Distributed Energy Resources Cybersecurity Framework & Risk Manager

RSDE
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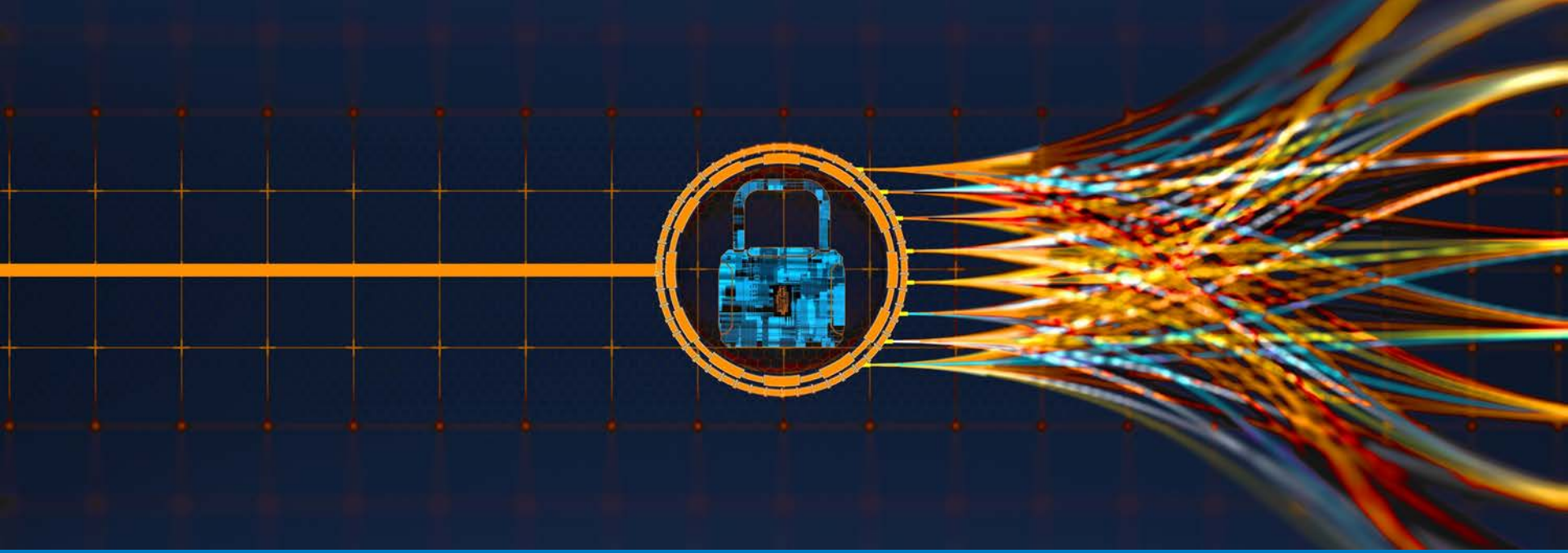
Cybersecurity Assessment for Distributed Energy Resources

- NREL conducted over 30 assessments for utilities across the United States with a cybersecurity assessment tool based on the DOE Cyber Security Capability Maturity Model (C2M2) and the National Institute of Standards and Technology (NIST) Cyber Security Framework (CSF) focused on business process.
- With funding from the Federal Energy Management Program (FEMP), part of the DOE Office of Energy Efficiency and Renewable Energy NREL modified the current cyber governance assessment tool to include an assessment process specifically for DERs.



The Distributed Energy Resources Cybersecurity Framework (DERCF) was developed to help federal agencies mitigate gaps in their cybersecurity posture for distributed energy systems.

Assessing Three Key Areas for Cybersecurity

Governance

Technical Management

Physical Security

Cyber Governance Security Assessment

Domains

- Risk Management
- Asset, Change, and Configuration
- Identity and Access Management
- Threat and Vulnerability Management
- Situational Awareness
- Information Sharing and Communication Management
- Incident Response
- External Dependency Management
- Cybersecurity Program Management

Cyber-Physical Technical Management Security Assessment

Domains

- Account Management
  - Authentication, authorization, and accounting
  - Role-based access control
  - Remote access
  - Monitoring and logging
- Configuration Management
  - Change management
  - Access control
  - System settings
  - Cloud security
- Systems/Device Management
  - Software integrity
  - Cryptography
  - System protections

Physical Security Assessment

Domains

- Administration Controls
  - Audits
  - Awareness training
  - System security testing
  - Operational management
  - Security plan
  - Secure data
- Physical Access Controls
  - Perimeter security
  - Building security
  - Lighting
  - Signage
  - Intrusion alarm/motion detector
- Technical Controls
  - Intrusion Detection/prevention assets
  - Smart card/keying/badges
  - Sensor system/proximity reader/radio-frequency identification
  - Communication system
  - Closed-circuit television

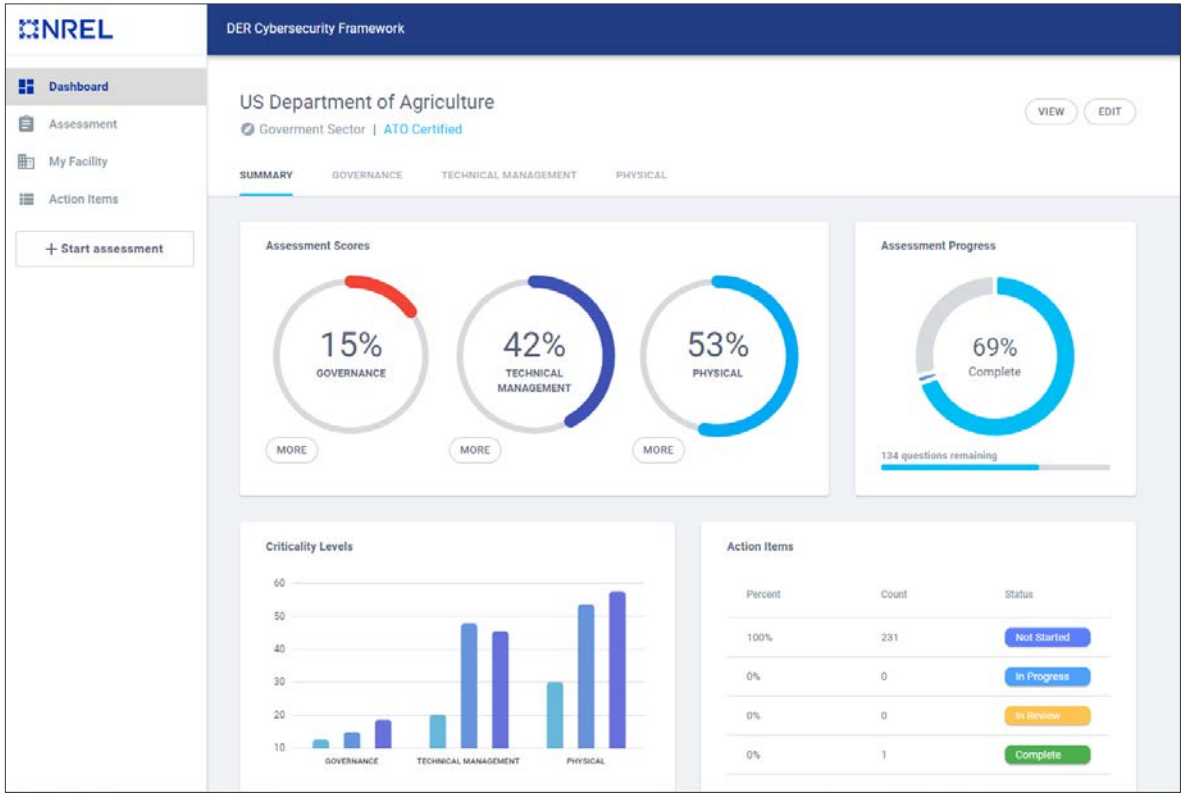
DERCF Tool: Overview

- Publicly available interactive version of the DERCF framework
- User-focused assessment
- Detailed results and action items
- Userbase: Site operations, energy managers, executive managers
- Tailored assessment to individual site

Hosted by NREL at www.dercf.nrel.gov

DERCF Tool: Unique Features

- Dynamic content-driven approach
- Internal-facing application to aid researchers based on user behavior
- User experience focused application, encourages re-use
- Data secured to meet FIPS-199 medium standards



Distributed Energy Resource Risk Manager

The Distributed Energy Resources Risk Manager

- NREL extended the scope of the DER-CF to include the NIST Risk Management Framework (RMF), addressing the challenges faced by federal energy managers when complying with the NIST RMF for DER systems
- The NIST RMF is a cyclical process designed to incorporate principles of security and risk management into an organization's system policies and procedures.
- As an additional tool, NREL's **Distributed Energy Resources Risk Manager (DER-RM)** is independent of the DER-CF's existing self-assessment and allows users to focus on the RMF process.

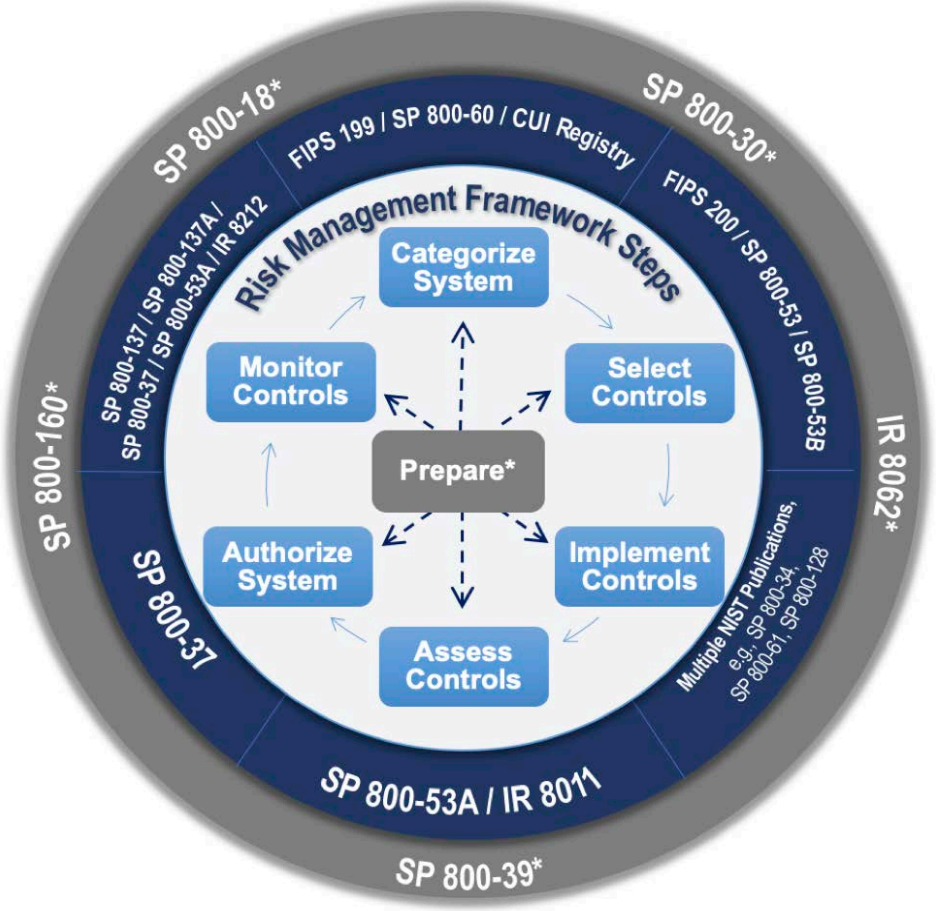


Illustration from NIST

DER-RM Goals

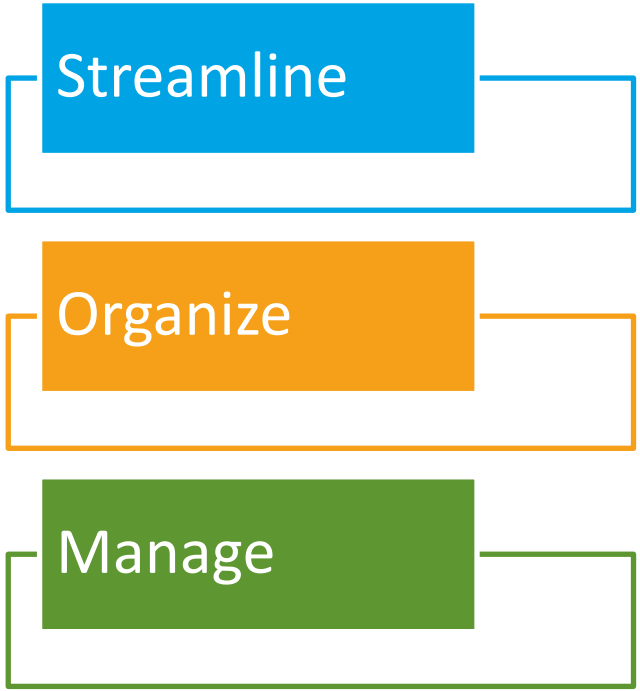
- **Navigate compliance**

  Manage cybersecurity risk with government requirements in an organized manner
- **Automate requirements**

  Adapt to the organization specific needs and present the most aligned templates and recommendations
- **Provide knowledge**

  Apply NIST guidance and DER-RM specific approaches
- **User-friendly interaction**

  Calculate risk score and generate system-specific requirements through real-world examples



Q&A

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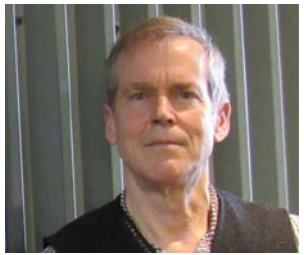

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