

# **Reliability assessment by sensitivity analysis due to electrical power sequential tripping for energy sustainability**

## **ABSTRACT**

A drastic change has occurred over the last few years in the electrical power business, where a significant worldwide revolution has taken place and changing the design of electrical powers. It has become imperative for the utility to handle the electrical power reliably as poor performance can lead to electrical power outages which will inevitably have an adverse impact on a nation's economy and society. Hence, the power company should consider devising suitable pre-emptive measures to avoid the possibility of electricity supply disruptions. These disruptions may have a potentially catastrophic effect on the running of the system, which may even include consumers having to bear monetary costs. This research looks at the valuations of risk and reliability cost/worth-based customer interruption cost due to static system sequential tripping. The performance of the suggested techniques are evaluated through comparing risk-based valuations and reliability cost/worth valuations corresponding to the transfer capability results which are correlated to the static system sequential tripping. The results have demonstrated that the unpredictable sequential tripping must not be ignored from the transmission reliability margin determination. Hence, the proposed techniques are likely to play an important role for energy sustainability of the future.

**Keyword:** Customer interruption cost; Electrical power tripping; Energy sustainability; Static system cascading collapse; Risk and reliability cost/worth