NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Risk Profile #8: Physical Security Vulnerabilities

Statement of the Risk

Intentional damage, destruction, or disruption to facilities can cause localized to extensive Interconnection-wide Bulk-Power System (BPS) disruption potentially for an extended period.

Level of Risk

Moderate Priority

Descriptors of the Risk

1. Increasing and evolving threat around physical attacks.
2. The exposed nature of the grid, which is vulnerable and difficult to protect.
3. Long lead times associated with manufacturing and replacing some equipment, which can increase complexity of restoration after physical attacks that damages BPS equipment.
4. The level of industry knowledge or coordination in accessing the existing spare equipment inventory.
5. Physical damage to generation fuel sources, such as natural gas pipelines, which will degrade reliable operations of the BPS.
6. Damage to long-haul telecommunications and water supplies, which will make certain critical facilities vulnerable and reduce the ability to serve load.
7. An electromagnetic pulse (EMP) event, which could lead to widespread loss of load in certain regions.

Recommendations for Mitigating the Risk

Near-term (1–2 year timeframe):

1. NERC should continue to oversee the implementation of NERC's Physical Security Reliability Standard entitled Critical Infrastructure Protection (CIP-014-1).
2. Enhance the coordination between Electricity Information Sharing and Analysis Center (E-ISAC) and the Telecommunications and Water supply ISACs.
3. NERC should develop effective metrics formulated to understand the trend of physical attacks and potential threats
4. Assess the risks of physical attack scenarios on midstream or interstate natural gas pipelines on natural gas availability impacting generation and the reliability of the BPS in the NERC's long-term reliability assessments and planning activities.

5. NERC should promote industry efforts with the trades and forums to develop a spare equipment strategy and prioritization.
6. NERC should expand GridEx to include more facilities and industries.
7. The forums and trades should perform the following activities:
    a. Identify and promote specific resiliency and vulnerability assessment best practices with planning for extreme events, including good physical security assessment practices.
    b. Develop an event guideline outlining prevention strategies and event response and recovery protocols for sabotage scenarios.
8. In collaboration with the Critical Infrastructure Protection Committee and industry stakeholders, develop a risk process to address the potential impacts of physical security threats and vulnerabilities.

Mid-term (3–5 year timeframe):

9. The industry should review and update restoration plans while accounting for physical security scenarios.
10. Develop performance and metrics reporting on joint E-ISAC and Telecommunications ISAC assessments of potential physical attack disruptions while differentiating from vandalism or theft incidents.
11. Conduct a special regional assessment that addresses natural gas availability and pipeline impacts under physical attack scenarios.
12. The Department of Energy, the industry, trades, and forums should identify appropriate mitigations to spare equipment gaps and transportation logistics.
13. The ERO Enterprise, the industry, trades, and forums should evaluate inventories of critical spare transmission equipment as necessary based on a spare equipment strategy and prioritization.
14. The industry should evaluate mechanisms for cost recovery of implementing specific resiliency strategies by the industry.
15. Industry should work with the technical committees and forums to develop mitigation strategies and physical security assessment best practices.
16. Expand participation in security exercises other than GridEx in order to reflect extreme physical events.
17. Facilitate planning considerations to reduce the number/exposure of critical facilities.

Long-term (greater than 5-year timeframe):

18. Institutionalize relationships among Electricity Subsector Coordinating Council (ESCC), government, and industry partners to enhance the culture of recognizing and addressing extreme physical event preparedness across industry.
19. Foster the development of methods, models, and tools to simulate system reliability impacts for the planning and operational planning time horizons.