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| NPRR Number | [1280](https://www.ercot.com/mktrules/issues/NPRR1280) | NPRR Title | Establish Process for Permanent Bypass of Series Capacitor |
| Date Posted | | April 16, 2025 | |
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| Requested Resolution | | Normal | |
| Nodal Protocol Sections Requiring Revision | | Section 3.11.4.3, Categorization of Proposed Transmission Projects | |
| Related Documents Requiring Revision/Related Revision Requests | | None | |
| Revision Description | | This Nodal Protocol Revision Request (NPRR) establishes a Regional Planning Group (RPG) review process for proposals to permanently bypass an existing series capacitor or un-bypass a series capacitor previously designated as permanently bypassed. | |
| Reason for Revision | | [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 1 – Be an industry leader for grid reliability and resilience  [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 2 - Enhance the ERCOT region’s economic competitiveness with respect to trends in wholesale power rates and retail electricity prices to consumers  [Strategic Plan](https://www.ercot.com/files/docs/2023/08/25/ERCOT-Strategic-Plan-2024-2028.pdf) Objective 3 - Advance ERCOT, Inc. as an independent leading industry expert and an employer of choice by fostering innovation, investing in our people, and emphasizing the importance of our mission  General system and/or process improvement(s)  Regulatory requirements  ERCOT Board/PUCT Directive  *(please select ONLY ONE – if more than one apply, please select the ONE that is most relevant)* | |
| Justification of Reason for Revision and Market Impacts | | The ERCOT System currently has 18 series capacitors installed in the 345 kV transmission network, to primarily enhance power transfer capability and provide voltage support by reducing impedance of the transmission lines between generation and major load centers. While series capacitors improve power transfer efficiency, they also introduce the risk of Subsynchronous Oscillation (SSO)—an abnormal energy interaction at frequencies below the normal operating frequency of 60 Hz. SSO can cause severe damage to generator shafts, series capacitors, and other system components, potentially leading to equipment failures and cascading outages. The risk of SSO increases as more generation or Large Load are located near existing series capacitors. In many cases, major transmission upgrades—such as new 345 kV transmission lines already approved or under construction—can effectively replace the original purpose of series capacitors. As a result, certain series capacitors may become redundant, less critical, or unnecessary following such major transmission upgrades.  The current RPG process does not include a formal review process for proposals to permanently bypass or un-bypass existing series capacitor(s). This NPRR requires that these projects be initially classified and reviewed as Tier 3 projects, with reclassification as Tier 4 neutral projects once any concerns are resolved, ensuring they become subject to RPG Project Review. This clear and structured approach will enhance transparency and coordination by providing RPG stakeholders the opportunity to review and provide comments. Also, efficiencies will be gained in the SSO study process as permanently bypassed series capacitors would no longer be considered capable of becoming radial to Generation Resources or Large Loads. | |

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| Market Segment | Not applicable |

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| **Market Rules Notes** | |

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

* NPRR1274, RPG Estimated Capital Cost Thresholds of Proposed Transmission Projects
  + Section 3.11.4.3

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| Proposed Protocol Language Revision |

3.11.4.3 Categorization of Proposed Transmission Projects

(1) ERCOT classifies all proposed transmission projects into one of four categories (or Tiers). Each Tier is defined so that projects with a similar cost and impact on reliability and the ERCOT market are grouped into the same Tier. For Tier classification, the total estimated cost of the project shall be used which includes costs borne by another party.

(a) A project shall be classified as Tier 1 if the estimated capital cost is greater than or equal to $100,000,000, unless the project is considered to be a neutral project pursuant to paragraph (f) below.

(b) A project shall be classified as Tier 2 if the estimated capital cost is less than $100,000,000 and a Certificate of Convenience and Necessity (CCN) is required, unless the project is considered to be a neutral project pursuant to paragraph (f) below.

(c) A project shall be classified as Tier 3 if any of the following are true:

(i) The estimated capital cost is less than $100,000,000 and greater than or equal to $25,000,000 and a CCN is not required, unless the project is considered to be a neutral project pursuant to paragraph (f) below; or

(ii) The estimated capital cost is less than $25,000,000, a CCN is not required, and the project includes 345 kV circuit reconductor of more than one mile, additional 345/138 kV autotransformer capacity, or a new 345 kV substation, unless the project is considered to be a neutral project pursuant to paragraph (f) below.

(d) A project shall be initially classified as Tier 3 if it meets any of the following conditions and shall subsequently be reclassified as a Tier 4 neutral project upon ERCOT’s determination that any concerns, questions, or objections raised during the comment process have been resolved satisfactorily:

(i) The estimated capital cost is greater than or equal to $25,000,000, and it is proposed for the purpose of replacing aged infrastructure or storm hardening; or

(ii) The estimated capital cost is less than $25,000,000, and it involves the permanent bypass of an existing series capacitor or un-bypassing of a series capacitor that was previously designated as permanently bypassed.

(e) A project shall be classified as Tier 4 if it does not meet the requirements to be classified as Tier 1, 2, or 3 or if it is considered a neutral project pursuant to paragraph (f) below.

(f) A project shall be considered a neutral project if it consists entirely of:

(i) The addition of or upgrades to radial transmission circuits;

(ii) The addition of equipment that does not affect the transfer capability of a circuit;

(iii) Repair and replacement-in-kind projects;

(iv) Transmission Facilities needed to connect a new Generation Resource, Energy Storage Resource (ESR), or Settlement Only Generator (SOG) to a new or existing substation on the existing ERCOT Transmission Grid, including the substation;

(v) The addition of static reactive devices;

(vi) A project to serve a new Load, unless such project would create a new transmission circuit connection between two stations (other than looping an existing circuit into the new Load-serving station);

(vii) Replacement of failed equipment, even if it results in a ratings and/or impedance change; or

(viii) Equipment upgrades resulting in only ratings changes.

(2) ERCOT may use its reasonable judgment to increase the level of review of a proposed project (e.g., from Tier 3 to Tier 2) from that which would be strictly indicated by these criteria, based on stakeholder comments, ERCOT analysis or the system impacts of the project.

(a) A project with an estimated capital cost greater than or equal to $50,000,000 that requires a CCN shall be reclassified and processed as a Tier 1 project upon request by a Market Participant during the comment period per Planning Guide Section 3.1.5, Regional Planning Group Comment Process.

(3) Any project that would be built by an Entity that is exempt (e.g., a Municipally Owned Utility (MOU)) from getting a CCN for transmission projects but would require a CCN if it were to be built by a regulated Entity will be treated as if the project would require a CCN for the purpose of defining the Tier of the project.

(4) If during the course of ERCOT’s independent review of a project, the project scope changes, ERCOT may reclassify the project into the appropriate Tier.