



### D29 Sabotaged Electrical Grid: Worse Than 9/11?

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**Learning Overview:** After attending this presentation, attendees will see that forensic engineers can play an important role in determining if criminal sabotage or an accidental sequence of events has occurred. The by-product of such an investigation is often an increase in the reliability of the electrical grid.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by contributing to an improved performance of criminalists and others involved in an investigation and postmortem of an intentional electrical grid failure by availing themselves of forensic electrical engineers.

This presentation is based on 50+ years of experience as a hands-on Electrical Engineer working for and with electric utilities nationally and internationally, and having caused accidental blackouts, experienced blackouts, investigating many blackouts, as well as breakdowns and failures of electrical equipment, including transmission lines, distribution lines, major power transformers, generators, and substations.

In addition, the study of major blackouts in the United States, Canada, Russia, Australia, Greece, Venezuela, Pakistan, and Jamaica, just to name a few, has caused one to pause and reflect on the dire consequences of a lack of electricity in our electricity-dependent world.

For example, on a small scale, an extended power failure in a high-rise condominium brings about the putrefaction of refrigerator contents, lack of circulating water, loss of heat and cooling, elevators, communication, and eventual evacuation. If we now scale this up to a city-wide outage, food stores will also close, gas stations will not pump fuel, the water supply will eventually dry up, police and emergency services will diminish, hospitals, banks, and credit card services will stop, cash will be king until barter and robbery takes hold, and so on. If we now scale this up to a region-wide outage affecting seven states and one province, as on Aug 14, 2003, then the outage effect really gains traction. The World Trade Center attack of 9/11 killed and injured several thousand people; a power failure of one week could kill as many, and a power failure lasting one month and longer will bring our society back to primordial behavior, much to the satisfaction of the perpetrators. The forecast will be left to psychologists and others in this field.

The criminalists and other investigators will be busy trying to survive.

So far, it is believed that most outages have been accidental or, let's say, not deliberate. However, there is a fine line between those two terms. "Accidents" can be staged and created. Without turning this presentation into a "how to," let it be said that we are very vulnerable today despite the various protection and backup systems that have been put in place after each blackout. These vulnerabilities still need to be addressed.

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#### Electrical Grid, Sabotage, Blackout