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.