

## Article Abstract

<b>Title:</b>	<b>Distribution system reliability evaluation using credibility theory</b>
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<b>Abstract:</b>	This paper describes a new method of using credibility theory to evaluate distribution system reliability. The advantage of this method lies in its ability to account for both objective and subjective uncertainty by integrating stochastic and fuzzy approaches. Equipment failures are modeled as random events, while the uncertainty in failure indices is modeled using credibility theory. In this manner, distribution system reliability is evaluated by simultaneously considering objective and subjective uncertainty. In this paper, a hybrid algorithm based on fuzzy simulation and Failure Mode and Effect Analysis (FMEA) is applied to determine fuzzy reliability indices of distribution system. This approach can obtain fuzzy expected values and their variances of reliability indices, and the credibilities of reliability indices meeting specified targets. The method is demonstrated using an IEEE test system comprising sixty seven nodes and thirty eight load points.
<b>Keywords:</b>	Distribution system, reliability evaluation, credibility theory, fuzzy reliability indices, fuzzy simulation