

Agenda

Reliability Issues Steering Committee

January 28, 2021 | 1:00-4:00 p.m. Eastern
Virtual Meeting

Attendee WebEx Link: [Join Meeting](#)

Introductions and Chair's Remarks

NERC Antitrust Compliance Guidelines

Agenda Items

- 1. 2021 Reliability Leadership Summit Post Mortem**
 - a. What worked well, opportunities for improvement
 - b. New risks
- 2. Next Steps for ERO Reliability Risk Priorities Report**
 - a. Review "First Draft" of Emerging Risks Survey Results*
 - b. Enhancements Needed to Improve the [Report from 2019](#)
 - c. Review Report Timeline and Assign Report Subgroups*

*Background materials included.

Antitrust Compliance Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.

- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

DRAFT Minutes

Reliability Issues Steering Committee

December 9, 2020 | 4:00-5:00 p.m. Eastern

Chair Nelson Peeler convened the meeting at 4:00 p.m. Eastern on December 9, 2020 and thanked everyone for attending. Tina Buzzard, NERC Staff, reviewed the procedures for the meeting, reviewed the NERC Antitrust Compliance Guidelines and Public meeting notice, and confirmed quorum.

Introduction and Chair's Remarks

Chair Peeler provided an overview of the agenda and the goals for the meeting.

Agenda Items

Framework to Address Known and Emerging Reliability and Security Risks

Mr. Lauby reviewed the Framework to Address Known and Emerging Reliability and Security Risks highlighting enhancements made based on policy input received, noting the comment matrix included in the advance materials package. Chair Peeler provided an update on the RISC and Reliability and Security Technical Committee (RSTC) collaboration noting quarterly Executive Committee meetings have been established. Upon motion duly made and seconded the Committee endorsed the framework.

2021 ERO Reliability Risk Priorities Report Schedule

Ms. Buzzard reviewed the RISC meeting schedule for 2021 noting that meetings through the third quarter will be virtual and the fourth quarter meeting is to be determined and will be evaluated and decision announced during the third quarter meeting.

RISC 2020 Emerging Risks Survey

Ms. Buzzard and Mr. Coleman presented the draft 2020 Emerging Risks Survey, copy of which was included in the advance materials package. Mr. Coleman stated that a subgroup of RISC members and NERC staff reviewed the last survey and feedback from the difficulty of completing that survey, and determined this year's survey should be more concise, clear questions that still provide the ability to analyze survey over survey trends. From that discussion NERC staff drafted the survey and requested a handful of stakeholders from the various distribution groups test the survey and from that test minor updates were incorporated. At the conclusion of discussion by the committee it was recommended to add EMP as one of the identified risks for ranking at the beginning of the survey and members were in agreement to distribute.

2021 Reliability Leadership Summit

Ms. Buzzard and Mr. Coleman presented the draft 2021 Reliability Leadership Summit (Summit) agenda, copy of which was included in the advance materials package. Mr. Coleman stated that a subgroup of RISC members and NERC staff reviewed and refined the prior Summit agenda, sought volunteers to be moderators for the Summit panels, and worked with the moderators to recommend and confirm speakers. Mr. Coleman opened to the moderators for comments on their panel and selection of speakers.

Ms. Buzzard noted that touchpoints are being scheduled with the panelists for after the holidays, and confirmed that the Summit will occur virtually via WebEx and final logistics with respect to management of the panels is being determined. The Committee members offered their appreciation to the subgroup and NERC staff in securing a stellar list of experts for the panels and look forward to a successful event.

2021 Reliability Indicators

Mr. Coleman presented on the 2021 Reliability Indicators stating that as part of NERC's effort to represent the current status of critical indicators to bulk power system (BPS) reliability, the RISC formed a subgroup to review the existing metrics that have been reported to the Corporate Governance and Human Resources Committee (CGHRC) and the Board of Trustees (Board) on an on-going basis. The RISC subcommittee recommended that rather than a dashboard for each indicator, relevant charts and graphs that demonstrate the actual data and the associated trends be depicted. This will allow for better understanding of the key data points and trends. Mr. Coleman provided a review of the 2021 indicators and the changes from 2020, copy of which was included in the advance materials package. The committee offered additional input for consideration into the 2021 indicators and Chair Peeler noted that these will be a revolving set of indicators and looks forward to the continuation of making them better and more effective.

Risk Membership

Chair Peeler reminded members that the nomination process for RISC members for the 2021-2023 term has commenced and submissions are due by close of business, December 16, 2020.

Other Matters

Chair Peeler closed the meeting reminding everyone to attend the Summit, if able, and thanking members and NERC staff for all the hard work.

Adjournment

The meeting concluded at 4:55 p.m. Eastern.



Tina M. Buzzard
Secretary

Review “First Draft” of Emerging Risks Survey Results

Action

Review

Summary

The 2020 Emerging Risks Survey was distributed to on December 14, 2020 to the following groups:

- RSTC
- RISC
- PCGC
- CCC
- MRC
- NATF
- NAGF
- Regional Entities CEOs
- WECC MAC
- ISO/RTO

64 responses were received and the results of the survey will be reviewed by the Committee and incorporated into the 2021 ERO Reliability Risk Priorities Report.

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

RISC Emerging Risks Survey Results

January 2021

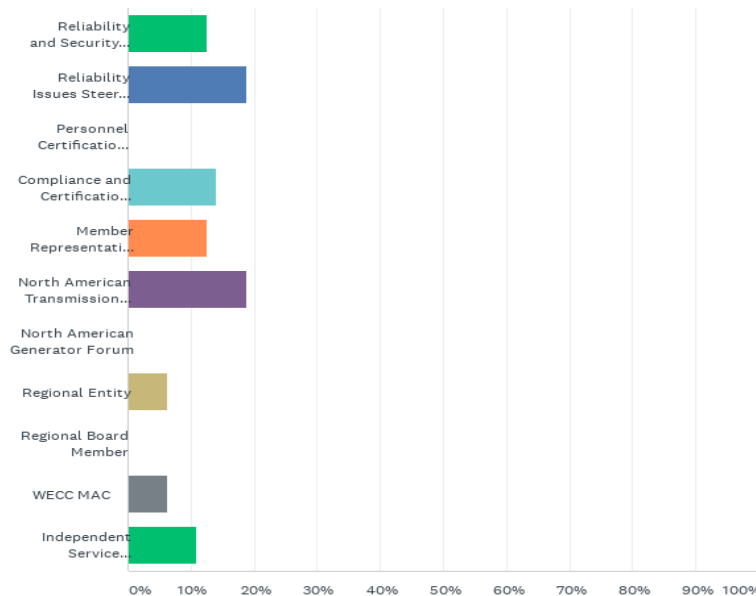
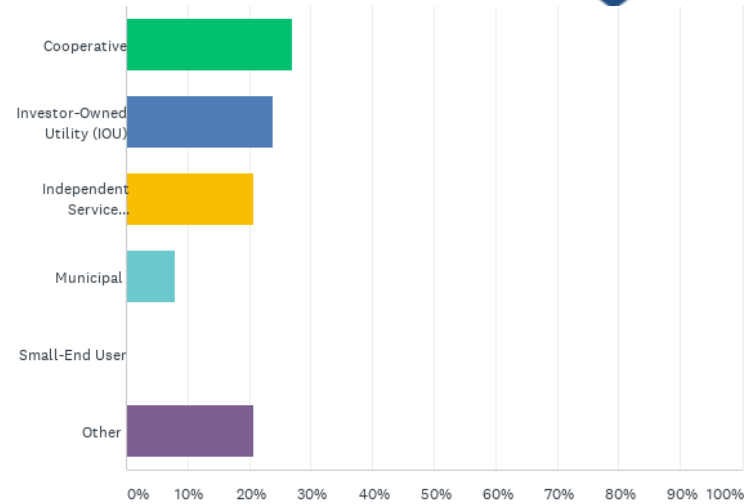
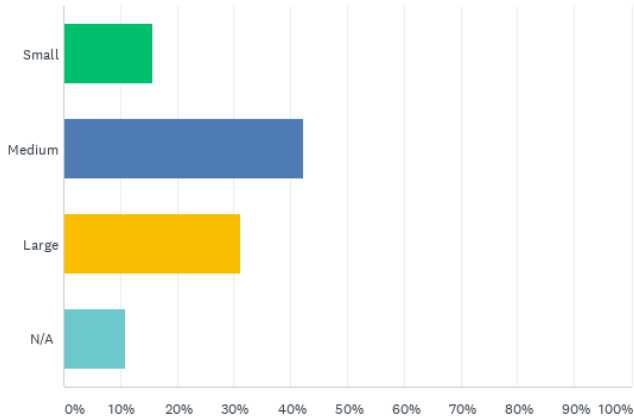
RELIABILITY | RESILIENCE | SECURITY





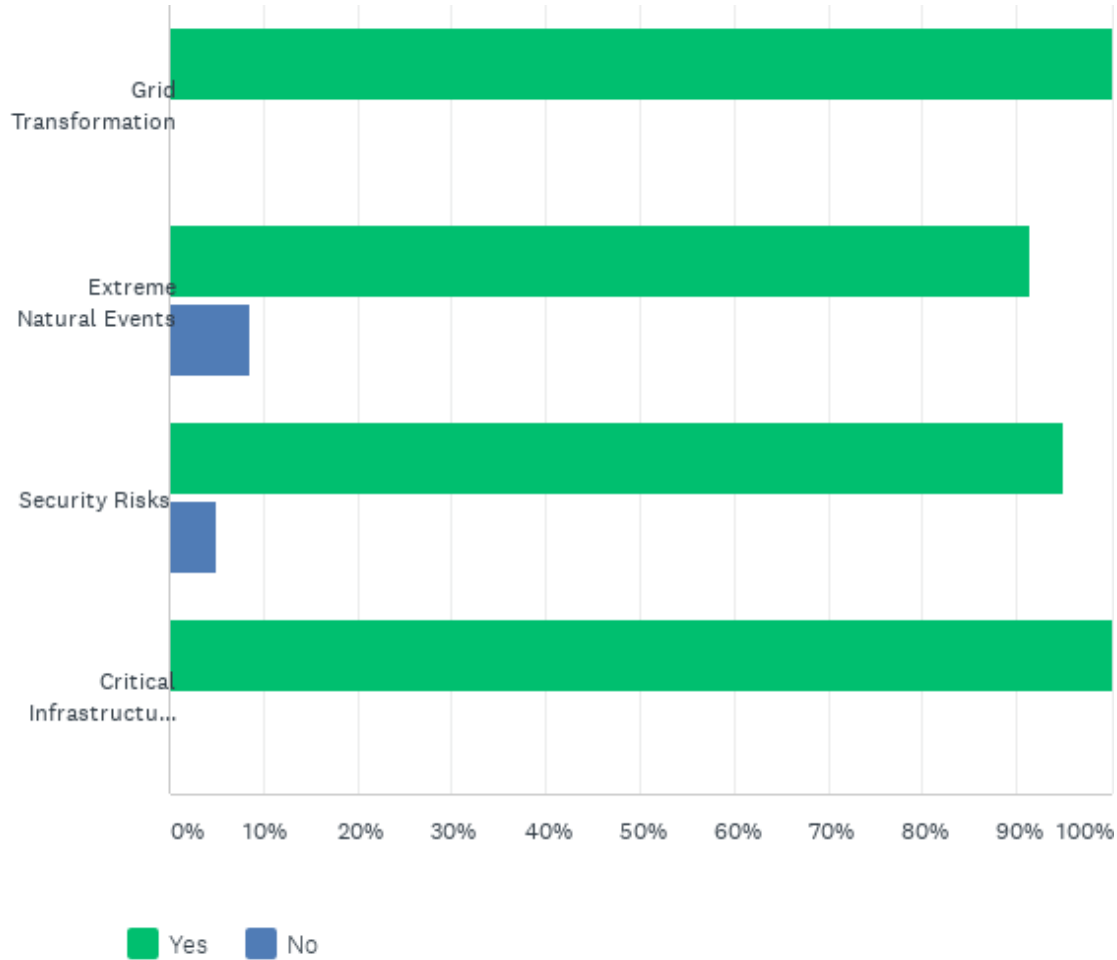
Response Summary

64 Total Responses





Overall Risk Profiles



- This may fit within grid transformation, but it doesn't seem like technology is moving swiftly enough (and economically) to meet the stated (or aspirational) timelines in which we see the transformation potentially occurring.
- No new proposed risks. However, within the existing identified risks, focus should be on:
 - Resource Adequacy for all hours of year.
 - Distributed Energy Resources (DER) visibility, communication, and coordination for the transmission and distribution interface.
 - Visualization and Situational Awareness for operations of the future.
 - Enabling advanced technology for efficient, secure, and reliable operations.
 - Means to identify, expediently address and protect against security threat vectors
- Consider revising “Extreme Natural Events” to “Extreme Events” to account for risks such as widespread pandemic.
- Individually each of these pose a threat to grid reliability and we should consider combinations of these events occurring simultaneously. For instance, increased physical and cyber security risks due to grid transformation. Physical risks increased due to reliance on natural gas infrastructure and fuel transport security and cyber security risks due to increase of data connections. Considering the current pandemic, may want to consider a risk profile with necessary pandemic planning in combination with these other risks and the availability of trained workforce. Security is core risk category that is always present and unlikely to ever be removed from the list. Successfully applying recommended mitigations doesn’t eliminate the need to keep Security on the report, as there will always be “new” threats in these areas. Extreme Natural Events is a similar area. From an optics perspective this could be construed by the casual reader that our industry is not making progress in these important risk areas. Consider organizing the report to separate “core” risks (extreme natural events, security) from “emerging” or “transient” risks that can be reasonably expected to be addressed, then retired from future reports.

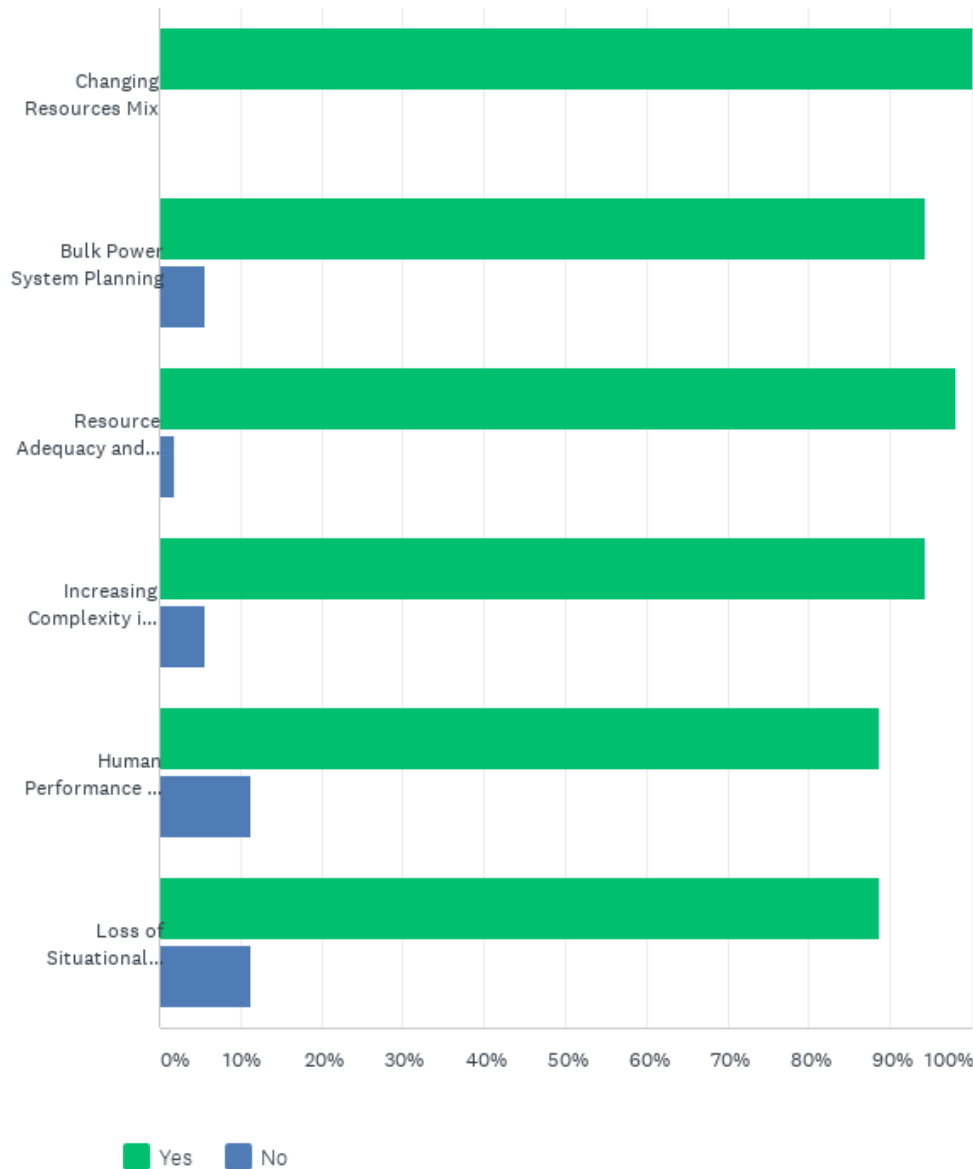
- Market/Regulatory Pressure - Desire to push equipment to higher ratings, reduce operating margins, and invite participation by unregulated entities will likely lead to lower costs, but may inadvertently reduce reliability of the BES. Regional Differences in Operating and Planning Philosophy - Lack of clear and consistent operating and planning practices between neighboring regions can create conflicts and degrade reliability. This has been evidenced by higher costs and reliability impacts along the seams between regions. Extreme Natural Events have always been a risk to the BES, but was identified as an "emerging risk" in the 2019 report due to the emergence of outages associated with wildfires.
- Pandemic - industry preparation for future pandemics
- Likely subsets of Grid Transformation, but may be worthy of specific looks: - Resource Adequacy Analyses 24/7/365, not just summer peak - Resource Retirement Processes - what kind of notice is given and what must be taken into account re expanded resource adequacy assessments - Modeling update requirements - especially for newer types of resources (wind, solar, etc), the models used by reliability coordinators and trans planners are insufficiently detailed and updated to enable proper studies for assessing interactions of new proposed interconnections etc - New study requirements - incorporate new study requirements in acknowledgement of grid transformation to more fully assess reliability
- Regulatory/Market Influence - Desire to push equipment to higher ratings, and to reduce reliability margins reduce costs, but may come with the unintended consequence of reducing reliability. Regional Differences in Operating and Planning Philosophy - Lack of coordination between neighboring regions can create conflicts or degrade reliability. This has been evidenced by higher cost and reliability impacts along the seams between regions. Extreme Natural Events have always been a risk to the Bulk Electric System, but was identified as an "emerging risk" in 2019 due to the emerging prevalence of wildfire threats and the need for pre-emptive actions. Security Risks have had an elevated risk profile for many years and I would certainly not describe it as an "emerging risk" in 2021. We must remain vigilant and maintain awareness of emerging security threats, but I don't believe it should be a top priority.

- Emerge of electric vehicles and rapid increase in load
- Interaction with distribution system
- Renewable penetration of generation resources and the variability they cause



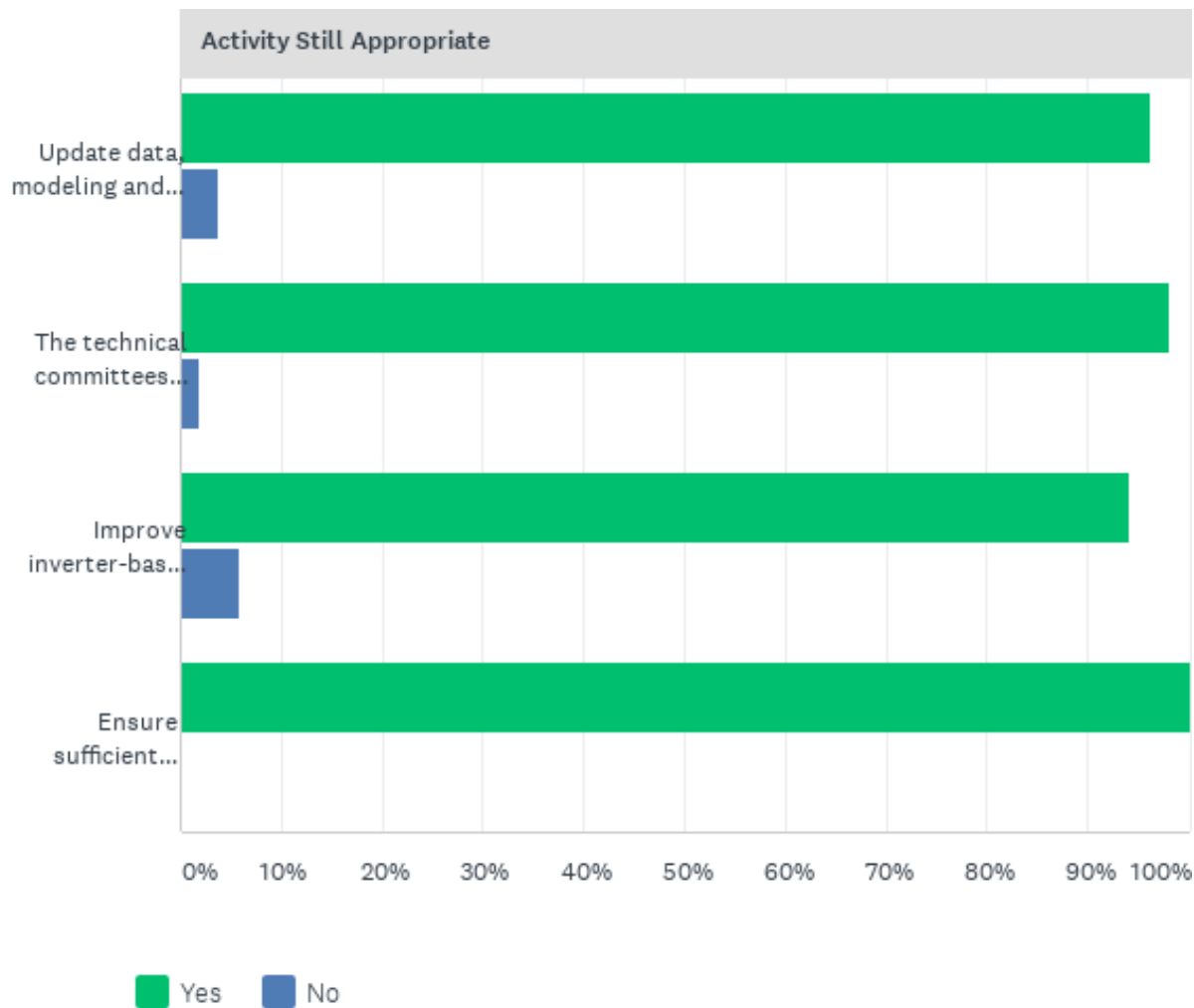
Grid Transformation

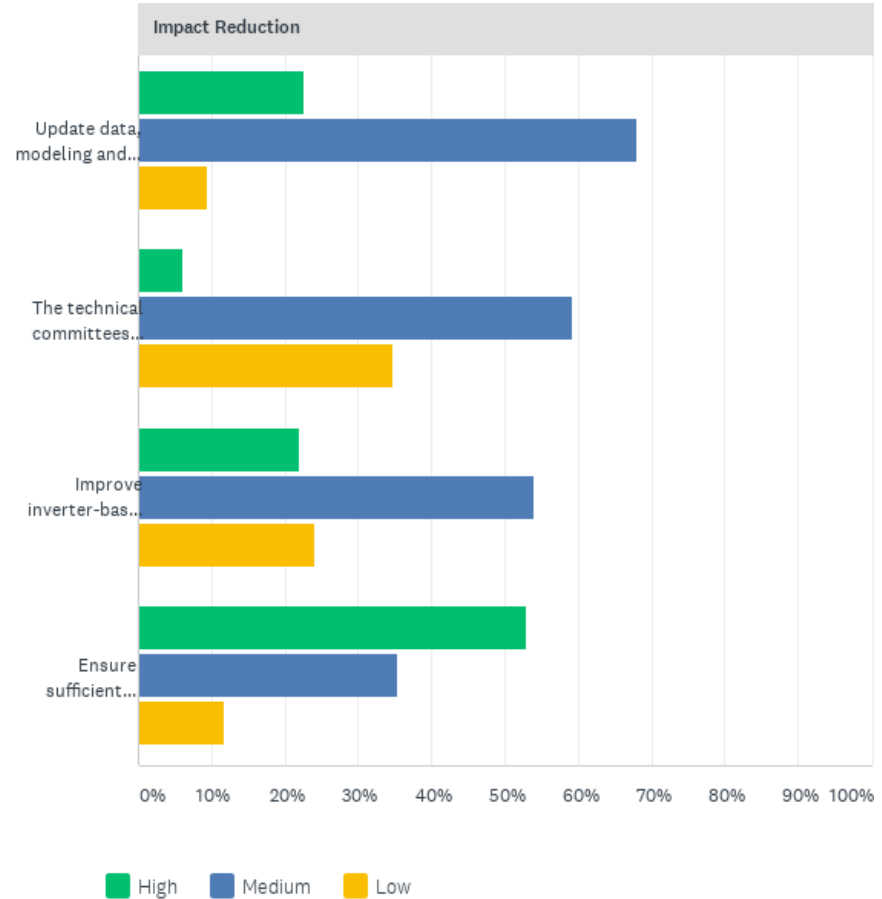
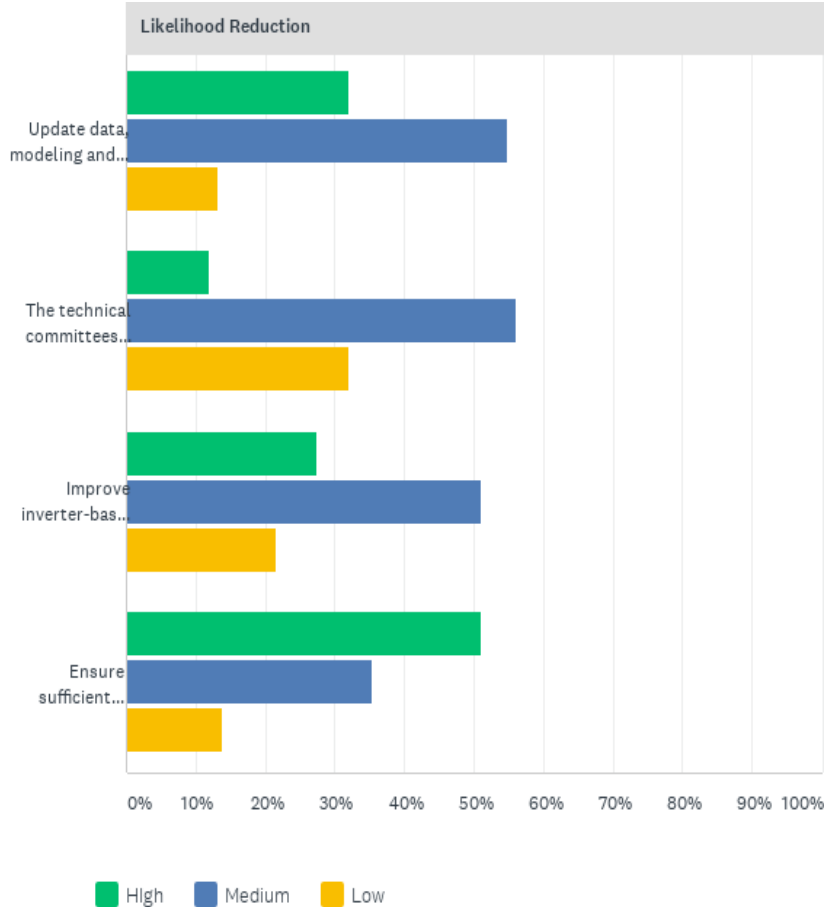
Grid Transformation Identified Risks Still Relevant?



- Load Forecasting during extreme events. LF is critical to managing and scheduling resources. LF is not performed well during last 6 years of extreme weather events...just when it is most critical that LF have accurate info Seams issues between different markets (ISOs, RTO's, RC's)...coordination and communication challenges during extreme events State regulatory differences and Political environment – related to requirements for renewables in the future, retirements of fossil fuel generation, timelines and targets – these are drivers for changing resource mix and resource adequacy rather than new or additional risks
- 'New' Market Entrants - Distributed Energy and Demand Response aggregators will become significant contributors to power supply over the next few years. It is important for BES Reliability that the operators of these resources are responsible for providing relevant data for Operations and Planning and that they are accountable for operating in a manner consistent with Balancing Authority needs and expectations.
- Considering the new administration in the US federal government, we should consider the impacts of aggressive renewable energy goals on the BPS. This could be broadened to explore the impact of aggressive energy policies (both state and federal).
- Because of the multiple jurisdictions over the assets affecting Grid Transformation, there is an ever increasing regulatory risk on reliability. With DER and their participation in aggregate on the bulk power system, there is an intersection of federal and state regulatory over the reliability of the transmission and distribution systems. FERC Order No. 2222 proposes distribution resources participate in the wholesale market through the bulk power system and includes a recognition of state authority over reliability of the distribution system. To accommodate state authority may create gaps or conflicts with NERC BES standards.
- Consider fuel supply assurance/security as an additional risk or incorporate in an existing risk
- Yes, the combination of state policies and market structures in various areas is placing existing synchronous generation in the position of being uneconomic. This is increasing resource closures resulting in the growing risk that various areas may not be able to cover load.

- Bulk power system modeling needs to reflect changes occurring on the distribution system both in the planning and operating models. What appears to be load today could be a combination of load, generation, storage at the distribution level. Managing and processing this data will be important in modeling the system accurately in both the planning and operating time horizons. Within the operating horizon, improved forecasting capabilities for intermittent resources and loads will be essential to maintaining the reliability of the grid. Models within planning and operational tools for specific components within these models must be vetted to make sure they effectively represent the component characteristics. Interconnection standards and characteristics for inverter-based resources will be important to understand how these resources will respond to system disturbances on BPS, sub-transmission and distribution connected resources. These standards should include data requirements to maintain situational awareness during these disturbances and allow modelling capabilities to accurately depict how these resources will respond. Black start resource and plan changes will be impacted by the changing resource mix. Historically these plans were developed to restart large central power sites. More focus should be given to how the changing resource mix with more distributed resources will impact coordinated planning of black out restoration plans. Grid transformation will require different skills for the workforce to be trained on. Current training is based on traditional resources and disturbance response. New training programs and advancement in computer tools will be necessary to handle the increase of data that is necessary with the increase in generation resources and changes in how essential reliability services, such as ramping, voltage support /reactive resource delivery and frequency response are provided. While considering everything noted above, reliability must be an overriding consideration in RTO market design as the generation becomes more inverter based. The market needs to value these resources beyond their ability to produce MWs under normal conditions.
- Due to the increased complexity of control schemes and limited training/understanding of the most complicated aspects of our business, mandatory relay protection & control training and certification programs should be explored. It does not need to be as extensive as control room operators but it needs established for the good of the grid operations and maintenance.





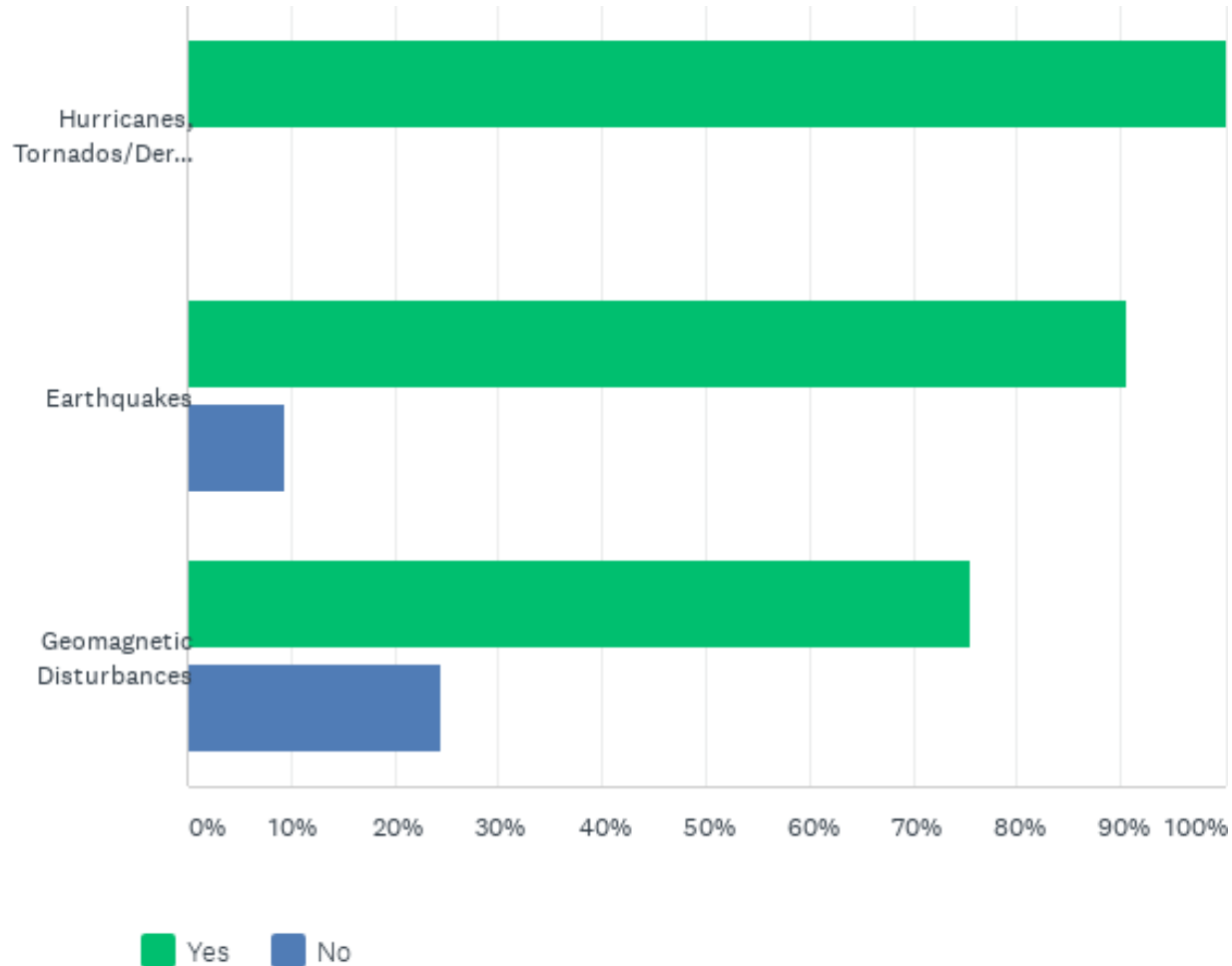
- Is there enough information to have a robust understanding of how the grid will respond in light of the transformation and will technology solutions do what we intend or could there be some unanticipated actions or inactions that haven't fully been addressed? With modeling accuracy need accurate planning for intermittent resources - especially in areas with high penetration, forecasting, etc.
- As industry seeks better operating flexibility, it would be helpful to have a better understanding of the value of reliability services that are available, how they're being utilized in light of the different resources from which these are being procured, and whether additional value can be provided to the overall operating flexibility of the BES. In addition, to further facilitate operating flexibility, mitigating actions could evaluate those activities that would garner better visibility and clear data sharing obligations for small resources with a BES impact. Finally, we would suggest adding a mitigation activity to address the risks posed from HP and aging work force.
- We would suggest adding a mitigation activity to address the risks posed from HP and aging work force that could be further developed in cooperation with NATF
- While I have yes in updating modeling and assessment requirements, this is difficult to answer without more detail. There may be activity needed, but may not be requirement based. Not enough context.
- Coordinated, regional approach to resource planning and procurement.
- Advanced Training Scenarios (planning for, recognizing, managing threats to grid from multiple sources – from lack of reactive resources to physical attacks, etc.; loss of flexibility in the system; common mode disruptions) for Grid Planners, Grid Load Forecasters, and Resource Planners
- Further development of interconnection standard requirements for inverter-based resources at sub-BPS levels. Identification of training needs for operations staff as operational flexibility requirements increase.

- Along with the changing resource mix, we could focus on improving renewable energy forecasts (for operations and planning time frames) for all times of the year (also, focus on extreme situations where renewables aren't available for extended periods of time). The second activity could be expanded to include hybrid resources (solar with battery storage). Should planning and contingency reserve requirements be adjusted as a result of the changing resource fleet? As we see more retirements of baseload resources and additions of "smaller" renewable resources, is there a need to revisit the generation component of the BES definition?
- Mitigation activity needed for the human performance and skilled workforce risk – with the technology changes in the sector training should keep up with the pace of change.
- No other mitigation activities proposed but we recommend higher priority for mitigating Solar and Wind integration issues.
- Consider additional activities related to fuel supply/fuel assurance. This could be follow up to the reliability guideline issued in 2020.
- As industry seeks better operating flexibility, it would be helpful to have a better understanding of the value of reliability services that are available, how they're being utilized in light of the different resources from which these are being procured, and whether additional value can be provided to the overall operating flexibility of the BES. In addition, to further facilitate operating flexibility, mitigating actions could evaluate those activities that would garner better visibility and clear data sharing obligations for small resources with a BES impact. Finally, we would suggest recommending to the NATF addressing the risks posed from HP and aging work force.
- Pace of transformation, including retirements, is accelerating. Consider whether our risk mitigation activities are keeping pace



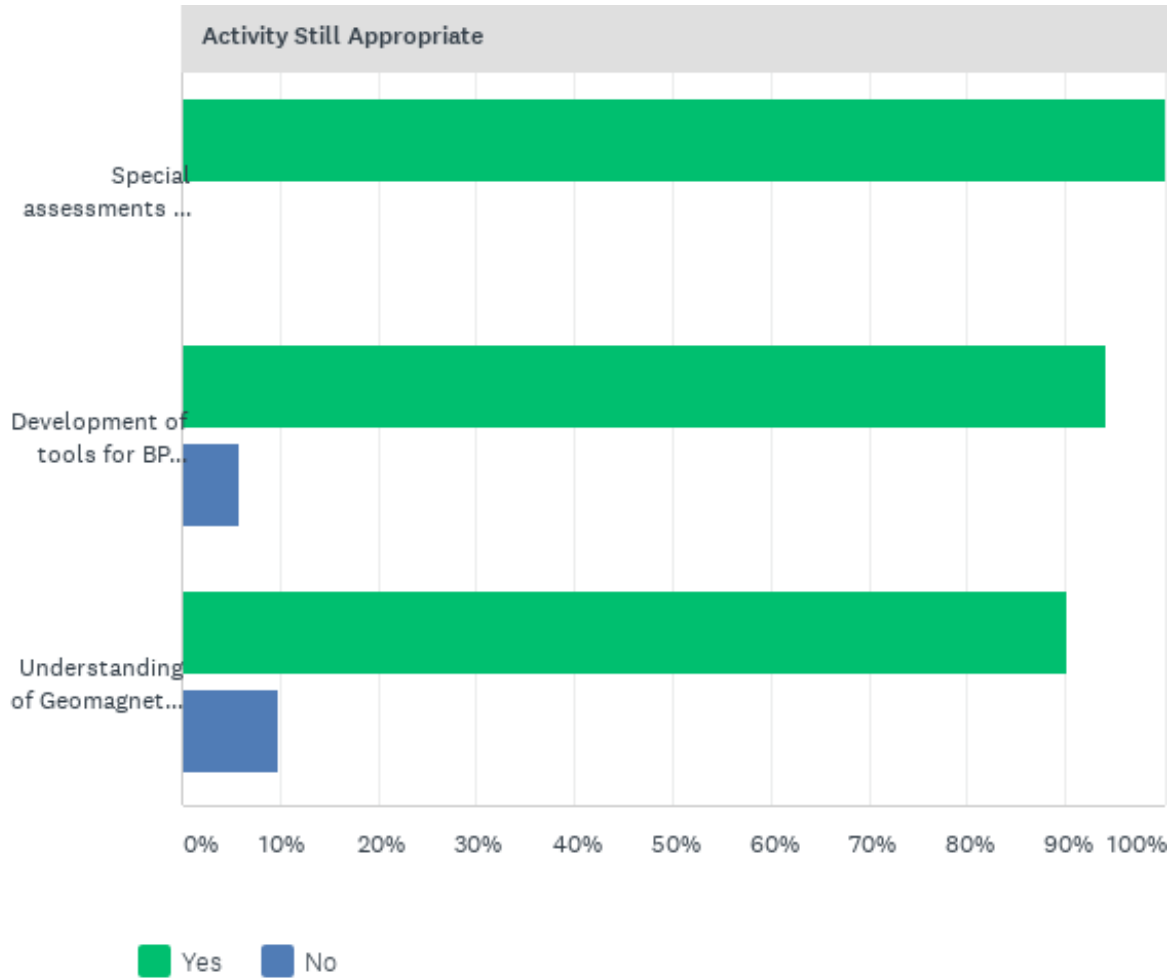
Extreme Natural Events

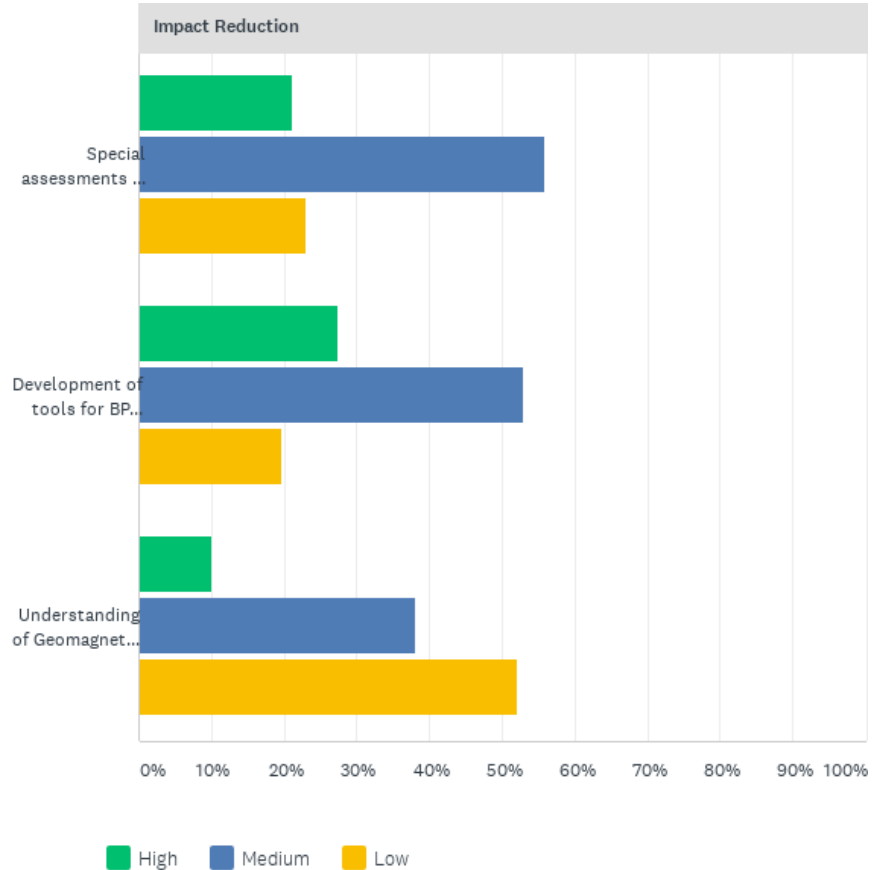
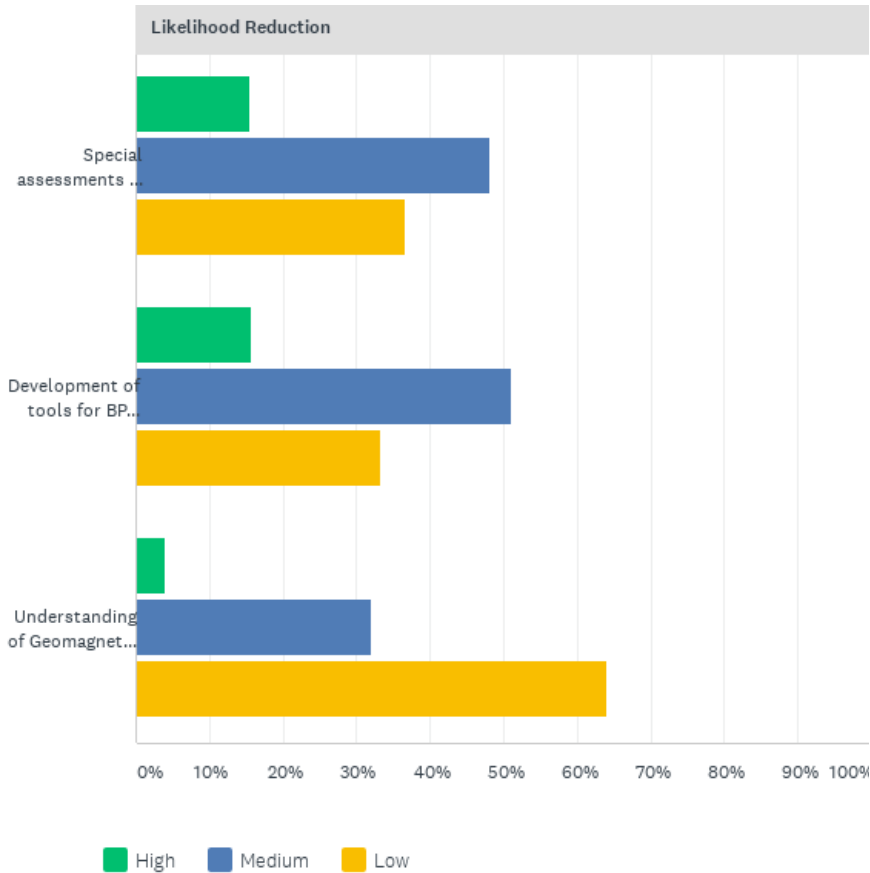
Extreme Natural Events Identified Risks Still Relevant?



- As a result of the current operational challenges resulting from COVID-19, we would suggest adding pandemics as a relevant risk for Extreme Natural Events.
- As a result of the current operational challenges resulting from COVID-19, we would suggest adding pandemics as a relevant risk for Extreme Natural Events.
- While these are still relevant risks, belief is that these are monitoring type items. There is quite a bit of focus and resource applied here and many collaboration efforts focused on the topics. No additional action is necessary or helpful.
- Please refer to the response regarding revisions to this risk profile. Consider including an additional risk for pandemics or other similar attacks.
- Dealing with multiple events at same time, including loss of situational awareness Health and safety risks and the availability of and impact on critical operational staff
- Yes, extreme ice storms/icing conditions
- Extreme Cold Weather Events Wildfire Risks As discussed previously, these risks have always been relevant to BES Reliability, and would not be considered 'Emerging Risks'. It is important to prepare and anticipate these events but these risks should not be considered novel.
- Given the events of 2020, a review of pandemic preparedness and impacts could be considered under this category.
- Ice storms

- Absent new information about GMD, there is no actionable activities NERC can undertake.
- As a result of the current operational challenges resulting from COVID-19, we would suggest adding pandemics as a relevant risk for Extreme Natural Events.
- Consider the opposite of these situation where there is too much wind, water etc -- consider NO wind or other renewable resource for extended period of time -- what does that do to resource adequacy when there is more dependence on wind and less dispatchable resources available in the future?
- Extreme Cold Weather Events Wildfire Risks As discussed earlier, these risks have always been relevant to BES Reliability, and would not be considered 'Emerging Risks'. It is important to prepare and anticipate these events but these risks should not be considered novel.



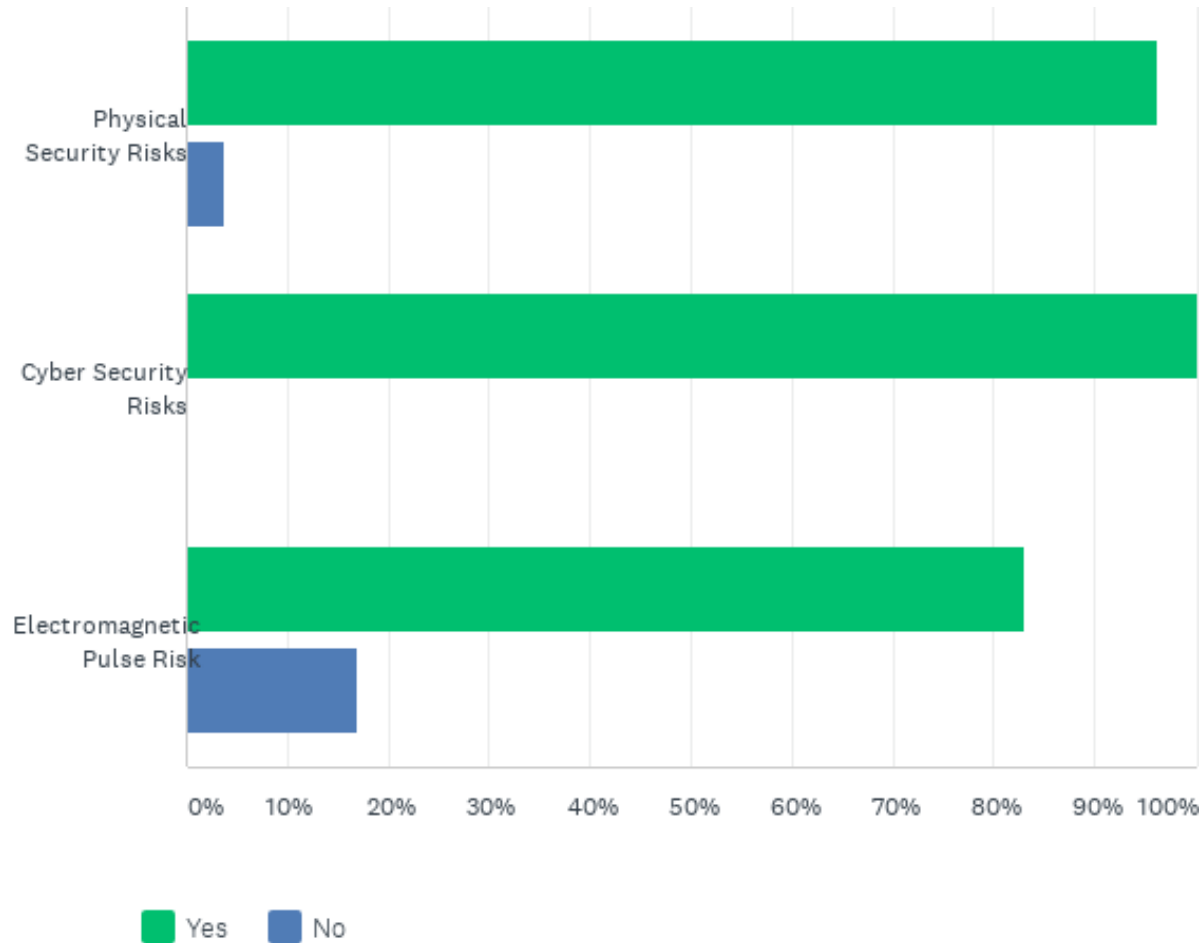


- As an additional mitigating activity, we would suggest developing a catalog of lessons learned to provide a reference for responsible entities to use in maturing and evolving their preparation and efforts to respond to Extreme natural Events. We would also suggest that this include common expectations relative to restoration and resiliency in response to these Extreme Natural Events.
- As an additional mitigating activity, we would suggest developing a catalog of lessons learned to provide a reference for responsible entities to use in maturing and evolving their preparation and efforts to respond to Extreme natural Events. We would also suggest that this include common expectations relative to restoration and resiliency in response to these Extreme Natural Events. In addition, we would suggest creating example plans, e.g., for pandemic response.
- Tool and procedure development are better suited for the Forums. Assessments / impact assessments are helpful context. Answered yes on number 2, but it represents a mixture of things. Procedures are more Forum / company specific to develop.
- The industry is in the beginning stages of defining resiliency. Looking at any risk reduction from potential tools seems premature. To address risks due to pandemics or other similar situations, post-pandemic reviews of lessons learned should be conducted, and guidance, recommendations, and/or logistics for responding to pandemics or other attacks should be developed or refined.
- Training and table top exercises to better prepare both planners and operators. Weighing cost of resiliency efforts versus impact and likelihood reduction Continue efforts around defining resiliency and how to measure
- Utilization of various industry forums to share and coordinate information sharing on best practices around resiliency efforts related to design considerations and identification and response to major storm events. GMD disturbances should be dropped from the identified risks for this category however, GMD event review is still an appropriate mitigation measure to share with industry.

- All significant events should be assessed to capture lessons learned in order to improve preparation and response efforts. Enhanced enforcement of existing Standards could be an avenue to improving and communicating preparedness for these events.
- Regarding wildfires, BPA recognizes that wildfires certainly escalated this past year and will likely continue to be an area of heightened work. BPA recommends that a NERC industry standard or set of acceptable procedures become adopted across the industry to assist with future wildfire events.
- In addition to system recovery and resiliency following extreme natural events, we could consider operational impacts that extreme natural events have on resource performance. For example, how do wildfires in the West impact the performance of solar facilities or how could extreme droughts impact hydro facilities?
- As an additional mitigating activity, we would suggest developing a catalog of lessons learned to provide a reference for responsible entities to use in maturing and evolving their preparation and efforts to respond to Extreme natural Events. We would also suggest that this include common expectations relative to restoration and resiliency in response to these Extreme Natural Events.
- Consider mitigation requirements for CIP 14 facilities
- Consider interactions of multiple factors between this and other risk profile areas. What happens if we simultaneously max out on issues from each area?
- All significant events should be assessed to capture lessons learned in order to improve preparation and response efforts. Enhanced enforcement of existing Standards could be an avenue to improving and communicating preparedness for these events.

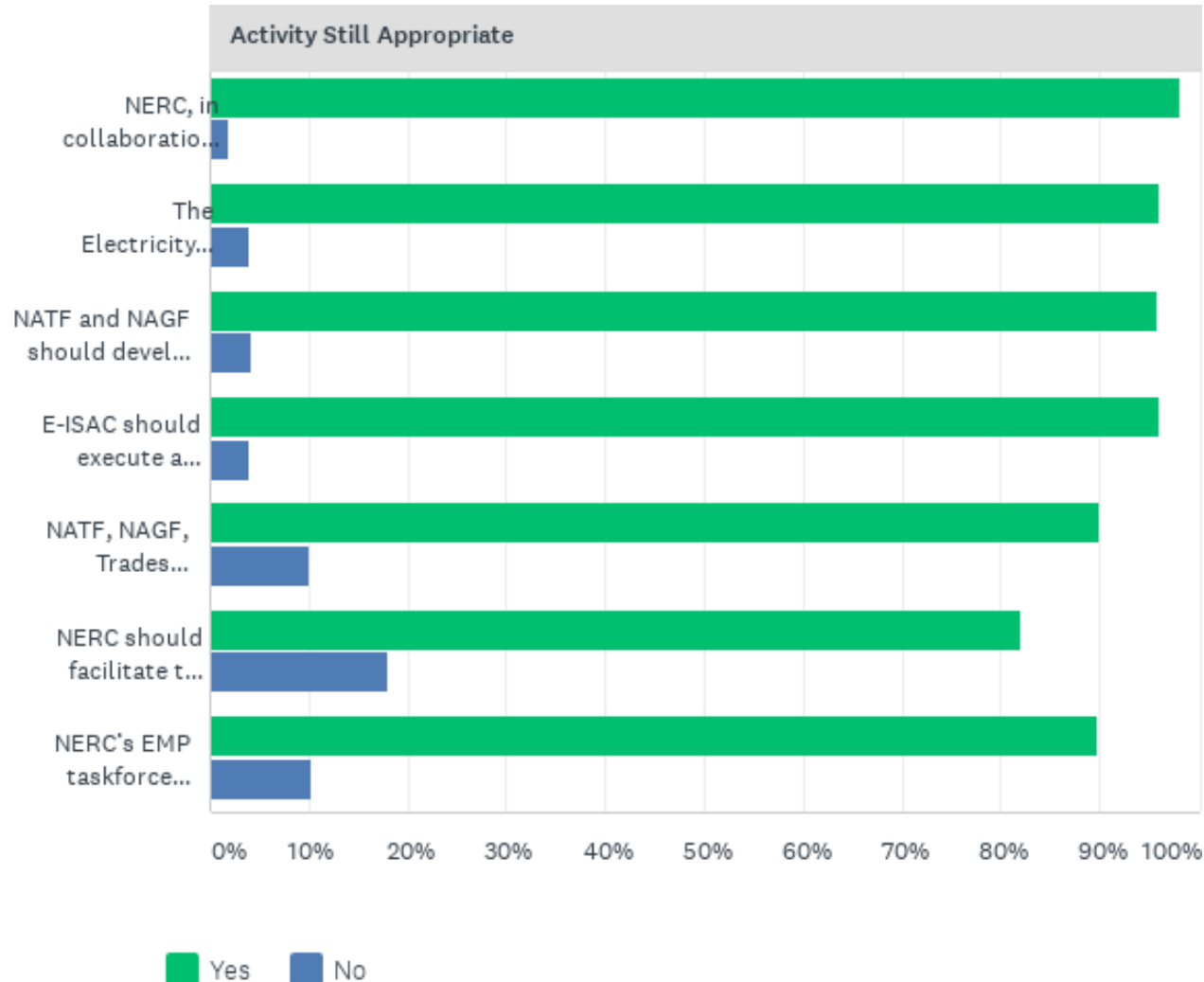


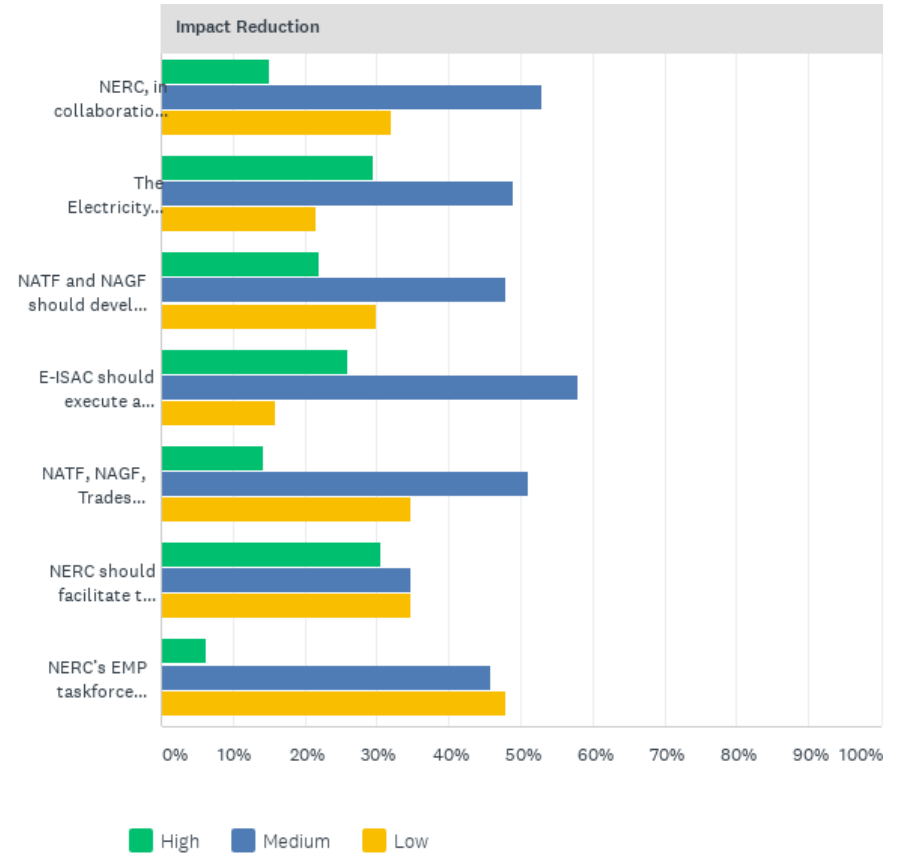
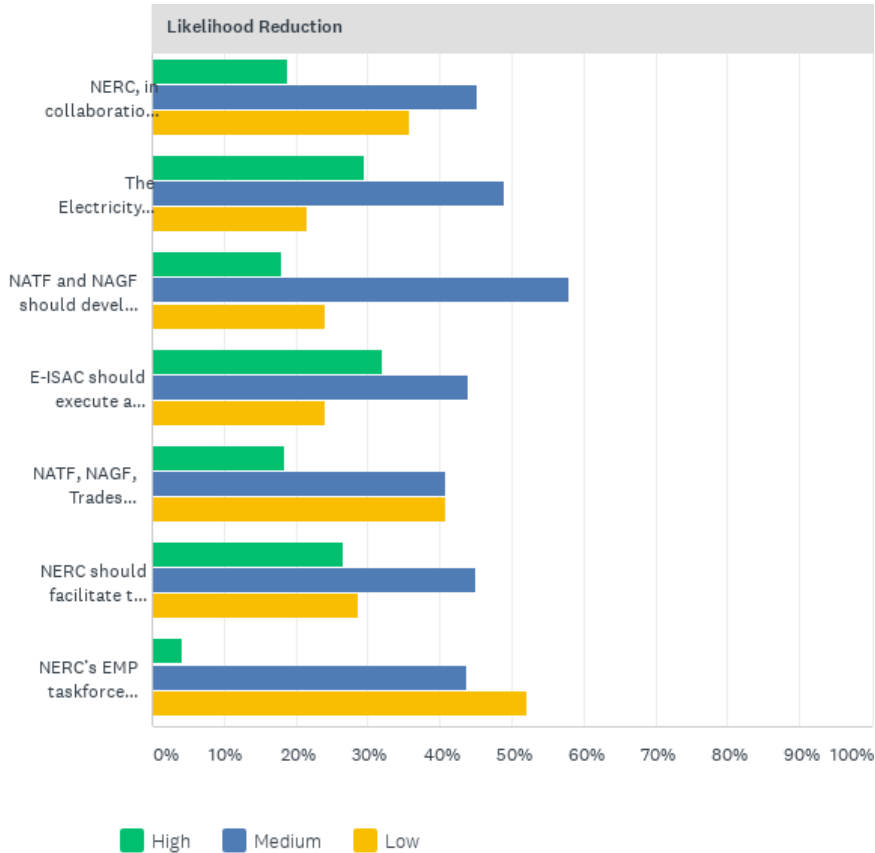
Security Risks



- Supply chain risks should be identified as a distinct category.
- Industries with highly sensitive information and infrastructure have rules to mitigate personnel risk. NERC may want to investigate personnel screening for certain positions.
- EMS system being compromised...but in such a way as the compromise is not recognized for months. Lack of performance data (security metrics) makes trending and analysis difficult SERC breaks the high-level risks into more specific risks (See Appendix C of SERC 2020 Risk Report) https://www.serc1.org/docs/default-source/committee/ec-reliability-risk-working-group/2020-reliability-risk-report.pdf?sfvrsn=e80ea39_4
- NERC's cyber security focus has been on EMS computer systems that support operations, yet during events other IT systems are needed to support operations. Asset and financial systems are critical in supporting operations during events such as weather. Our industry has a heavy reliance on public communication network for performing secondary support roles to operations. Another risk to consider is internal security risks and the need for stronger controls to mitigate these risks. The damage that could be caused to critical infrastructure by bad actors within utilities could be significant due to increased access and knowledge of the infrastructure. Additional security risks that are introduced with the changing resource mix and additional threat vectors. Ability to quickly recognize and disseminate threat information to the industry is essential to limiting impact. Electromagnetic Pulse is not a 'security' risk in the sense that a properly trained physical or cybersecurity defender can be effective in mitigating risk or reacting to an event. Communicating this issue to stakeholders, as this report is intended, would be better served by moving this risk to the Critical Infrastructure Interdependencies section consistent with other risks that involve deep collaboration between electrical engineers & planners and government partners. Stakeholders with little interest in security topics may miss this important issue.

- As stated previously, Security Risks are not a new phenomena or an 'Emerging Risk' to BES Reliability. It should continue to be an important aspect of maintaining reliability and resiliency, but there are other priorities that should be recognized.
- Could EMP risk be considered as a component of physical security?
- Risk of these increasing with more societal instability and breakdown of traditional mores
- As stated previously, Security Risks are not a new phenomena or an 'Emerging' Risk to the BES. It should continue to be an important aspect of maintaining reliability and resiliency.





- I believe that all of these items remain appropriate activities and most are implemented or in flight by the industry. I think the RISC should really hone in on where NERC can participate actively or engage in the activities. An example of this would be the ISAC encouraging efforts on workforce cyber education. It doesn't hurt, but it is already occurring and will continue to occur regardless. It is difficult to qualify likelihood or impact changes based on some of these that occur regularly and should continue, but the continuation may not move the needle substantively. I would need more information to respond to planning approaches and what value that would bring.
- We are concerned about the potential for activities intended to reduce the number of critical facilities to conflict with other regulatory obligations by responsible entities. For example, many entities have state jurisdictional obligations to ensure load service while maintaining reasonable electricity rates. Any reduction in the number of critical facilities will likely require capital investments, which would require cost recovery and, therefore, could impact rates. For this reason, we suggest removal or modification of mitigating activity #6. Additionally, significant risk mitigation could be achieved if efforts to ensure that better, more actionable threat intelligence can be distributed to responsible entities faster and if cyber incentives or other incentives such as grants are made available for all utilities – not just those who are subject to FERC jurisdiction. Given the interconnected nature of the grid, activities that drive all responsible entities toward greater cyber security will provide more significant benefits to BES reliability and resiliency.

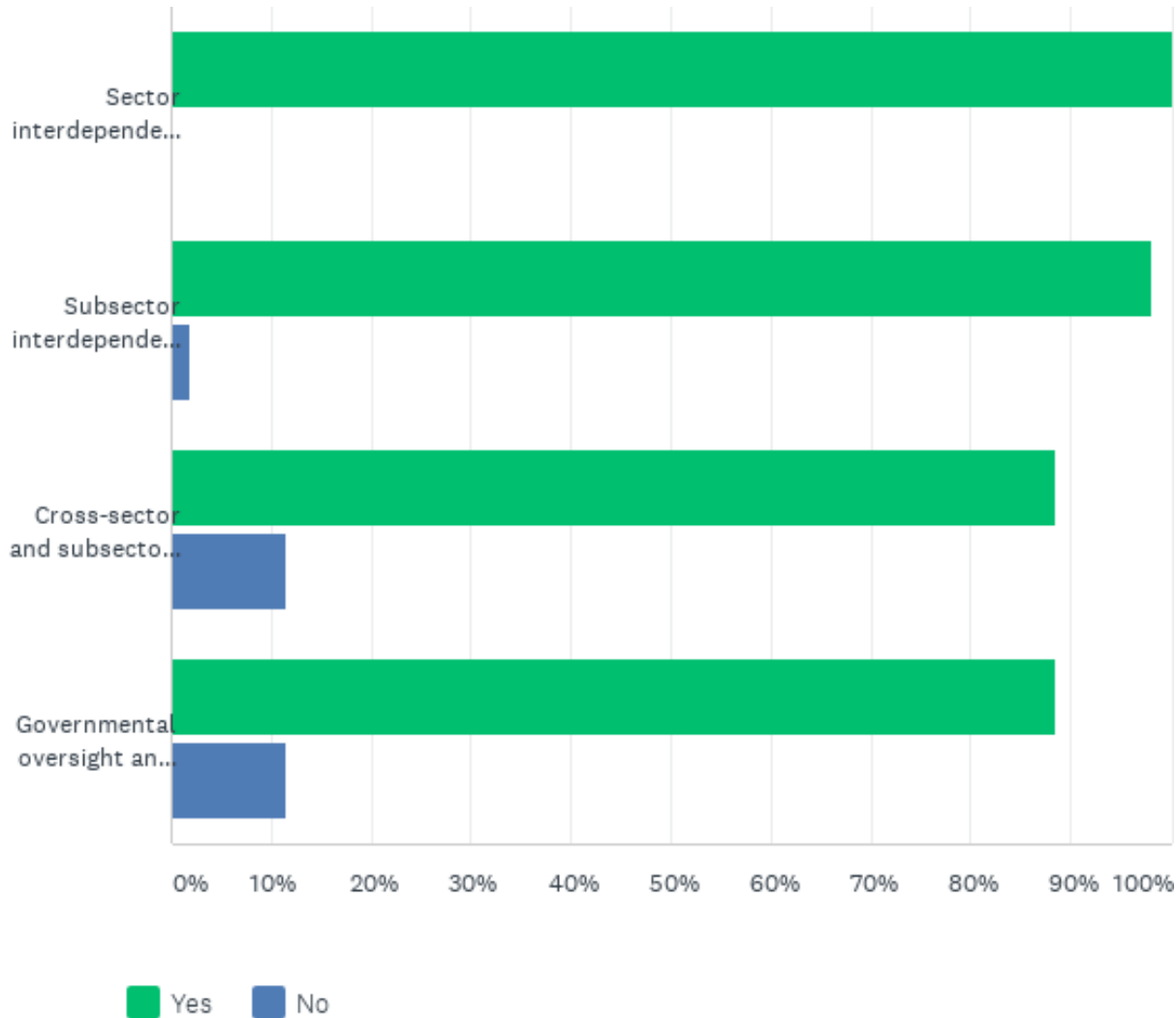
- We are concerned about the potential for activities intended to reduce the number of critical facilities to conflict with other regulatory obligations by responsible entities. For example, many entities have state jurisdictional obligations to ensure load service while maintaining reasonable electricity rates. Any reduction in the number of critical facilities will likely require capital investments, which would require cost recovery and, therefore, could impact rates. For this reason, we suggest removal or modification of mitigating activity #6. As an additional mitigation consider an initiative to ensure that better, more actionable threat intelligence can be distributed to responsible entities faster. Also, consider ways to make incentives available to all entities not just those subject to FERC jurisdiction. Given the interconnected nature of the grid, activities that drive all responsible entities toward greater cyber security will provide more significant benefits to BES reliability and resiliency.
- Consider revising the mitigation activity from “NATF and NAGF should develop supply chain cyber security superior practices” to “NATF and NAGF should collaborate together to develop realistic and effective supply chain practices.”
- NATF and NAGF should be engaged with NERC in developing supply chain security practices
- A best practice in the SERC region is that some BA’s have a tertiary backed up EMS system, that is kept isolated and offline, ready for deployment in the event their online and hot backup EMS system is compromised.
- Risks pertaining to use of cloud-based systems are on a steep increase, as evidenced by current events. There are efforts underway by FERC and NERC to ease compliance issues, but large widely reported outages and breaches have underscored the risks in this area. Recommend adding one item: ERO should facilitate development of criteria for approved use of software-as-a-service or infrastructure-as-a-service technologies for reliability operations, that minimizes risk without overly constraining utility technology solutions).
- Event analysis and dissemination of information to the industry are the keys to reducing the likelihood and impact of Security Risks.

- BPA would like to see NERC increase its efforts with supply chain and vendor equipment within the Security arena. BPA believes this cyber risk will continue to grow and it does not seem that as an industry we are keeping pace.
- We should ensure there is a linkage between cyber events/supply chain issues and how this translates to potential impacts on the grid. Make it clear who has responsibility to detect, inform and act to mitigate risks.
- Note that I answered the above questions, keeping in mind that a combination of the above recommendations would be needed to mitigate security risks.
- We are concerned about the potential for activities intended to reduce the number of critical facilities to conflict with other regulatory obligations by responsible entities. For example, many entities have state jurisdictional obligations to ensure load service while maintaining reasonable electricity rates. Any reduction in the number of critical facilities will likely require capital investments, which would require cost recovery and, therefore, could impact rates. For this reason, we suggest removal or modification of mitigating activity #6. Additionally, significant risk mitigation could be achieved if efforts to ensure that better, more actionable threat intelligence can be distributed to responsible entities faster and if cyber incentives or other incentives such as grants are made available for all utilities – not just those who are subject to FERC jurisdiction. Given the interconnected nature of the grid, activities that drive all responsible entities toward greater cyber security will provide more significant benefits to BES reliability and resiliency.
- Risk assessments for attack scenarios should be risk based and focused on higher impact critical facilities. The Regions could assist with developing planning approaches, models and simulation approaches to reduce the number of critical facilities.
- Really emphasize the planning activities to reduce number of critical facilities and mitigate impact
- Event Analysis and Dissemination of Information to industry are the keys to reducing the likelihood and impact of Security Risks.
- Analysis & Resilience Center (ARC) Bulk Power Initiative and Energy Sector Risk Register (ongoing)



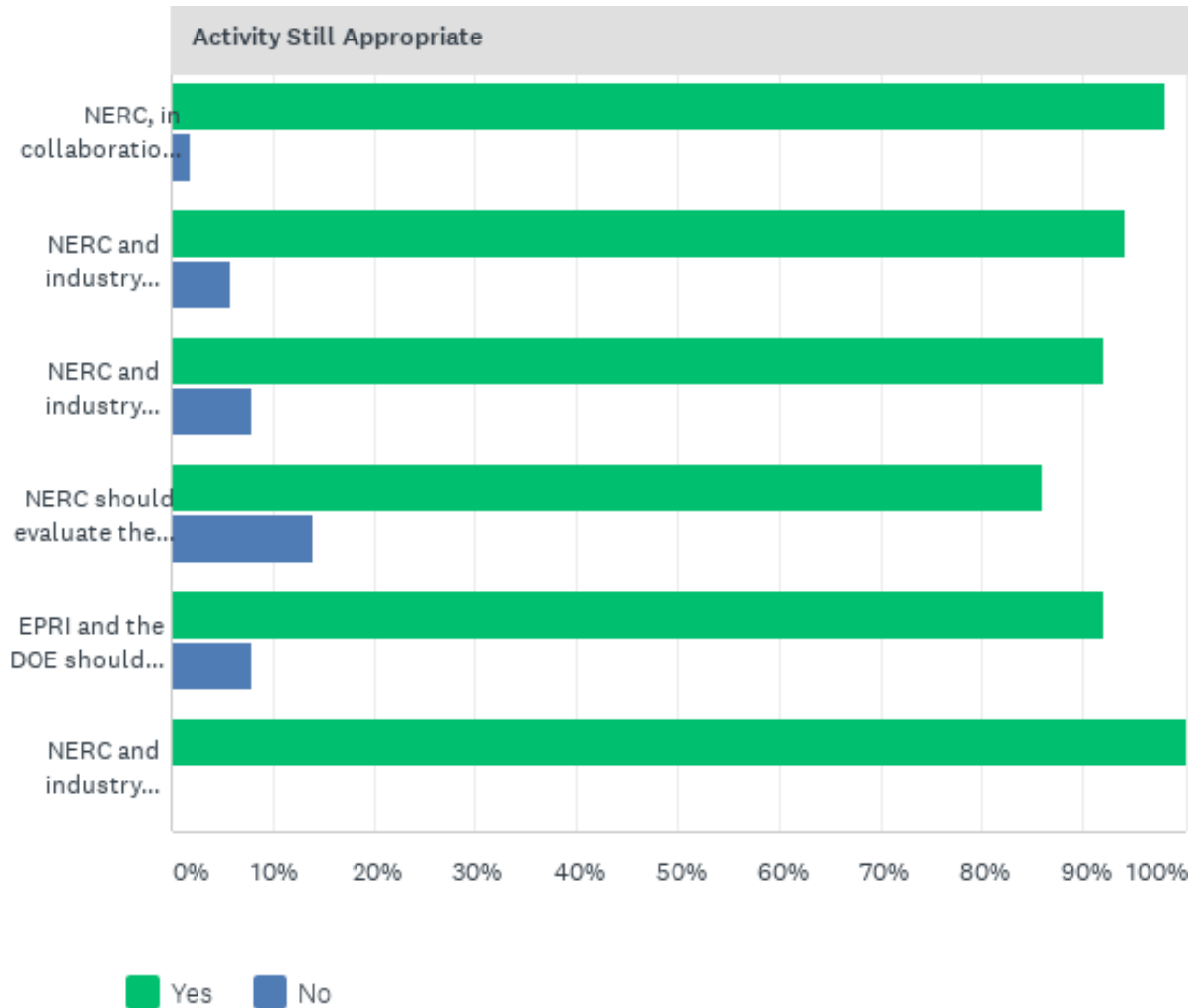
Critical Infrastructure Interdependencies

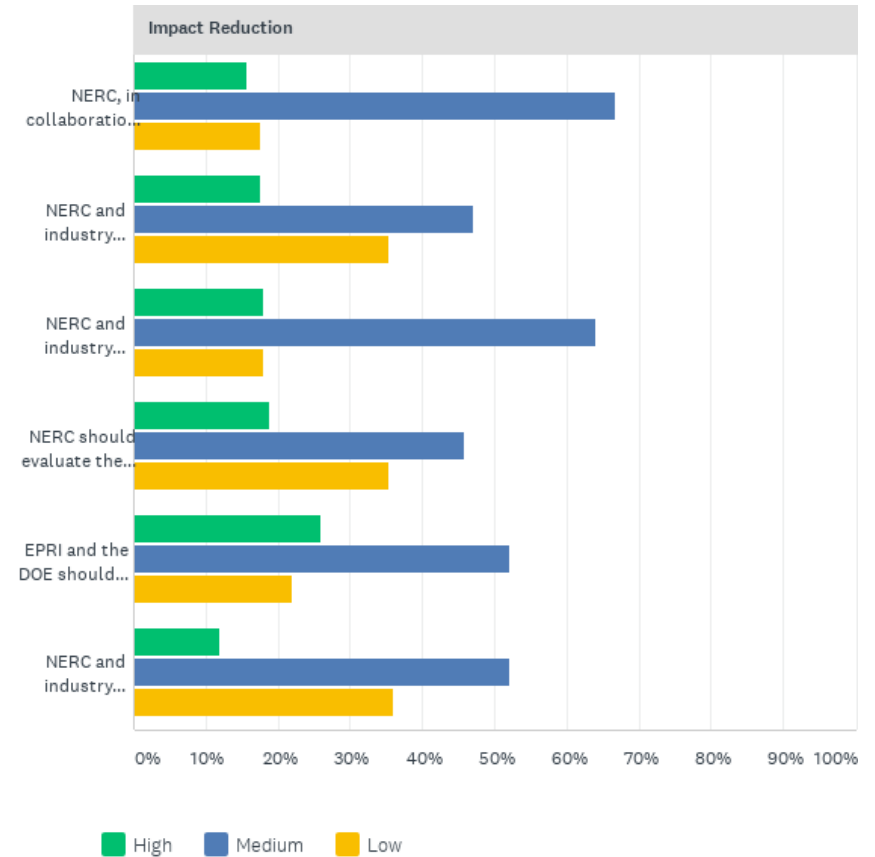
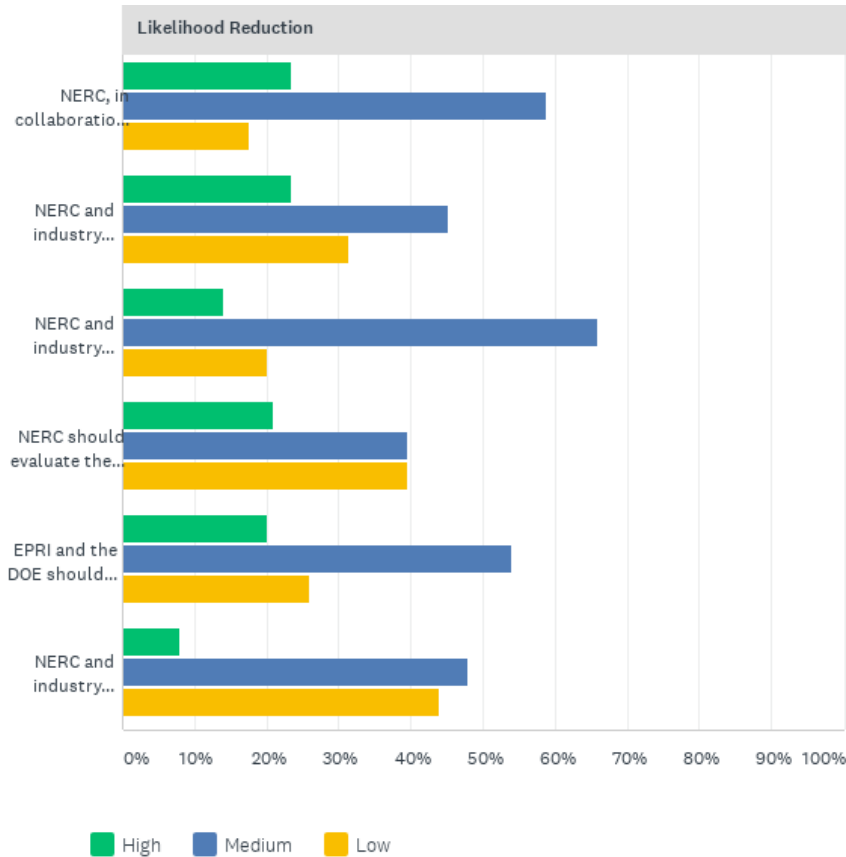
Critical Infrastructure Interdependencies Identified Risks Still Relevant?



- Different data sharing and confidentiality practices amongst the sectors could present risks beyond each sector where data submitted to federal agencies by each sector could provide insights into sector interdependencies and/or points of vulnerability. While we recognize the importance/relevance of the risks associated with critical infrastructure interdependencies, we do not believe that NERC should initiate standards to mitigate such risks. Instead, we recommend the use of reliability guidelines to educate and identify potential mitigating practices.
- Different data sharing and confidentiality practices amongst the sectors could present risks beyond each sector where data submitted to federal agencies by each sector could provide insights into sector interdependencies and/or points of vulnerability.
- Gas pipeline uplift pumping stations – with curtailable load contracts – that get executed during emergencies – exactly when you need the gas pipeline pumping station to stay online and work. Impact of Operational Flow Orders (Must-take) on gas generation Supply Chain concerns (non-cyber) – critical components. Pandemic – impact on BPS maintenance, scheduled maintenance and construction.
- Public communications networks that are used and other communication means used in support of the system operation of all critical infrastructure facilities and provide data necessary for situational awareness of these facilities.
- Public/private Sector participation on the BES - As part of Grid Transformation, more and more entities will become a more critical part of the operation and planning for BES Reliability. In fact, these small entities will collectively become Critical Infrastructure needed to support a reliable electric system. Managing expectations and performance for these 'new' participants will be critical.
- I'm not sure if this is appropriate to cover here or under the grid transformation section, but the line between distribution and transmission is blurring as we see increasing penetrations of DERs. There is an increased need for coordination and information sharing between transmission and distribution system planners.

- Different data sharing and confidentiality practices amongst the sectors could present risks beyond each sector where data submitted to federal agencies by each sector could provide insights into sector interdependencies and/or points of vulnerability.
- Control systems interactions between resources and devices, and also T&D&G - with increasing complexity of both systems and devices being controlled, there is higher opportunity for negative interactions
- Public/private Sector participation on electric grid - As part of Grid Transformation, more and more entities will become a more critical part of the operation and planning for BES Reliability. In fact, these small entities will collectively become Critical Infrastructure needed to support reliable electric service. Managing expectations and performance for these 'new' participants will be critical.





- EPRI and DOE efforts are maybe. Need more context.
- We would suggest that mitigating activity #5 would also provide risk mitigation under Security Risks as the redundancy and resiliency value could reduce the likelihood and impact of outages. Additionally, we would suggest ensuring that the various meetings and conferences proposed under mitigating activity #6 should include our sector partners to ensure more actionable results. Finally, an effort to understand how data sharing and confidentiality practices differ amongst the sectors, could present risks beyond each sector, and what actions can be taken to reduce such risks should be considered as an additional mitigating activity.
- We would suggest that mitigating activity #5 would also provide risk mitigation under Security Risks as the redundancy and resiliency value could reduce the likelihood and impact of outages. Additionally, we would suggest ensuring that the various meetings and conferences proposed under mitigating activity #6 include our sector partners to ensure more actionable results. Finally, consider as an additional mitigating activity an effort to understand how different data sharing and confidentiality practices amongst the sectors could present risks beyond each sector, and what actions can be taken to reduce such risks.
- NERC should continue to work with other sectors to develop strong relationships so that any recommendations from assessments can be implemented and reduce duplicate efforts.
- As we get more and more interdependent with others as an industry, we must ask the question who is ultimately in charge of overseeing these interactions and making sure that best practices are followed and adhered to. A clear expectation of responsibility assignment becomes more important during adverse or emergency operations.
- Vulnerabilities of Distributed Energy providers and aggregators must be considered as part of their integration and operation with the BES.

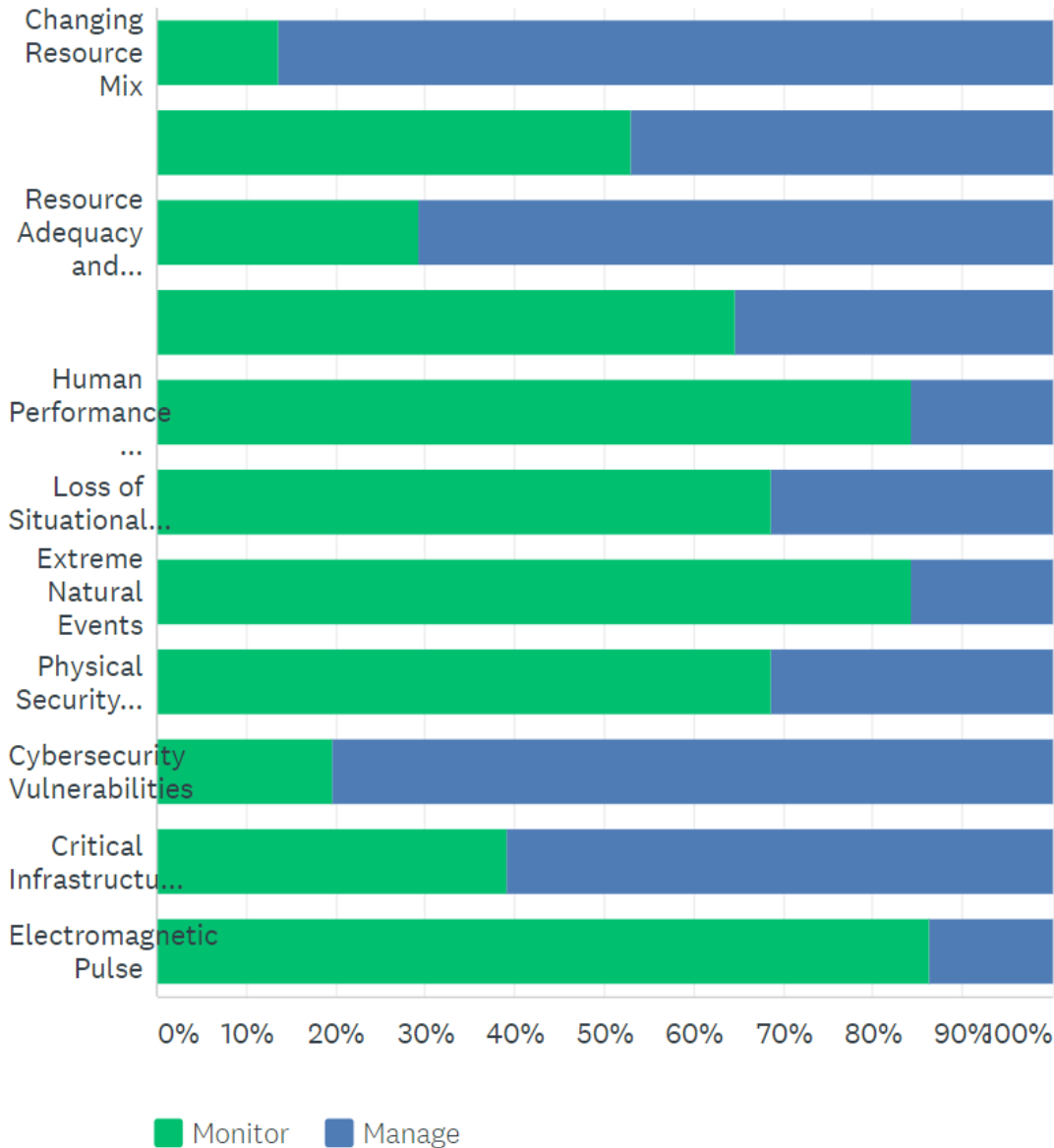
- Within the area of Critical Infrastructure Interdependencies, BPA would like to see NERC increase its focus on communication resiliency following a major event to ensure that communication systems are quickly returned to normal operations.
- There has been a lot of work done to understand the impacts of natural gas limitations on the BPS. What are the next steps for this work and is there additional work that needs to be done? Is there something that we can learn from or contribute to the DOE NAERM project?
- More effective two-way collaboration and information sharing between Canada and the US.
- We would suggest that mitigating activity #5 would also provide risk mitigation under Security Risks as the redundancy and resiliency value could reduce the likelihood and impact of outages. Additionally, we would suggest ensuring that the various meetings and conferences proposed under mitigating activity #6 should include our sector partners to ensure more actionable results. Finally, an effort to understand how data sharing and confidentiality practices differ amongst the sectors, could present risks beyond each sector, and what actions can be taken to reduce such risks should be considered as an additional mitigating activity.
- Vulnerabilities to Distributed Energy providers and aggregators must be considered as part of their integration and operation into the grid.
- To ensure infrastructure security, some of the assessments that include specific failure scenarios may need to have limited distribution.



Ranking of Identified Risks

Ranking of Identified Risks

	11	10	9	8	7	6	5	4	3	2	1	Rank
Changing Resource Mix	21	9	10	5	1	0	1	1	2	1	0	43.2
Cybersecurity Vulnerabilities	20	14	3	6	1	1	0	3	2	0	1	42.5
Resource Adequacy and Performance	8	9	5	7	1	5	5	3	1	2	5	33.2
Critical Infrastructure Interdependencies	2	6	8	9	5	4	6	1	3	6	1	31.0
Loss of Situational Awareness	1	3	3	4	5	10	9	11	3	2	0	27.0
Physical Security Vulnerabilities	2	1	7	3	9	8	1	5	4	10	1	26.3
Extreme Natural Events	1	3	2	4	10	8	7	2	8	5	1	26.1
Bulk Power System Planning	1	2	6	5	6	3	7	9	6	5	1	25.9
Increasing Complexity in Protection and Control Systems	1	1	6	2	4	8	9	6	7	4	3	24.4
Human Performance and Skilled Workforce	2	2	2	3	5	4	4	5	9	10	5	21.5
Electromagnetic Pulse	3	0	1	0	0	1	1	3	4	7	31	11.1





Questions and Answers

Introduction

The following survey provides identified bulk power system (BPS) reliability risks and recommended mitigating activities to control them compiled by the NERC Reliability Issues Steering Committee (RISC) in the 2019 ERO Reliability Risk Priorities Report. The survey serves as a vehicle to prioritize identified risks as well as to potentially identify new and emerging risks.

Additionally, the survey responses set a framework for the development of the 2021 ERO Reliability Risk Priorities report (See the [2019 report](#) for background) which will provide an overview of inherent BPS risks, current mitigating activities and recommendations for additional activities to control the risks. This report is widely used by the Electric Reliability Organization, industry, policymakers, and regulators to more fully understand inherent risks to the BPS and serve as a guide to further develop and refine mitigating strategies. The RISC report is expected to be released in August 2021.

The deadline for completion is *January 15, 2021*. Should you have any questions with respect to the survey or obstacles with using SurveyMonkey feel free to contact Tina Buzzard at (404) 446-9686, tina.buzzard@nerc.net.

The survey will take approximately 10-15 minutes to complete. You are able to stop and return to the survey at any time if unable to complete in one sitting, however *you must return to the survey on the same device used when starting the survey originally*.

The RISC thanks you for your time and effort in completing the survey!

Survey Participant Information

Name:

Title

Company

Size

Type

Select all that are appropriate.

Transmission

Generation

Distribution

Other

Affiliation

Risk Profiles

In 2019, the RISC reviewed and assembled information from ERO Enterprise stakeholders and policymakers and focused subgroup work to develop an initial composite set of risk profiles. Further review and consolidation resulted in four high level risks: Grid Transformation, Extreme Natural Events, Security Risks, and Critical Infrastructure Interdependencies.

Is each of these risk profiles still relevant?

	Yes	No
Grid Transformation	<input type="radio"/>	<input type="radio"/>
Extreme Natural Events	<input type="radio"/>	<input type="radio"/>
Security Risks	<input type="radio"/>	<input type="radio"/>
Critical Infrastructure Interdependencies	<input type="radio"/>	<input type="radio"/>

Other profiles for consideration?

Grid Transformation

In the 2019 ERO Reliability Risk Priorities Report, the following are the identified risks under Grid Transformation, considering current times, are these risks still relevant?

	Yes	No
Changing Resources Mix	<input type="radio"/>	<input type="radio"/>
Bulk Power System Planning	<input type="radio"/>	<input type="radio"/>
Resource Adequacy and Performance	<input type="radio"/>	<input type="radio"/>
Increasing Complexity in Protection and Control Systems	<input type="radio"/>	<input type="radio"/>
Human Performance and Skilled Workforce	<input type="radio"/>	<input type="radio"/>
Loss of Situational Awareness	<input type="radio"/>	<input type="radio"/>

Are there other identified risks to be considered under Grid Transformation?

The following are the recommended mitigation activities under Grid Transformation. Are these activities still appropriate?

If you think the mitigation activity is still appropriate, how effective do you think the activity will be at reducing the likelihood and impact of a reliability event associated with the risks listed above. Please choose:

High – Significant measurable mitigation is achieved

Medium – a moderate, but measurable mitigation is achieved

Low – Little or no measurable mitigation is achieved

	Activity Still Appropriate	Likelihood Reduction	Impact Reduction
Update data, modeling and assessment requirements to ensure valid and accurate results given resource and grid transformation (ongoing effort).	<input type="text"/>	<input type="text"/>	<input type="text"/>
The technical committees should establish and implement an approach to evaluate the potential impacts of energy storage on reliability.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Improve inverter-based resource BPS interconnection and operation and stay abreast of new technologies, such as storage/hybrid resources.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Ensure sufficient operating flexibility at all stages of resource and grid transformation.	<input type="text"/>	<input type="text"/>	<input type="text"/>

Are there other mitigation activities for consideration?

Extreme Natural Events

In the 2019 ERO Reliability Risk Priorities Report, the following are the identified risks under Extreme Natural Events, considering current times, are these risks still relevant?

	Yes	No
Hurricanes, Tornados/Derecho, Extreme Heat/Drought, Wild Fires, Flooding, Extreme Cold	<input type="radio"/>	<input type="radio"/>
Earthquakes	<input type="radio"/>	<input type="radio"/>
Geomagnetic Disturbances	<input type="radio"/>	<input type="radio"/>

Are there other extreme natural events to consider?

The following are the recommended mitigation activities under Extreme Natural Events. Are these activities still appropriate?

If you think the mitigation activity is still appropriate, how effective do you think the activity will be at reducing the likelihood and impact of a reliability event associated with the risks listed above. Please choose:

High – Significant measurable mitigation is achieved

Medium – a moderate, but measurable mitigation is achieved

Low – Little or no measurable mitigation is achieved

	Activity Still Appropriate	Likelihood Reduction	Impact Reduction
Special assessments of extreme natural event impacts, including capturing lessons learned, creating simulation models, and establishing protocols and procedures for system recovery and resiliency.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Development of tools for BPS resiliency	<input type="text"/>	<input type="text"/>	<input type="text"/>
Understanding of Geomagnetic Disturbance (GMD) events on BPS.	<input type="text"/>	<input type="text"/>	<input type="text"/>

Are there other mitigation activities for consideration?

Security Risks

In the 2019 ERO Reliability Risk Priorities Report, the following are the identified risks under Security Risks, considering current times, are these risks still relevant?

	Yes	No
Physical Security Risks	<input type="radio"/>	<input type="radio"/>
Cyber Security Risks	<input type="radio"/>	<input type="radio"/>
Electromagnetic Pulse Risk	<input type="radio"/>	<input type="radio"/>

Are there other security risks to consider?

The following are the recommended mitigation activities under Security Risks. Are these activities still appropriate?

If you think the mitigation activity is still appropriate, how effective do you think the activity will be at reducing the likelihood and impact of a reliability event associated with the risks listed above. Please choose:

High – Significant measurable mitigation is achieved

Medium – a moderate, but measurable mitigation is achieved

Low – Little or no measurable mitigation is achieved

	Activity Still Appropriate	Likelihood Reduction	Impact Reduction
NERC, in collaboration with industry, should evaluate the need for additional assessments of the risks of attack scenarios (e.g., vulnerabilities related to drone activity, attacks on midstream or interstate natural gas pipelines or other critical infrastructure).	<input type="text"/>	<input type="text"/>	<input type="text"/>
The Electricity Information Sharing and Analysis Center (E-ISAC) should encourage continued industry efforts on workforce cyber education to raise awareness of methods and tactics used by cyber attackers (e.g., email phishing, credential theft).	<input type="text"/>	<input type="text"/>	<input type="text"/>
NATF and NAGF should develop supply chain cyber security superior practices.	<input type="text"/>	<input type="text"/>	<input type="text"/>
E-ISAC should execute a long-term strategy to improve cyber and physical security information-sharing, protection, risk analysis, and increase engagement within the electric sector as well as with other ISACs.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NATF, NAGF, Trades Associations, and E-ISAC should develop tiered security performance metrics. Such metrics would track and evaluate events and use predictive analysis to identify and address prospective vulnerabilities on a risk-prioritized basis.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC should facilitate the development of planning approaches, models, and simulation approaches that reduce the number of critical facilities and mitigate the impact relative to the exposure to attack.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC's EMP taskforce should highlight key risk areas that arise from the EPRI's EMP analysis for timely industry action.	<input type="text"/>	<input type="text"/>	<input type="text"/>

Are there other mitigation activities for consideration?

Critical Infrastructure Interdependencies

In the 2019 ERO Reliability Risk Priorities Report, the following are the identified risks under Critical Infrastructure Interdependencies, considering current times, are these risks still relevant?

	Yes	No
Sector interdependence is becoming more critical, such as the added importance of digital communications for electric system protection and control and voice communications for emergency response and restoration.	<input type="radio"/>	<input type="radio"/>
Subsector interdependence is increasing (e.g., growing reliance on natural gas as an electrical generation fuel source with potential needs for fuel switching in the event of natural gas unavailability), creating the potential for more limiting contingencies, including single-point failures.	<input type="radio"/>	<input type="radio"/>
Cross-sector and subsector implications and coordination are not routinely socialized or thoroughly tested during drills.	<input type="radio"/>	<input type="radio"/>
Governmental oversight and regulatory constructs differ widely among the sectors and subsectors, impeding information sharing and alignment.	<input type="radio"/>	<input type="radio"/>

Are there other critical infrastructure interdependencies to consider?

The following are the recommended mitigation activities under Critical Infrastructure Interdependencies. Are these activities still appropriate?

If you think the mitigation activity is still appropriate, how effective do you think the activity will be at reducing the likelihood and impact of a reliability event associated with the risks listed above. Please choose:

High – Significant measurable mitigation is achieved

Medium – a moderate, but measurable mitigation is achieved

Low – Little or no measurable mitigation is achieved

	Activity Still Appropriate	Likelihood Reduction	Impact Reduction
NERC, in collaboration with industry and industry partners, should identify and prioritize limiting conditions and/or contingencies that arise from other sectors that affect the BPS.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC and industry partners should host strategic interactions among critical infrastructure partners (e.g., industry and regulators) to identify and align on mutual priorities.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC and industry partners should increase emphasis on cross-sector considerations in industry drills (e.g., NERC Grid-Ex, DOE drills, utility exercises (e.g., Southern California Edison (SCE) Resilient Grid Exercise)).	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC should evaluate the need to conduct special regional assessments that address natural gas availability and pipeline impacts under physical attack scenarios.	<input type="text"/>	<input type="text"/>	<input type="text"/>
EPRI and the DOE should continue their work on communication alternatives but also the use of same or similar technologies for critical SCADA data. New technologies should be explored that could assist in providing unique and hardened back-up telecommunication methods for the most critical data.	<input type="text"/>	<input type="text"/>	<input type="text"/>
NERC and industry partners should conduct various meetings and conferences to highlight the importance of cross-sector interdependence and coordination, such as the NERC Reliability Summit, NATF/EPRI resiliency summits, and FERC/DOE technical conferences.	<input type="text"/>	<input type="text"/>	<input type="text"/>

Are there other mitigation activities for consideration?

Risk Ranking

Considering your responses above, please rank the 11 identified risks with 11-highest, 1-lowest.

	11	10	9	8	7	6	5	4	3	2	1
Changing Resource Mix	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bulk Power System Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resource Adequacy and Performance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing Complexity in Protection and Control Systems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human Performance and Skilled Workforce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loss of Situational Awareness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extreme Natural Events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physical Security Vulnerabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cybersecurity Vulnerabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Critical Infrastructure Interdependencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electromagnetic Pulse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Considering your responses above, please classify the 11 identified risks as:

Monitor (risks that have been long recognized with commensurate NERC and industry monitoring for proper mitigation), or

Manage (newly emerging, requiring active management with a more aggressive immediate approach necessary for effective foresight and mitigation).

	Monitor	Manage
Changing Resource Mix	<input type="radio"/>	<input type="radio"/>
Bulk Power System Planning	<input type="radio"/>	<input type="radio"/>
Resource Adequacy and Performance	<input type="radio"/>	<input type="radio"/>
Increasing Complexity in Protection and Control Systems	<input type="radio"/>	<input type="radio"/>
Human Performance and Skilled Workforce	<input type="radio"/>	<input type="radio"/>
Loss of Situational Awareness	<input type="radio"/>	<input type="radio"/>
Extreme Natural Events	<input type="radio"/>	<input type="radio"/>
Physical Security Vulnerabilities	<input type="radio"/>	<input type="radio"/>
Cybersecurity Vulnerabilities	<input type="radio"/>	<input type="radio"/>
Critical Infrastructure Interdependencies	<input type="radio"/>	<input type="radio"/>
Electromagnetic Pulse	<input type="radio"/>	<input type="radio"/>

Thank you for taking the time to complete the 2020 RISC Emerging Risks Survey!

Review Report Timeline and Assign Report Subgroups

Action

Review

Summary

Chair Peeler will review the 2021 ERO Risk Priorities Report timeline and seek volunteers for subgroups to work on the report production.

RISC Annual Process Manual

Risk Identification and Mitigation Framework

December 2020

Annual Process

Every two years the NERC RISC committee develops a report that identifies key risks to bulk power system (BPS) reliability as well as a framework for mitigating those risks. The report is published in November of odd-numbered years. The recommended production timeline of that report is shown below:

- Fourth Quarter 2020 (Every other year)
 - Develop and distribute the risk template/industry survey to the following groups:
 - RSTC
 - RISC
 - PCGC
 - CCC
 - MRC
 - NATF
 - NAGF
 - Regional Entities CEOs
 - WECC MAC
 - ISO/RTO
 - Finalize summit topics/recommended speakers; begin summit preparations
- December
 - **RISC meeting - December 1 (11:00 a.m –Noon)**
 - Review/initiate the RISC 2020 Emerging Risks Survey
- January
 - Reliability Leadership Summit (January 26-27, virtual)
 - **RISC meeting – January 28 (1:00-4:00 p.m. Eastern)**
 - Analyze additional identified risks as a result of RISC 2020 Emerging Risks Survey and the annual Long-Term Reliability Assessment
 - Analyze additional identified risks as a result of new data and information received at the Reliability Leadership Summit
 - Assign report writing teams
- February
 - RISC subcommittees convene for report writing

- March
 - RISC meeting - March 24 (1:00-3:00 p.m. Eastern)
 - RISC subcommittees convene for report writing
 - Work with RSTC on potential risks identified in the upcoming State of Reliability Report
- April
 - RISC subcommittees convene for report writing
 - Work with RSTC on potential risks identified in the upcoming Summer Reliability Assessment
- May
 - RISC meeting – May 19 (1:00-3:00 p.m. Eastern)
 - Report completed
 - Present preliminary results to the Board
- June
 - Publication/editing
 - Distribute report for public comment
- July
 - RISC meeting – July 7 (1:00-3:00 p.m. Eastern)
 - Publication/editing
 - RISC to approve the report and recommend to Board of Trustees for approval
- August
 - Report approval by NERC Board of Trustees
- September - March
 - Upon approval from the NERC Board of Trustees, RISC and RSTC leadership will convene to ensure that identified risks along with associated mitigating activities are adequately addressed either in committee and sub-committee work plans, or by other groups as identified by RISC. For those items not incorporated into existing work plans, RISC and RSTC leadership will have joint strategic collaboration meetings no less than once a quarter to develop appropriate strategies for ensuring that all risks and mitigating activities are properly addressed, monitored, and measured through the committee and sub-committee process. The execution of this plan along with the measurement of success is depicted in Figure 1 which can also be found in the Risk Framework Document.

2021

September 15, 1:00-3:00 p.m.

October 20, 1:00-3:00 p.m. Eastern

December 2, 1:00-3:00 p.m. Eastern

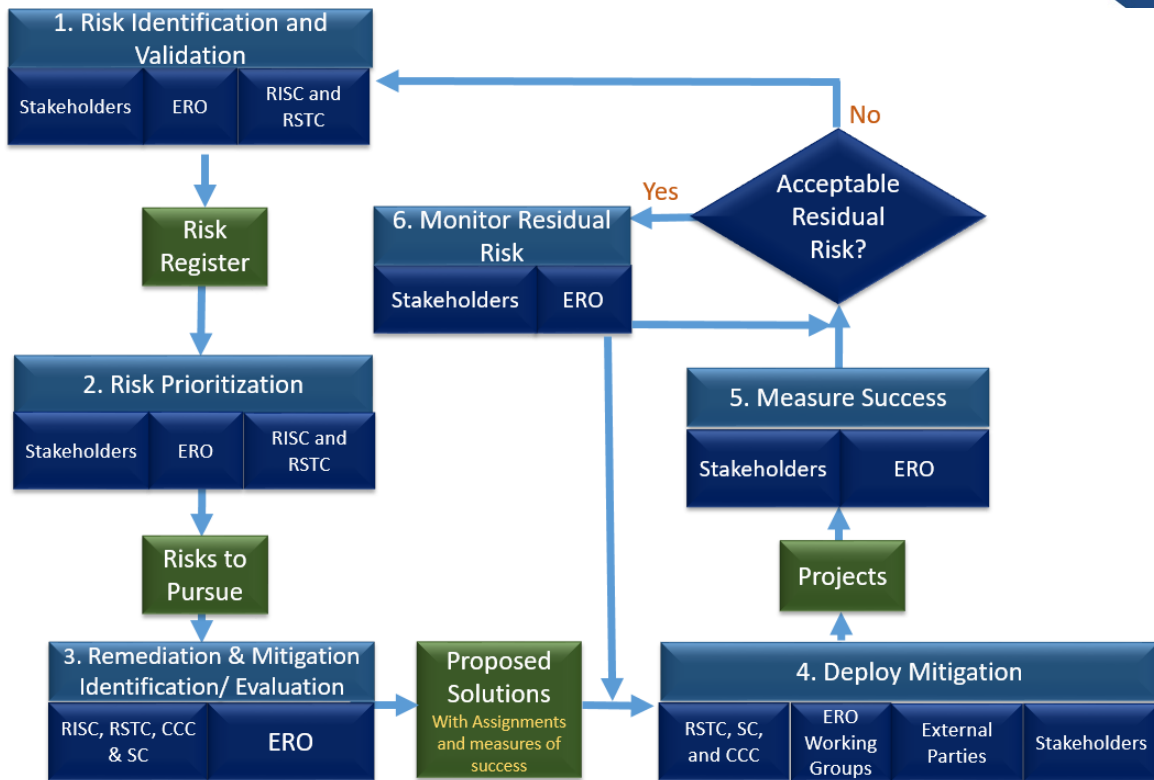


Figure 1

- March – December (years in which a RISC report will not be presented for BOT approval)
 - During this time period the RISC and RSTC will measure the effectiveness of the identified risks and mitigating strategies as incorporated into work plans of committees and sub-committees. This will be an ongoing process which will follow the flow chart included in the Risk Framework document.

Key Milestones

I. Risk Template

The risk template is put together at the beginning of the fourth quarter prior to report publication. Each cycle the RISC committee will review the previous risk template and update based on potential emerging risks and potential new challenges introduced to the BPS since the last template was compiled. The updated and refined template will be used to compile the comprehensive survey, which will be distributed to industry leaders.

II. Industry Survey

The comprehensive industry survey serves as a vehicle to prioritize identified risks as well as to potentially identify new and emerging risks. In order to ensure the greatest accuracy and integrity of the survey NERC will conduct an industry webinar for training around proper completion of the survey. As part of the training NERC will define key terms. For example, one of the key objectives is to determine if a particular risk category should be managed versus monitored. If a risk should be managed, it means that active management is required and industry does not have a clear and precise solution or action plan to solve. If a risk should be

monitored it means that the risk has been well defined with well-documented industry procedures for addressing or resolving. Additionally, the rankings for risk items will be adequately defined during the survey training webinars. The survey and training will be scheduled early in the fourth quarter.

Proposed Key Terms

Baseline Impact – The Baseline Impact is the relative scale ranking of the impact of an identified risk without the implementation of any mitigating efforts.

Baseline Likelihood – the Baseline Likelihood is the relative scale ranking of how likely an identified risk will occur or have a potential effect on the Bulk Power System.

Baseline Risk – the Baseline Risk is the risk itself prior to the implementation of any mitigating activities. For example the Changing Resource Mix is a stand-alone risk. Prior to the implementation of any mitigating activities around this risk it would be considered to be a baseline risk.

Mitigation Actions – Mitigation Actions are any type of action employed with the intent to address and reduce a risk. The effect of mitigating actions should be to lower the impact or the likelihood of a risk.

Reduced Impact – Reduced Impact is the amount of reduction in the relative scale ranking of a risk as a result of implementation of a mitigating action. For example if the Changing Resource Mix risk to the grid has a Baseline Impact of 3.0 and a mitigating activity would reduce the impact to 2.5, the Reduced Impact as a result of that mitigating activity is .5.

Reduced Likelihood – Reduced Likelihood is the amount of reduction in the relative scale ranking of a risk as a result of implementation of a mitigating action. For example if the Changing Resource Mix risk to the grid has a Baseline Likelihood of 3.0 and a mitigating activity would reduce the likelihood to 2.5, the Reduced Likelihood as a result of that mitigating activity is .5.

Remaining Risk Impact – Remaining Risk Impact is equivalent to Baseline Impact minus Reduced Impact

Remaining Risk Likelihood – Remaining Risk Likelihood is equivalent to Baseline Likelihood minus Reduced Likelihood.

Risk – A risk is an event, condition, trend, or situation which if realized would have a negative impact on BPS reliability.

Risk Control – for purposes of the survey Risk Control is defined as the collective elements and mitigating activities and their associated reductions in risk likelihood and impact.

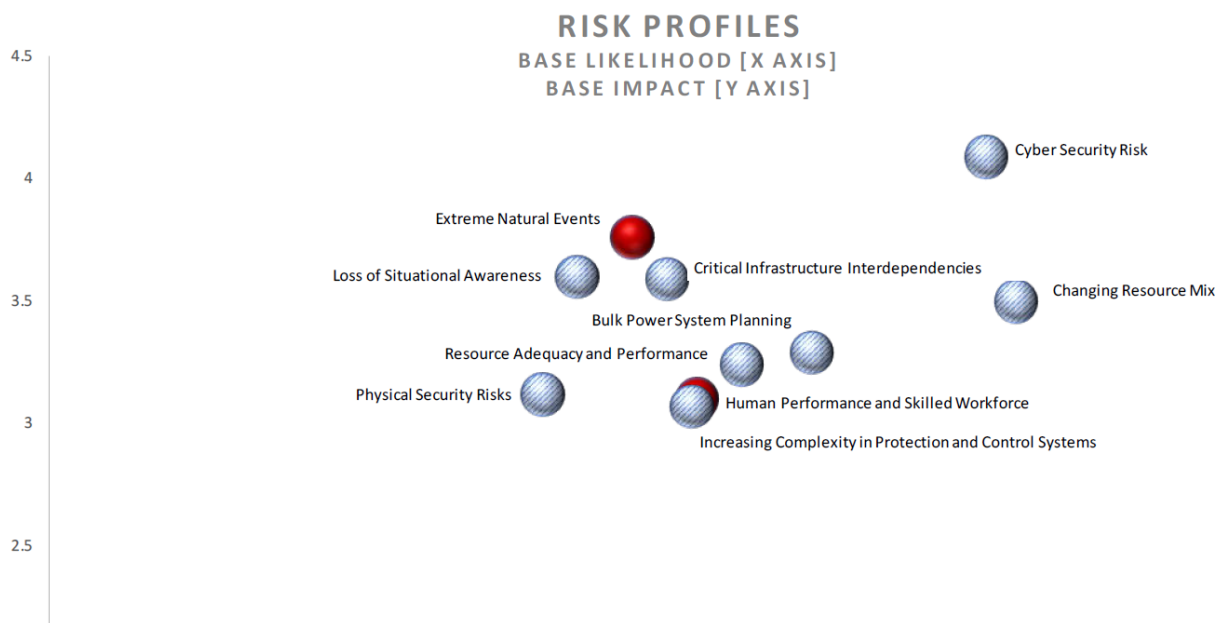
Risk Profile – A Risk Profile is a definition of a given risk along with the description of that risk.

III. Reliability Leadership Summit

The purpose of the Reliability Leadership Summit is to gather industry leaders to engage in constructive dialogue using the survey results as a framework. Keynote speakers and other speakers provide unique perspective into the key drivers of existing and emerging risks and help to identify areas that were potentially overlooked in the survey. Panel sessions are put together to collaborate around key risks and mitigating strategies as well as to engage in meaningful debate about their relative importance and significance. The Reliability Leadership Summit serves as a key building block to the ultimate RISC report.

IV. Heat Map/Risk Matrix

A visual depiction of the key risks and mitigating activities as well as those affects is a valuable tool in discerning what risks are potentially the most critical or where industry attention can have the most impact. Decision makers can have a better visual of the potential impacts of investment and attention. The heat map is an important derivative of the collected results from the survey and the Reliability Leadership Summit.



V. Report Compilation

The RISC Priorities Report is published every two years and is intended to inform regulators, policy makers and industry on existing and emerging risks as well as proposed and implemented mitigating strategies. The report builds off the initial risk identification and mitigation framework, the risk survey, the Reliability Leadership Summit, as well as additional input from the RISC committee and individual industry leaders. The RISC Committee works diligently to leverage all information to build a cogent report. It is also incumbent on the RISC Committee to measure the effectiveness and progress toward resolution of identified risks and the efficacy of mitigating activities.