

Distributed Generation Capacity Allocation Using GA for Maximizing System Benefits

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Abstract— The issue of evaluating available generation capacity for Distributed Generation (DG) on the existing distribution system is an important challenge in power system planning. Traditionally, distribution network operators have allocated available generation capacity on a first come first served basis. The placement of generation on a first come first served basis, invariably, limits the overall capacity of distributed generation. Several new methods, with respect to the technical constraints, are developed to determine the suitable locations and ratings for DG on distribution networks. The methods will enable a high penetration of generation on the network and avoid network blackouts. These methods have two main disadvantages; firstly all network constraints and objective functions are assumed linear and secondly objective functions are not economic base. In the new proposed method by the author, the ratio of generation to cost is maximized based on genetic algorithm (GA), because of nonlinear nature of cost and benefit. In this method all network constraints and objective function can be modeled easily, which alleviate the problem of linear conditions. The results of the proposed method are accurate and even in linear conditions can be comparable with other methods. The proposed method is simulated on a case study and results confirm effectiveness and robustness of the method in compare to the other methods.