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| PGRR Number | [107](https://www.ercot.com/mktrules/issues/PGRR107) | PGRR Title | Related to NPRR1180, Inclusion of Forecasted Load in Planning Analyses |
| Date Posted | May 11, 2023 |
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| Requested Resolution  | Normal  |
| Planning Guide Sections Requiring Revision  | 3.1.2.1, All Projects3.1.3, Project Evaluation3.1.4.1, Development of Regional Transmission Plan3.1.4.2, Use of Regional Transmission Plan3.1.7, Steady State Transmission Planning Load Forecast4.1.1.1, Planning Assumptions |
| Related Documents Requiring Revision/Related Revision Requests | Nodal Protocol Revision Request (NPRR) 1180, Inclusion of Forecasted Load in Planning Analyses |
| Revision Description | This Planning Guide Revision Request (PGRR) aligns the Planning Guide with NPRR1180. PGRR107 revises the Planning Guide to address recent amendments to P.U.C. Subst. R. 25.101, Certification Criteria, which became effective on December 20, 2022.Specifically, PGRR107 incorporates the requirement in P.U.C. Subst. R. 25.101(b)(3)(A)(ii)(II) for any review conducted by ERCOT to incorporate the historical Load, forecasted Load growth, and additional Load seeking interconnection, in ERCOT’s analysis. PGRR107 also requires a Regional Planning Group (RPG) project submitter to provide such information to ERCOT, when available, for inclusion in ERCOT’s planning analyses. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/news/presentations/2013/ERCOT%20Strat%20Plan%20FINAL%20112213.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | This PGRR aligns the Planning Guide with the Protocols, as revised by NPRR1180. |

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| Proposed Guide Language Revision |

**3.1.2.1 All Projects**

(1) The submittal of each transmission project (60 kV and above) for RPG Project Review should include the following elements:

(a) The proposed project description including expected cost, feasible alternative(s) considered, transmission topology and Transmission Facility modeling parameter data, and all study cases used to generate results supporting the need for the project in electronic format (powerflow data should be in PTI Power System Simulator for Engineering (PSS/E) RAWD format). Also, the submission should include accurate maps and one-line diagrams showing locations of the proposed project and feasible alternatives;

(b) Identification of the SSWG, Dynamics Working Group (DWG), or Regional Transmission Plan powerflow cases used as a basis for the study and any associated changes that describe and allow accurate modeling of the proposed project;

(c) Description and data for all changes made to the SSWG base cases or Regional Transmission Plan cases used to identify the need for the project, such as Generation Resource unavailability and area peak Load forecast;

(d) A description of the reliability and/or economic problem that is being solved;

(e) Any relevant historical Load information, or quantifiable evidence supporting the forecasted Load growth and additional Load seeking interconnection in the project area, if applicable;

(f) A description of the Subsynchronous Resonance (SSR) impact of the proposed project to the generation facilities in the system pursuant to Protocol Section 3.22.1, Subsynchronous Resonance Vulnerability Assessment, and potential SSR Countermeasure plan for any identified SSR vulnerability, if applicable;

(g) Desired/needed in-service date for the project, and feasible in-service date, if different;

(h) The phone number and email address of the single point of contact who can respond to ERCOT and RPG participant questions or requests for additional information necessary for stakeholder review; and

(i) Analysis of rejected alternatives, including cost estimates, and other factors considered in the comparison of alternatives with the proposed project.

(2) Both transmission and distribution solutions to performance deficiencies may be considered where applicable.

(3) If there is any other information, not included above, that the submitting party believes is relevant to consideration of the need for any submitted project, the submitting party should include that information in the project submission.

***3.1.3 Project Evaluation***

(1) ERCOT and the RPG shall evaluate proposed transmission projects using a variety of tools and techniques as needed to ensure that the system is able to meet applicable reliability criteria in a cost-effective manner. For most proposed projects, several alternatives will be identified to meet the reliability criteria or other performance improvement objectives that the proposed project is designed to meet. The project alternative with the expected lowest cost over the life of the project is generally recommended, subject to consideration of the expected long-term system needs in the area, including forecasted Load growth and Load seeking interconnection that may not have signed an agreement, if applicable, and subject to consideration of the relative operational impacts of the alternatives.

(2) In some cases, one alternative may be to dispatch the system in such a way that all reliability requirements are met, even without the proposed transmission project or any transmission alternative, resulting in a less efficient dispatch than what would be required to meet the reliability requirements if the proposed project was in place. Consideration of the merits of this alternative relative to the proposed transmission project is more complex. To facilitate the discussion and consideration of these alternatives, ERCOT has adopted certain definitions and practices, described in paragraph (4) of Protocol Section 3.11.2, Planning Criteria, and Sections 3.1.3.1, Definitions of Reliability-Driven and Economic-Driven Projects, and 3.1.3.2, Reliability-Driven Project Evaluation below.

(3) In conducting an independent review of any project, ERCOT may, in its discretion, make adjustments to the planning case to ensure that the case reaches a solution. When conducting an independent review of any project classified as Tier 1 pursuant to Protocol Section 3.11.4, Regional Planning Group Project Review Process, ERCOT must provide reasonable advance notice to the RPG of any proposed adjustments and an opportunity for stakeholder comment on them.

(4) As part of its independent review of any project classified as Tier 1 pursuant to Protocol Section 3.11.4, ERCOT shall:

(a) Perform a generation sensitivity analysis. The generation sensitivity analysis will evaluate the effect that proposed Generation Resources in or near the study area will have on a recommended transmission project. Generation Resources that have signed Standard Generation Interconnection Agreements (SGIAs) but were not included in the study cases because they did not meet all of the requirements for inclusion in the cases pursuant to Section 6.9, Addition of Proposed Generation to the Planning Models, will be included in the sensitivity analysis. ERCOT shall not consider the results of the generation sensitivity analysis in determining project need during its independent review of the project; and

(b) Evaluate impacts related to the Load scaling used in the study on any constraints resulting in project recommendations. The results of this evaluation shall be included in the final recommendations in the independent review.

(5) ERCOT’s independent review shall incorporate and consider any information provided by the RPG project submitter regarding the historical Load, and quantifiable evidence of the forecasted Load growth and additional Load seeking interconnection in the project area, that may not have signed an agreement.

**3.1.4.1 Development of Regional Transmission Plan**

(1) The planning process begins with computer modeling studies of the generation and Transmission Facilities and substation Loads under normal conditions in the ERCOT System. Contingency conditions along with changes in Load and generation that might be expected to occur in operation of the ERCOT Transmission Grid are also modeled. To maintain adequate service and minimize interruptions during Outages, model simulations are used to identify adverse results based upon the planning criteria and to examine the effectiveness of various problem-solving alternatives.

(2) The effectiveness of each alternative will be evaluated under a variety of possible operating environments because Loads and operating conditions cannot be predicted with certainty. As a result, repeated simulations under different conditions are often required. In addition, options considered for future installation may affect other alternatives so that several different combinations must be evaluated, thereby multiplying the number of simulations required.

(3) Once feasible alternatives have been identified, the process is continued with a comparison of those alternatives. To determine the most favorable, the short-range and long-range benefits of each alternative must be considered including operating flexibility and compatibility with future plans.

**3.1.4.2 Use of Regional Transmission Plan**

(1) If a project submitted for RPG review is included in the Regional Transmission Plan, and no changes are identified which would affect the need for the proposed project through the comment period described in Section 3.1.5, Regional Planning Group Comment Process, then the Regional Transmission Plan may serve as the ERCOT Independent Review of the proposed project.

(2) Tier 1, 2, and 3 projects that are included in the Regional Transmission Plan should be submitted for RPG Project Review at an appropriate lead time. Generally, this lead time should be sufficient to allow the review to be completed before the TSP reaches the decision point at which it must initiate the engineering and procurement in order to meet the required in-service date, but not farther in advance than is necessary. In general, these lead times will be three to four months for Tier 3 projects and six to seven months for Tier 1 and 2 projects.

(3) Tier 1, 2, and 3 projects that are included in the Regional Transmission Plan but do not reach this decision point before the development of the next year’s Regional Transmission Plan begins will be removed from the case used to develop the Regional Transmission Plan and will be re-evaluated as a part of the development of this subsequent Regional Transmission Plan.

***3.1.7 Steady State Transmission Planning Load Forecast***

(1) ERCOT shall use the following process for determining the Load level to be used in the starting base cases for the Regional Transmission Plan and in the steady-state evaluation of a Tier 1 project pursuant to Protocol Section 3.11.4, Regional Planning Group Project Review Process:

(a) ERCOT will compare the ERCOT 90/10 Load forecast with the summed SSWG bus-level Load forecast for each Weather Zone.

(b) If the ERCOT 90/10 Load forecast is higher, ERCOT will use this forecast for the Weather Zone.

(c) If the SSWG Load forecast is higher than or equal to the ERCOT 90/10 Load forecast, but below the ERCOT 90/10 Load forecast plus a boundary threshold determined in accordance with paragraph (f) below, ERCOT will use the SSWG Load forecast for the Weather Zone.

(d) If the SSWG Load forecast is higher than or equal to the ERCOT 90/10 Load forecast plus the boundary threshold, ERCOT will use the ERCOT 90/10 Load forecast plus the boundary threshold for the Weather Zone.

(e) If a TSP(s) believes that the ERCOT 90/10 Load forecast plus the boundary threshold does not adequately represent the Weather Zone or an area within the Weather Zone, the TSP(s) may present ERCOT with additional information to justify using a higher Load forecast, including the SSWG Load forecast, for that Weather Zone. This may consist of any available information regarding historical Load, and any quantifiable evidence supporting the forecasted Load growth and additional Load seeking interconnection in the Weather Zone that may not have signed an agreement. Confidential information provided by Customers can be incorporated by reference and made available for inspection by ERCOT upon request. ERCOT, in its sole discretion, may choose to use a higher Load forecast than indicated in paragraph (d) above if it reasonably determines that the Load forecast indicated in paragraph (d) above does not adequately represent the Weather Zone or an area within the Weather Zone. If ERCOT uses a Load forecast higher than the ERCOT 90/10 Load forecast plus the boundary threshold in the evaluation of a Tier 1 project, ERCOT must explain and document the basis for that choice, using aggregated information as needed to shield Protected Information, in its independent review.

(f) ERCOT-proposed revisions to the boundary threshold used to implement the requirements of this section will be recommended by the Technical Advisory Committee (TAC) and approved by the ERCOT Board.

4.1.1.1 Planning Assumptions

(1) A contingency loss of an element includes the loss of an element with or without a single line-to-ground or three-phase fault.

(2) A common tower outage is the contingency loss of a double-circuit transmission line consisting of two circuits sharing a tower for 0.5 miles or greater.

(3) Unavailability of a single generating unit includes an entire Combined Cycle Train, if no part of the train can operate with one of the units Off-Line as provided in the Resource Registration data.

(4) The contingency loss of a single generating unit shall include the loss of an entire Combined Cycle Train, if that is the expected consequence.

(5) The following assumptions may be applied to the SSWG base cases for use in planning studies:

(a) Reasonable variations of Load forecast, including forecasted Load growth and any additional Load seeking interconnection in the project area that may not have signed an agreement;

(b) Reasonable variations of generation commitment and dispatch applicable to transmission planning analyses on a case-by-case basis may include, but are not limited to, the following methods:

(i) Production cost model simulation, security constrained optimal power flow, or similar modeling tools that analyze the ERCOT System using hourly generation dispatch assumptions;

(ii) Modeling of high levels of intermittent generation conditions; or

(iii) Modeling of low levels of or no intermittent generation conditions.

(6) Assumed Direct Current Tie (DC Tie) imports and exports will be curtailed as necessary to meet reliability criteria in planning studies.

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| ***[PGRR098: Insert paragraph (7) below upon system implementation:]***(7) Manual System Adjustments shall not increase the amount of consequential Load loss following a common tower outage, or the contingency loss of a single generating unit, transmission circuit, transformer, shunt device, FACTS device, or DC Tie Resource or DC Tie Load, with or without a single line-to-ground fault. |