

How to improve our chances against attacks on our substations?

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Just 9 !!
Article from 2014,
after Metcalf
substation attacks

U.S. Risks National Blackout From Small-Scale Attack

Federal Analysis Says Sabotage of Nine Key Substations Is Sufficient for Broad Outage

Recent Physical Attack on Substations

Conspiracy, Terrorism, Burglary - why?!



Washington State – Dec 24

4 Washington Substations - Tacoma Power's Graham and Elk Plain substations and Puget Sound Energy's Kapowsin and Hemlock substations



North Carolina – Dec 3

Cut power to tens of thousands of people and took days to repair. Officials had called the outage a "targeted" attack. 45K customers impacted.



More than 100 incidents

Since Jan 2022, there have been **at least 18** more publicly reported attacks or potential attacks on substations and power plants in Florida, North Carolina, Oregon, South Carolina, and Washington

15

MW Drop

\$3M

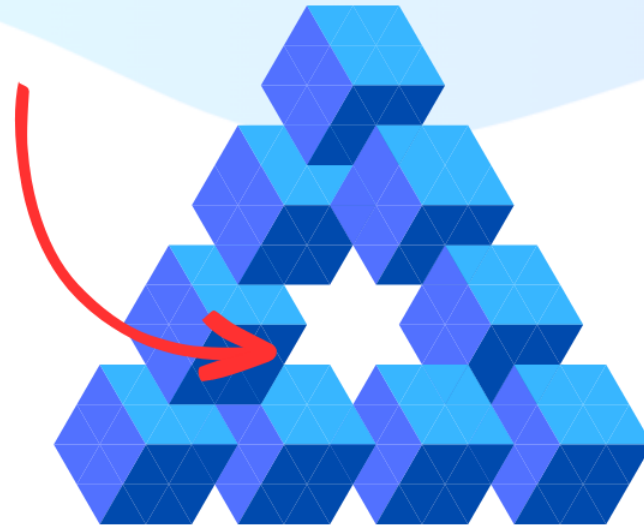
Loss

14K

Customers

A potential resiliency solution has 3 components.

① Physical Security



③

Rapid Response
Resiliency Technology

②

A.I. Technology

**NERC CIP 014 and
the NERC Security
Guideline for the
Electricity Sector,
a video system is
required to
visually monitor
substations**



Voice Signals from the Security Personnel

Image Processing Code running on CCTV Video Acquisition System

Protection sensors on critical assets (IOT-based)



Early Warning Systems for Operators

Data Acquisition systems exists.

Technology exists.

Time to connect these.



Rapid Response Resiliency Technology

- Mobile Substations
- Faster Data Analytics – Using Conversational Interface
- Microgrids





Digital Transformation will have a big role to play.

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