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| PGRR Number | [100](http://www.ercot.com/mktrules/issues/PGRR100) | PGRR Title | Steady-State Case Building Timeline Update |
| Date of Decision | July 14, 2022 |
| Action | Approved |
| Timeline  | Normal |
| Effective Date | January 1, 2023 |
| Priority and Rank Assigned | Not Applicable |
| Planning Guide Sections Requiring Revision  | 6.1, Steady-State Model Development6.4.1, Transmission Project Information and Tracking Report6.4.2, ERCOT Responsibilities |
| Related Documents Requiring Revision/Related Revision Requests | Steady State Working Group Procedure Manual |
| Revision Description | This Planning Guide Revision Request (PGRR) revises the Annual Planning Model base case update frequency from triannual to biannual to align with the intention of the Steady State Working Group (SSWG) to adjust its current case building schedule to a biannual basis. This PGRR also ensures the continued production of Transmission Project Information and Tracking (TPIT) reports on a triannual basis. |
| 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) Improves the case quality of the Annual Planning Model base cases and allows for the potential of additional cases going forward, such as the Geomagnetically-Induced Current (GIC) system model.*(please select all that apply)* |
| Business Case | SSWG presented the idea for moving to a biannual update schedule at the August 17, 2021 Planning Working Group (PLWG) meeting. SSWG proposes making this update effective with the 2022 case build schedule. This PGRR will increase the efficiency and capability of the SSWG case build by allowing a longer case build duration during each update. This longer duration will:* Allow for the bandwidth to add additional cases to the case builds;
* Provide time for increased error checking to ensure high quality and accurate models; and
* Provide time for the additional model data that will be added during the transition from a bus-branch to a node-breaker model.

The SSWG has been following a triannual case build schedule since the adoption of PGRR026, Addition of Year 6 to the SSWG Base Cases, in 2013 to add a six year summer peak case to help meet North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-4, Transmission System Planning Performance Requirements. This tasks SSWG with developing 54 base cases annually. Since that time, the case build schedule has remained relatively unchanged; however, case building has seen an evolution in complexity, including the addition of a number of types of models that either didn’t exist in 2013 or were in modeling infancy (Distributed Generation (DG), Settlement Only Distribution Generator (SODG), unregistered DG, battery Energy Storage System (ESS), Distribution Energy Storage Resource (DESR), etc). For example, the 2018SUM1 case from the June 2013 case build contained 6,608 buses while the 2022SUM1 case from the October 2021 case build contains 9,109 buses. SSWG members have noted a growing concern with case quality in recent cases. Most SSWG members feel that they are near maximum capacity workload with the existing case build triannual schedule. Recently, several efforts have begun that could impact SSWG workload.(1) As part of the effort to comply with NERC Reliability Standard TPL-007, Transmission System Planned Performance for Geomagnetic Disturbance (GMD) Events, the Planning Geomagnetic Disturbance Task Force (PGDTF) was formed to help guide ERCOT through the initial development of GIC models to complete benchmark and supplemental GMD Vulnerability Assessments. Requirement R2 of NERC Reliability Standard TPL-007-4 requires a responsible entity to maintain the GIC models for performing ERCOT System benchmark and supplemental GMD vulnerability assessments of the near-term transmission planning horizon at least once every 60 calendar months. Since the initial work associated with the PGDTF has been completed, the PGDTF’s future needs to be decided. ROS could direct them to become a working group; however, a Planning Geomagnetic Disturbance Working Group (“PGDWG”) would have a limited scope of work. One of the suggestions for relocating the responsibility for updating GIC system models, is for it to be added to the SSWG. This is a reasonably good fit since the content in the GIC models are in essence the future SSWG base cases, with a small number of additional parameters. Therefore, ROS could charge SSWG to include the GIC system models update in their scope of work.(2) Following the February 2021 winter event, the Technical Advisory Committee (TAC) created an Emergency Conditions List which contained items #47, 93, and 94 that the PLWG has been discussing that address transmission planning studies and extreme winter cases. The PLWG sub-group tasked with developing a response identified several potential extreme event cases that could be added to the SSWG list of cases to create. At a minimum, it would seem the addition of a future winter peak or extreme winter peak case is a real possibility.3) SSWG is currently transitioning to Power System Simulator for Engineering (PSS/E) v35. The SSWG already saw the amount of effort it took to add in the new Rate 4 and Rate 5 during the latest case update in which there are still Rate 4 and Rate 5 updates left to complete. One of the major benefits of PSS/E v35 is the ability to model the transmission system in a node-breaker model rather than the traditional bus-branch model. ERCOT is in the initial stages of modifying the topology processor to allow output from the ERCOT Network Operations Model to PSS/E in node-breaker format. The benefits to moving to a node-breaker model include a much closer consistency between the planning and operations models since both will now be node-breaker models. This will make contingency modeling more accurate. The industry is also clearly headed in this direction. The SSWG issue is that it will be a significant challenge completing the conversion to a PSS/E v35 node-breaker model and maintaining the quality of the current case build with the triannual schedule.4) Following discussion with Market Participants, it was determined that there was a desire for the frequency of the publication of TPIT reports to not be impacted by the proposed change to the SSWG case update schedule. Therefore, this PGRR contains revisions to ensure the continued production of TPIT reports on a triannual basis. |
| ROS Decision | On 1/6/22, ROS voted unanimously to recommend approval of PGRR100 as submitted. All Market Segments participated in the vote.On 2/7/22, ROS voted unanimously to table PGRR100. All Market Segments participated in the vote.On 5/5/22, ROS voted unanimously to endorse and forward to TAC the 2/7/22 ROS Report, as amended by the 3/22/22 ERCOT comments as revised by ROS, and 3/2/22 Impact Analysis for PGRR100, with a recommended effective date of 1/1/23. All Market Segments participated in the vote. |
| Summary of ROS Discussion | On 1/6/22, participants noted that the PLWG elected to discuss PGRR100 at their December 15, 2021 meeting, and that PLWG did not express any concerns with the proposed language at that time.On 2/7/22, participants acknowledged the need for additional discussion regarding the implementation timeline; and the proposed alternate schedule for development of the Impact Analysis as noted in the 1/28/22 ERCOT comments.On 5/5/22, participants considered desktop edits discussed at the PLWG and the effective date requested in the 3/2/22 ERCOT comments. |
| TAC Decision | On 5/25/22, TAC voted unanimously to recommend approval of PGRR100 as recommended by ROS in the 5/5/22 ROS Report. All Market Segments participated in the vote. |
| Summary of TAC Discussion | On 5/25/22, there was no discussion. |
| ERCOT Opinion | ERCOT supports approval of PGRR100. |
| ERCOT Market Impact Statement | ERCOT Staff has reviewed PGRR100 and believes the market impact for PGRR100 increases the efficiency and capability of the SSWG case build by allowing a longer case build duration during each update. |
| Board Decision | On 6/2122, the ERCOT Board voted unanimously to recommend approval of PGRR100 as recommended by TAC in the 5/25/22 TAC Report. |
| PUCT Decision | On 7/14/22, the PUCT approved PGRR100 and accompanying ERCOT Market Impact Statement as presented in Project No. 52934, Review of Rules Adopted by the Independent Organization. |

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| Market Segment | Not applicable |

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| **Comments Received** |
| Comment Author | **Comment Summary** |
| ERCOT 012822 | Requested tabling to allow for further discussion of implementation date, and proposed an alternate schedule for development of the Impact Analysis |
| ERCOT 030222 | Requested an effective date of January 1, 2023  |
| ERCOT 032222 | Offered clarifying language to ensure the continued triannual production of TPIT reports while moving to a biannual SSWG case building schedule |

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| Market Rules Notes |

Please note the baseline Planning Guide language in the following section(s) has been updated to reflect the incorporation of the following PGRR(s):

* PGRR096, Achieve Consistent Representation of Distributed Generation in Steady-State Models (incorporated 6/1/22)
	+ Section 6.1

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| Proposed Guide Language Revision |

6.1 Steady-State Model Development

(1) To adequately simulate steady-state system conditions, it is necessary to establish and maintain steady-state data and simulation ready study cases in accordance with the ERCOT Steady State Working Group Procedure Manual. These case models, known as steady-state base cases, shall contain appropriate equipment characteristics and system data, and shall represent projected system conditions that provide a starting point for each required season and year.

(a) The Annual Planning Model base cases, which represent the annual peak load conditions, as prescribed in Protocol Section 3.10.2, Annual Planning Model, shall be developed annually, updated on a biannual basis, and may be updated as needed on an interim basis. Each Annual Planning Model base case, biannual updates, and off-cycle updates shall be posted on the Market Information System (MIS) Secure Area to ensure availability of the most accurate steady-state base cases.

(b) Additional steady-state base cases, such as seasonal base cases, shall also be developed annually, updated on a biannual basis, and may also be updated as needed on an interim basis. These derivative base cases, biannual updates, and off-cycle updates shall be posted on MIS Secure Area to ensure availability of the most accurate steady-state base cases.

(c) Off-cycle updates not associated with the biannual update shall be posted in a timely manner and include:

(i) Corrections to significant errors discovered in modeling or major changes in operation configuration that affect the steady-state base cases; or

(ii) A significant change in the scope or timing of a transmission project or the development of a new transmission project that impacts either of the next two summer base cases.

(d) Off-cycle updates that are posted as described in paragraphs (1)(a) through (c) above shall be in the form of a Power System Simulator for Engineering (PSS/E) formatted incremental change file.

(e) All steady-state base cases and incremental change files on the MIS Secure Area shall be available for use by Market Participants.

(f) The ERCOT Steady State Working Group Procedure Manual describes each base case that is required to be built. The schedule for posting all steady-state base cases shall be made available on the MIS Secure Area.

(2) Transmission Service Providers (TSPs) and ERCOT shall develop the steady-state base cases. The steady-state base cases are derived from the Network Operations Model to ensure consistency of key characteristics, including Ratings, impedance and connectivity for Transmission Facilities that are common between the Network Operations Model and each steady-state base case. Minor differences between the models will occur for several reasons. For example:

(a) The Network Operations Model is converted from a “breaker, switch, and AC line segment” convention to an equivalent steady-state base case “bus and branch” convention. This conversion reduces the number of breakers/switches that may be included in the steady-state base case model and may combine buses separated by breakers/switches in the Network Operations Model.

(b) Additional detailed modeling may be added to the converted Network Operations Model for planning purposes.

(c) Future projects are added to the converted Network Operations Model that do not exist in the Network Operations Model past the model build date used to extract a snapshot from the Network Operations Model.

(3) Using the Network Model Management System (NMMS), ERCOT and TSPs shall create steady state models that represent current and planned system conditions from the following data elements:

(a) Each TSP, or its Designated Agent, shall provide its respective transmission network steady-state model data, including load data.

(b) Each TSP, or its Designated Agent, shall not include the impact of energy sources connected to the Distribution System that are registered with ERCOT and required to provide telemetry including, but not limited to, Distribution Generation Resources (DGRs), Distribution Energy Storage Resources (DESRs), or Settlement Only Distribution Generators (SODGs) in its submitted Load data as negative loads or as embedded reductions in the submitted load forecast.

(c) Each TSP, or its Designated Agent, shall include the impact of energy sources connected to the Distribution System that are not registered with ERCOT in its submitted Load data. The methodology used shall be consistent across all TSPs and described in the ERCOT Steady State Working Group Procedure Manual.

(d) ERCOT shall utilize the latest available Resource Entity and Private Use Network model data submitted to ERCOT by the Resource Entity and the Private Use Network owners through the Resource Registration process for Resource Entities.

(e) ERCOT shall utilize proposed Generation Resource model data provided by the Interconnecting Entity (IE) during the generation interconnection process in accordance with Section 5, Generator Interconnection of Modification.

(f) ERCOT shall determine the operating state of Generation Resources (MW, MVAr) using a security-constrained economic dispatch tool.

(g) ERCOT shall determine the import/export levels of asynchronous transmission interconnections based on historical data.

6.4.1 Transmission Project Information and Tracking Report

(1) The ERCOT Transmission Project and Information Tracking (TPIT) report contains the status of the transmission projects (60 kV and above) that have a material impact to the flow of power in the ERCOT System updated by the Steady State Working Group (SSWG).

 (2) The transmission projects listed in the TPIT report are typically projects that are planned for completion by a Transmission Service Provider (TSP) within the near-term planning horizon. Projects that may not be listed in the TPIT report include:

(a) Any project that requires Regional Planning Group (RPG) review and has not completed the review process;

(b) Any project with a projected in-service date beyond the last year for which an ERCOT SSWG case is posted; or

(c) Any project that consists of only a Remedial Action Scheme (RAS) or an Automatic Mitigation Plan (AMP) (which is not typically modeled).

6.4.2 ERCOT Responsibilities

(1) ERCOT shall prepare the TPIT report using data supplied by each TSP, or its Designated Agent.

(2) ERCOT shall update the TPIT report with updated information provided through the SSWG case build or SSWG update process.

(3) ERCOT shall publish the TPIT report on the ERCOT website on a triannual basis.