

The role of smart communities integrated with renewable energy resources, smart homes and electric vehicles in providing ancillary services: a tri-stage optimization mechanism

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Abstract-

Increasing the connection of distribution networks (DNs) inevitable since the uncertain behavior of the above-mentioned resources can create various technical and economic challenges for the operators. Hence, this article introduces a tri-stage mechanism for the ancillary services markets in coordinated TN and DN, taking into account wind and solar demand response program (DRP) not only reduces the costs of the energy and ancillary services markets but also improves the voltage profile during the peak period.

Index Terms- Active distribution networks; Energy market; Ancillary services markets; Smart homes; Electric vehicles; Demand response program

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