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| PGRR Number | [098](http://www.ercot.com/mktrules/issues/pgrr098) | PGRR Title | Consideration of Load Shed in Transmission Planning Criteria |
| Date of Decision | | April 28, 2022 | |
| Action | | Recommended Approval | |
| Timeline | | Normal | |
| Proposed Effective Date | | January 1, 2024 for Section 4.1.1.8; upon system implementation for all remaining language | |
| Priority and Rank Assigned | | Not applicable | |
| Planning Guide Sections Requiring Revision | | 4.1.1.1, Planning Assumptions  4.1.1.8, Maintenance Outage Reliability Criteria (new)  6.10, Contingency Filing Requirements | |
| Related Documents Requiring Revision/Related Revision Requests | | Steady-State Working Group Procedure Manual | |
| Revision Description | | This Planning Guide Revision Request (PGRR) adds language to the existing reliability performance criteria to allow a corrective action plan to be developed under certain outage scenarios. | |
| 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 | | The North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-4, Transmission System Planning Performance Requirements, defines a P6 planning event as the concurrent loss of two transmission circuits, transformers, or shunt devices (following Manual System Adjustments after the first contingency loss).  In practice, a P6 planning event usually occurs when a construction or maintenance outage is followed by a contingency event. NERC Reliability Standard TPL-001-4 permits non-consequential Load loss as a mitigation plan for criteria violations following P6 planning events, but it does not limit the amount of Load loss. Although non-consequential Load loss may be technically acceptable, it is not desirable from a reliability perspective, particularly during off-peak periods.  Due to the summer outage restrictions implemented by ERCOT, the window to perform necessary maintenance and capital project work has been reduced. This has affected the ability of Transmission Service Providers (TSPs) to schedule outages.  This PGRR adds criteria that permits TSPs to develop corrective action plans so that they can schedule outages during off-peak periods without putting Load at risk. This new language will improve system resiliency and give system operators the flexibility necessary to schedule outages for maintenance and capital project work.  Language in this PGRR is consistent with the expectations outlined in the NERC Reliability Standard TPL-001-5, Transmission System Planning Performance Requirements, R.2.1.4 and R.2.4.4, as the NERC Reliability Standards relate to the study of known outages in transmission planning assessments.  The NERC P6 planning event definition includes the loss of two single Transmission Elements, but in the ERCOT system, a contingency event also includes the loss of a double-circuit transmission line. This inconsistency between ERCOT and NERC planning criteria is addressed by this PGRR.  Past PGRRs have also supplemented NERC Reliability Standard TPL-001-4 performance criteria. For example, PGRR025, Addition of Criteria for Autotransformer Unavailability, added the requirement for a transformer unavailability study, and PGRR060, Clarification of Reliability Performance Criteria, added the requirement for a DC Tie unavailability study.  An implementation date of January 1, 2024 for new Section 4.1.1.8 is recommended in order to allow ERCOT and TSPs sufficient time to perform initial assessments and propose solutions.  The implementation date for proposed revisions to Section 6.10 is recommended to be upon implementation of changes to the Steady State Working Group (SSWG) Procedure Manual and to the ERCOT internal process for managing the ERCOT contingency list for the steady-state base cases necessary to implement the proposed criteria in new Section 4.1.1.8. | |
| ROS Decision | | On 12/2/21, ROS unanimously voted via roll call to table PGRR098 and refer the issue to PLWG. All Market Segments participated in the vote.  On 2/7/22, ROS unanimously voted via roll call to recommend approval of PGRR098 as amended by the 2/1/22 ERCOT comments. All Market Segments participated in the vote.  On 3/3/22, ROS voted via roll call to endorse and forward to TAC the 2/7/22 ROS Report and Impact Analysis for PGRR098. There was one abstention from the Independent Generator (Luminant) Market Segment. All Market Segments participated in the vote. | |
| Summary of ROS Discussion | | On 12/2/21, the sponsor provided an overview of PGRR098. Participants requested further discussion at PLWG.  On 2/7/22, participants reviewed the 2/1/21 ERCOT comments.  On 3/3/22, ERCOT Staff reviewed PGRR098’s Impact Analysis and contextualized the additional Full-Time Employee (FTE) as caused by general increased changes in transmission planning and specific increased studies and criteria as established within PGRR098. | |
| TAC Decision | | On 4/13/22, TAC voted via roll call to recommend approval of PGRR098 as recommended by ROS in the 3/3/22 ROS Report; with a recommended effective date of January 1, 2024 for Section 4.1.1.8 and upon system implementation for the remainder of PGRR098. There was one abstention from the Independent Generator (Luminant) Market Segment. All Market Segments participated in the vote. | |
| Summary of TAC Discussion | | On 4/13/22, there was no discussion. | |
| ERCOT Opinion | | ERCOT supports approval of PGRR098. | |
| ERCOT Market Impact Statement | | ERCOT Staff has reviewed PGRR098 and believes the market impact for PGRR098 permits TSPs to develop corrective action plans to facilitate the scheduling of maintenance outages during off-peak system conditions without additional risk of non-consequential load loss. | |
| ERCOT Board Decision | | On 4/28/22, the ERCOT Board unanimously voted to recommend approval of PGRR098 as recommended by TAC in the 4/13/22 TAC Report. | |

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| **Comments Received** | |
| **Comment Author** | **Comment Summary** |
| CenterPoint Energy 012122 | Proposed more specific language regarding common tower outages and other clarifications |
| ERCOT 020122 | Added list of transmission elements for which unavailability should be considered, specified that the proposed criteria be assessed for selected off-peak conditions, removed implementation timeline language included in the final paragraph of Section 4.1.1.8, and added new contingencies to the ERCOT contingency list in Section 6.10 |

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| **Market Rules Notes** |

Please note administrative revisions, authored as “ERCOT Market Rules,” have been made to the language below to renumber Section 4.1.1.7 due to the incorporation of PGRR095, Establish Minimum Deliverability Criteria, into the April 1, 2022 Planning Guide.

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| Proposed Guide Language Revision |

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;

(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.

(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.

4.1.1.8 Maintenance Outage Reliability Criteria

(1) In an off-peak system condition selected in accordance with paragraph (3) below, with any transmission element included in paragraph (2) below unavailable, followed by Manual System Adjustments, followed by a common tower outage or the contingency loss of a transmission circuit, transformer, shunt device, or FACTS device, with or without a single line-to-ground fault, all Facilities shall be within their applicable Ratings, the ERCOT System shall remain stable with no cascading or uncontrolled Islanding, and there shall be no non-consequential Load loss. An operational solution may be planned on a permanent basis to resolve a performance deficiency under this condition.

(2) The unavailability of the following transmission elements shall be considered for the requirements of this section:

(i) Any double-circuit transmission line consisting of two circuits sharing a tower of 0.5 miles or greater where both circuits must be removed from service for a maintenance outage; or

(ii) Any transmission circuit, transformer, shunt device, or FACTS device.

(3) At least one off-peak system condition occurring outside of the Peak Load Season shall be selected for assessment.

6.10 Contingency Filing Requirements

(1) Each Transmission Service Provider (TSP), or the entity designated as its modeling entity in Appendix A to the ERCOT Steady State Working Group Procedure Manual, shall provide updates to the ERCOT contingency list corresponding to the steady-state base cases for the TSP’s existing system and planned future Transmission Facilities. ERCOT shall post the list to the Market Information System (MIS) Secure Area. The list shall be reviewed and updated as described in the ERCOT Steady State Working Group Procedure Manual. At a minimum, the list shall contain all required category P1, P2, P4, P5, and P7 contingencies, as described in the North American Electric Reliability Corporation (NERC) Reliability Standard addressing Transmission System Planning Performance Requirements, all contingencies representing the Forced Outage of a double circuit (two circuits on the same structures in excess of 0.5 miles in length), all contingencies representing the Outage of a double circuit (two circuits on the same structure in excess of 0.5 miles in length) where both circuits must be taken out for a maintenance outage, and any other contingencies described in the ERCOT Steady State Working Group Procedure Manual.