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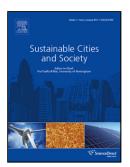
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## ACCEPTED MANUSCRIPT

# Benefit Maximization of Demand Side Management Operator (DSMO) and Private Investor in a Distribution Network

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#### Abstract

In this paper, the beneficial impact of private investor participation and demand side management operator (DSMO) in planning problem is investigated. All system uncertainties are modeled by fuzzy number approach. Bi-objective optimization model is proposed for the maximum benefit of DSMO and private investor in the planning horizon. To tackle the optimization problem,  $\varepsilon$ -constraint and fuzzy decision making methods are jointly used. Different scenarios are modeled including and excluding electric vehicles (EVs) charging impact on the daily load curve. The problem is formulated in the general algebraic modeling system (GAMS) environment and solved by its embedded high-performance solvers. The obtained results reveal that the desired benefits of a private investor cannot be satisfied in the no benefit sharing scenario. In non-zero benefit sharing scenario, Pareto optimal front includes non-negative values for both DSMO and private investor which demonstrates the

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