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| PGRR Number | [128](https://www.ercot.com/mktrules/issues/PGRR128) | PGRR Title | Regional Transmission Plan Review of Grid Enhancing Technologies |
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| **Date** | | September 15, 2025 | |
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| **Submitter’s Information** | | | |
| Name | | Alex Al-Homsi, Ted Bloch-Rubin | |
| E-mail Address | | [alex.alhomsi@smartwires.com](mailto:alex.alhomsi@smartwires.com) ; [ted.blochrubin@smartwires.com](mailto:ted.blochrubin@smartwires.com); | |
| Company | | Smart Wires Inc. (Smart Wires) | |
| Phone Number | | (940) 344-4045, (240) 778-8351 | |
| Cell Number | |  | |
| Market Segment | | Not applicable | |

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| Comments |

Smart Wires[[1]](#footnote-1) appreciates the opportunity to submit comments in response to the Planning Guide Revision Request (PGRR) 128, Regional Transmission Plan Review of Grid Enhancing Technologies, which would direct ERCOT to evaluate potential applications of Grid Enhancing Technologies (GETs) and High Performance Conductors (HPCs) (together “Advanced Transmission Technologies or ATTs) for economic, reliability and safety benefits. Smart Wires is a United States-based company founded in 2010 and headquartered in Durham, North Carolina.

Supporting the 9/15/25 WATT AMP TTP comments, Smart Wires suggests increasing the range of applications in which GETs should be evaluated (paragraph (4) of Section 3.1.1.2, Regional Transmission Plan) and including more specific terminology to reflect standard definitions of certain GETs (paragraph (5) of Section 3.1.1.2). To ensure transparency in the implementation of PGRR128, we suggest including certain report details (paragraph (6) of Section 3.1.1.2) and specifying a frequency of reporting (paragraph (7) of Section 3.1.1.2).

**ERCOT and its member utilities have been leaders in managing modern grid development, but major industry and technological changes threaten both system reliability and affordability for ratepayers.**

The inclusion of GETs in ERCOT’s Regional Transmission Plan is critical to addressing the region’s reliability and economic needs in a rapidly evolving power system. ERCOT faces several converging challenges:

* **Rapid Load growth** driven by population increases, electrification, and unprecedented data center demand.
* **Variable renewable generation** with siting limitations and curtailment challenges, especially when transmission capacity is constrained.
* **Capital and timeline constraints** for new transmission projects, which can take years to permit and build.

Meanwhile, congestion costs remain high, and traditional solutions often arrive too late to address near-term reliability and market price impacts. In 2022, Smart Wires conducted an independent analysis of three of ERCOT’s top twenty constrained circuits[[2]](#footnote-2):

* Burns Sub – Rio Hondo 138kV
* Grant – Plaza 138kV
* Blessing – Lolita 138kV

These constraints accounted for nearly $125 million in 2022 congestion costs. The study found that installing a single Advanced Power Flow Control (APFC) device, such as a Modular Static Synchronous Series Compensator (M-SSSC), on each circuit could have relieved these constraints with a relatively modest investment. While congestion cost savings reflect avoided market costs rather than direct utility production savings, they are closely tied to Congestion Revenue Rights (CRR) values, which quantify the economic impact of congestion in the market. Congestion also often forces the curtailment of available generation (particularly low-cost or renewable resources) raising electricity prices and limiting efficient dispatch. By relieving these constraints, APFCs enable more efficient generation to reach load, reduce CRR exposure, defer major capital projects, and support renewable integration. Taken together, the benefits identified in this study supported an investment payback period of less than one year.

**Why GETs Should Be Considered in Every Planning Cycle**

Some commenters indicated that certain GETs are inappropriate solutions for long-term needs and/or difficult to model in common power system software applications. APFCs are a rapid, reliable, and highly controllable asset that utilities in other regions are already using to manage dramatic load growth.[[3]](#footnote-3),[[4]](#footnote-4) [[5]](#footnote-5) The following benefits can be accrued from APFC installations.

1. **Bridge solution for uncertainty:** APFCs can be deployed rapidly, providing congestion relief now while major transmission projects progress through lengthy approval and construction timelines.
2. **Scalable and relocatable:** Modular solutions like APFCs can grow with system needs and be relocated as grid patterns evolve, reducing the risk of stranded investments.
3. **Proven and easy to model:** APFCs are already in service globally and can be represented in ERCOT studies as simple series reactors or capacitors, requiring minimal process changes.
4. **Consumer value and system reliability:** By unlocking existing transmission capacity, APFCs reduce congestion costs, enable load connections, and enhance system reliability.

**Recommendation**

Advancing PGRR128 ensures ERCOT evaluates GETs in every planning cycle, enabling lower-cost, flexible, and timely solutions that benefit consumers, system operators, and the reliability of the ERCOT grid.

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| **Revised Cover Page Language** |

None

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| Revised Proposed Guide Language |

**3.1.1.2 Regional Transmission Plan**

(1) The Regional Transmission Plan is developed annually by ERCOT, in coordination with the RPG and Transmission Service Providers (TSPs). The Regional Transmission Plan addresses regional and ERCOT-wide reliability and economic transmission needs and the planned improvements to meet those needs for the upcoming six years starting with the SSWG base cases. These planned improvements include projects previously approved by the ERCOT Board, projects previously reviewed by the RPG, new projects that will be refined at the appropriate time by TSPs in order to complete RPG review, and the local projects currently planned by TSPs. Combined, these projects represent ERCOT’s plan which addresses the reliability and efficiency of the ERCOT System in order to meet North American Electric Reliability Corporation (NERC) Reliability Standards, the Protocols, Nodal Operating Guides and this Planning Guide. Projects that are included in the Regional Transmission Plan are not considered to have been endorsed by ERCOT until they have undergone the appropriate level of RPG Project Review as outlined in Protocol Section 3.11.4, Regional Planning Group Project Review Process, if required. The process used by ERCOT to develop the Regional Transmission Plan is outlined in Section 3.1.4, Regional Transmission Plan Development Process.

(2) ERCOT shall post the Regional Transmission Plan by December 31 of each year as follows:

(a) Versions that include ERCOT Critical Energy Infrastructure Information (ECEII) shall be posted on the Market Information System (MIS) Secure Area;

(b) Versions that include both ECEII and Protected Information shall be posted on the MIS Certified Area for TSPs only; and

(c) Versions redacted of ECEII and Protected Information shall be posted on the ERCOT website.

(3) ERCOT shall include in the Regional Transmission Plan report a list of Transmission Facilities that are loaded above 95% of their applicable Ratings for the following conditions:

(a) Normal system conditions; or

(b) Following the contingency loss of a single generating unit, transmission circuit, transformer, or common tower outage.

(4) ERCOT must evaluate in the Regional Transmission Plan the potential use of grid enhancing technologies and high-performance conductors for the purpose of:

(a)   increasing transmission capacity;

(b)   reducing transmission system congestion;

(c)   increasing reliability of electric services;

(d)   increasing safety of transmission system crossings over water; and

(e)   reducing the risk of wildfires.

(5) For the purposes of the Regional Transmission Plan:

(a) “Grid enhancing technologies” means hardware or software technology that reduces congestion or enhances the flexibility of electric transmission and distribution systems by increasing the capacity of a line or rerouting electricity from overloaded to uncongested lines while maintaining industry safety standards and includes dynamic line ratings, advanced power flow controllers, and topology optimization; and

(b) "High-performance conductors" means a conductor that has a direct current electrical resistance at least ten percent lower than existing conductors of a similar diameter while simultaneously increasing the energy carrying capacity by at least seventy-five percent and includes carbon fiber or composite core conductors and superconductors.

(6)   An evaluation under paragraph (4) above must include considerations of the availability, technical feasibility, repairability, durability, operational risks, long-term Load support viability, and cost-effectiveness of grid enhancing technologies and high-performance conductors.

(7) To facilitate its obligations under paragraph (6) above, ERCOT may from time to time prepare and/or provide a report of available grid enhancing technologies and high-performance conductors for TSPs to consider in constructing and operating their facilities. ERCOT may decline to recommend the use of a particular grid enhancing technology or high-performance conductor if it determines the technology or conductor is not readily available or implementation of the technology or conductor would not be feasible or cost-effective.

1. <https://www.smartwires.com/> [↑](#footnote-ref-1)
2. <https://www.ercot.com/files/docs/2023/01/26/December-2022-ERCOT-Operations-Report-Public.docx> [↑](#footnote-ref-2)
3. [https://publicdownload.epri.com/PublicAttachmentDownload.svc/AttachmentId=89050](https://url.avanan.click/v2/___https:/publicdownload.epri.com/PublicAttachmentDownload.svc/AttachmentId=89050___.YXAzOnNtYXJ0d2lyZXM6YTpvOjVlZjJjNzNiYjYwNTBlNmNhNmYzYWU5NjY3YjMxNzNhOjY6NmQ4ODo2MGE0NzUzMjA3NjljNTA5MTAzYzU1YmZjYmZkOTlmYzk1NTA2NTYxYmJlYmQ5NGU4MDBlNTY2NGEyZmZhNDllOnA6VDpO) [↑](#footnote-ref-3)
4. <https://www.datacenterdynamics.com/en/news/pge-partners-with-smart-wires-on-grid-enhancement-project-in-san-jose-california/> [↑](#footnote-ref-4)
5. <https://www.smartwires.com/case-studies/> [↑](#footnote-ref-5)