

Impact of distributed generation on distribution investment deferral

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Abstract— The amount of distributed generation (DG) is increasing worldwide, and it is foreseen that in the future it will play an important role in electrical energy systems. DG is located in distribution networks close to consumers or even in the consumers's side of the meter. Therefore, the net demand to be supplied through transmission and distribution networks may decrease, allowing to postpone reinforcement of existing networks. This paper proposes a method to assess the impact of DG on distribution networks investment deferral in the long-term. Due to the randomness of the variables that have an impact on such matter (load demand patterns, DG hourly energy production, DG availability, etc.), a probabilistic approach using a Monte Carlo simulation is adopted. Several scenarios characterized by different DG penetration and concentration levels, and DG technology mixes, are analyzed. Results show that, once initial network reinforcements for DG connection have been accomplished, in the medium and long-term DG can defer feeder and/or transformer reinforcements.

Index Terms— Electricity distribution; Distribution planning; Electricity economics; Distributed generation; Mont

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