication sent to the ERCOT-designated point of contact or to [ResourceIntegrationDepartment@ercot.com](mailto:GINR@ercot.com) shall include the associated project INR number in the subject field. If the communication is not specific to a project, the email subject field shall have the words “Generator Interconnection or Modification.”

(13) If a proposed generator that would use the same physical interconnection is to be built in phases with in-service dates more than three months apart, each phase should be treated as a separate interconnection request but may be included in the same study.

***5.2.3 Confidentiality***

(1) For any interconnection request involving a large generator, all data, documents or other information regarding the interconnection request, including the identity of the IE, will remain Protected Information until ERCOT receives written Notice from the IE that this information may be made public or until the IE requests a Full Interconnection Study (FIS). The FIS agreement may contain confidential cost estimates; it will remain Protected Information and will not be released to parties other than those who are members of the confidential Transmission Owner Generation Interconnection list except as otherwise required by a court or by regulatory authorities having jurisdiction.

(2) For any interconnection request involving a small generator, all data, documents, or other information regarding the interconnection request, including the identity of the IE, will remain Protected Information until ERCOT receives written Notice from the IE that this information may be made public or until ERCOT approves the IE’s completed Resource Registration form for inclusion in the Network Operations Model, whichever occurs first.

(3) Once the interconnection request is classified as a public project through one of these steps, ERCOT will make available the project description, the results of any economic analysis of Transmission Facilities needed to connect the generator costing over $25,000,000, and any information developed throughout the interconnection study process about transmission improvement projects that may be submitted for Regional Planning Group (RPG) review as a result of the new generation.

***5.2.4 Duty to Update Project Information and Respond to ERCOT and TDSP Requests for Information***

(1) Each IE shall provide current and accurate Resource Registration information (including information describing the generator, the MPT, and any other generator-owned transmission or distribution facilities) and contact information to ERCOT and the interconnecting Transmission and/or Distribution Service Provider (TDSP), and shall promptly update that information as soon as possible, but no later than ten Business Days, following any change to that information. All TDSPs will be sent notification when ERCOT reviews and acknowledges Registration information changes in the online RIOO system. Interconnection studies that are based on outdated, false, or inaccurate data may adversely affect the safety and reliability of the ERCOT System and can result in damage to generation or transmission equipment. Failure to provide accurate Resource Registration information and contact information may result in project delays or cancellation as described in Section 5.2.6, Project Cancellation Due to Failure to Comply with Requirements.

(2) Twice each year, each IE that has submitted an FIS request shall submit via the online RIOO system, for each proposed facility, the declaration in Section 8, Attachment A, Declaration of Resource Data Accuracy, stating that, as of the date of submission, the most recently submitted data on the current version of the Resource Registration form accurately reflects the anticipated characteristics of the proposed Resource and that the contact information is correct. The declaration shall be executed by an officer or other person having authority to bind the company and shall be submitted via the online RIOO system. Each IE shall submit one declaration for each project no earlier than March 1 and no later than March 15 each year, and shall submit another declaration for each proposed facility no earlier than September 1 and no later than September 15 each year. Failure to submit a declaration may result in project cancellation as described in Section 5.2.6.

(3) If, after receipt of updated Resource Registration data, ERCOT, the interconnecting TDSP, or the lead Transmission Service Provider (TSP) determines that any subsequent changes to the project or to the transmission system or distribution system may affect the reliable operation of the ERCOT System or otherwise warrant new studies, then ERCOT or the TDSP may require additional studies to be performed before the proposed generator is allowed to interconnect to the ERCOT System. The IE and TDSP(s) shall develop a schedule for completing the additional studies. The TDSP shall provide the FIS studies, if applicable, to ERCOT and the other TDSPs via the online RIOO system.

(4) If the IE increases the requested amount of capacity of any proposed large generator by more than 20% of the amount requested in the initial application, the IE shall submit a new interconnection request for the additional capacity or for the entire project.

(5) Within ten Business Days, the IE shall notify ERCOT and the interconnecting TDSP, or, if applicable, lead TSP of any change in ownership and shall provide conclusive documentary evidence of the ownership change (such as a purchase/sale agreement or a document executed by both parties confirming the transaction) via the online RIOO system. TDSPs will receive notification when ERCOT reviews and acknowledges the change. The new owner shall acknowledge the sale by submitting the Resource Registrations data showing the contact information for the new owners within 60 days. Failure to do so may result in project cancellation as described in Section 5.2.6.

(6) An IE shall not transfer all or any portion of a project, including the real property to be utilized by the project, to an Entity that meets any of the prohibited company ownership (including affiliations) or headquarters criteria identified in the Lone Star Infrastructure Protection Act, Texas Business and Commerce Code, Sections 113**.**002(a)(2)(A)-(b)(2)(B) or 2274.0102(a)(2)(A)-(b)(2)(B), added by Act of June 18, 2021, 87th Leg., R.S., Ch. 975 (S.B. 2116). If the IE for a project changes, then the new IE shall execute and submit a new attestation in RIOO within ten Business Days of the change in ownership. If the IE for a project relocates the IE’s headquarters, then the IE shall execute and submit a new attestation in RIOO within ten Business Days of the change in headquarters. If an IE or the real property that will be utilized by or for the project meets any of the prohibited company ownership or affiliation criteria, the project will be subject to cancellation in the manner described in Section 5.2.6.

(7) To support ERCOT resource adequacy and North American Electric Reliability Corporation (NERC) reliability assessment reporting requirements, the IE shall provide the following information via the online RIOO system as soon as possible, but in no event later than ten Business Days after the information is available or has been updated:

(a) Revisions to the initial projected Commercial Operations Date and if available, the energization and Initial Synchronization dates;

(b) Notification if any required air permits have been issued or permit applications have been withdrawn;

(c) Notification and dates for when generator construction has commenced or has been completed; and

(d) A declaration of adequate water supplies (Section 8, Attachment B, Declaration of Adequate Water Supplies), unless the generator is powered by wind or PhotoVoltaic (PV) equipment or is a battery Energy Storage System (ESS).

(8) If during the course of the GIM process, additional information is needed by ERCOT or the TDSP from the IE, the IE must respond to the request within ten Business Days. The IE will be notified that action is required by its ERCOT contact.

***5.2.5 Inactive Status***

(1) Any proposed large generator or proposed modification to a large generator subject to Section 5, Generator Interconnection or Modification, shall be given the status of “Inactive” if it has not met the conditions for inclusion in the ERCOT planning models, as specified in Section 6.9, Addition of Proposed Generation to the Planning Models, within two years of the date on which ERCOT posts the final FIS elements for the proposed generator to the Market Information System (MIS) Secure Area.

(2) Any proposed small generator or proposed modification to a small generator subject to Section 5 shall be given the status of “Inactive” if it has not met the conditions for inclusion in the ERCOT Network Operations Model within six months of the date on which the interconnection request was initiated.

(3) An IE may also elect “Inactive” status for any proposed generator after the FIS has been requested. For any interconnection-related study or process in progress when the IE elects “Inactive” status, the Entity conducting the study or performing the process may, at its own discretion, stop work on the study, not include the generator in the study, or discontinue any process related to this project.

(4) If a proposed small or large generator had met the requirements of Section 6.9 and is included in the planning models prior to electing a status change to “Inactive”, the proposed small or large generator shall be removed from the planning models during the next available planning model case build.

(5) A proposed small or large generator whose IE has elected “Inactive” status may elect to change to “Planned” status if ERCOT determines that it still meets the requirements of Section 6.9 and not more than two years have elapsed since the date any one or more of the studies in the most recent FIS was posted to the MIS Secure Area. If more than two years have elapsed, then the IE shall restart the FIS process for the project, unless ERCOT notifies the IE in writing that such studies are unnecessary.

(6) A proposed small or large generator that was given the status of “Inactive” because it had not met the conditions for inclusion in the ERCOT planning models shall be assigned the status of “Planned” and included in the ERCOT planning models if ERCOT determines that the generator meets the requirements of Section 6.9, and if not more than two years have elapsed since the date any one of more of the studies in the most recent FIS was posted to the MIS Secure Area. If more than two years have elapsed since posting of the FIS, then the IE shall restart the FIS process for the project, unless ERCOT notifies the IE in writing that such studies are unnecessary.

(7) For any proposed small or large generator with the status of “Inactive”, the IE associated with the project shall not be required to submit the semiannual declaration or any other information that would otherwise be required under this Planning Guide and ERCOT shall exclude the Resource’s capacity from each monthly Generator Interconnection Status report that is issued while the IE is in “Inactive” status.

(8) If a transmission-connected project has been “Inactive” for five years, ERCOT may cancel the project pursuant to Section 5.2.6, Project Cancellation Due to Failure to Comply with Requirements. At any time prior to cancellation of its project, an IE may submit a request to terminate the project’s “Inactive” status and return the project to “Planned” status if ERCOT determines that the IE has provided complete and updated project information.

(9) If a distribution-connected project has been “Inactive” for one year or the TDSP sends notification of a cancellation, ERCOT may cancel the project pursuant to Section 5.2.6. At any time prior to cancellation of its project, an IE may submit a request to terminate the project’s “Inactive” status and return the project to “Planned” status if ERCOT determines that the IE has provided complete and updated project information.

***5.2.6 Project Cancellation Due to Failure to Comply with Requirements***

(1) If at any time ERCOT determines that an IE with a project in “Planned” status has failed to meet any requirement of the ERCOT Protocols or this Planning Guide, including, without limitation, any requirement to provide materially accurate or complete information concerning any proposed small or large generator, ERCOT may send a notice of potential cancellation to the IE via email or through the online RIOO system. The notice of potential cancellation shall describe the failure and provide notice of ERCOT’s intent to cancel the project if the failure is not remedied.

(2) Within 60 days of receiving ERCOT’s notification of potential cancellation, the IE shall correct the failure or provide information that explains to ERCOT’s satisfaction why the IE cannot reasonably comply with ERCOT requirements or why the failure to comply cannot reasonably be remedied.

(3) If the IE fails to respond to ERCOT’s notice of potential cancellation within 60 days, or if ERCOT determines that, notwithstanding the IE’s response, the IE has neither satisfactorily resolved the deficiency nor provided an explanation that, in ERCOT’s sole judgment, justifies the deficiency, ERCOT may cancel the IE’s project no sooner than 30 days after providing notice to the IE that the project will be canceled.

(4) If at any time before cancellation ERCOT determines that the IE did not fail to meet any requirement of the ERCOT Protocols or the Planning Guide or that any failure has been satisfactorily remedied, then ERCOT shall notify the IE that the concern has been resolved and the potential cancellation has been rescinded.

(5) At any time prior to cancellation, an IE may request a change in the status of the project to “Inactive” status as provided in Section 5.2.5, Inactive Status.

(6) Once a project is canceled, it is permanently removed from the GIM process and must be resubmitted to be reconsidered for interconnection.

***5.2.7 Voluntary Project Cancellation***

(1) An IE may cancel the GIM process at any time upon providing written notice of cancellation via the RIOO system. The RIOO system will notify ERCOT and TDSPs of any cancellation. Cancellation of the GIM process does not affect any obligation the IE may have previously incurred, including any obligation to render payment to the TSP for FIS studies.

***5.2.8 Interconnection Agreements and Procedures***

5.2.8.1 Standard Generation Interconnection Agreement for Transmission-Connected Generators

(1) As a condition for obtaining transmission service, an IE for any transmission-connected generator must execute a Standard Generation Interconnection Agreement (SGIA) with its TSP. A template of the SGIA can be found on the ERCOT website.

(2) The TSP must submit a change request via the online RIOO system to transmit a copy of the signed SGIA to ERCOT within ten Business Days of execution.

(3) The TSP must submit a change request via the online RIOO system to transmit a copy of any public, financially-binding agreement between the IE and the TSP, other than an SGIA, under which the interconnection for a transmission-connected generator will be constructed. The agreement must be submitted within ten Business Days of execution.

(4) The TSP must submit a change request via the online RIOO system within ten Business Days of receiving both a notice to proceed with construction of the interconnection for the transmission-connected generator and the financial security sufficient to fund the interconnection facilities pursuant to either agreement addressed in paragraphs (2) or (3) above.

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| ***[PGRR088: Insert paragraph (5) below upon system implementation:]***  (5) Within ten Business Days of providing the TSP both the notice to proceed with construction of the interconnection for the Generation Resource and the financial security sufficient to fund the interconnection facilities pursuant to the SGIA, the IE must submit a change request via the online RIOO system to provide the financial security amount if it is not redacted in the public version of the SGIA filed with the Public Utility Commission of Texas (PUCT). ERCOT will include in the monthly Generator Interconnection Status report the name of the interconnecting TSP and the total amount of financial security sufficient to fund the interconnection facilities, if provided by the IE. |

5.2.8.2 Interconnection Agreement for Distribution-Connected Generators

(1) Each IE for a distribution-connected generator must provide ERCOT and the relevant TSP a copy of its fully executed applicable Distribution Service Provider (DSP) interconnection agreement, or a letter attesting that the interconnection agreement with the DSP has been executed, as a condition for interconnecting a proposed generation project at distribution voltage in ERCOT.

5.2.8.3 Provisions for Municipally Owned Utilities and Cooperatives

(1) A Municipally Owned Utility (MOU) or Electric Cooperative (EC) developing a proposed generator that will interconnect to its own system is not required to execute an interconnection agreement. However, an MOU or EC must execute an SGIA or other appropriate interconnection agreement if its proposed generator would interconnect with another TDSP’s facilities.

(2) A letter from a duly authorized official from the MOU or EC confirming the Entity’s intent to construct and operate the proposed generator and to interconnect such generator with its own transmission or distribution facilities will be deemed by ERCOT to be sufficient as a public commitment by the MOU or EC and will have the same impact as an interconnection agreement for all purposes. The MOU or EC shall submit the letter to ERCOT via the online RIOO system.

***5.2.9 Self-Limiting Facilities***

(1) An IE may elect to designate any proposed new or modified Generation Resource or ESR as a component of a Self-Limiting Facility for the purposes of the GIM process. Upon such designation, all studies and tests undertaken pursuant to this Section 5, Generator Interconnection or Modification, or that may otherwise be required as a condition for interconnection shall use the Self-Limiting Facility’s proposed MW Injection limit as the maximum potential injection to the ERCOT System, and, if applicable, shall use the Self-Limiting Facility’s MW Withdrawal limit as the maximum potential withdrawal from the ERCOT System, notwithstanding the nameplate capacity values provided.

(2) Any Generation Resource or ESR that has been studied and tested in the GIM process as a component of a Self-Limiting Facility may not, at any time during or after this process, increase the MW Injection limit or MW Withdrawal limit of the Self-Limiting Facility beyond the value or values that were used in these studies and tests without re-initiating the GIM process to evaluate the impacts of the increased value or values.

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| ***[PGRR092: Replace Section 5.2.9 above upon system implementation of NPRR1077:]***  ***5.2.9 Self-Limiting Facilities***  (1) An IE may elect to designate any proposed new or modified Generation Resource, ESR, or SOG as a component of a Self-Limiting Facility for the purposes of the GIM process. Upon such designation, all studies and tests undertaken pursuant to this Section 5, Generator Interconnection or Modification, or that may otherwise be required as a condition for interconnection shall use the Self-Limiting Facility’s proposed MW Injection limit as the maximum potential injection to the ERCOT System, and, if applicable, shall use the Self-Limiting Facility’s MW Withdrawal limit as the maximum potential withdrawal from the ERCOT System, notwithstanding the nameplate capacity values provided.  (2) Any Generation Resource, ESR, or SOG that has been studied and tested in the GIM process as a component of a Self-Limiting Facility may not, at any time during or after this process, increase the MW Injection limit or MW Withdrawal limit of the Self-Limiting Facility beyond the value or values that were used in these studies and tests without re-initiating the GIM process to evaluate the impacts of the increased value or values. |

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| ***[PGRR115: Insert Section 5.2.10 below upon system implementation of NPRR1234:]***  ***5.2.10 Required Interconnection Equipment***  (1) Each POI for a Generation Resource, ESR, or SOG interconnected at transmission voltage to the ERCOT System must have a permanent configuration consisting of a station with breakers capable of interrupting fault current to sectionalize the transmission lines connecting the station to the ERCOT System. The breakers shall be under the remote control of the applicable Transmission Operator (TO) and capable of being operated remotely to comply with an instruction from ERCOT. |

5.3 Interconnection Study Procedures for Large Generators

(1) The provisions in this Section establish the procedures for conducting the Security Screening Study and Full Interconnection Study (FIS) for each new or modified large generator, as that term is defined by paragraph (3) of Section 5.2.1, Applicability.

5.3.1 Security Screening Study

(1) For each Generator Interconnection or Modification (GIM) submitted for a large generator, ERCOT will conduct a steady-state Security Screening Study, including power-flow and transfer studies, based on the expected in-service year to identify potential generation dispatch limitations based on the site proposed by the Interconnecting Entity (IE).

(a) The Security Screening Study is a high-level review of the project and generally includes a number of initial assumptions from both ERCOT and the IE. In accordance with P.U.C. Subst. R. 25.198, Initiating Transmission Service, ERCOT will establish the scope of the Security Screening Study that will include a determination of the need for a more in-depth Subsynchronous Resonance (SSR) study. The SSR vulnerability of all Generation Resources applicable under Section 5, Generator Interconnection or Modification, will be assessed pursuant to Protocol Section 3.22.1.2, Generation Resource or Energy Storage Resource Interconnection Assessment.

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| ***[PGRR118: Replace paragraph (a) above with the following upon system implementation of NPRR1246:]***  (a) The Security Screening Study is a high-level review of the project and generally includes a number of initial assumptions from both ERCOT and the IE. In accordance with P.U.C. Subst. R. 25.198, Initiating Transmission Service, ERCOT will establish the scope of the Security Screening Study that will include a determination of the need for a more in-depth Subsynchronous Resonance (SSR) study. The SSR vulnerability of all Generation Resources and Energy Storage Resources (ESRs) applicable under Section 5, Generator Interconnection or Modification, will be assessed pursuant to Protocol Section 3.22.1.2, Generation Resource or Energy Storage Resource Interconnection Assessment. |

(b) At its sole discretion, ERCOT may waive the requirement for a Security Screening Study for a GIM.

(2) The results of the Security Screening Study will provide an indication of the level at which the proposed generator can expect to operate simultaneously with other known generators in the area before significant transmission additions or enhancements may be required. During the course of the Security Screening Study, ERCOT may consult with the affected Transmission Service Provider(s) (TSP(s)), if needed, to identify the most efficient means of providing transmission service.

(3) During the Security Screening Study phase of the GIM process, and in accordance with the Protocols, all data, documents, and other information required by ERCOT from an IE related to a request for interconnection are considered Protected Information pursuant to Protocol Section 1.3.1.1, Items Considered Protected Information, to the extent that such information is not otherwise publicly available. Accordingly, ERCOT shall not publicly release any of the protected data, documents, or other information during the Security Screening Study phase except to TSPs. Information about interconnection requests in the Security Screening Study phase will only be released publicly in aggregated amounts.

(4) Upon completion of the Security Screening Study, ERCOT will present the IE with a preliminary report that will inform the IE about the suitability of the proposed Point of Interconnection (POI) for the proposed MW amount. This report does not imply any commitment by ERCOT or any TSP to recommend or construct transmission additions or enhancements. The report will also contain a description of the SSR assessment performed as part of the Security Screening Study and any conclusions resulting from the SSR assessment.

(5) Within 180 days of the date ERCOT notifies the IE of the Security Screening Study results, the IE must notify ERCOT, via the online Resource Integration and Ongoing Operations (RIOO) system, of its desire to pursue an FIS, otherwise ERCOT shall consider the GIM withdrawn by the IE. ERCOT will begin initiation and coordination of the FIS only after receiving this Notification and all required items from the IE for the FIS application to be approved. TSPs will receive a RIOO system automated email when ERCOT determines the FIS application is complete.

(6) After the expiration of the 180-day period, an IE must submit a new GIM for a Security Screening Study and must again pay the appropriate fee. The IE will also be required to submit any updates or changes in the project’s data to ERCOT.

(7) For any interconnection request that proposes either a large generator that would be interconnected at distribution voltage or a qualifying modification to a large generator that is interconnected at distribution voltage, ERCOT will not initiate a Security Screening Study or propose any FIS kickoff meeting until the IE first provides written confirmation from the affected Distribution Service Provider (DSP) stating that the DSP has evaluated the proposed project, determined that the interconnection of the generator at distribution voltage is electrically feasible, and identified the necessary upgrades to accommodate the proposed interconnection. In conducting a Security Screening Study for such an interconnection request, ERCOT shall evaluate only the transmission-level impacts, if any, of the proposed generator, and the affected DSP shall provide ERCOT any information concerning the DSP’s facilities or the proposed generator interconnection as may be requested by ERCOT for the purpose of completing the Security Screening Study.

5.3.2 Full Interconnection Study

(1) An FIS consists of the set of steady-state, stability, short-circuit, facility, and/or other relevant studies that are necessary to determine the reliability impact of a large generator on affected Transmission Facilities and identify the Transmission Facilities that are needed to reliably interconnect the new or modified generator to the ERCOT System. The FIS is not intended to determine the deliverability of power from the proposed Generation Resource to market or to ensure that the proposed Generation Resource does not experience any congestion-related curtailment.

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| ***[PGRR118: Replace paragraph (1) above with the following upon system implementation of NPRR1246:]***  (1) An FIS consists of the set of steady-state, stability, short-circuit, facility, and/or other relevant studies that are necessary to determine the reliability impact of a large generator on affected Transmission Facilities and identify the Transmission Facilities that are needed to reliably interconnect the new or modified generator to the ERCOT System. The FIS is not intended to determine the deliverability of power from the proposed Generation Resource or ESR to market or to ensure that the proposed Generation Resource or ESR does not experience any congestion-related curtailment. |

(2) For an interconnection request involving a large generator interconnecting at distribution voltage, the FIS shall evaluate only the transmission-level impacts, if any, of the proposed generator, and the affected DSP shall provide the lead TSP all information concerning the DSP’s facilities or the proposed generator interconnection as may be requested by the TSP for the purpose of completing any one or more FIS studies.

(3) To initiate an FIS, the IE must submit each of the following via the online RIOO system:

(a) A request to proceed with the FIS via the online RIOO system;

(b) Complete Resource Registration data in the format prescribed by ERCOT with applicable information required for interconnection studies identified in the Resource Registration Glossary for the applicable Resource type. This information includes, among other things, the appropriate dynamic model for the proposed generator and results of the model quality tests and associated simulation files as described in paragraph (5)(c) of Section 6.2, Dynamics Model Development, subject to performance and usability verification by the lead TSP with approval from ERCOT through the FIS process. Dynamic model data shall be provided using the appropriate dynamic model template. Paragraph (5) of Section 6.2 and the Dynamics Working Group Procedure Manual contain more detail and IE dynamics data requirements. Data submitted for transient stability models shall be compatible with the current version of the planning and operations model software as described in the Dynamics Working Group Procedure Manual. If no compatible model exists, the IE shall work with a consultant or software vendor to develop and supply accurate/appropriate models along with other associated data. These models shall be incorporated into the standard model libraries of all software packages;

(c) An FIS Application Fee as described in the ERCOT Fee Schedule in the ERCOT Nodal Protocols, with the MW amount determined based on:

(i) The MW of additional installed capacity for GIMs not meeting paragraph (1)(c)(ii) of Section 5.2.1, Applicability; or

(ii) Total MW capacity for GIMs meeting paragraph (1)(c)(ii) of Section 5.2.1;

(d) Proof of site control as described in Section 5.3.2.1, Proof of Site Control; and

(e) A declaration in Section 8, Attachment C, Declaration of Department of Defense Notification, certifying that:

(i) The IE has notified the Department of Defense (DOD) Siting Clearinghouse of the proposed Generation Resource and requested an informal or formal review as described in 32 C.F.R. § 211.1; or

(ii) The IE’s proposed Generation Resource is not required to provide notice to the DOD and Federal Aviation Administration (FAA) because the project does not meet the criteria requiring notice to the FAA under 14 C.F.R. § 77.9.

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| ***[PGRR118: Replace paragraph (e) above with the following upon system implementation of NPRR1246:]***  (e) A declaration in Section 8, Attachment C, Declaration of Department of Defense Notification, certifying that:  (i) The IE has notified the Department of Defense (DOD) Siting Clearinghouse of the proposed Generation Resource or ESR and requested an informal or formal review as described in 32 C.F.R. § 211.1; or  (ii) The IE’s proposed Generation Resource or ESR is not required to provide notice to the DOD and Federal Aviation Administration (FAA) because the project does not meet the criteria requiring notice to the FAA under 14 C.F.R. § 77.9. |

(4) The IE can request an FIS for an active project before completion of the Security Screening Study or at any other time after ERCOT deems the initial GIM application complete, but must comply with the timeline set forth in paragraph (5) of Section 5.3.1, Security Screening Study. Requesting both studies at the same time may shorten the overall time to complete the GIM process due to overlap of work on both studies.

(5) Payment of the ERCOT FIS Application Fee does not affect the IE’s independent responsibility to pay for FIS studies conducted by the TSP or for any DSP studies.

(6) ERCOT shall manage a confidential email list (Transmission Owner Generation Interconnection) to facilitate communication of confidential GIM-related information among TSP(s) and ERCOT. Membership to this email list will be limited to ERCOT and appropriate TSP personnel.

(7) If any of the items required for the FIS request pursuant to paragraph (3) above are deemed not acceptable by ERCOT or are not submitted, then the IE must submit any omitted items and resolve and resubmit any deficient items. If the FIS request is not deemed complete by ERCOT within 60 days of submission of the FIS request, the FIS will be considered to have not been requested for the purpose of meeting paragraph (5) of Section 5.3.1. If the 180-day limit specified in paragraph (5) of Section 5.3.1 has expired, the GIM will be cancelled immediately. If the 180-day limit has not expired and the deficiency is not resolved before the 180-day limit, the GIM will be cancelled upon expiration of the 180-day limit.

5.3.2.1 Proof of Site Control

(1) To establish proof of site control for the purposes of paragraph (3)(d) of Section 5.3.2, Full Interconnection Study, the IE must demonstrate through an affiliated company, through a trustee, or directly in its name that:

(a) The IE is the owner in fee simple of the real property to be utilized by the facilities for which any new generation interconnection is sought;

(b) The IE holds a valid written leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought;

(c) The IE holds a valid written option to purchase or obtain a leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought; or

(d) The IE holds a duly executed written contract to purchase or obtain a leasehold interest in the real property to be utilized by the facilities for which new generation interconnection is sought.

(2) The IE must notify ERCOT of any substantive change in status of the arrangement used to demonstrate site control.

(3) If the IE fails to maintain site control at any point before the date the generator is fully constructed, ERCOT will consider the interconnection request withdrawn as of the date of the loss of site control unless the applicant can show within 30 days that it has re-established site control or has established control of a new site that would not result in any material modification of any interconnection study requested under the current application.

5.3.2.2 Full Interconnection Study Scoping Process

(1) Within ten Business Days of the IE’s submission of the items required by paragraph (3) of Section 5.3.2, Full Interconnection Study, ERCOT will designate a TSP to lead the FIS and will contact that TSP to schedule an FIS kickoff meeting. ERCOT will select the lead TSP based upon a preliminary analysis of the most likely POI, or for a distribution-connected project, the most likely transmission substation for the proposed interconnection. If an IE has previously developed a generation project in ERCOT with the selected TSP, the IE, ERCOT, and the TSP may agree to forgo the kickoff meeting. If they so agree, the timeline for the IE and TSP to reach agreement on the FIS scope will start on the date ERCOT notifies the TSP of the IE’s decision to proceed with the FIS.

(2) ERCOT will notify all other TSP(s) of the FIS request via the online RIOO system. It is the responsibility of each TSP to determine if the proposed project would have a material impact on its Transmission Facilities and to decide whether and to what extent it should participate in the FIS. The assistance of more than one TSP may be required in areas where Transmission Facilities are provided by multiple TSPs. In these cases it may be necessary for the IE to execute study agreements with multiple TSPs.

(3) Each TSP desiring to participate in the FIS shall promptly notify the lead TSP via email. The lead TSP must include all interested TSPs in the FIS to the extent such involvement is reasonable.

(4) At the FIS kickoff meeting, the IE will present the proposed project and ERCOT will review the results of the Security Screening Study. The lead TSP will facilitate a general discussion of the preliminary study scope of work for the FIS.

(5) Any SSR studies required under Protocol Section 3.22.1.2, Generation Resource or Energy Storage Resource Interconnection Assessment, shall be scoped at the same time as the FIS but do not need to be included as part of the FIS.

(6) Following the kickoff meeting, the IE and the TSP(s) must agree to the terms of the FIS study as a condition for proceeding with the FIS studies. The FIS study agreement must include all assumptions, timetables, study costs, and payment schedules, and the determination of all requirements for interconnection. The IE and TSP(s) may divide the FIS into distinct study phases, each requiring IE approval to proceed. All payments for the FIS studies shall be remitted directly to the TSP(s) completing the studies.

(a) The FIS must include all study elements required by Section 5.3.2.4, Full Interconnection Study Elements, unless ERCOT and the TSP(s) determine that one or more studies should not be performed. ERCOT and the TSP(s) shall consider the Security Screening Study and any information provided by the IE when developing the FIS scope.

(b) The requirement for one or more of the FIS study elements identified in Section 5.3.2.4 may be waived for projects involving any distribution-connected generator or any project meeting paragraph (1)(c)(ii) of Section 5.2.1, Applicability, if mutually agreed upon by ERCOT and the TSP(s). In order to aid in the determination of whether or not FIS study waivers are appropriate, ERCOT and the TSP(s) may request additional data and information from the IE beyond what is required by Section 5.2.2, Initiation of Generator Interconnection or Modification, Section 5.3.2, and Section 5.5, Generator Commissioning and Continuing Operations.

(7) The TSP(s) shall submit the FIS study agreement via the online RIOO system. The online RIOO system will provide notification via an email to ERCOT and other TSP(s) of availability of the FIS study agreement for review and comment. Comments must be made within ten Business Days.

(8) If the IE and TSP(s) cannot agree to the terms of the FIS study within 60 days, ERCOT will attempt to mediate an agreement. If mediation is unsuccessful, ERCOT will cancel the interconnection request if the IE does not agree to the proposed terms within ten days of being notified that the mediation was unsuccessful.

(9) The TSP shall notify ERCOT by submitting a change request via the online RIOO system within ten Business Days of the following events:

(a) Signing of the FIS study agreement; and

(b) Funding of the FIS study agreement.

5.3.2.3 Full Interconnection Study Description and Methodology

(1) The FIS consists of a series of distinct study elements. The specific elements that will be included in a particular FIS will be stated in the FIS agreement, and not all of the study elements specified below must be included if the IE and the TSP agree that one or more studies are unnecessary. The primary purpose of the FIS is to determine the most effective and efficient manner in which to achieve the proposed project while continuing to maintain the reliability of the ERCOT System by ensuring compliance with all North American Electric Reliability Corporation (NERC) Reliability Standards, Protocols, this Planning Guide and the Operating Guides. The scenarios and base cases being used for these studies to determine potential transmission limitations will be documented in the FIS study scope.

(2) Each proposed generator that requires a separate physical transmission interconnection will be treated as an individual study to be analyzed separately from all other such requests unless otherwise agreed by the IE and TSP(s) in the interconnection study agreement.

(3) The FIS process includes developing and analyzing various computer model simulations of the existing and proposed ERCOT generation/transmission system. The results from these simulations will be utilized by the TSP(s) to determine the impact of the proposed interconnection.

(4) The TSP(s) will examine normal transmission operations as well as potentially adverse, or contingency, conditions in order to identify and analyze the reliability and effectiveness of various interconnection design alternatives in alleviating or mitigating any undesirable performance of the interconnection under a variety of operating conditions. The study should include analysis demonstrating the adequate reliability of any temporary interconnection configurations.

(5) In comparing interconnection alternatives, the TSP(s) will consider such information as interconnection cost and construction schedule, impact to short- and long-range reliability, operational flexibility, and compatibility with future transmission plans. The TSP(s) may consider interconnection alternatives not suggested by the IE.

(6) The TSP(s) may update the final FIS report to reflect changes to the ERCOT System (i.e., new Standard Generation Interconnection Agreements (SGIAs)) after the report is completed and before the SGIA is executed.

5.3.2.4 Full Interconnection Study Elements

5.3.2.4.1 Steady-State Analysis

(1) The steady-state interconnection study base case shall be created from the most recently approved Steady State Working Group (SSWG) base case. TSP(s) or ERCOT may remove any future (currently nonexistent) facility from the steady-state interconnection study base case if either determines that the facility may significantly affect the interconnection study results and the facility has not already undergone appropriate review by the Regional Planning Group (RPG). In addition, ERCOT and TSP(s) may include other publicly disclosed projects in the steady-state interconnection study base case. ERCOT may request a list of the interconnection requests included in the FIS by the TSP(s). Modifications to the SSWG base case, necessary to evaluate the study results, shall be documented in the FIS but not to the extent that documenting the modifications would reveal Protected Information.

(2) The TSP(s) shall perform contingency analyses as required by the NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides and identify any additional facilities that may be necessary to ensure that expected system performance conforms to these standards. The study shall identify any system limitations that would prevent the generator from achieving full output.

(3) Loss-of-generation analyses shall assume that the lost generation will be replaced from all remaining Generation Resources in proportion to their nominal capacity (i.e., inertial response), and shall consider the generation limit of each Generation Resource.

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| ***[PGRR118: Replace paragraph (3) above with the following upon system implementation of NPRR1246:]***  (3) Loss-of-generation analyses shall assume that the lost generation will be replaced from all remaining Generation Resources and/or ESRs in proportion to their nominal capacity (i.e., inertial response and primary frequency response), and shall consider the generation limit of each Generation Resource and ESR. |

(4) The lead TSP is responsible for completing an analysis of any contingency events or Outages that could result in a violation of the NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides, regardless of which TSP owns the facilities involved. The results of this analysis will be shared with TSP(s) that have facilities involved in planning criteria violations and those affected TSP(s) will be responsible for evaluating the validity of the anticipated violations.

5.3.2.4.2 System Protection (Short-Circuit) Analysis

(1) The FIS agreement will specify locations where available short-circuit fault duty will be identified, calculated, and documented.

(2) If any of the required transmission system facilities identified in the FIS facility study associated with the GIM result in violations of the TSP’s short circuit criteria, the TSP shall plan and provide facilities to address such violations. The TSP will determine the maximum available fault currents at the interconnection substation for determining switching device interrupting capabilities and protective relay settings.

5.3.2.4.3 Dynamic and Transient Stability (Unit Stability, Voltage) Analysis

(1) At the discretion of the lead TSP or ERCOT, the lead TSP will perform transient stability studies if necessary to meet NERC Reliability Standards, Protocols, this Planning Guide or the Operating Guides applicable to the generator or to the ERCOT System. If the lead TSP conducting a stability study decides such study is not required, the lead TSP shall provide a written justification in lieu of the study report.

(2) When performing such studies, all operational and planned generators which have met the requirements of Section 6.9, Addition of Proposed Generation to the Planning Models, in the area of the study shall be dispatched at full net output in at least one of the scenarios/cases evaluated by the lead TSP. The dispatch level may be reduced to respect any published stability limits or to reach a power flow solution. If any Generation Resources in the study area are not dispatched at full output, the study report shall include the technical rationale. Any resulting increase in generation will be balanced as addressed in the FIS agreement.

(3) Stability study base cases shall be formed from the latest available approved SSWG base cases consistent with the most recently approved Dynamics Working Group (DWG) stability data base. The initial transmission configuration in the area of study included in a stability study base case shall be identical to that used in the steady-state studies of the same period. Any previously identified transmission improvements that will not be in service prior to the Initial Synchronization of the proposed generator shall not be included in the stability study base case.

(4) Transient stability studies will analyze the performance of the proposed generator and the ERCOT System in terms of angular stability, voltage stability and excessive frequency excursions. Additional studies may include small signal stability or critical clearing time analyses where the number of cycles for which a transmission line can sustain a fault without causing loss of synchronism of any of the Resource is compared to the response of the protection systems. Such studies should incorporate reasonable and conservative assumptions regarding plant operating conditions. Proposed analyses shall be identified and defined in the FIS agreement.

(5) All stability studies shall be performed in accordance with NERC Reliability Standards, Protocols, this Planning Guide and the Operating Guides. The stability study portion of the FIS shall document any instability identified through performance of the study.

(6) If the TSP identifies instability (other than instability identified for extreme events) in the stability portion of the FIS, the following steps will be taken after the FIS is deemed complete and posted to the Market Information System (MIS) Secure Area in accordance with Section 5.3.2.5, FIS Report and Follow-up:

(a) The IE and TSP shall investigate alternative solutions to resolve the instability through changes to the proposed generator and report their findings to ERCOT. If changes to the generator are determined by ERCOT to be feasible, the IE shall implement the changes prior to Initial Synchronization.

(b) If ERCOT determines that changes to the proposed generator are not feasible to resolve the identified instability, ERCOT shall notify the TSP and IE, and the TSP shall investigate a transmission improvement to resolve the instability and report its findings to ERCOT.

(c) If ERCOT determines that a proposed transmission improvement is feasible to resolve the identified instability, the TSP shall proceed with implementing the transmission improvement, in accordance with Protocol Section 3.11.4, Regional Planning Group Project Review Process, identified in paragraph (6)(b) above after the requirements of Section 6.9 have been met for the proposed generator.

(d) If the transmission improvement identified in paragraph (6)(b) or (c) above cannot be implemented prior to Initial Synchronization, ERCOT shall determine the appropriate operating limit, including evaluating the feasibility of a proposed Remedial Action Scheme (RAS) that may mitigate the limit when a market solution is not available, in accordance with Section 5.3.5, ERCOT Quarterly Stability Assessment, prior to Initial Synchronization.

5.3.2.4.4 Facility Study

(1) The facility study provides complete details of the transmission and substation facilities needed to connect a generator to a new or existing substation on the ERCOT Transmission Grid. These details include conceptual design descriptions, construction milestones, and cost estimates. A facility study is not required for a large generator interconnecting directly to a DSP’s distribution facilities unless transmission facilities are required to be constructed.

(2) In conducting the facility study, if the lead TSP determines that the costs of the Transmission Facilities needed to connect the proposed generator are expected to exceed $25,000,000, the lead TSP will submit a change request via the online RIOO system to communicate this finding to ERCOT and other TSP(s) within ten Business Days of such determination. This communication will include all available information upon which that finding is based, including but not limited to:

(a) A description of the Transmission Facilities needed to connect the proposed generator;

(b) Information necessary to modify a power-flow case to include those facilities;

(c) Any information obtained from the IE that would be helpful in modeling the proposed generator for the study; and

(d) The estimated cost of the facilities.

(3) The lead TSP will notify the RPG email list via email within ten Business Days following the later of the completion of the facility study or the signing of an SGIA when the cost of the Transmission Facilities needed to connect the generator is expected to be greater than $25,000,000.

5.3.2.5 FIS Report and Follow-up

(1) The TSP(s) will submit to ERCOT and to the other TSP(s) via the online RIOO system a preliminary report of findings and recommendations for each of the FIS elements.

(2) Any questions, comments, proposed revisions, or clarifications by any party shall be made in writing to the TSP(s) within ten Business Days after the issuance of each study report, which may cover one or more study elements. ERCOT can extend this review period by an additional 20 Business Days and an email will be sent to notify the affected TSP(s) and the IE that it needs additional time to review the report.

(3) After considering the information received from ERCOT and other TSPs, the study element(s) report will be deemed complete and a final report shall be provided, via the online RIOO system, to ERCOT and all TSPs. The TSP(s) conducting the FIS shall submit via the online RIOO system, the SSR analysis, if required, as a separate document from the remainder of the report.

(4) Each final study element report will be available via the online RIOO system after the report has been deemed complete and marked “final” and will be posted to the MIS Secure Area within ten Business Days. Coincident with posting of the final FIS study element reports to the MIS Secure Area, ERCOT will notify the TSP and the IE when each study element report is posted. The TSP shall provide a copy of each final report to the IE upon request.

(5) The study element(s) report shall not contain sensitive information including, but not limited to, confidential plant design information including stability study model data and parameters and contingencies causing instability. The TSP(s) shall provide this information to ERCOT and other TSP(s) upon request.

(6) The TSP issuing the final FIS element(s) report shall indicate that the report is the final report required by the FIS. At the end of the ten Business Day review period following the issuance of the final FIS element(s) report, the FIS will be deemed complete and the IE and TSP may execute an SGIA.

(7) The final FIS element(s) report shall be deemed complete and marked “final” via the online RIOO system at least 45 days prior to the quarterly stability assessment deadline defined in paragraph (2) of Section 5.3.5, ERCOT Quarterly Stability Assessment.

(8) Should the IE wish to proceed with any proposed transmission-connected project, the IE must execute a new or amended SGIA with the appropriate TSP within 180 days following the completion of the FIS (includes all major study element(s) reports). Failure to do so may result in a cancellation as described in Section 5.2.6, Project Cancellation Due to Failure to Comply with Requirements.

(9) During the time after the FIS is completed and before Initial Synchronization, the IE shall notify both ERCOT and the lead TSP(s) of any changes to the assumptions used for the FIS along with a detailed written explanation of why the changes were made. If the changes substantially differ from the assumptions used for the FIS, ERCOT and the TSP(s) shall determine the impact of the changes on the results of the FIS and, if applicable, SSR studies. If the changes are determined by ERCOT and lead TSP(s) to have the potential to materially alter the conclusions documented in the FIS, the lead TSP(s) will make appropriate modifications to one or more FIS study elements. The updated FIS reports will be submitted via the online RIOO system. Any questions, comments, proposed revisions, or clarifications by any party shall be made in writing to the TSP(s) within ten Business Days after the issuance of an updated study report. Initial Synchronization of the generator may be delayed pending completion of these modifications to the FIS.

5.3.3 ERCOT Economic Study

(1) In accordance with paragraph (2) of Protocol Section 3.11.6, Generation Interconnection Process, ERCOT shall perform an independent economic analysis of the Transmission Facilities needed to connect a generator to the ERCOT Transmission Grid, including any new substation that may be needed, and that are expected to cost more than $25,000,000. This economic analysis is performed only for informational purposes, and no ERCOT endorsement will be provided.

(2) The IE shall provide to ERCOT any requested information necessary to accurately represent the generator in the economic study.

(3) ERCOT will endeavor to complete this economic study within 90 days, and will inform the TSP(s) and IE if additional time is required. ERCOT will provide the results of the economic study to the IE and to the TSP(s) via the online RIOO system.

5.3.4 Reactive Study

(1) The IE and the TSP shall coordinate with one another for the IE to complete the reactive study and for the TSP to have the needed data to start the FIS stability study.

(a) The TSP shall send the preliminary short circuit current for the proposed POI based on the most recent System Protection Working Group (SPWG) base case to the IE within 15 Business Days of an IE request after the FIS study agreement has been signed.

(b) The IE shall complete a preliminary reactive study to determine the reactive devices that will be needed to meet ERCOT requirements. Once determined, the IE shall add the reactive devices, if any, to the Resource Registration data and make the updated data available to ERCOT and the TSP via the online RIOO system.

(c) The TSP shall start the FIS stability study after all the required data is available via the online RIOO system.

(2) Once the TSP has completed the FIS short circuit study and it is approved by ERCOT and posted to the MIS Secure Area, the IE shall complete and submit the final reactive study via the online RIOO system.

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| ***[PGRR076: Insert paragraph (3) below upon system implementation:]***  (3) For GINR projects attempting to meet the next quarterly stability assessment deadline, pursuant to Section 5.3.5, ERCOT Quarterly Stability Assessment, ERCOT shall approve or comment on the final reactive study according to the following timeline:  (a) Within 15 days if submitted at least 45 days before the quarterly stability assessment deadline. Resubmissions submitted 30 days or more before the quarterly stability assessment deadline will be reviewed and returned within ten days;  (b) On the day of the quarterly stability assessment deadline if submitted 30 to 44 days prior to the quarterly stability assessment deadline; or  (c) Without guarantee that it will be reviewed prior to the quarterly stability assessment deadline if submitted less than 30 days prior to the quarterly stability assessment deadline. |

5.3.5 ERCOT Quarterly Stability Assessment

(1) ERCOT shall conduct a stability assessment every three months to assess the impact of planned large generators connecting to the ERCOT System. The assessment shall derive the conditions to be studied with consideration given to the results of the FIS stability studies for large generators, with planned Initial Synchronization in the period under study. ERCOT may study conditions other than those identified in the FIS stability studies.

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| ***[PGRR115: Replace paragraph (1) above with the following upon system implementation of NPRR1234:]***  (1) ERCOT shall conduct a stability assessment every three months to assess the impact of planned large generators and Large Loads subject to the requirements of Section 9.2.1, Applicability of the Large Load Interconnection Study Process, connecting to the ERCOT System.  (a) For large generators with planned Initial Synchronization in the period under study, the assessment shall derive the conditions to be studied with consideration given to the results of the FIS stability studies.  (b) For new Large Loads and Load modifications subject to the requirements of Section 9.2.1, with planned Initial Energization in the period under study, the assessment shall derive the conditions to be studied from the most current Load Commissioning Plan and with consideration given to the results of the Large Load Interconnection Study (LLIS) stability studies.  (c) ERCOT may study conditions other than those identified in the FIS or LLIS stability studies. |

(2) Large generators that are not included in the assessment as described in this Section as result of the IE failing to meet the prerequisites by the deadlines as listed in the table below will not be eligible for Initial Synchronization during that three-month period. The timeline for the quarterly stability assessment shall be in accordance with the following table:

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| **Generator Initial Synchronization Date** | **Last Day for an IE to meet prerequisites as listed in paragraph (4) below** | **Completion of Quarterly Stability Assessment** |
| Upcoming January, February, March | Prior August 1 | End of October |
| Upcoming April, May, June | Prior November 1 | End of January |
| Upcoming July, August, September | Prior February 1 | End of April |
| Upcoming October, November, December | Prior May 1 | End of July |

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| ***[PGRR115: Replace paragraph (2) above with the following upon system implementation of NPRR1234:]***  (2) Large generators that are not included in the assessment as described in this Section as result of the IE failing to meet the prerequisites by the deadlines as listed in the table below will not be eligible for Initial Synchronization during that three-month period. Loads described in paragraph (1)(b) above that are not included in the assessment as a result of failing to meet the prerequisites by the deadlines as listed in the table below will not be eligible for Initial Energization during that three-month period. The timeline for the quarterly stability assessment shall be in accordance with the following table:   |  |  |  | | --- | --- | --- | | **Generator Initial Synchronization or Large Load Initial Energization Date** | **Last Day for an IE, Resource Entity, or TSP to meet prerequisites as listed in paragraphs (4) and (5) below** | **Completion of Quarterly Stability Assessment** | | Upcoming January, February, March | Prior August 1 | End of October | | Upcoming April, May, June | Prior November 1 | End of January | | Upcoming July, August, September | Prior February 1 | End of April | | Upcoming October, November, December | Prior May 1 | End of July | |

(3) If the last day for an IE to meet prerequisites or if completion of the quarterly stability assessment as shown in the above table falls on a weekend or holiday, the deadline will extend to the next Business Day.

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| ***[PGRR115: Replace paragraph (3) above with the following upon system implementation of NPRR1234:]***  (3) If the last day for an IE, Resource Entity, or TSP to meet prerequisites or if completion of the quarterly stability assessment as shown in the above table falls on a weekend or holiday, the deadline will extend to the next Business Day. |

(4) The following prerequisites shall be satisfied prior to a large generator being included in the quarterly stability assessment:

(a) The generator has met the requirements of Section 6.9, Addition of Proposed Generation to the Planning Models.

(b) The IE has provided all generator data in accordance with the Resource Registration Glossary, Planning Model column, including but not limited to steady state, system protection and stability models.

(i) The IE shall submit the final dynamic data model at least 45 days prior to the quarterly stability assessment deadline described in paragraph (2) above. If ERCOT is unable to complete its review prior to the quarterly stability assessment deadline, ERCOT shall not include the Generation Resource or Settlement Only Generator (SOG) in that quarterly stability assessment.

(ii) Changes to the dynamic data model after the stability study is deemed complete may subject the Generation Resource or SOG to modification of one or more FIS study elements as defined in paragraph (9) of Section 5.3.2.5, FIS Report and Follow-up. If ERCOT and the lead TSP(s) determine that modifications to one or more FIS study elements are required, then ERCOT shall not include the Generation Resource or SOG in a quarterly stability assessment until the revised FIS has been completed in accordance with paragraph (4)(c)(i) below.

(iii) If an IE submitted a final dynamic data model at least 45 days prior to the quarterly stability assessment deadline but ERCOT determines that the Generation Resource or SOG is ineligible to be included in a quarterly stability assessment pursuant to paragraphs (4)(b)(i) or (4)(b)(ii) above, ERCOT will send a notification to the IE.

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| ***[PGRR118: Replace paragraph (b) above with the following upon system implementation of NPRR1246:]***  (b) The IE has provided all generator data in accordance with the Resource Registration Glossary, Planning Model column, including but not limited to steady state, system protection and stability models.  (i) The IE shall submit the final dynamic data model at least 45 days prior to the quarterly stability assessment deadline described in paragraph (2) above. If ERCOT is unable to complete its review prior to the quarterly stability assessment deadline, ERCOT shall not include the Generation Resource, ESR or Settlement Only Generator (SOG) in that quarterly stability assessment.  (ii) Changes to the dynamic data model after the stability study is deemed complete may subject the Generation Resource, ESR, or SOG to modification of one or more FIS study elements as defined in paragraph (9) of Section 5.3.2.5, FIS Report and Follow-up. If ERCOT and the lead TSP(s) determine that modifications to one or more FIS study elements are required, then ERCOT shall not include the Generation Resource, ESR, or SOG in a quarterly stability assessment until the revised FIS has been completed in accordance with paragraph (4)(c)(i) below.  (iii) If an IE submitted a final dynamic data model at least 45 days prior to the quarterly stability assessment deadline but ERCOT determines that the Generation Resource, ESR, or SOG is ineligible to be included in a quarterly stability assessment pursuant to paragraphs (4)(b)(i) or (4)(b)(ii) above, ERCOT will send a notification to the IE. |

(c) The following elements must be complete:

(i) Final FIS studies, which the TSP must have submitted via the online RIOO system at least 45 days prior to the quarterly stability assessment deadline;

(ii) Reactive Power Study; and

(iii) System improvements or mitigation plans that were identified in these studies as required to meet the operational standards established in the Protocols, Planning Guide, Nodal Operating Guides, and Other Binding Documents prior to synchronizing the generator.

(d) The data used in the studies identified in paragraph (4)(c) above is consistent with data submitted by the IE as required by Section 6.9.

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| ***[PGRR115: Insert paragraph (5) below upon system implementation of NPRR1234 and renumber accordingly:]***  (5) The following prerequisites must be satisfied prior to the inclusion of a new Large Load or Load modification subject to the requirements of Section 9.2.1 in the quarterly stability assessment:  (a) The Large Load has met the requirements of Section 9.4, LLIS Report and Follow-up, and Section 9.5, Interconnection Agreements and Responsibilities;  (b) The Load Commissioning Plan has been updated to reflect the results of the LLIS as required by paragraph (1) of Section 9.2.4, Load Commissioning Plan;  (c) The interconnecting TSP has provided to ERCOT the dynamic load model it received from the Interconnecting Large Load Entity (ILLE) per paragraph (1) of Section 9.3.4.3, Dynamic and Transient Stability Analysis, and written affirmation that no changes to the project information have been communicated by the ILLE, per Section 9.2.3, Modification of Large Load Project Information, that would invalidate the model;  (d) The following elements must be complete;  (i) Reactive Power Study, if required according to Protocol Section 3.15, Voltage Support; and  (ii) SSO Study, if required according to Protocol Section 3.22.1.4, Large Load Interconnection Assessment; and  (e) The data used in the studies identified in paragraph (c) above is consistent with data used in the final LLIS studies approved per Section 9.4, LLIS Report and Follow-up. |

(5) At any time following the inclusion of a large generator in a stability assessment, but before the Initial Synchronization of the generator, if ERCOT determines, in its sole discretion, that the generator no longer meets the prerequisites described in paragraph (4), or that an IE has made a change to the design of the generator that could have a material impact on ERCOT System stability, then ERCOT may refuse to allow Initial Synchronization of the generator, provided that ERCOT shall include the generator in the next quarterly stability assessment period that commences after identification of the material change or after the generator meets the prerequisites specified in paragraph (4), as applicable. If ERCOT determines, in its sole discretion, that the change to the design of the generator would not have a material impact on ERCOT System stability, then ERCOT may not refuse to allow Initial Synchronization of the generator due to this change.

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| ***[PGRR115: Replace paragraph (5) above with the following upon system implementation of NPRR1234:]***  (5) At any time following the inclusion of a large generator or applicable Large Load in a stability assessment, but before the Initial Synchronization of the generator or Initial Energization of the Large Load, if ERCOT determines, in its sole discretion, that the generator or Large Load no longer meets the prerequisites described in paragraphs (4) or (5) above, or that an IE or ILLE has made a change to the design of the generator or Large Load that could have a material impact on ERCOT System stability, then ERCOT may refuse to allow Initial Synchronization of the generator or Initial Energization of the Large Load. ERCOT shall include the generator or Large Load in the next quarterly stability assessment period that commences after identification of the material change or after the generator or Large Load meets the prerequisites specified in paragraphs (4) or (5) above, as applicable. If ERCOT determines, in its sole discretion, that the change to the design of the generator or Large Load would not have a material impact on ERCOT System stability, then ERCOT may not refuse to allow Initial Synchronization of the generator or Initial Energization of the Large Load due to this change. |

(6) ERCOT shall post to the MIS Secure Area a report summarizing the results of the quarterly stability assessment within ten Business Days of completion.

5.4 Interconnection Procedures for Small Generators

5.4.1 Small Generator Review Meetings

(1) Upon request by an Interconnecting Entity (IE), ERCOT, the Transmission Service Provider (TSP), and if applicable, the Distribution Service Provider (DSP) will have an initial meeting with the IE to discuss the small generator interconnection process and address general information related to the project.

5.4.2 Submission of Interconnection Agreement and TSP and/or DSP Studies and Technical Requirements

(1) As a condition for ERCOT’s acceptance of the Resource Registration form for an interconnection request involving a small generator other than a Settlement Only Generator (SOG), the following conditions must be met:

(a) The IE must submit a copy of a fully executed interconnection agreement or letter, as required per Section 5.2.8, Interconnection Agreements and Procedures.

(b) The Transmission and/or Distribution Service Provider (TDSP) to which the generator is proposed to interconnect, or in the case of a modification described in paragraph (1)(c) of Section 5.2.1, Applicability, the TDSP to which the generator currently connects, must provide written confirmation via email to ERCOT stating that all interconnection studies required by the TDSP have been completed, and indicating whether any operational limitations, including ramping limitations, maximum output limitations, or other restrictions, are expected to affect the generator’s operation. If the TDSP identifies operational limitations, the TDSP must describe those limitations.

(c) The TDSP must provide the following information to ERCOT:

(i) Confirmation that the IE has provided financial security sufficient to fund the distribution system upgrades identified by the TDSP;

(ii) The timeline for those upgrades; and

(iii) Any operational limitation on the generator’s operation in the interim.

5.4.3 Reviews and Approval to Submit Model Information

(1) ERCOT shall review submitted interconnection agreements, TSP and DSP study results, and generator technical specifications.

(2) ERCOT shall communicate within ten Business Days the need for clarification or additional information. ERCOT shall provide a reason for rejecting any information.

(3) The IE shall have ten Business Days to submit clarifications or additional information in response to an ERCOT request.

(4) If the IE does not respond within ten Business Days, ERCOT may place the project in “Inactive” status. Once the IE provides the information, ERCOT may place the project in “Planned” status and ERCOT shall have ten Business Days for reviews.

(5) Once the IE has provided all required agreements, studies, and technical specifications and ERCOT reviews have been completed, the approval to submit model information will be granted and the project will be included in ERCOT systems.

5.4.4 Transmission System Reliability Impact

(1) ERCOT may delay the synchronization, testing, or commissioning of any generator to the extent it deems necessary to study transmission system impacts of this generator and any other proposed or existing generators. If, as a result of this study or any previous study, ERCOT determines that the generator would create or contribute to a reliability concern, ERCOT may prohibit the synchronization, testing, or commissioning of the generator until the reliability concern is addressed.

5.5 Generator Commissioning and Continuing Operations

(1) For each interconnecting Generation Resource or Energy Storage Resource (ESR), each Interconnecting Entity (IE) shall meet the conditions established by ERCOT before proceeding to Initial Energization, Initial Synchronization, and commercial operations. These conditions may require proof of meeting applicable ERCOT requirements, which may include, but are not limited to, reactive capability, voltage ride-through standards, dynamic model template submission, Automatic Voltage Regulator (AVR), Primary Frequency Response, Power System Stabilizer (PSS), Subsynchronous Resonance (SSR) models, and telemetry.

(2) Before ERCOT approves Initial Energization for a project that will consume Load other than Wholesale Storage Load (WSL) and that is not behind a Non-Opt-In Entity (NOIE) tie meter:

(a) The Resource Entity must request an Electric Service Identifier(s) (ESI ID(s)) from the Distribution Service Provider(s) (DSP(s)) that will be serving the Load at the Resource site and provide the ESI ID(s) to ERCOT, as described in paragraph (2) of Protocol Section 10.3.2, ERCOT-Polled Settlement Meters; and

(b) These ESI ID(s) must be established in the ERCOT Settlement system in a state that allows for the Load to be properly settled to the appropriate Qualified Scheduling Entity (QSE).

(3) Within 300 days of receiving ERCOT’s approval for Initial Synchronization above 20 MVA of a new or repowered Generation Resource or ESR, a Resource Entity shall ensure the Resource meets the conditions established by ERCOT for commercial operations and shall submit a request to ERCOT to commission the Resource.

(a) In the event a Generation Resource or ESR will be unable to complete all necessary construction and required testing to commence commercial operations and connect reliably to the ERCOT System within the 300 days, the Generation Resource or ESR may request a good cause exception with sufficient detail, and shall notify ERCOT prior to the planned commercial operation date and provide ERCOT with an updated commercial operation date that the Generation Resource or ESR can reasonably expect to commence operations in a reliable manner.

(4) Prior to the Resource Commissioning Date of an Inverter-Based Resource (IBR), the IE associated with the IBR shall submit the appropriate dynamic models for the “as-built” data and the data submitted for the quarterly stability assessment, documentation clearly indicating any differences, results of the model quality tests of the “as-built” data overlaid with the results of the data submitted for the quarterly stability assessment, and associated simulation files pursuant to paragraph (5)(c) of Section 6.2, Dynamics Model Development. Submissions shall be sent electronically to [Dynamicmodels@ercot.com](mailto:Dynamicmodels@ercot.com) for ERCOT review, and the phrase "IBR prior to commissioning" must be included in the subject line of the submission email. ERCOT shall respond to the IE within ten Business Days of the submission, indicating whether the submission is acceptable or if additional information is required. If additional time is needed for review, ERCOT can extend this review period by an additional 20 Business Days, and an email will be sent to notify the IE that it needs additional time to review the submission. The time for ERCOT to review models and associated documentation will be a qualified cause to extend the allowed time to complete the conditions established by ERCOT for commercial operations.

(5) No later than 30 days following the Resource Commissioning Date, the Resource Entity shall submit updates to the resource dynamic planning and operations models through the online Resource Integration and Ongoing Operations (RIOO) system based on “as-built” data and provide a plant verification report as required by paragraph (5)(b) of Section 6.2. Pursuant to paragraph (5)(c) of Section 6.2, the Resource Entity shall include model updates with model quality tests.

(6) During continuing operations:

(a) Prior to the implementation of modification to any control settings or equipment of an IBR that impacts the dynamic response (such as voltage, frequency, and current injections) at the Point of Interconnection (POI), the proposed modification shall be reviewed by the interconnecting Transmission Service Provider (TSP) and ERCOT:

(i) The Resource Entity shall submit the appropriate dynamic model for the proposed modification, results of the model quality tests overlaid with the results before the modification, and associated simulation files pursuant to paragraph (5)(c) of Section 6.2. Submissions shall be sent electronically to [Dynamicmodels@ercot.com](mailto:Dynamicmodels@ercot.com) for ERCOT review, and the phrase "IBR proposed modification" must be included in the subject line of the submission email. The Resource Entity may withdraw its modification plan at any time during the review process if the Resource Entity no longer wishes to proceed with the modification.

(ii) ERCOT shall respond to the Resource Entity within ten Business Days of the submission in paragraph (i) above, indicating whether the submission is acceptable or if additional information is required. ERCOT can extend this review period by an additional 20 Business Days, and an email will be sent to notify the Resource Entity that it needs additional time to review the submission.

(iii) Upon completing its review of the model quality tests, ERCOT shall notify the Resource Entity and the interconnecting TSP of its determination. The notification will indicate one of the following:

(A) ERCOT recommends that the interconnecting TSP conduct a limited dynamic stability study comparing electrical performance before and after the proposed modification, and reasonably evaluate whether the proposed modification may present dynamic stability risks that should be subject to further study.

(B) The proposed modification is applicable to paragraph (1)(c)(iii) of Section 5.2.1, Applicability. The Resource Entity shall initiate a Generator Interconnection or Modification (GIM) request through RIOO.

(C) The proposed modification is deemed unacceptable.

(D) The proposed modification is deemed acceptable without need for a dynamic stability study.

(iv) Within 90 days of the receipt of the accepted submission in paragraph (iii)(A) above, the interconnecting TSP shall submit its dynamic stability study report to ERCOT electronically to [Dynamicmodels@ercot.com](mailto:Dynamicmodels@ercot.com).

(v) ERCOT shall review the dynamic stability study report submitted by the interconnecting TSP within ten Business Days.  ERCOT can extend this review period by an additional 20 Business Days, and an email will be sent to notify the interconnecting TSP and the Resource Entity that it needs additional time to review the dynamic stability study report.

(vi) Upon completing its review and ERCOT acceptance of the dynamic stability study report, ERCOT shall notify the Resource Entity and the interconnecting TSP of its determination. The notification will indicate one of the following:

(A) The proposed modification is deemed acceptable.

(B) The proposed modification is applicable to paragraph (1)(c) of Section 5.2.1. The Resource Entity shall initiate a GIM request through RIOO.

(vii) ERCOT, in consultation with the interconnecting TSP, may allow the proposed changes to be temporarily implemented prior to the above review process in order to address any identified performance deficiency.

(b) Pursuant to paragraph (5)(c) of Section 6.2, the Resource Entity shall include model updates with model quality tests.

(c) The Resource Entity shall provide ERCOT with a plant verification report as required by paragraph (5)(b) of Section 6.2 at the following times:

(i) No later than 30 days after implementing a settings change as required by paragraph (7) of Section 6.2;

(ii) No earlier than 12 months and no later than 24 months following the later of the Resource Commissioning Date or March 1, 2021; and

(iii) A minimum of every ten years.