

# **Optimal allocation of solar and wind generation units in sub-networks considering the uncertainty of the load and the uncertainty of the productive capacity of the units by the valued algorithm**

Mostafa Ramzani\*, Ahmad Reza Jodehi,

**Abstract :** One of the major issues discussed in power engineering is electric power generation. Since traditional costs and losses are high in production, modern methods such as DG Units can be used. To be DG is a small manufacturing unit that is located at a point close to consumer centers, which is also related to environmental conditions and type of DG, including solar, wind and other producers of fossil fuels, etc. But the important issue in discussing the dispersed production units is the position and optimal configuration of these units, which is briefly called the allocation of DG (DG allocation) issue. DG Locations is a hot topic in the research. The optimal allocation of DG can reduce transmission and distribution costs as well as reduce losses. In this study, using the Walther exploratory algorithm, the answer was found to be closer to the global optimal and also using the Monte Carlo method of uncertainty Modeling and more likely answers. The results in the form of charts and tables in the fourth chapter indicate that the losses of the system after the installation of distributed generation systems were reduced and also the voltage profile was within the permitted range.

**Keywords :** Key Vagrant: Monte Carlo Simulation, Valve Optimization Algorithm, Uncertainty, Optimal Allocation

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