

Aggregated Report on NERC Level 2 Industry Recommendation: Cold Weather Preparations for Extreme Weather Events

October 18, 2021

Summary

NERC received 1,173 responses to the Alert, targeting the Reliability Coordinator (“RC”), Balancing Authority (“BA”), Transmission Operator (“TOP”), and Generator Owner (“GO”) functional groups. The Alert was posted publicly on the NERC website, and consisted of 5 recommendations and 25 questions. Each of these 25 questions was directed toward a specific functional group: 2 questions were intended for the RCs, 4 questions were intended for the BAs, 4 questions were intended for the TOPs, and 15 questions were intended for the GOs. The final 3 questions for GOs asked for MW volumes and were intended to provide additional details for the analysis in case follow-up or additional risk assessment became necessary. This information will be summarized below in the interest of efficiency in review, security, as well as the non-uniform nature of the submissions.

100% of RCs and approximately 80% of TOPs and BAs responded that their organizations have developed operating plans that are close to real-time (2–3 days ahead). In addition, 100% of RCs and over 97% of TOPs and BAs reported that these plans address operating conditions such as cancellation of outages, generator starting, operating forecasts, and ramping requirements. TOPs also reported a very positive outlook: 80% of TOPs responded that they have conducted, or will conduct, a complete or partial seasonal assessment including weatherization, equipment, and transfer capability. Over 90% of GOs with fossil-fired generation reported that they survey, or will start surveying, unit weatherization and availability. However, BAs and GOs were mixed in other responses, with many entities indicating they did not plan to coordinate with fuel providers, conduct fuel surveys, or reinforce weatherization capabilities. Details of these responses are described below. The responses indicate the importance for grid operators to be prepared to implement their operating plans to manage potential supply shortfalls in extreme weather.

Background

As summarized in the Alert, NERC seeks to assess the status of the industry’s cold weather preparedness. Registered entities were provided detailed background information along with five recommendations outlining the approach to identifying and mitigating this risk.

The responses to the 25 questions are summarized below.

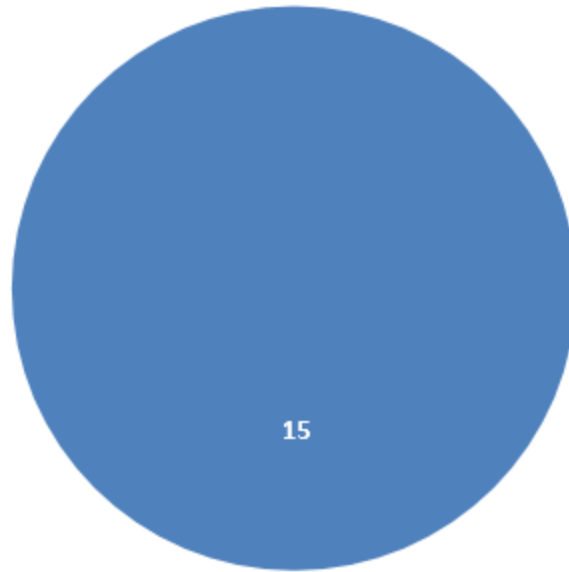
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Question RC-1

Has your organization developed operating plans that are closer to real-time (2–3 days ahead)?

RC-1 USA Only

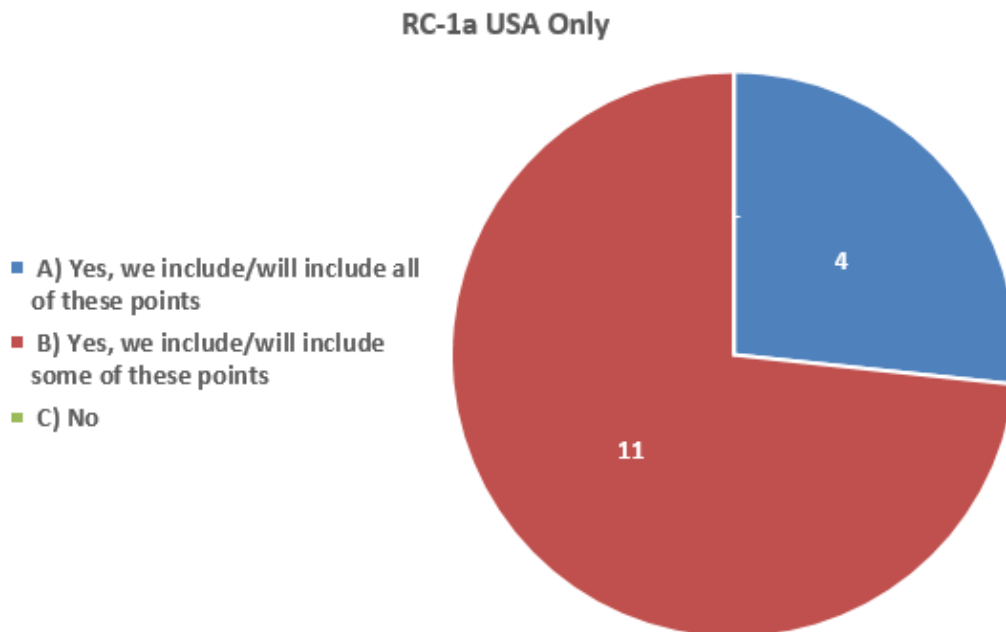
- A) Yes
- B) No, however we intend to develop such plans
- C) No, and we have no intention of developing such plans



Question RC-1a

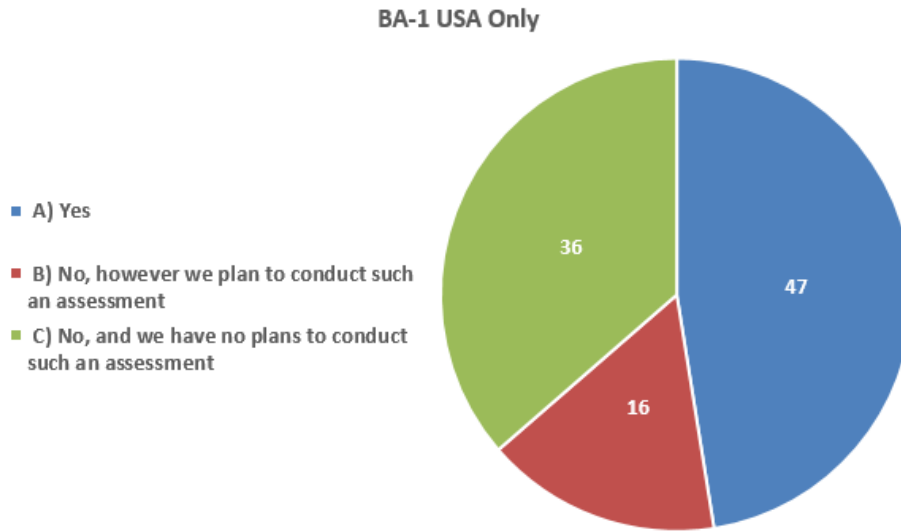
If your answer was A or B, does/will it include the following:

- Detailed plans to address the operating conditions such as cancellation of outages, generator starting and operating forecasts as well as ramping requirements
- The plans are communicated and coordinated with neighboring organizations
- The plan has protocols for communication between your RC and neighboring BAs
- Implementation plans are outlined in a forward-looking three week plan
- The plans evaluate, and use, an after-action review to identify additional transfer capabilities for optimal dispatch of resources and energy management
- For stability-based import limits, the plans use real-time tools to determine import limits
- Operational limitations of the generation facilities in your area



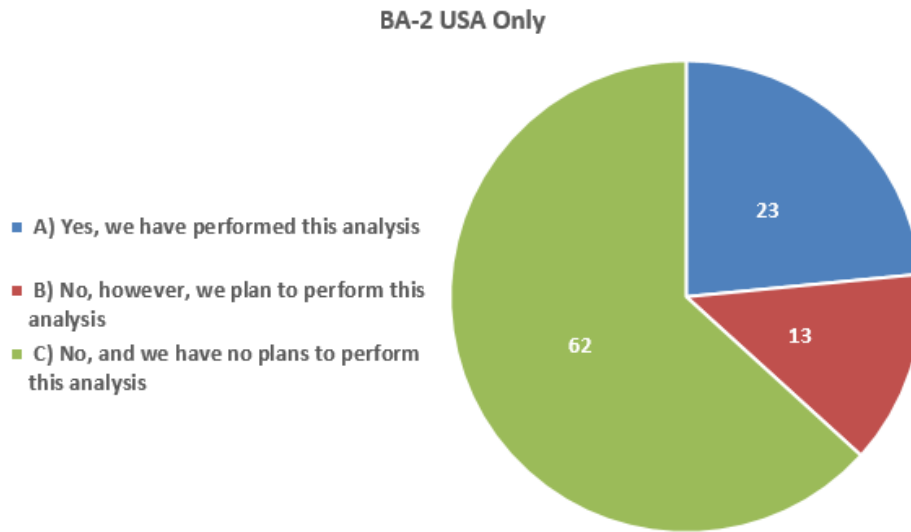
Question BA-1

Does your organization conduct a seasonal energy and capacity assessment for normal and extreme cold scenarios at least two months prior to the winter season?



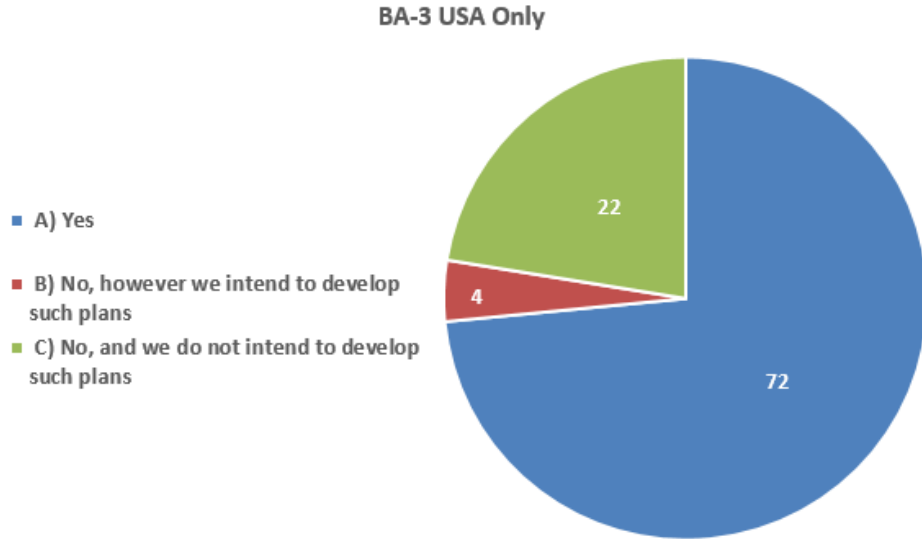
Question BA-2

Has your organization analyzed electric import capability for widespread, extreme, multi-day weather events and determined under what conditions emergency transfer capability can be used to increase imports into the deficient area ahead of the season, taking into account Balancing Authority Areas and RCs extreme weather capabilities and the ability to provide aid during extreme weather?



Question BA-3

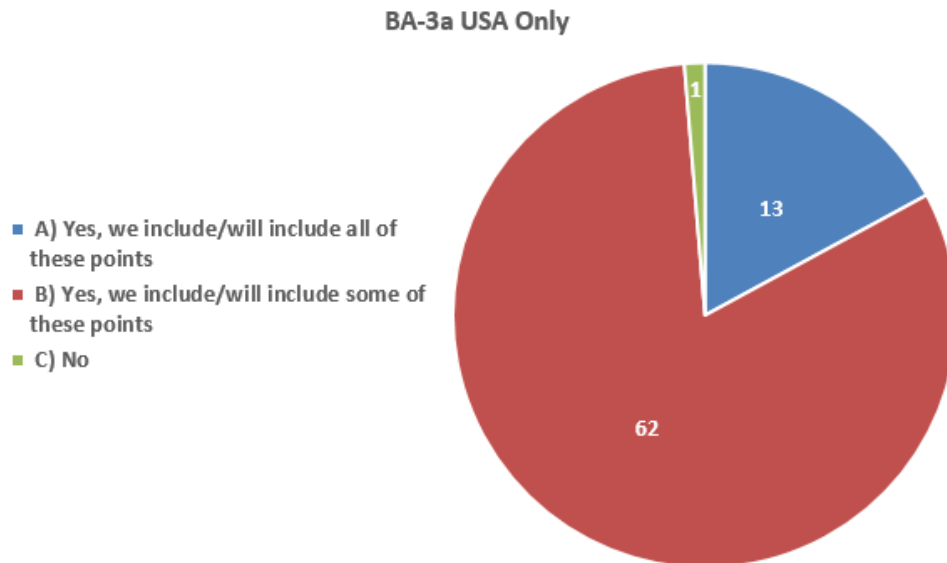
Has your organization developed Operating Plans that are closer to real-time (2–3 days ahead)?



Question BA-3a

If your answer was (A) or (B), does/will it include the following:

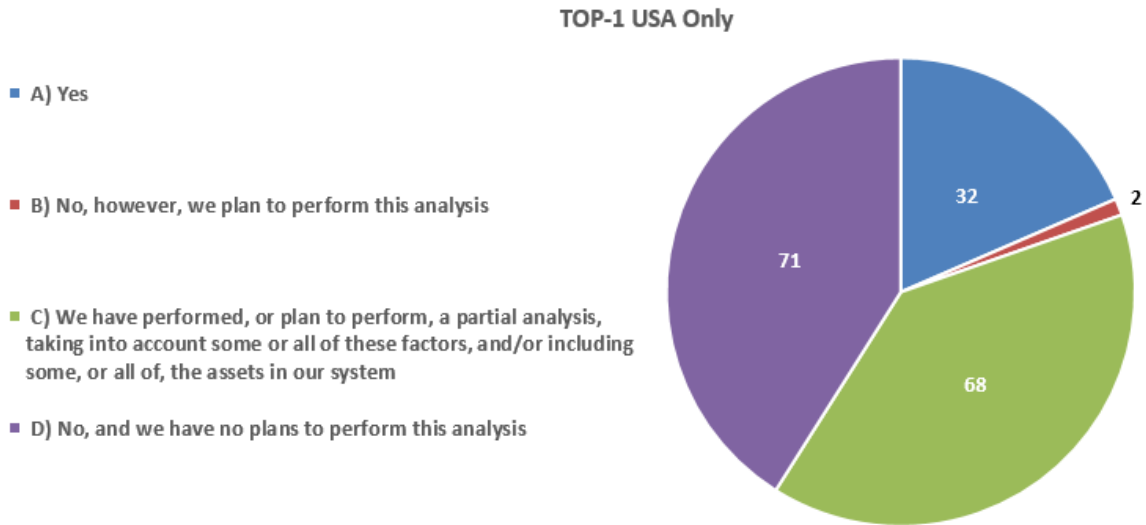
- Detailed plans to address the operating conditions such as cancellation of outages, generator starting and operating forecasts, as well as ramping requirements
- Plans that are communicated and coordinated with neighboring organizations
- Implementation of plans that are outlined in a forward looking three week plan
- Plans to meet any gap in energy between the forecast load in real-time and the day-ahead physical energy supply
- Plans containing details on Operating Reserves for fast-start and fast-ramping generation contingency response
- Plans to replace energy throughout a long-duration supply loss or unanticipated increase in demand
- Plans have protocols for communication between your RC and neighboring BAs
- Plans incorporate operational limitations of the generation facilities in your area



Question TOP-1

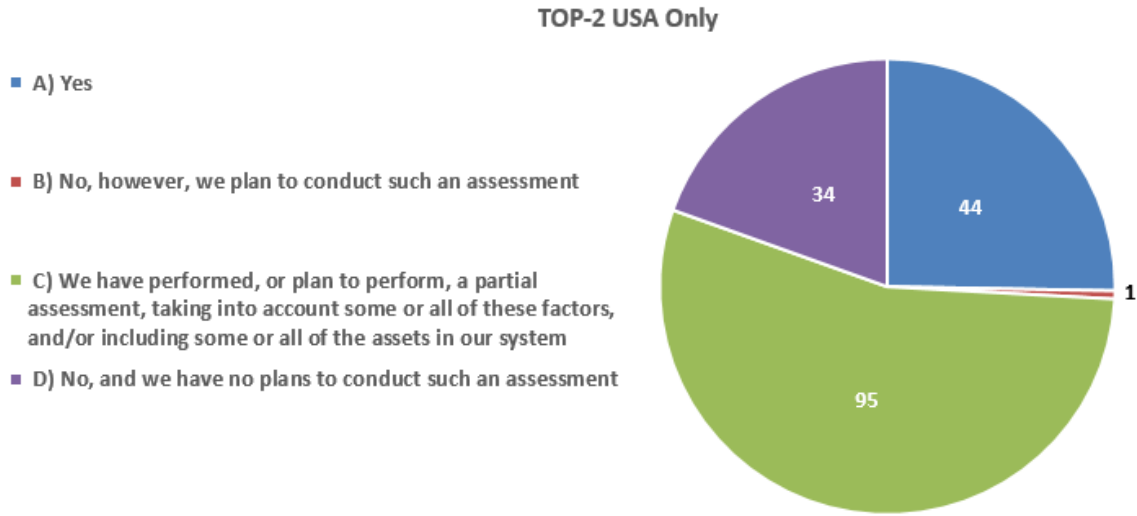
Has your organization analyzed electric import capability for widespread extreme multi-day weather events and determined ahead of the season under what conditions emergency transfer capability can be used to increase imports into the deficient area, taking into account the following factors:

- For stability-based import limits, use real-time tools to determine import limits
- Understand neighboring Balancing Authority Areas and RCs extreme weather capabilities and the ability to provide aid during extreme weather
- Evaluate/consider the use of ambient temperature adjusted limits on all transmission facilities where the conductor rating is the limitation



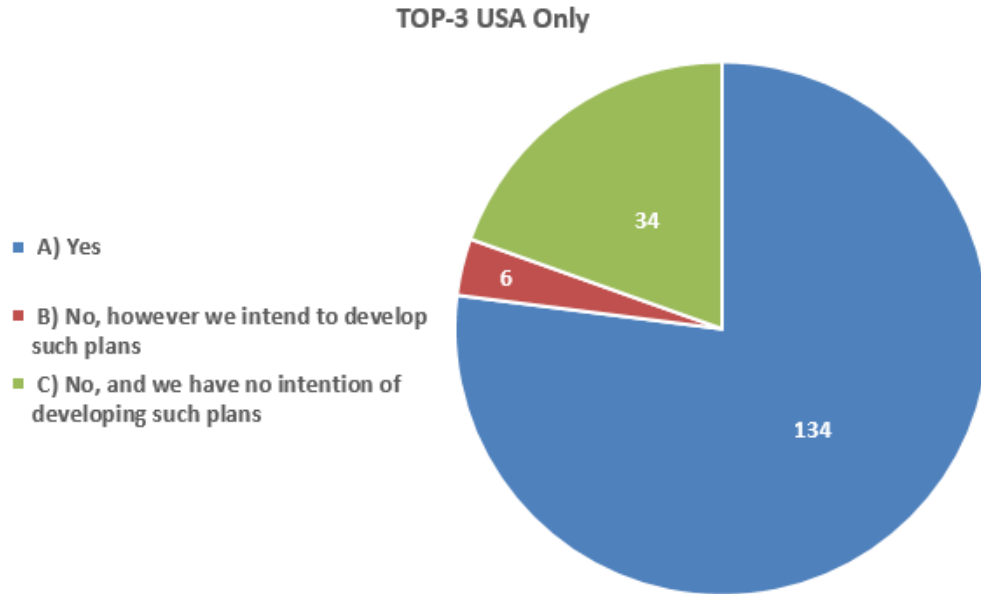
Question TOP-2

Does your organization conduct transmission system seasonal assessments, including weatherization of substations and equipment, maintenance and testing of voltage reduction equipment, assessment of transmission and generation outages, and transfer capabilities during those outages that could limit transfer capability and/or resource availability?



Question TOP-3

Has your organization developed Operating Plans that are closer to real-time (2–3 days ahead)?

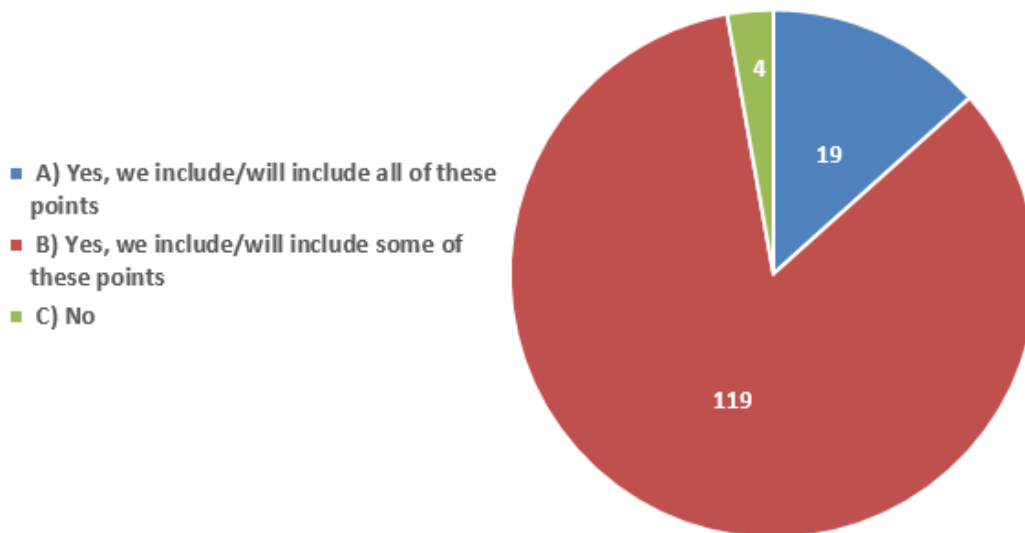


Question TOP-3a

If your answer was (A) or (B), does/will it include the following:

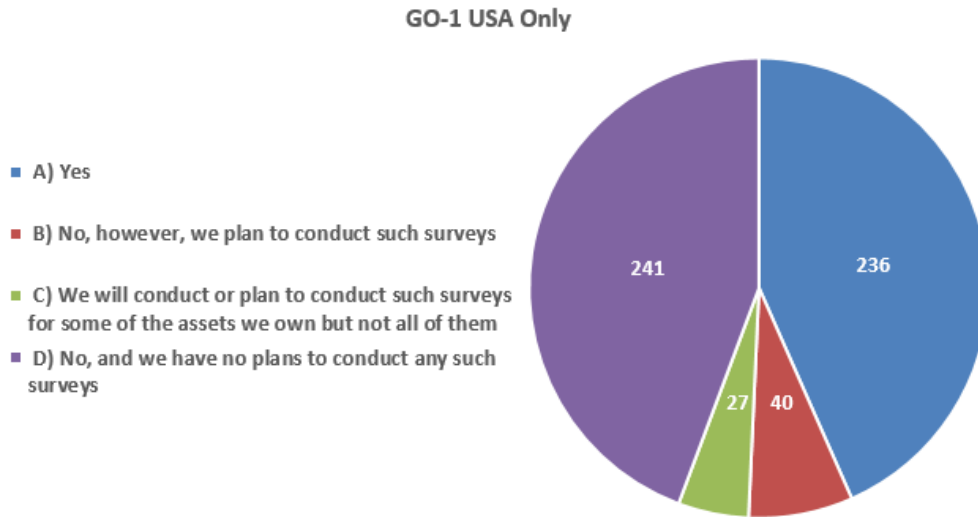
- Detailed plans to address the operating conditions such as cancellation of outages, generator starting, and operating forecasts, as well as ramping requirements
- The plans are communicated and coordinated with neighboring organizations
- Implementation of plans that are outlined in a forward-looking three-week plan
- The plans evaluate and utilize the use of an after-action review to identify additional transfer capabilities, for optimal dispatch of resources and energy management
- For stability-based imports limits, the plans use real-time tools to determine import limits
- Plans have protocols for communication between your RC and neighboring BAs
- Plans incorporate operational limitations of the generation facilities in your area

TOP-3a USA Only



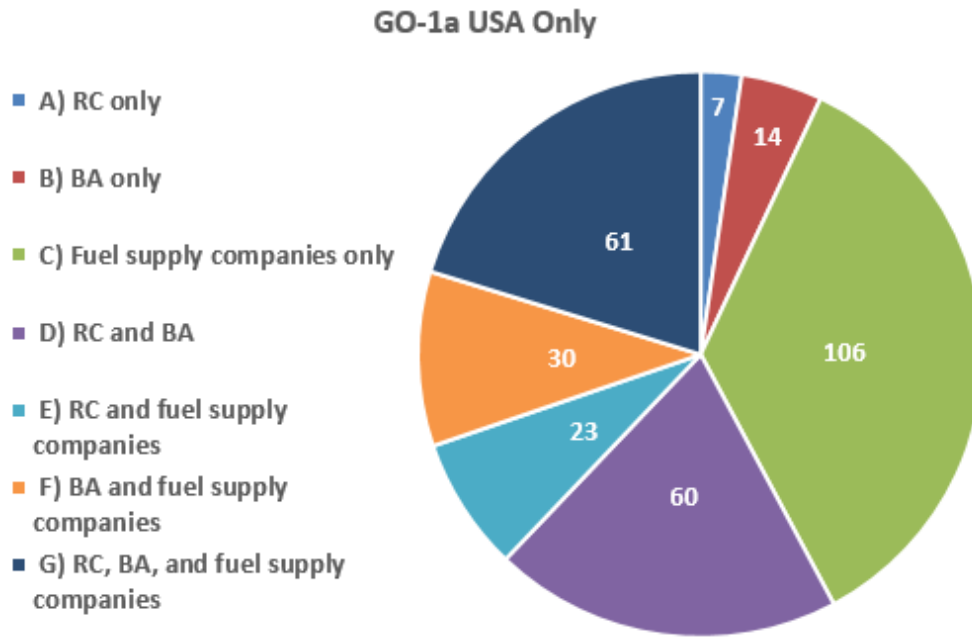
Question GO-1

If your organization owns fossil-fired units, do you conduct surveys with fuel suppliers for delivery of fuel during extreme cold weather?



Question GO-1a

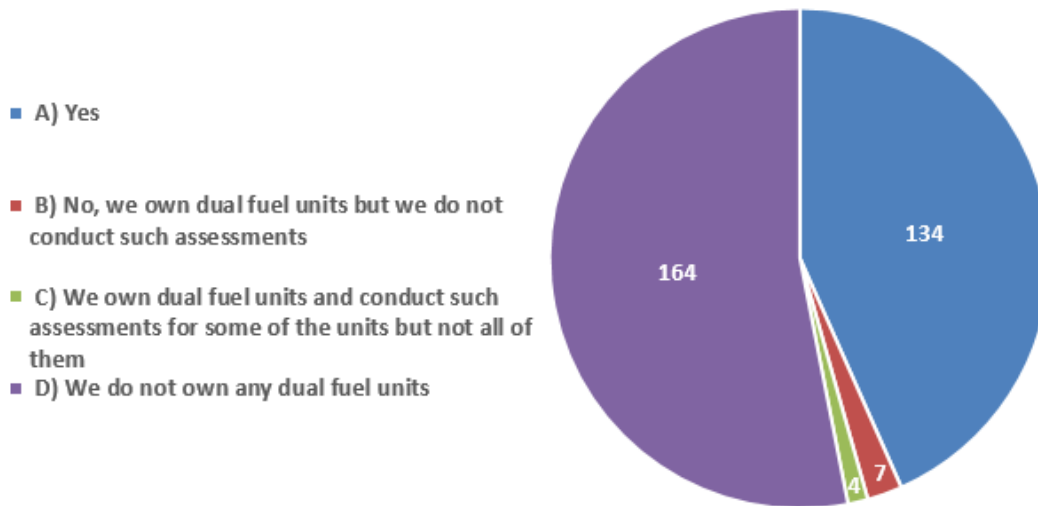
If your answer to (1) was (A), (B), or (C): Which entities do you or will you communicate the results with?



Question GO-1b

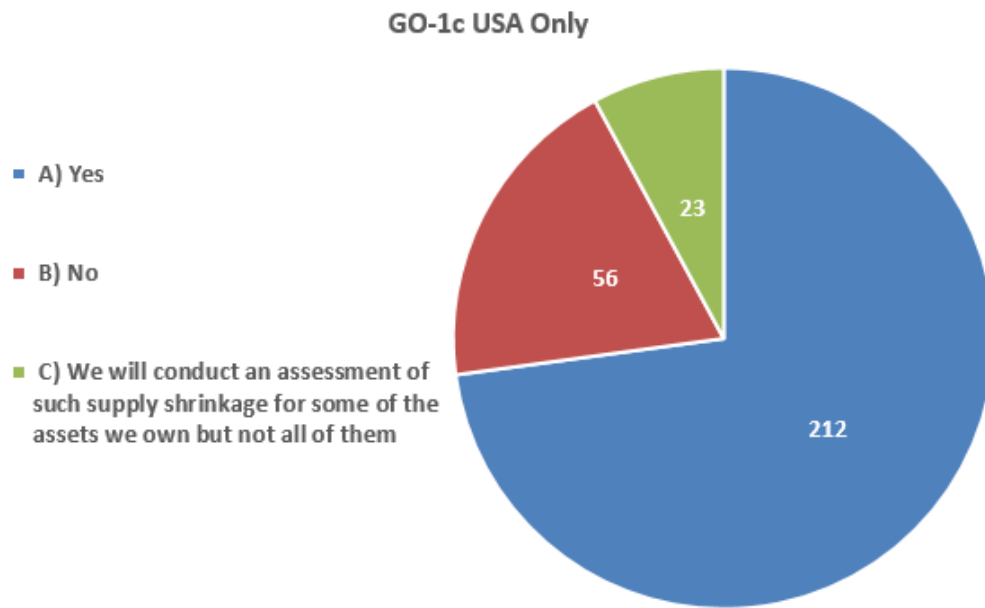
If your answer to (1) was (A), (B), or (C): Does your organization conduct dual fuel assessments to ensure resources can switch to the alternate fuel and monitor how much alternate fuel is on site?

GO-1b USA Only



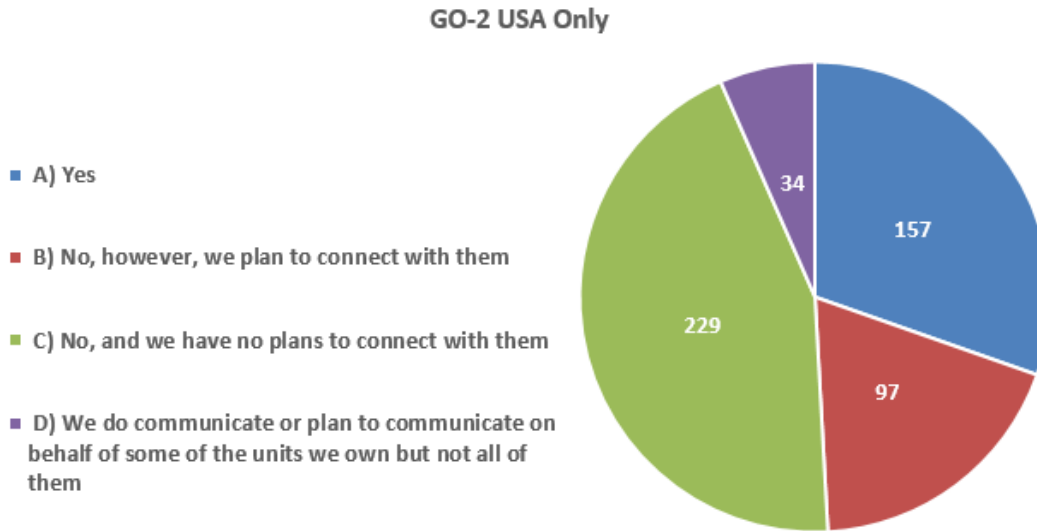
Question GO-1c

If your answer to (1) was (A), (B), or (C): Do (or will) the surveys include an assessment under extreme weather scenarios for supply shrinkage?



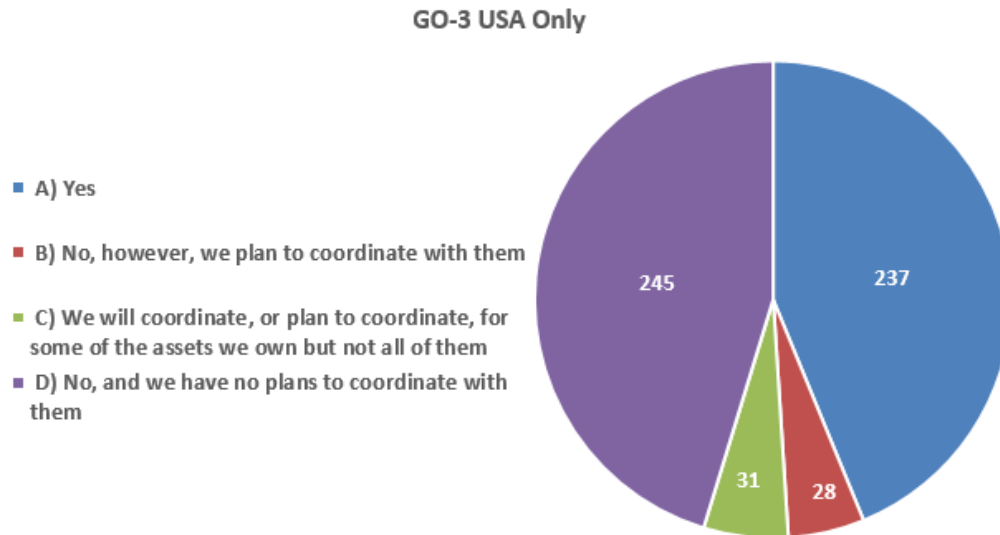
Question GO-2

Has your organization communicated with natural gas providers (suppliers and pipelines) on emergency plans and implemented actions from the NERC Reliability Guideline: Gas and Electrical Operational Coordination Considerations?



Question GO-3

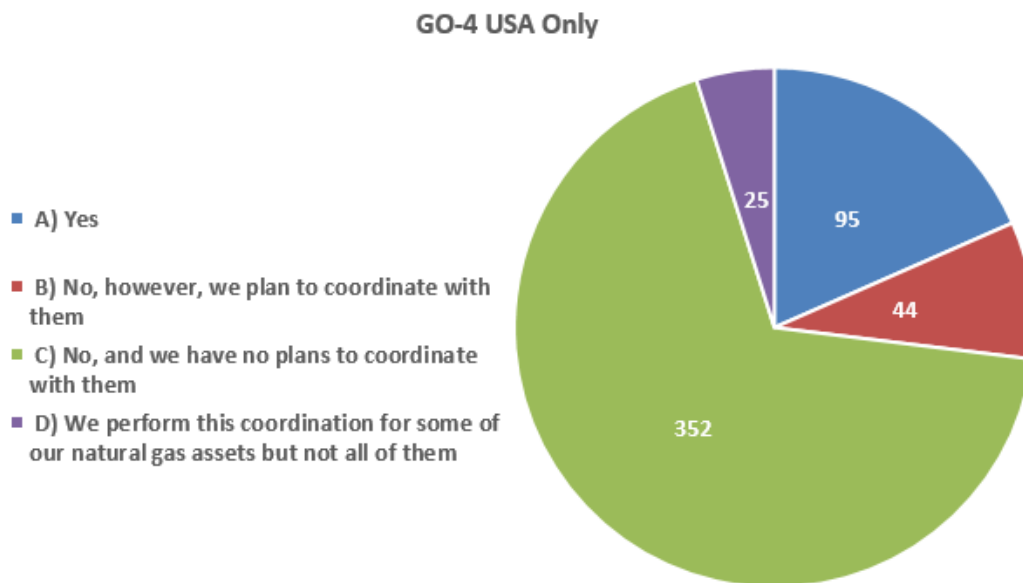
If your organization owns any fossil-fired units, have you coordinated with fuel providers to evaluate the capability of the system to support ramping rates and durations to maintain electric load-supply balance during significant energy production swings, particularly in the areas of significant penetration of Variable Energy Resources (VERs)?



Question GO-4

Has your organization coordinated with the appropriate entities to identify applicable natural gas system supply chain facilities' (i.e., facilities used for production, treating, processing, pressurizing, storing or transporting natural gas) vulnerabilities, such as:

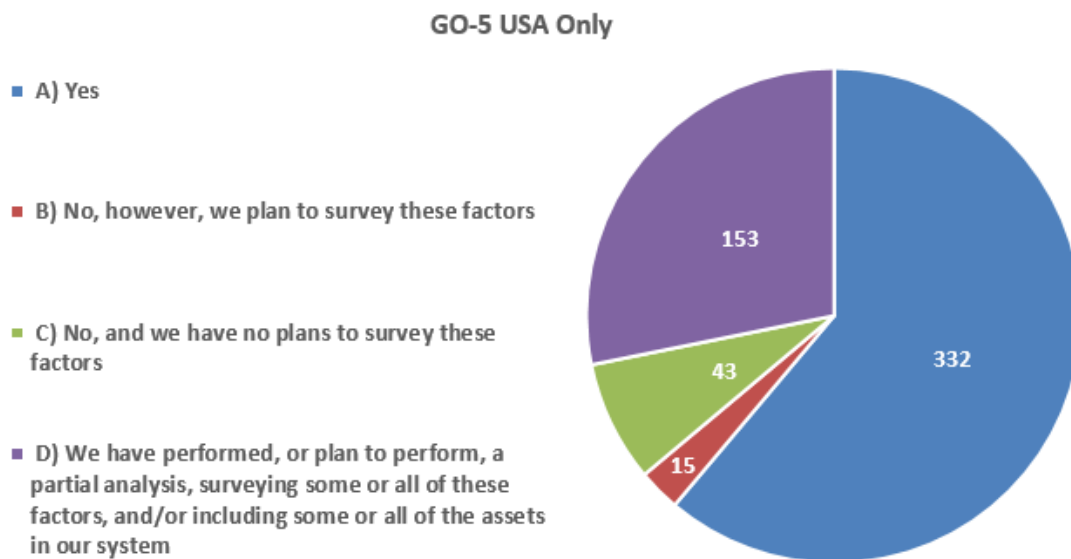
- Wellhead freezing history/projections
- Compressor loss history/projections
- Back-up options if electric service is dropped (e.g. propane heaters, battery/electric storage)
- Processing plant and gas treatment facility performance history/projections



Question GO-5

If you own fossil-fired units, has your organization surveyed the unit weatherization and availability for the following factors?

- Minimum temperature and time needed for the resources to start
- Temperatures and other weather conditions that the units can operate through if on-line prior to the extreme conditions (cold, or extreme wind and precipitation)
- Consider pre-seasonal unit startup tests and unit scheduling for infrequently run or off-line resources, or resources that have been off-line for prolonged period of time¹
- Seasonal emissions/environmental surveys
- Minimum alternate fuel burning procedures
- Water-related vulnerabilities

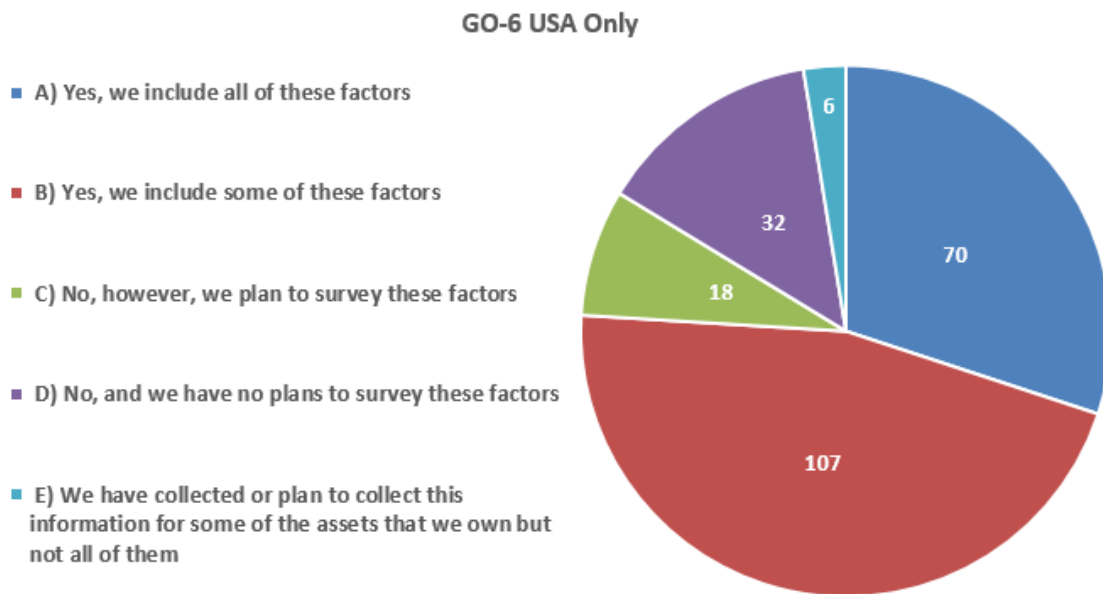


¹ E.g., see [PJM Manual 14D: Generator Operational Requirements](#), Section 7.5.1 Generation Resource Operational Exercise

Question GO-6

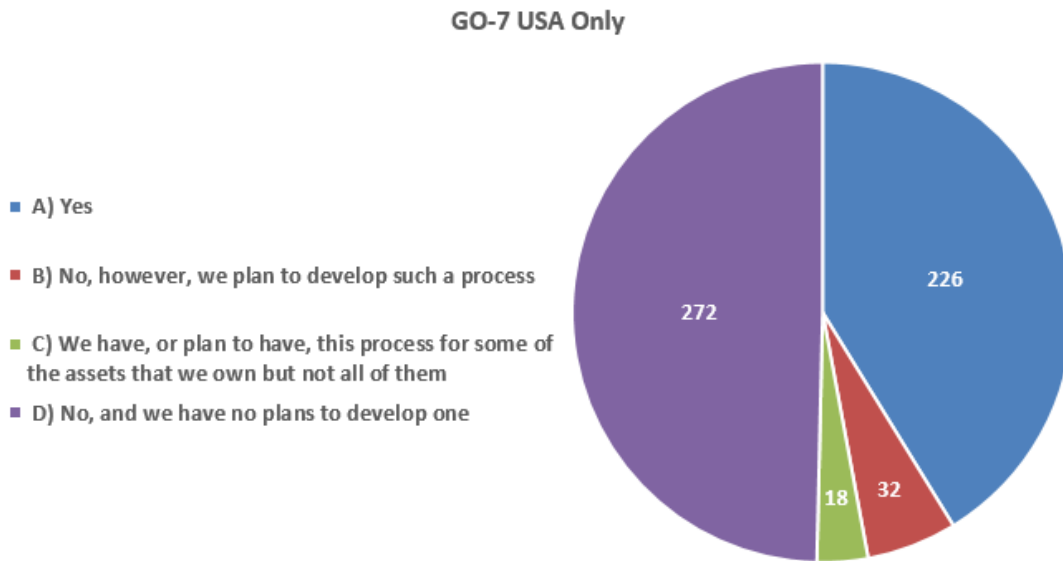
If you own solar-powered units, has your organization surveyed the unit weatherization and availability for the following factors?

- De-icing capability
- Low and High Ambient Temperature Constraints
- Actions for snow cover
- Unit maintenance schedule
- Evaluate increasing likelihood of forced outages and de-rates under extreme conditions



Question GO-7

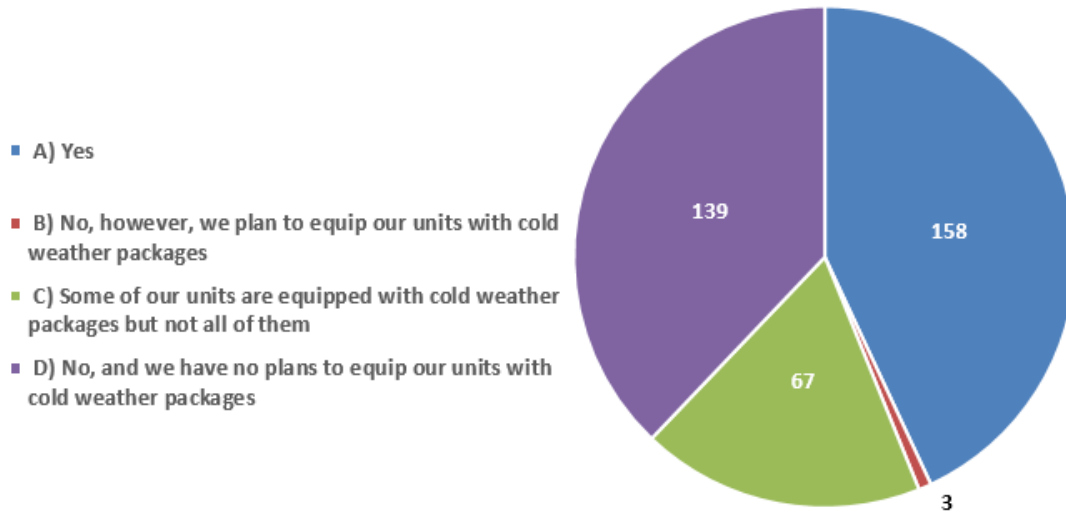
Do you have a process in place to attempt to obtain an emissions waiver in the event one is needed to operate even if you have no guarantee that the waiver will be approved by federal, state, county, or other prevailing authorities?



Question GO-8

If you own wind-powered units, are the units equipped with cold weather packages?

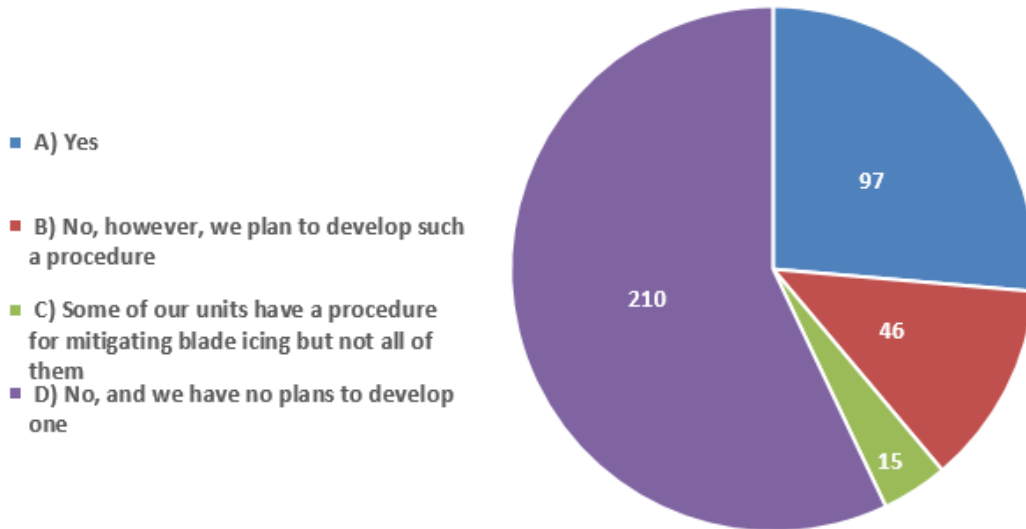
GO-8 USA Only



Question GO-9

If you own wind-powered units, do you have a procedure for mitigating blade icing?

GO-9 USA Only



Question GO-10

Please fill in the number of nameplate MW for each of the three questions below using the three free-text boxes. If you are not registered as a GO, please enter “NA” in each box.

- How many MW does your organization own that, in your assessment, are currently capable or will be capable of operating in extreme cold weather conditions?
- How many MW does your organization own that, in your assessment, will be unavailable due to extreme cold weather conditions?
- How many additional MW does your organization own that are currently operational and would not be categorized under (A) or (B)? An example would be asset(s) that you have not assessed for operation in an extreme cold weather scenario. Note: The sum of (A), (B), and (C) should be the total operating MW owned by your entity.

The intention of this last question was to gauge the materiality of a particular response. In recent reports, notably the industry recommendation on supply chain compromises by persistent threat actors, NERC has increasingly made efforts to determine if an entity’s response justified sufficient concern that resources should be used for follow-up investigation. The responses to this question ranged from attachments and raw numbers to verbal explanations and thus are not suitable for aggregate summarization. However, NERC will take into account these answers for subsequent assessments or analyses as needed.

Next Steps

NERC will continue to address significant risks to BPS reliability, ensuring that industry is well informed of system events, providing unique and valuable information for asset owners and operators.

As no further industry response to the Level 2 Recommendation is required, there will be no further reports on this issue under the NERC Rules of Procedure.

Best Regards,



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