

Preparing for the Inevitable

New Approach to Recovery from
Catastrophic Losses of Grid Facilities

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etcalf. Ukraine. Super Storm Sandy. The risks to the nation's bulk power delivery network are growing. The threat of physical and cyber attacks now compound the risks from natural disasters.

As former utility regulators and policymakers, we urge utilities, network operators, and regulators to recognize these growing risks, work together to develop robust grid resiliency and recovery plans, and implement a shared inventory model as a cost-effective way to expedite restoration of the power delivery network if severe weather strikes or parts of the grid come under attack.

Recent attacks on the electrical system, including the rifle attacks disabling transformers at Metcalf in California and the use of cyber-warfare to disrupt the power supply in the Ukraine, serve as important indicators. Bad actors now see disrupting the electricity supply as a way to cause havoc.

Physical attackers have demonstrated an increased sophistication in the planning and execution of coordinated strikes at multiple sites, and the motivation and means to plan and carry out these attacks without prior detection.

Strategic attacks on grid facilities could result in unprecedented loss of essential services, including water, sewer and communications, in addition to electricity. Utilities must take additional steps to enhance grid security, to protect against attacks, and to enhance resiliency and recovery if an attack is successful. Likewise, Super Storm Sandy disrupted major elements of the Northeast grid and future natural disasters are inevitable.

Policymakers are paying attention to potential threats to the nation's power supply. While federal agencies and utilities are working together to protect the grid through enhanced physical and cyber security, it is also critical for utilities and regulators to anticipate and prepare for recovery if an attack is successful, or when severe weather affects large portions of the power delivery system.

For some critical pieces of grid equipment, such as high-voltage transformers, replacements are not readily available for response to widespread losses. A high-voltage transformer can take up to two years to manufacture and deliver. For this type of equipment, it's critical and prudent to have a readily-available domestic inventory of spares to expedite recovery and lessen the

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impact of a catastrophic event.

The question for utilities and regulators is how to adequately prepare for recovery from possible catastrophic losses. Doing nothing may minimize cost in the short run. But, it leaves electricity customers exposed to the risk of extended outages. A head-in-the-sand approach is not a practical resiliency policy.

At the other extreme, having each utility purchase its own dedicated inventory of critical equipment, including high-voltage transformers, sufficient to address the risk of widespread catastrophic losses would be duplicative and prohibitively expensive for utility customers.¹

A shared inventory model offers a sensible middle-ground approach. Access to a shared inventory can ensure that a readily-available supply of securely stored spare transformers will be available domestically for deployment following a catastrophic event.

Having utilities pool the costs of maintaining an inventory of spare critical equipment will expedite grid recovery at substantial savings relative to a go-it-alone approach with every U.S. utility purchasing and maintaining its own extensive inventory of critical equipment spares that they may never need.

Moreover, a shared inventory approach will provide economies of scales in purchasing, warehousing, protecting, and maintaining the spare equipment.

Utilities understand the unique challenges of recovering from damage to the transmission grid. Grid Assurance is a joint effort by six major utilities to develop a shared inventory approach.

It will use cost-based pricing arrangements that are familiar

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