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Graph partitioning-based clustering for the planning of distribution network topology using spatial- temporal load forecasting

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Abstract

Planning the expansion and the new topology of distribution networks requires knowing the location and characterization of the load as well as its future growth. Spatial load forecasting is a key tool in this task, providing high spatial resolution and adequate temporal granularity. Nowadays, with the penetration of distributed energy resources, multiple microgrid connection strategies, and implementation of self-healing and protection schemes, it is necessary to identify load blocks to plan the new active network architecture. Based on spatial load forecasting information, this paper proposes a graph partitioning technique to create load clusters in the distribution feeders. A weighted graph is constructed by means of a minimum spanning tree that allows to consider

adjacency relations. The results of the simulation, carried out in a real distribution network , have demonstrated the effectiveness of the proposed method. © 2021 IEEE.

Author keywords

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