

## Composite Distributed Generation and Transmission Expansion Planning Considering Security

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**Abstract :** During the recent past, due to the increase of electrical energy demand and governmental resources constraints in creating additional capacity in the generation, transmission, and distribution, privatization, and restructuring in electrical industry have been considered. So, in most of the countries, different parts of electrical industry like generation, transmission, and distribution have been separated in order to create competition. Considering these changes, environmental issues, energy growth, investment of private equity in energy generation units and difficulties of transmission lines expansion, distributed generation (DG) units have been used in power systems. Moreover, reduction in the need for transmission and distribution, the increase of reliability, improvement of power quality, and reduction of power loss have caused DG to be placed in power systems. On the other hand, considering low liquidity need, private investors tend to spend their money for DGs. In this project, the main goal is to offer an algorithm for planning and placing DGs in order to reduce the need for transmission and distribution network.

**Keywords :** planning, transmission, distributed generation, power security, power systems

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