

Abstract Submitted
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Analysis of network survivability with application to power systems SVETLANA POROSEVA, University of New Mexico — All society's critical infrastructures depend on availability of electric power. It makes the resilience and reliability of power systems of crucial importance. Multiple studies indicate that the modern electric power infrastructure is not prepared to withstand many forms of large-scale damage caused by natural and man-made malicious physical events. A key factor in the system's ability to survive massive sudden damage caused by adverse events is its topology: the number of system elements that generate and demand power and the connections between them. We will present an approach to quantify the impact of the system topology on its survivability. The approach is based on analyzing the system's responses to all possible combinations of unrecoverable faults (fault scenarios) on the availability and connectivity of the system elements. Such an analysis is a computational challenge for large-scale systems or micro-grids with complex topology. The possibilities of reducing the computational complexity of the problem will also be discussed.

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