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A techno-economic comparison of utilizing aerial bundled conductors with bare conductors in distribution systems

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Reliability of distribution systems becomes more important since consumers expect uninterrupted supply irrespective of external circumstances. Frequently, bare conductors are used in many of the distribution systems. From the economical point of view, the utilization of bare conductors in distribution lines is more appropriate. Reliability of distribution lines with bare conductors is low due to both environmental effects and human activities. Therefore utility companies may incur revenue losses due to unserved energy to the consumers. The reliability of distribution systems with aerial bundled conductors is high but they are expensive. In this work, the cost of utilizing aerial bundled conductors has been compared with the bare conductors considering the cost of unserved energy. Reliability parameters of feeders with bare conductors of a distribution system in the coastal area of the country have been calculated. For a particular year, the unserved energy due to bare conductor failures was calculated in the selected area. The cost of the unserved energy was calculated with the help of penalty factor. The cost for utilizing aerial bundled conductors in distribution systems has been compared with the cost of use of bare conductors.

Key words: Unserved energy, Aerial Bundled Conductors

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