

An Optimization approach of renewable energy distribution networks simultaneously considering capacity and distance

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Renewable energy companies are mostly in a small scale with limited financial status, their initial distribution networks are in a small scale. Companies should scale up the network by providing renewable energies into demands in terms of amount and cost. This had not been considered before. In this paper, the renewable energy distribution problem has been transformed into a mathematically transformed into decision-making problems. The current problem can be categorized into Capacitated Vehicle Routing Problem (CVRP). CVRP is a well-known combinatorial optimization problem which is concerned with minimizing the distribution cost between suppliers and customers using the minimum number of vehicles. The solutions of the proposed problems have been computed using evolutionary algorithms including genetic algorithm and Ant Colony Optimization. In order to illustrate the applicability of the proposed modeling and computation methodology, bioenergy network problem in the metropolitan city of Seoul has been considered in this paper.