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NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Actions

Howard Gugel, Vice President of Engineering and Standards
Board of Trustees Meeting
February 10, 2022

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- Proposed changes
 - Clarify the role as process oversight body
 - Clarify that the Standards Committee (SC) may consult technical committees regarding the technical justification of Standard Authorization Requests (SAR)
 - Added expectation that voting members are familiar with the Standard Processes Manual
 - Added a paragraph to highlight the SC's ability to address urgent reliability needs with appropriate agility
- Action
 - Approve the Standards Committee charter amendments

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Critical Infrastructure Protection Board Resolution Update

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- Standards
 - Work continues on CIP-003
 - Drafting team is considering comments and preparing changes
 - Expect to post week of February 14
- Low Impact Criteria Review team
 - Work continues on white paper
 - Identification of risks and management strategies
 - Input to be solicited (Q2 target)

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Cold Weather Standard Development Update

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- SAR accepted for posting
- SAR drafting team seated
- Comments being reviewed
- SC committed to deadlines in Board resolution



Questions and Answers

CIP-014 Compliance Evidence

Steven Noess, Director, Regulatory Programs
Board of Trustees Meeting
February 10, 2022

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- **Summary**

- CIP-014-2 has a unique caveat to its “Compliance” section that all evidence be retained at an entity’s facilities.
- ERO Enterprise should no longer treat CIP-014 evidence differently
 - Advent of Align and SEL
 - Experiences during pandemic highlighted effectiveness of remote work
 - Challenged ERO Enterprise’s ability to monitor CIP-014 effectively
 - Removal harmonizes CIP-014 with every other Reliability Standard

- **Action**

- Approve and authorize staff to file with applicable regulatory authorities, to the extent necessary, modifications to the Compliance section of CIP-014-2



Questions and Answers

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Supply Chain

Howard Gugel, Vice President of Engineering and Standards, NERC
Thomas Galloway Sr., President and CEO, NATF
Board of Trustees Meeting
February 10, 2022

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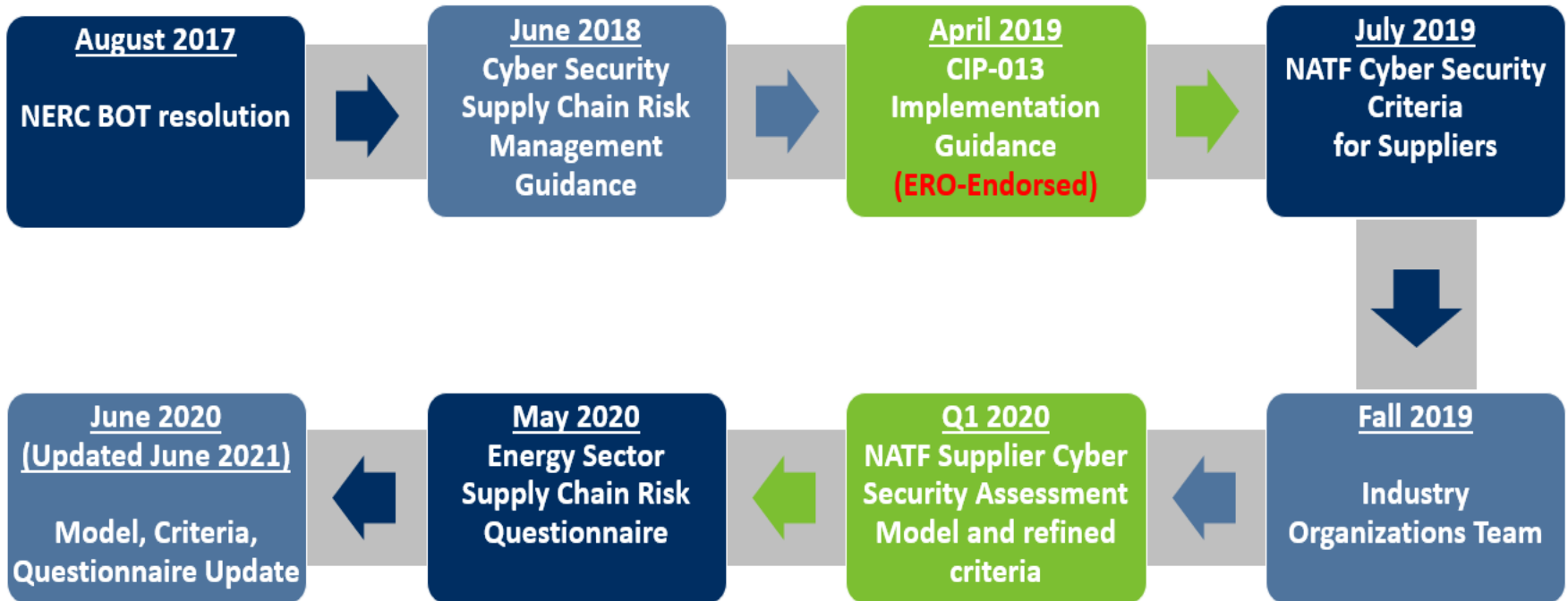


- Board of Trustees (Board) 2017 Resolution
 - Addressed supply chain standards and other potential risks
 - Requested actions from NERC and stakeholders
 - Prepare for Implementation of the standards
 - Study supply chain risks
 - Communicate supply chain risks
 - Forums to develop best practices white papers
 - Associations to develop white papers on issues for small entities
 - Technical committees to study the effectiveness of the standards

- Activities in response to resolution
 - Two studies/reports on supply chain risks
 - Small group meetings to communicate supply chain risks
 - NAGF and NATF developed best practices white papers
 - APPA/NRECA jointly developed white papers on issues for small entities
 - Technical committee to study the effectiveness of the standards
- NATF supply chain activities continued the resolution

NATF Supply Chain Activities

NATF's Supply Chain Journey



Objectives

Security

Identifying and addressing cyber security risks introduced via supply chain

Industry Convergence

Achieve industry convergence on the approach (Model) to facilitate addressing the following objectives

Efficiency and Effectiveness

Convergence on common approaches to achieve reasonable assurance of suppliers' security practices

Compliance

Implementation guidance to meet supply chain related CIP standards (CIP-013-1; CIP-005-6 R2.4; CIP-010-3 R1.6)

Supply Chain Accomplishments

NATF Supply Chain Security Assessment Model

- NATF Supply Chain Security Assessment Criteria
- Energy Sector Supply Chain Risk Questionnaire
- NATF Criteria and Questionnaire Revision Process

NATF and ERO Collaboration

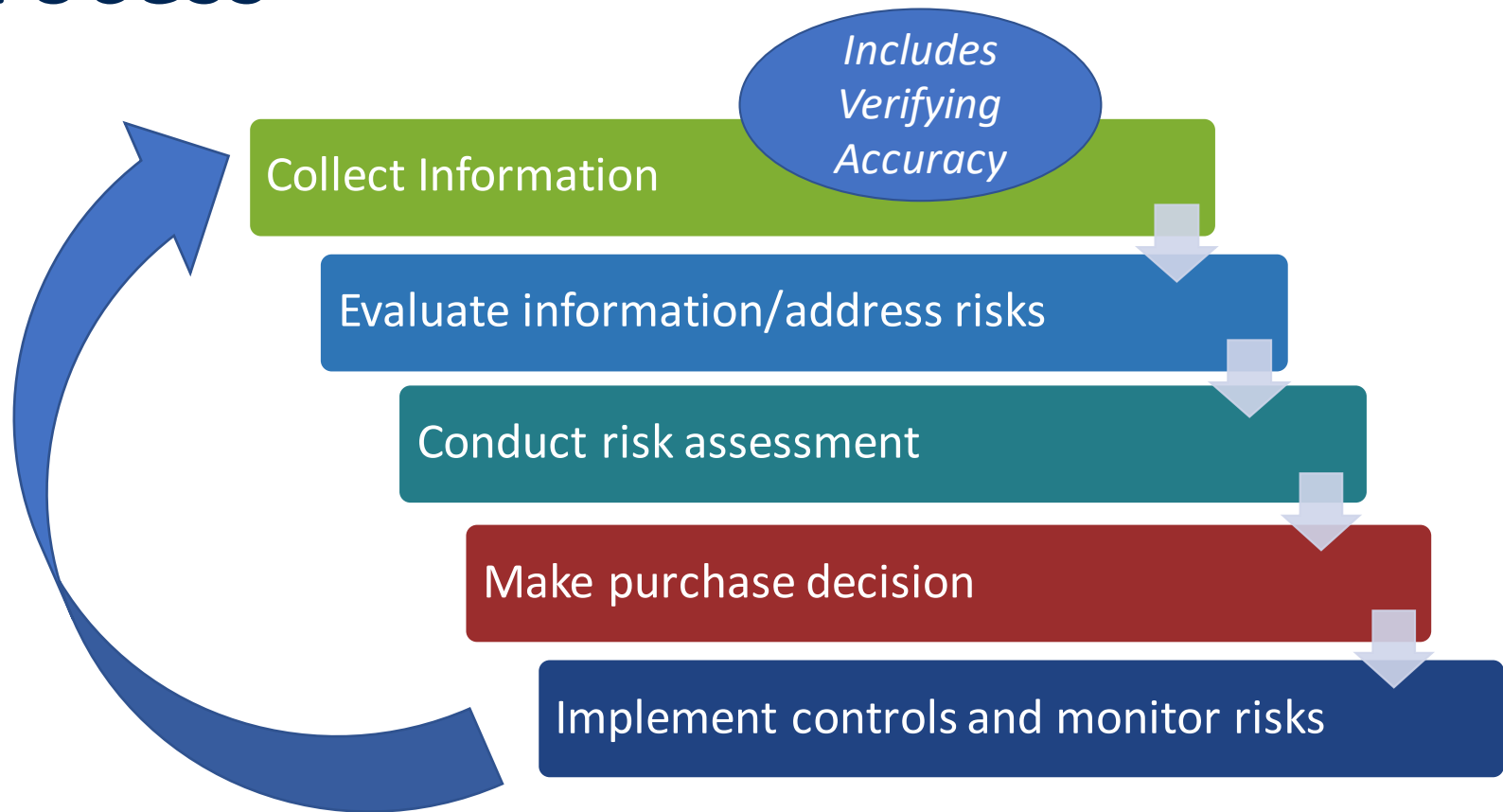
- NERC and E-ISAC Awareness of NATF Supply Chain Activities

The Industry Organizations Team

- Educational Products
- Webinars Series
- Industry alignment, collaboration and support of products

Available to industry at
<https://www.natf.net/industry-initiatives/supply-chain-industry-coordination>

Supplier Assessment Model Process



NATF Supply Chain Security Assessment Model Value Proposition

Mitigation

Provides a foundation for entities to identify and mitigate supply chain risks

Partnerships

Provides opportunities for entities and suppliers to mitigate risks

Inclusive

Allows entities to work with current suppliers and third-party assessors

Adaptable

Open process to identify or modify needed information

Convergence

Identification of needed information allows suppliers to be responsive

Validation

Facilitates collection and verification of industry-specific information

Convergence on Information

Effective and Efficient for Industry

- Convergence on information needed to evaluate risk
- Manageable amount of data

Effective and Efficient for Suppliers/Vendors

- Information consistency provides for faster vendor response

Criteria are Mapped to Multiple Security Frameworks

- Includes NIST, ISO 27001, IEC 62443 and SOC
- One framework does not cover all criteria

Validation of Supplier Information

- NIST does not have an associated certification or assessment
- Obtaining multiple certifications will cover most criteria

Continued Efforts for Key Components



In Process

Continue ERO Enterprise and NATF Collaboration

- ERO Endorsement of Implementation Guidance
 1. *NATF CIP-013 Implementation Guidance – Independent Assessments*
 2. *NATF CIP-013 Implementation Guidance – SCRM Plans*

Continue Convergence of Industry

- Effective
- Efficient
- Secure





Questions and Answers

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Year-End Review of Achievements of the 2021 Work Plan Priorities

Erika Chanzas, Manager of Business Planning
Board of Trustees Meeting
February 10, 2022

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ERO Enterprise Long-Term Strategy Focus Areas

1. Expand risk-based focus in Standards, Compliance Monitoring, and Enforcement
2. Assess and catalyze steps to mitigate known and emerging risks to reliability and security
3. Build a strong, E-ISAC-based security capability
4. Strengthen engagement across the reliability and security ecosystem in North America
5. Capture effectiveness, efficiency, and continuous improvement opportunities

NERC'S Core Priorities for 2021

1. Energy Sufficiency
2. Cold Weather
3. Cyber and Physical Security Threats

- Significant unforeseen challenges:
 - Ongoing pandemic
 - Winter Storm Uri
 - Unprecedented security threats
- Key accomplishments in the following areas:
 - Reliability risk mitigation
 - E-ISAC
 - NERC employee experience
 - ERO Enterprise transformation
 - Reliability ecosystem
- Delivered against 53 of 57 tactical priorities set in August 2020

Weatherization

- Approved initial winter prep Reliability Standards and accepted SAR for standard modifications

Energy Sufficiency

- Formed Energy Reliability Assessment Task Force (ERATF) and developed SAR

Inverter Performance

- Prepped SAR following Odessa disturbance

Facility Ratings

- Coordinated Enterprise-wide approach to mitigating facility ratings risk; leveraged NATF efforts

CIP Standards

- Worked on protections for low impact assets with external roundtable connectivity for CIP-003
- Created task force to evaluate CIP standards against lens of coordinated attack

Reliability Assessments

- Advances in assessment of energy risk and reliability against more extreme conditions

Risk Assessment

- Completed risk registry and began risk prioritization process development

Information Sharing

- Issued over 1,500 postings and bulletins, conducted multiple Critical Broadcast Calls and webinars/briefings in response to significant increase in security risks
- Expanded membership by 20% and increased information sharing by 20%

System Monitoring

- Launched OT pilots and supported implementation of DOE 100-day sprint (Dragos/Essence)

Government Partnerships

- Developed joint whitepaper on supply chain risk with FERC
- Worked with DOE to expand CRISP and established an Energy Threat Analysis Center to support DHS's Joint Cyber Defense Collaborative

GridEx & GridSecCon

- Integrated Canadian government and cross-sector industries (gas, telecom, finance) into GridEx
- More than 900 participants in GridSecCon (held virtually)

Other

- Received Net Promoter Score (NPS) of 59 in JD Power Member Satisfaction Survey
- Increased collaboration with natural gas sector

Workplace Model

- Developed and implemented Connected Workforce model and internal communications plan
- Executed new D.C. office lease and Atlanta office lease amendment

People Development

- Rebuilt performance management based on professional services model
- Leadership training conducted for all staff and targeted training for people managers

Diversity & Inclusivity

- Conducted unconscious bias training and launched three Employee Resource Groups
- Substantial progress made in hiring/advancing practices

Employee Engagement

- Conducted virtual employee appreciation event and created employee peer recognition program
- Employee engagement survey results recognized transformation efforts

Align and SEL

- Implemented Releases 1 and 2 successfully, and reconceived Release 3 as two (Release 3 implemented in December 2021 and Release 4 planned for 2022)

Consistency

- Implemented harmonized processes and increased consistency in performance of CMEP

Engagement

- Conducted two Enterprise-wide town halls and three leadership group engagements
- Increased Regional Entity engagement with the E-ISAC

Collaboration

- Joint presentation of GridSecCon (Texas RE) and virtual Human Performance conference (WECC)

Federal/State/Provincial

- Conducted regular engagement with regulators, policymakers, and government representatives
- Coordination with Regional State Outreach team on Reliability Assessments

Canadian Partners

- NRCan and Public Safety Canada participated in GridEx; built Cyber Centre connection
- Continuing to partner with IESO on Project Lighthouse

Trades & Forums

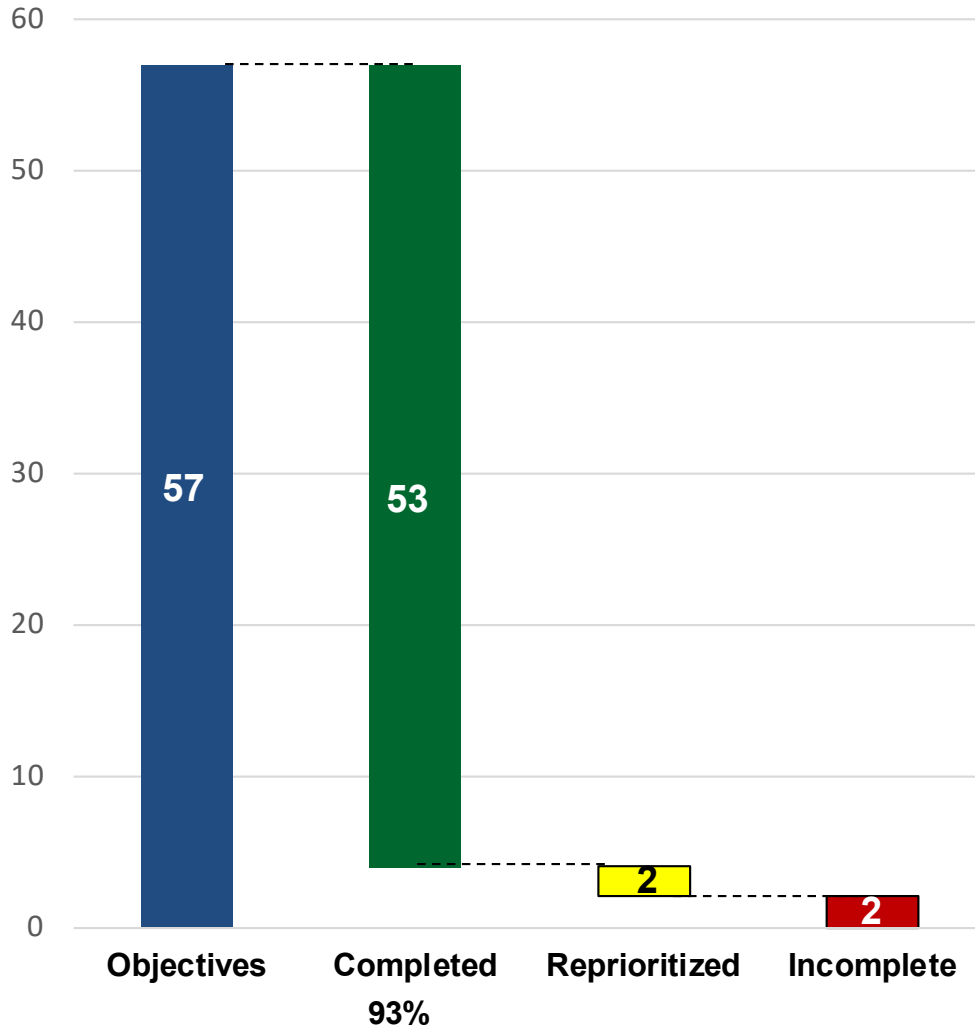
- Conducted quarterly meetings with Trades & Forums representatives and expanded reach into renewable energy associations
- Conducted bi-monthly meetings with NATF on joint work plan items
- Collaborated with NAGF on energy and weatherization work
- Worked with natural gas trades and companies to address subsector interdependencies

Media

- Expanded outreach around Reliability Assessments and social media activity

Other

- Collaboration with IEEE, EPRI, NAESB, ESIG, PSERC, and IRC on a number of reliability efforts
- Continued collaboration with EU/ENTSO-E, with focus on security, pandemic, and energy sufficiency



- **53 items complete**
- **2 items deferred by management**
 - Delayed federation of MS Teams until security risk mitigation strategy could be developed
 - Delayed rollout of new E-ISAC Portal to fully address critical software defects and other issues before going live; will implement in Q1 2022
- **2 not reached**
 - Staffing constraints on resilience measures; will address in 2022
 - Delayed implementation of E-ISAC automated data sharing platform with membership; will implement in 2022



Questions and Answers

Appendix

Detailed Work Plan Priorities Assessment



Objective has been achieved



Objective reprioritized by management in 2021



Objective will not be met in 2021

Key Objectives

1. Prioritize and support the development of new and/or enhancement of existing Reliability Standards for the following risks:

Resource availability due to potential energy limitations in the operational timeframe

Transmission planning-related fuel scenarios for normal and extreme events

Supply chain risk mitigation for low impact BES Cyber Assets

Cold Weather Reliability Standard enhancements for generating units

FERC/ERO Enterprise Mid-Central/Texas Cold Weather Inquiry -Begin implementation of Inquiry Actions

Status Highlights



ERATF completed industry survey and drafted technical justification and a SAR



ERATF completed industry survey and drafted technical justification and a SAR



Project 2020-03 initiated



Cold Weather Standards adopted by Board and filed with FERC



Final report released; SAR accepted for posting by SC and project initiated

Status Highlights

Key Objectives

2. Consistently embed internal control activities within the compliance monitoring program
3. Develop strategy for appropriate oversight of the emerging resource mix



Compliance Oversight Plan (COP) approach presented to the CCC and NERC Board. NERC and Regional Entities developed an internal controls template and training that has been adopted by all Regional Entities.



BES Generator Threshold Report; Electric-Gas Working Group Work Plan

Key Objectives

Lower Priority Activities:

Planning data, information exchange, and modeling of distributed energy resources

Inverter protection and control interactions during grid disturbances

Status Highlights



Standards Project 2020-06 in development



Standards Project 2020-02 in development

Key Objectives

1. **Assessment:** Identify and assess performance trends and emerging factors impacting BPS reliability and make recommendations to address the following high-priority risks:

Energy storage technologies, applications, and use (Energy)

Incorporating cybersecurity risks in BPS planning, engineering, and operations (cyber)

Supply Chain (cyber)

Load loss recovery from extreme events (resilience measures) (energy/cold weather)

Status Highlights



(1) Storage Special Assessment; (2) 2021 Long-Term Reliability Assessment (LTRA); and (3) Reliability Guideline: Performance, Modeling, and Simulations of BPS-Connected BESS and Hybrid Plants



IEEE Security Integration Project in progress; RSTC's SITES built into work plan



Ongoing work of Supply Chain Working Group (SCWG) of RSTC



Short-staffed; target completion in 2022

Key Objectives

2. **Mitigation:** Develop lessons learned, recommendations, and/or implement mitigations (e.g., guidelines, technical references, training, industry outreach):

Increasing reliance on DER and resources below BES thresholds

Increased amounts of DER

Supply Chain: Implement report recommendations

FERC/ERO Enterprise Mid-Central/Texas Cold Weather Inquiry
-Begin implementation of Inquiry Actions

Status Highlights



1) SPIDERWG Reliability Guidelines Approved by the RSTC; (2) BES Generation Threshold report drafted; (3) LTRA; and (4) State of Reliability report completed



(1) SPIDERWG Reliability Guidelines; (2) LTRA; (3) State of Reliability report completed; and (4) DER Modeling Survey and findings presented



Continued modifications to CIP-003 to address supply chain for low impact BES Cyber Assets



Final report released; SAR has been accepted for posting by SC and project initiated. RSTC reviewing work plans.

Key Objectives

Lower Priority Activities:

Assessment:
Electromagnetic pulse

Assessment:
Energy Management Systems

Mitigation:
Unacceptable inverter performance

Mitigation:
Energy Management Systems

Status Highlights



Work continues on EMPWG



2021 updated EMS Special Assessment



Published Odessa Report and IRPWG work plan



Published Lessons Learned document; conducted Monitoring and Situational Awareness Conference (virtual)

Key Objectives

1. Strategy:

Execute strategic plan

Develop OT risk mitigation strategy

Evaluate extension of services to downstream natural gas (DNG) sector

Operationalize strategic partnerships

Maintain cost effectiveness

Status Highlights



Executed Strategic Plan; see sub-objectives 1.2, 1.4, and 1.5



CRISP pilots updated to the second phase of execution and 100-day plan and needs assessment conducted



Daily information sharing and monthly meetings with DNG-ISAC continue - future integration evaluation being scoped



(1) E-ISAC access to IESO, DNG portals and real-time sharing; (2) New DOE administration collaboration on incidents and CRISP; and (3) Monthly analyst-to-analyst exchange calls



Will end 2021 under budget and GridSecCon costs covered by registration fees and vendor sponsorships

Key Objectives

2. Information Sharing:

Increase overall information sharing by partners and industry through targeted outreach

Continue to expand CRISP participation and evaluate other sensor technologies

Improve coordination and connectivity to intelligence community

Continue to conduct threat workshops, webinars and develop products

Status Highlights



Member Executive Committee (MEC) metrics slides; procedures and messaging for membership outreach, both generally and for the SMIRF community



Positive discussion on partnership, budget, and future technology; CRISP survey completed with 94% program satisfaction



Government and intel executives invited to GridEx VI tabletop and participation in several classified and unclassified briefings



(1) Conducted monthly webinars; (2) resumed industry engagement program; and (3) conducted two critical broadcasts

Key Objectives

3. Analysis:

Deploy automated information sharing tools, leverage E-ISAC data platform and extend to membership

Refine performance metrics

Status Highlights



Delayed until 2022



Included in the MEC metrics slides

Key Objectives

4. Engagement:

Enhance E-ISAC portal and develop robust feedback mechanisms

Continue Industry Engagement Program and increase membership

Execute GridEx VI

Maintain Canadian engagement

Status Highlights



New portal migration delayed until 2022



Four Industry Engagement Programs conducted in 2021; E-ISAC added 107 new member and partner organizations, at an increase of 9% new users increased by 24% (1,187 new users)



GridEx VI successfully executed



Monthly CEA and quarterly SIPC meetings; invited to participate in NRCan security exercise. IESO: monthly meetings and E-ISAC now has access to IESO Lighthouse Portal

Key Objectives

1. Enhance outreach to stakeholder/policy organizations:

Implement state outreach initiative, including

- Harmonized communications on reliability assessments
- Served as a trusted resource to the states on reliability and security matters.

Enhance relationships with Canadian entities and support information exchange with international entities on reliability and security matters.

Cold Weather: Coordinate with FERC, NERC and the Regions regarding joint inquiry

Cold Weather: Communicate with key stakeholder/policy organizations on the Mid-South Cold weather event and assessments and actions

Cyber: Communicate with Administration related to cybersecurity initiatives

Status Highlights



NERC state outreach team has continued to meet regularly with state regulators and coordinate on assessments



Numerous engagements/meetings; NERC Board to met with Canadian regulators; Robb delivered keynote at Fall CAMPUT meeting



Final report issued November 2021



Briefings conducted on Capitol Hill and for state regulators in the MISO and PJM areas



Released a whitepaper (FERC-NERC) regarding SolarWinds

Key Objectives

2. Work with ERO Enterprise Communications Group (ERO CG) to refine and further develop the ERO Enterprise Strategic Communication Plan, to:

Develop sharing platforms

Amplify initiatives and messages through expanded ERO Enterprise communication efforts

Implement activities from Work Plan

Status Highlights



Management decided to change direction on the work priority with regard to MS Teams



Messaging on multiple efforts including: Align, SEL launch -- WECC, NERC; deferment on onsite activities and self-logging expansion; release of SRA and infographic; WRA and infographic; LTRA and infographic; release of *Currently Compliant* podcast



See sub-objective above "Amplify...."

Key Objectives

3. Sustain and expand stakeholder outreach through in-person and virtual meetings using WebEx conferences where possible

4. Support corollary activities within industry, forums, and trades (e.g., DOE's NAERM, IEEE Standard 2800, EPRI, and NATF/NAGF)

5. Improve processes and presentation of seasonal assessments toward coordinated and quicker release with Regional Entities

Status Highlights



Increased outreach to FERC, DOE, NARUC, states and trades



Conducted ongoing meetings with NATF, NAGF, and NAERM; continued support of IEEE Standard 2800



Improved seasonal assessments, published Summer and Winter Reliability Assessments earlier than in the past; coordinated release and outreach efforts with Regional Entities

Key Objectives

1. Complete the “Big 3” (plus 1):

Rolled out Align Release 1, 2 and 3 along with the ERO SEL , supported by stakeholder outreach and education, end-use training, and business unit readiness activities

Completed CIP and Phase II of the O&P Standards Efficiency Reviews

Successfully implemented the RSTC

Communicated with Administration on cybersecurity initiatives (cyber)

Status Highlights



Align Release 1 launched in Q1 2021. Align Release 2 launched on July 19; Align Release 3 broken into two phases – Release 3 launched on December 7. Align Release 4 will be launched in Q3 2022.



Final recommendations presented to Board at May meeting



RSTC met throughout 2021; approved a number of reliability guidelines, reference documents, SARs and other technical documents; continually updated work plan to reflect numerous projects



Released a whitepaper (FERC- NERC) regarding SolarWinds and a NERC alert

Key Objectives

2. NERC:

Finish 2021 at or below budget and maintain at least \$3M in operating reserves

Implement flexible workforce and responsible reentry plans (as needed)

Execute new leases for ATL and D.C. offices

Status Highlights



2021 Q4 unaudited results show NERC 3.3% under budget with well over \$3M in operating reserves



The flexible workforce (Connected Workforce) went live in June and reentry plan update presented to staff in July. Office reopening plans presented at NERC town hall



Executed new DC office lease and current Atlanta office lease amendment

Key Objectives

3. Regional Entities:


Continue evaluation of compliance monitoring and enforcement processes for efficiency with Regional Entity and stakeholder feedback

Implement opportunities to centralize and/or standardize processes


4. ERO Enterprise:

Achieve transformation process alignment and shared resources


Status Highlights



Filed petition for program; FERC approval of CMEP ROP revisions; Provided presentations to the CCC on CMEP activities as part of the CCC stakeholder perception feedback; held discussions with industry groups on same topics



Align and SEL implementation – see focus area, objective 1.1. Reporting of reserve categories to FAC standardized (See “Total ERO Enterprise Reserves” on p. 30-31 of the November 3 FAC Agenda Package)



ERO Enterprise town halls shared examples of the transformation that include, but are not limited to, implementation of Align and the SEL, self-formed training and outreach group, collaboration groups, and overall better coordination and engagement across the Enterprise.

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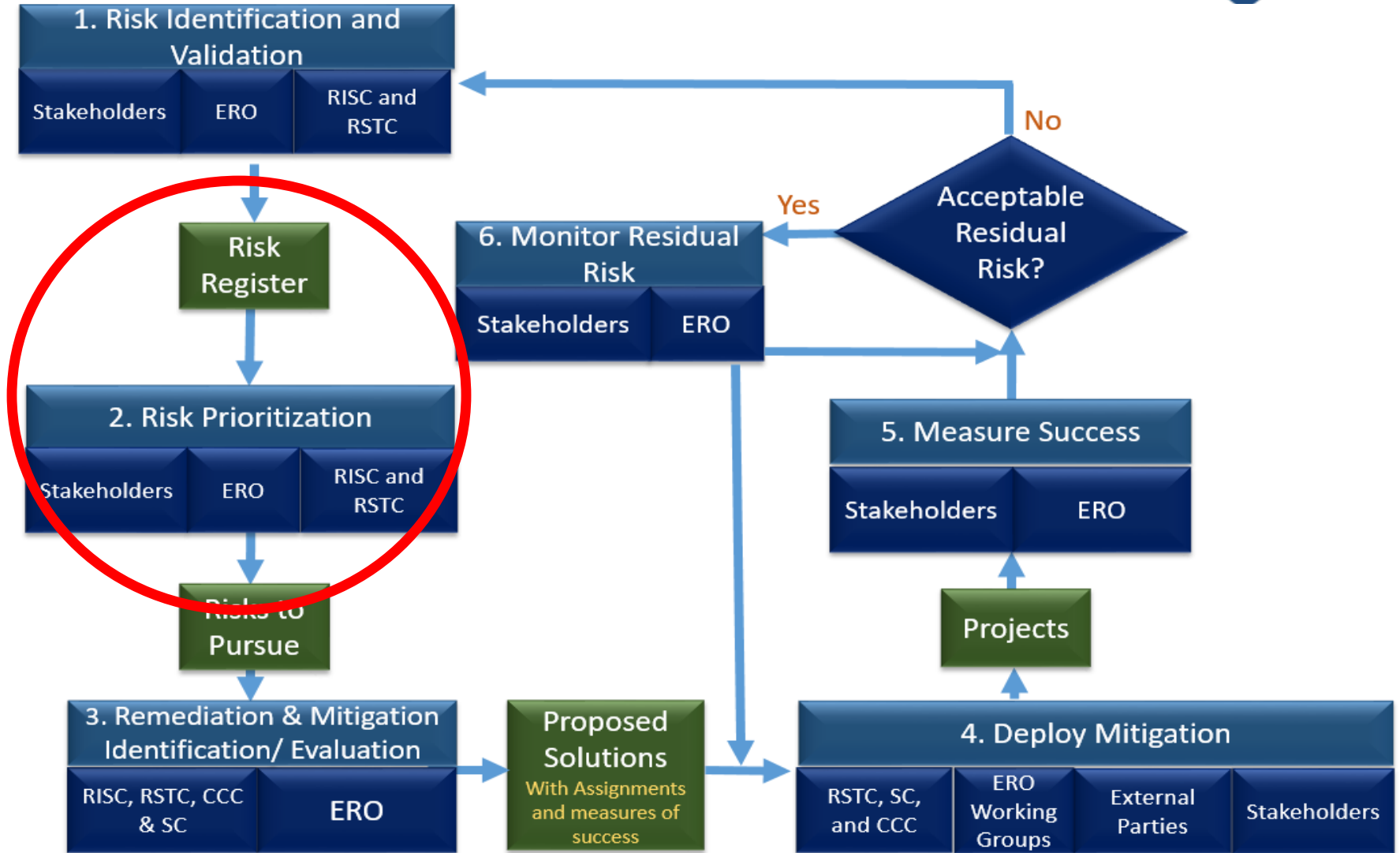
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Risk Registry

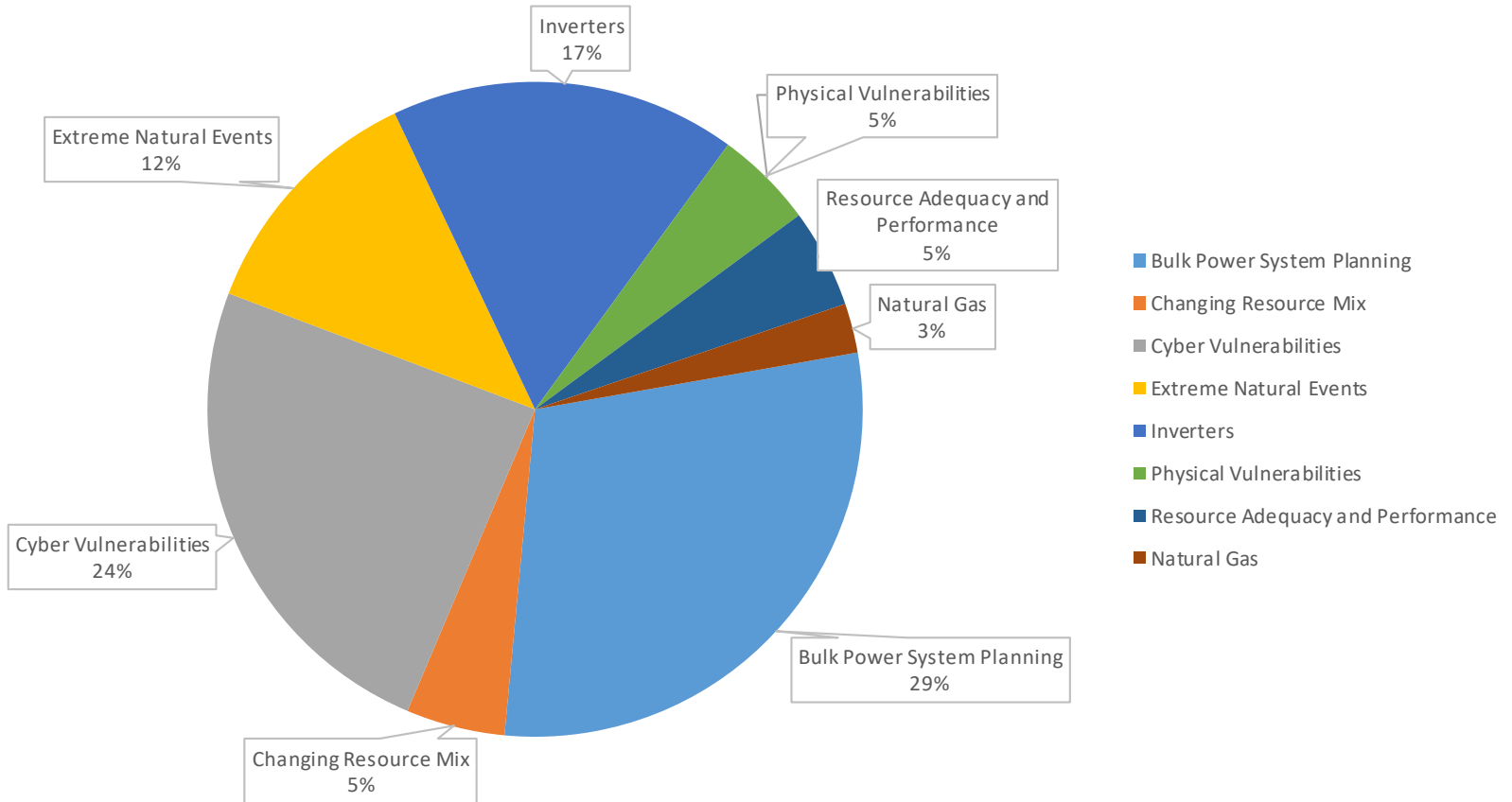
Soo Jin Kim, Director of PRISM
February 10, 2022

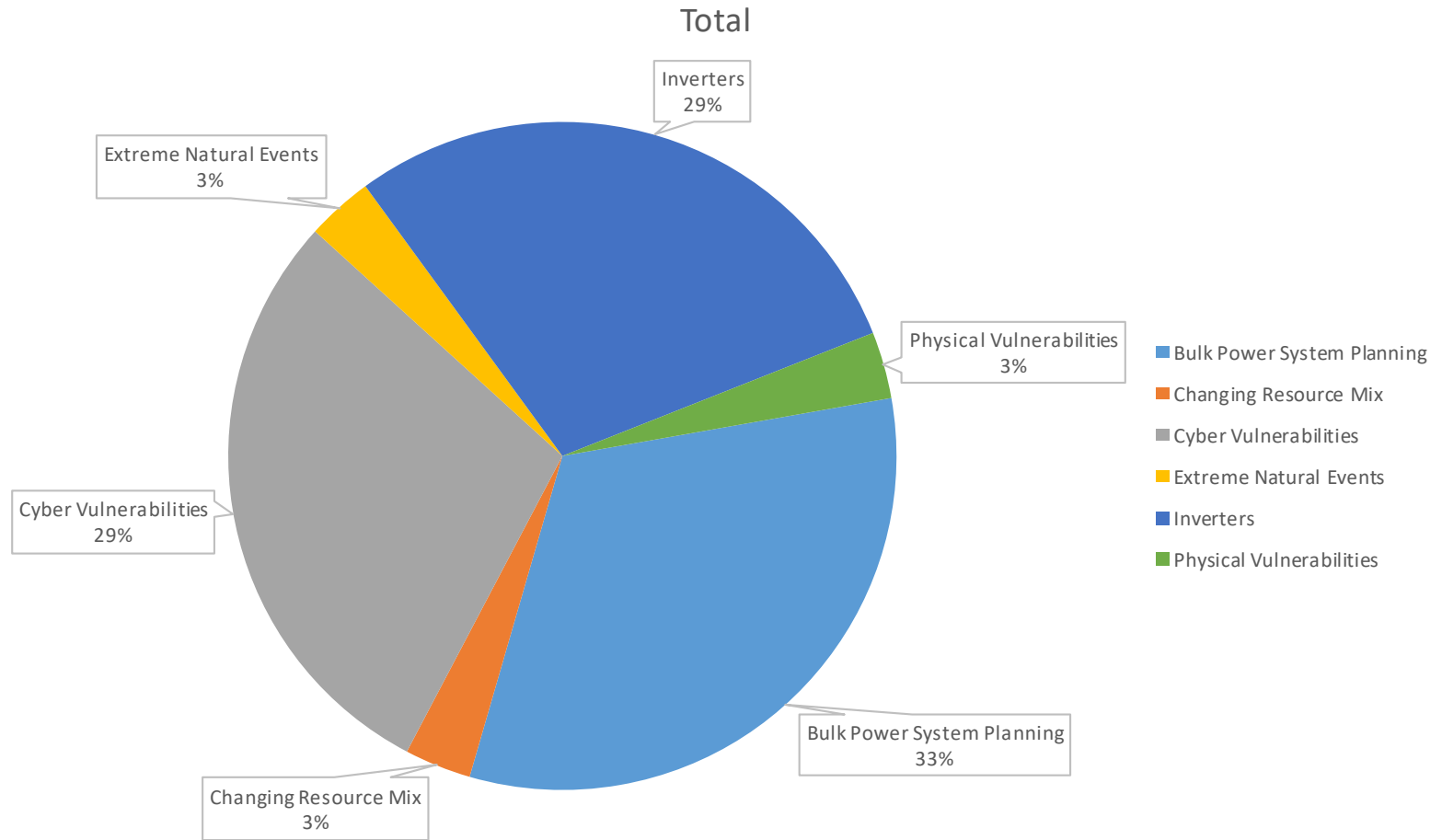
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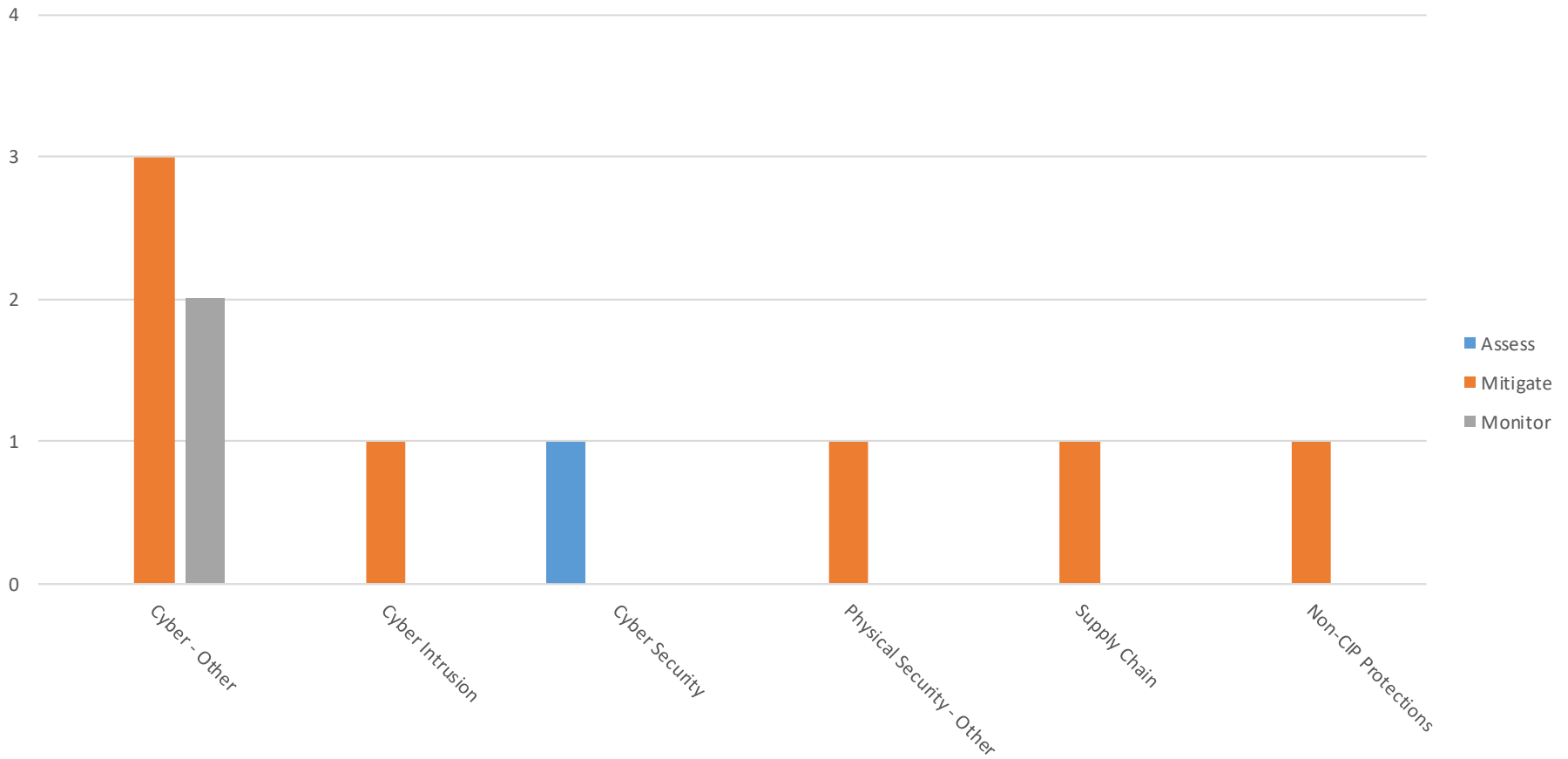


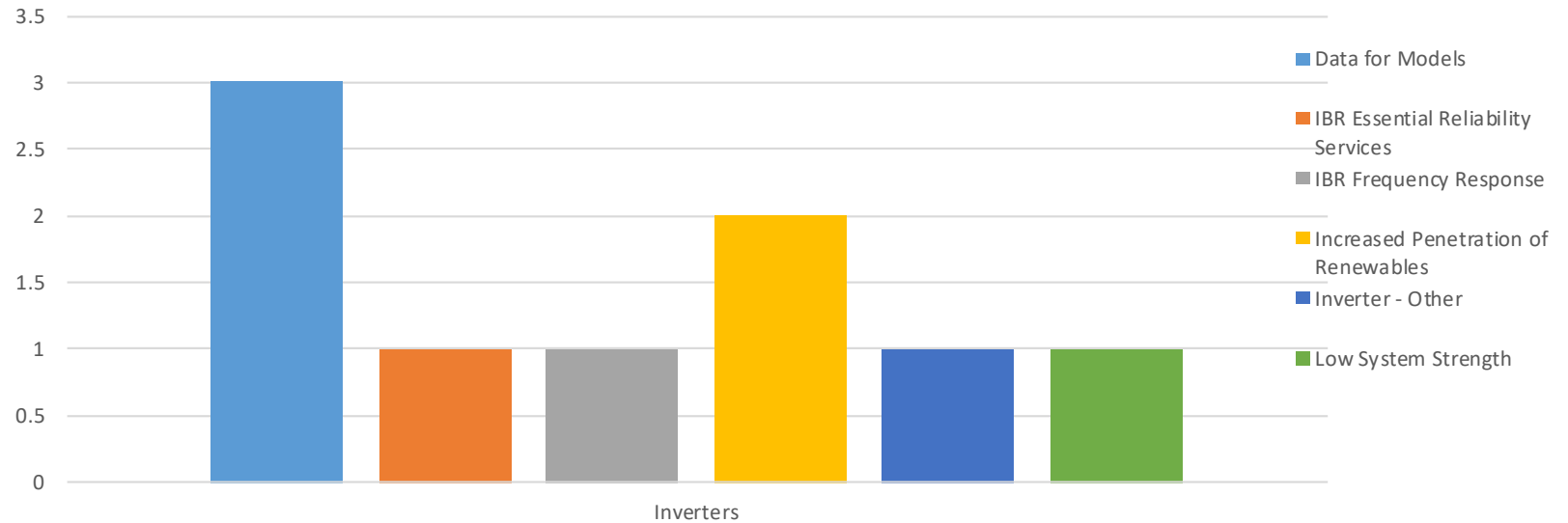
Overview of Risk Registry Tasks

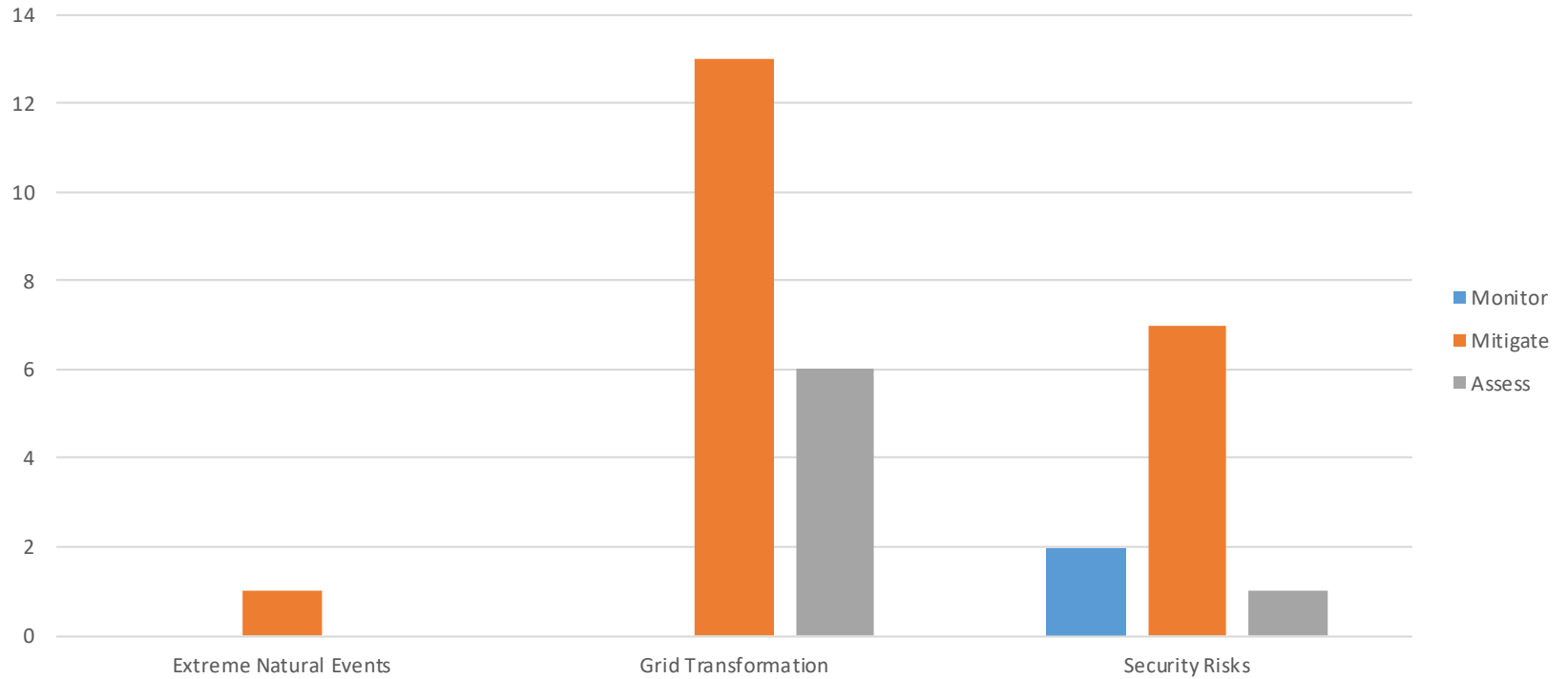




- Energy Adequacy
- Extreme Natural Events (including Cold Weather)
- Security Risks (Cyber and Physical)
- Inverters









Questions and Answers