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| PGRR Number | [074](http://www.ercot.com/mktrules/issues/PGRR074) | PGRR Title | Related to NPRR973, Add Definitions for Generator Step-Up and Main Power Transformer |
| Date of Decision | | February 6, 2020 | |
| Action | | Recommended Approval | |
| Timeline | | Normal | |
| Proposed Effective Date | | Upon system implementation of Nodal Protocol Revision Request (NPRR) 973, Add Definitions for Generator Step-Up and Main Power Transformer | |
| Priority and Rank Assigned | | Not Applicable | |
| Planning Guide Sections Requiring Revision | | 5.1.1, Applicability  5.7.1, Generation Resource and Settlement Only Generator Data Requirements  5.8.2, Transformer Tap Position  6.11, Process for Developing Geomagnetically-Induced Current (GIC) System Models | |
| Related Documents Requiring Revision/Related Revision Requests | | NPRR973  Nodal Operating Guide Revision Request (NOGRR) 196, Related to NPRR973, Add Definitions for Generator Step-Up and Main Power Transformer  Resource Registration Glossary Revision Request (RRGRR) 022, Related to NPRR973, Add Definitions for Generator Step-Up and Main Power Transformer | |
| Revision Description | | This Planning Guide Revision Request (PGRR) clarifies language by use of NPRR973-proposed defined terms Generation Step-Up (GSU) and Main Power Transformer (MPT). | |
| Reason for Revision | | Addresses current operational issues.  Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/wcm/lists/144926/ERCOT_Strategic_Plan_2019-2023.pdf) or directed by the ERCOT Board).  Market efficiencies or enhancements  Administrative  Regulatory requirements  Other: (explain)  *(please select all that apply)* | |
| Business Case | | NPRR973 proposes adding as defined terms Generator Step-Up and Main Power Transformer; these two terms are used in the Planning Guide. | |
| ROS Decision | | On 11/7/19, ROS voted unanimously to table PGRR074 and refer the issue to the Planning Working Group (PLWG). All Market Segments were present for the vote.  On 1/9/20, ROS voted unanimously to recommend approval of PGRR074 as submitted. All Market Segments were present for the vote.  On 2/6/20, ROS voted unanimously to endorse and forward to TAC the 1/9/20 ROS Report and Impact Analysis for PGRR074. All Market Segments were present for the vote. | |
| Summary of ROS Discussion | | On 11/7/19, there was no discussion.  On 1/9/20, there was no discussion.  On 2/6/20, there was no discussion. | |

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| Market Segment | Not Applicable |

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| **Comments Received** | |
| Comment Author | **Comment Summary** |
| None |  |

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| Market Rules Notes |

Please note the baseline Planning Guide language in the following sections has been updated to reflect the incorporation of the following PGRRs into the Planning Guide:

* PGRR069, Related to NPRR921, RTF-2 Elimination of the Terms All-Inclusive Generation Resource and All-Inclusive Resource (unboxed 11/1/19)
  + Section 5.1.1
  + Section 5.7.1
* PGRR072, Treatment of Generation Resource Retirement and Mothball in Regional Transmission Plan and Geomagnetic Disturbance Vulnerability Assessment (partially unboxed on 11/1/19)
  + Section 6.11
* PGRR072, Treatment of Generation Resource Retirement and Mothball in Regional Transmission Plan and Geomagnetic Disturbance Vulnerability Assessment (unboxed due to partial system implementation on 12/12/19)
  + Section 6.11

Please note that the following PGRR(s) also propose revisions to the following section(s):

* PGRR075, Dynamic Model Quality Requirement
  + Section 5.7.1
* PGRR076, Improvements to Generation Resource Interconnection or Change Request (GINR) Process
  + Section 5.1.1
  + Section 5.7.1

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| Proposed Guide Language Revision |

***5.1.1 Applicability***

(1) The requirements in this Section 5, Generation Resource Interconnection or Change Request, are applicable, to the following:

(a) Any Entity proposing a Generation Resource or Settlement Only Generator (SOG), including a storage device, with an aggregate power output (gross power output minus auxiliary Load directly related to the generator) measured at the low side of the Main Power Transformer (MPT) of ten MW or greater, planning to interconnect to the ERCOT Transmission Grid; or

(b) Resource Entities that are seeking to modify a generator or storage device that is connected to the ERCOT Transmission Grid by:

(i) Upgrading the summer or winter Seasonal Net Max Sustainable Rating by ten MW or greater within a single year;

(ii) Change the inverter, wind turbine generator, or power converter associated with a facility of ten MW or greater, unless the replacement is in-kind; or

(iii) Changing or adding a Point of Interconnection (POI) to a facility of ten MW or greater.

(2) Interconnection requirements for Settlement Only Distribution Generators (SODGs) and on-site Distributed Generation (DG) that are either (a) one MW or less and not registered with ERCOT or (b) greater than one MW and registered with the PUCT as a self-generator are not subject to this Section 5 but are addressed in P.U.C. Subst. R. 25.211, Interconnection of On-Site Distributed Generation (DG), and P.U.C. Subst. R. 25.212, Technical Requirements for Interconnection and Parallel Operation of On-Site Distributed Generation.

5.7.1 Generation Resource and Settlement Only Generator Data Requirements

(1) The Interconnecting Entity (IE) shall submit with its Generation Interconnection or Change Request (GINR) the most current actual facility information (generation, substation, and transmission/subtransmission if applicable) or best available expected performance data for the physical and electrical characteristics of all proposed facilities (in sufficient detail to provide a basis for modeling) up to the Point of Interconnection (POI) with a Transmission Service Provider (TSP).

(2) Failure to supply the required data may delay ERCOT processing of the interconnection application and studies and result in a GINR cancellation as described in Section 5.7.7, Cancellation of a Project Due to Failure to Comply with Requirements. Recommendations resulting from these studies that are based on outdated, false, or bad data may adversely affect the safety and reliability of the ERCOT System and can result in damage to generation or transmission equipment. The IE and subsequently, the Resource Entity associated with any approved Generation Resource or Settlement Only Generator (SOG), must promptly submit any updates to ERCOT to ensure the long-term adequacy, reliability, and safety of the ERCOT System, as required by the Protocols, this Planning Guide, the Operating Guides, and North American Electric Reliability Corporation (NERC) Reliability Standards. Failure to comply may result in financial penalties.

(3) In an effort to produce the best available Security Screening Study and Full Interconnection Study (FIS), ERCOT suggests that IEs begin collecting all appropriate engineering and equipment data from manufacturers as soon as the IE selects its major equipment for the proposed project.

(4) While the duty to update data may require additional information, at a minimum, the IE shall submit the following data via the online Resource Integration and Ongoing Operations (RIOO) system at each step of the process:

(a) Application and Security Screening Study:

(i) Generation Entity Information Sheet; and

(ii) Generation Interconnection Screening Study Request Data.

(b) FIS:

(i) Updates to the above information (if necessary);

(ii) Applicable data required for interconnection studies as defined in the Resource Registration Glossary applicable to the resource type;

(iii) Provision of the appropriate dynamic model for the proposed Generation Resource or SOG (some standard dynamic model forms are posted on the ERCOT website);

(iv) If alternative models are required to appropriately represent the proposed Generation Resource or SOG, an alternative model may be provided by the IE, subject to verification by the lead TSP and ERCOT; and

(v) In order to perform stability (transient and voltage) analyses, the IE shall provide unit stability model information and data to the TSP(s) and ERCOT via the online RIOO system. The Dynamics Working Group Procedural Manual contains more detail and IE dynamics data requirements. Data submitted for transient stability models shall be compatible with ERCOT standard models (Siemens/PTI PSS/E and Powertech Labs Inc TSAT, VSAT and SSAT). 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 both software packages. It is recommended that generation owners and developers encourage manufacturers and software vendors to work together to develop and maintain these important models.

(c) Prior to start of construction:

(i) Any significant design changes in the generator(s) or Main Power Transformer(s) (MPT(s)) of the proposed Generation Resource or SOG shall be provided to ERCOT and the TSP to ensure compatibility with the existing transmission system.

(d) Prior to the Resource Commissioning Date:

(i) Registration and official Resource Registration data submittal pursuant to Section 6.8.2, Resource Registration Process;

(ii) Updates to Resource Registration data based on “as-built” or “as-tested” data in all cases; and

(iii) Proof of meeting ERCOT requirements (reactive, low Voltage Ride-Through (VRT) standards, stability models, Power System Stabilizer (PSS), Subsynchronous Resonance (SSR) models).

(e) During continuing operations:

(i) The IE shall provide ERCOT and the TSP with any equipment data changes which result from equipment replacement, repair, or adjustment. Unless otherwise required in the Protocols, this Planning Guide or the Operating Guides, the IE shall provide such data to ERCOT and the TSP no later than 60 days prior to the date of the actual change in equipment characteristics or during annual data update filings whichever occurs first. This requirement shall also apply to all future owners throughout the service life of the project/plant.

5.8.2 Transformer Tap Position

(1) The Interconnecting Entity (IE) will contact the Transmission Service Provider (TSP) providing the interconnection before the Main Power Transformers (MPTs) are placed into service and will work with the TSP to select the tap position on the MPTs. The Generation Resource will confirm the use of this tap position with the TSP and ERCOT.

6.11 Process for Developing Geomagnetically-Induced Current (GIC) System Models

(1) To adequately simulate Geomagnetic Disturbance (GMD) events, it is necessary to establish and maintain Geomagnetically-Induced Current (GIC) system models and conduct geomagnetic disturbance vulnerability assessments to determine whether the ERCOT System can meet the performance requirements of the benchmark and supplemental geomagnetic disturbance event described in North American Electric Reliability Corporation (NERC) Reliability Standards. These GIC system models shall contain appropriate system data, and shall represent projected system conditions that provide a starting point for the required year(s).

(a) ERCOT, in collaboration with Transmission Service Providers (TSPs) and Resource Entities, shall develop and maintain the GIC system models. The GIC system models are derived from the steady-state base cases developed by Steady-State Working Group (SSWG) for the near-term transmission planning horizon to ensure consistency between the system topology in the SSWG base cases and GIC system models.

(b) ERCOT, in collaboration with TSPs and Resource Entities, may set a Generation Resource to out of service prior to receiving a Notification of Suspension of Operations (NSO) if the Resource Entity notifies ERCOT of its intent to retire/mothball the Generation Resource and/or makes a public statement of its intent to retire/mothball the Generation Resource.

(i) ERCOT will post and maintain the current list of Generation Resources that will be set to out of service pursuant to paragraph (1)(b) above on the Market Information System (MIS) Public Area.

(c) Each TSP, or its Designated Agent, shall provide its respective transmission network GIC model data in accordance with the GIC System Model Procedure Manual.

(d) Each Resource Entity, or its Designated Agent, shall provide its respective Resource Entity-owned generating units, plants, transmission lines, shunt devices, Main Power Transformers (MPTs), and Generator Step-Ups (GSUs) connected to the ERCOT System in accordance with the GIC System Model Procedure Manual and the Resource Registration Glossary.

(e) ERCOT shall aggregate the GIC system model data supplied by each TSP and Resource Entity and shall compile the data to form the GIC system models. Upon completion of compiling the data for the GIC system models, ERCOT and the TSPs shall review and finalize the GIC system models. Upon completion of the review of the GIC system models, ERCOT shall post these models on the ERCOT Market Information System (MIS) Certified Transmission Service Provider Information page.

(f) Guidelines and formats for the GIC system model data and model maintenance can be found in the GIC System Model Procedure Manual.

(g) GIC data is considered Protected Information pursuant to Protocol Section 1.3, Confidentiality.

(2) Each TSP and Resource Entity shall provide ERCOT for use in the GMD vulnerability assessments as outlined in Section 3.1.8, Planning Geomagnetic Disturbance (GMD) Activities:

(a) A list of equipment potentially removed from service as a result of protection system operation or misoperation due to harmonics that could result from the benchmark GMD event.

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| [PGRR070: Insert paragraph (b) below upon system implementation:]  (b) A list of equipment potentially removed from service as a result of protection system operation or misoperation due to harmonics that could result from the supplemental GMD event. |

(3) TSPs and Resource Entities may refer to a Reliability and Operations Subcommittee (ROS)-approved methodology for developing the equipment lists described in paragraph (2) above. TSPs and Resource Entities are not required to submit the equipment lists described in paragraph (2) above until 30 days after ROS approves a methodology.