RESEARCH MOTIVATION

- Availability of Bulk Power Systems (BPS) cyber resilience metrics will support risk management and mitigation decisions.
- Provide quantitative insights to ensure operational resilience and assist in development of cost-effective mitigation plans.
- Motivate BPS operators to continually assess their resilience capabilities and benchmark their performance.

RESEARCH VISION

We aim to develop quantifiable cyber resilience metrics for BPS vulnerable to cyber attacks.

RESEARCH ROADMAP

- Development of mathematical models to derive cyber resilience metrics such as robustness, redundancy, rapidity, and resourcefulness properties of the BPS network considering the interconnected substations and control centers in presence of cyber threats.
- Development of a qualitative tool to provide users with a qualitative approach to assess the security posture of cyber systems and networks in the bulk power systems.
- Development of a quantitative tool to provide quantitative cyber resilience assessment for the utility companies based on network/hardware/software configurations.

RESEARCH IMPACT ON BPS SECURITY

BPS SYSTEM SECURITY IMPACT

- Organizational Impact
  - Increased overall technical and organizational security.
  - Increased network resilience from cyber attacks.
  - Automated software generated resilience metrics would help in reducing costly resources for vulnerability analysis.

COLLABORATION OPPORTUNITIES

Seeking collaborative opportunities from industry partners:
- Evaluation of qualitative tool
- Reference architectures to aid in development of quantitative tool

Contact: ssheetty@odu.edu

Activity webpage: https://cred-c.org/researchactivity/cyber-resilience-metrics-bulk-power-systems