How to improve our chances against attacks on our substations?

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

Federal Analysis Says Sabotaging Nine Key Substations Is Sufficient for Broad Outage

Just 9!! Article from 2014, after Metcalf substation attacks
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
A potential resiliency solution has 3 components.

1. Physical Security
2. A.I. Technology
3. Rapid Response Resiliency Technology
NERC CIP 014 and the NERC Security Guideline for the Electricity Sector, a video system is required to visually monitor substations.
Data Acquisition systems exists.

Technology exists.

Time to connect these.

- 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
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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