Economic, political, environmental, societal and technical factors have encouraged the proliferation of Distributed Energy Resources (DER) particularly Distributed Generation (DG) in transmission and distribution (T&D) systems. DG proliferation can impact numerous aspects of T&D planning, operations, engineering, analysis, policy and regulation. The industry is actively engaged in evaluating the severity of those impacts on the existing T&D grid and developing solutions to ensure seamless integration. The growing interest and increasing penetration levels of DG, particularly of renewable generation technologies, such as photovoltaics, have also spurred revisiting the microgrid concept as a solution to effectively manage and integrate variable DG along with other DER technologies. Consequently, these factors have also contributed to the emergence of new concerns and challenges. Furthermore, it is expected that penetration levels of DG will continue growing, increasing the complexity of the T&D grid, accentuating the need for reliable real-time operations and control, and triggering additional engineering issues. In this context, one of the key topics that the industry needs to address is the development of new methodologies and solutions for protection and real-time monitoring of T&D systems with high penetration of DG and microgrids. The objective of this special issue is to address, discuss, and present novel applications of protection and monitoring methodologies and solutions for T&D systems with high penetration of DG and microgrids, including but not limited to:

- Novel applications of protection systems, methodologies and technologies such as adaptive protection, overcurrent, distance and directional protection, single-phase tripping, pulse reclosing, etc for improving reliability and power quality of T&D systems with high penetration of conventional and renewable DG and microgrids
- Novel applications of monitoring systems, methodologies and technologies such as Distributed Energy Resources Management Systems (DERMS), Outage Management Systems (OMS), Phasor Measurement Units, smart sensors and AMI for real-time operations and control of T&D systems with high penetration of DG and microgrids
- Impact of DER on conventional protection schemes and industry experiences on conventional and novel protection schemes applied to T&D systems with high DER concentration.
- Practical methods to determine and mitigate adverse impacts from conventional and renewable DGs on the selectivity and coordination of traditional T&D system protection
- New methods, technologies and applications for protection of conventional and renewable DG and Microgrids under interconnected and islanded operation modes

The articles in this special issue will emphasize the application of these technologies and methodologies from the T&D system perspective, with special attention to mitigating impacts, improving system security, operation and control, and increasing system resilience and reliability.

**Submission Guidelines**

This special issue solicits original work that must not be under consideration for publication in other venues. Two-page extended abstracts are solicited for the first round of reviews. Authors of selected abstracts will be invited to submit the full papers in the second round. Authors should refer to the IEEE PES Transactions author guidelines at [http://www.ieee-pes.org/publications/information-for-authors](http://www.ieee-pes.org/publications/information-for-authors) for information about content and formatting of submissions. Please submit the extended abstract including a cover letter with author contact information to Guest EIC Julio Romero Aguero (jera@ieee.org) directly before the deadline.

**Important Dates**

Jan 30th, 2015: Deadline for extended abstract (2 pages) submission  
Mar 30th, 2015: Completion for first-round of reviews  
Jun 30th, 2015: Deadline for full paper submission  
Oct 30th, 2015: Final decision notification  
Nov 30th, 2015: Publication materials due

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