

Reducing the Short Circuit Level in a Large Metropolitan Area

by

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Abstract.-

As electric power systems grow in response to increasing demand and as new generation is being located near load centers, short circuit currents reach and in some cases surpass the interruptive capacity commercially available. New short circuit fault current limiters, based on power electronics or superconductivity, are being developed for transmission voltages, but their application is still distant. One common practice in order to reduce these fault levels is to insert a low-loss series reactor in selected transmission lines. This, of course, can have a negative impact on voltage stability. Another solution is to split buses or open lines, although there is always the uncertainty of how much system reliability suffers by this practice.

In this paper, it is shown that a careful choice of lines to open can lead to a significant reduction in short circuit levels, with an insignificant degradation of system reliability. For the studies shown, a reliability technique based on Monte Carlo simulations is used, and indices calculated are loss of load probability and expected value of energy not supplied.