

Extreme Weather Working Group Revised Table 1 Documentation

This is documentation for the revisions to the Extreme Weather Working Group (EWWG) Tables March 2023 spreadsheet. The original title of the table was “Types of Extreme Weather Events Impacting NYCA, Import Regions and the System Elements That Are Affected”. As our understanding of how extreme weather events impact planning has evolved, I believe it has become clear that we should break down potential weather impacts relative to resource adequacy and system resiliency planning requirements. With the help of Judith Curry I revised the original table to break down weather impacts for those two requirements.

My understanding is that one concern for the EWWG is the resource adequacy analyses done at NYISO. Over many years New York electric planners have developed modeling procedures that project the resource adequacy necessary to maintain current reliability standards. The current reliability procedures were developed for dispatchable generation with well understood forced outage rates with the presumption that outages are independent of each other. Increasing levels of wind and solar generation are changing the paradigm. Our working group must examine what modifications may be needed to account for the impacts of unpredictable, intermittent resources.

Table 1: “Types of Extreme Weather Events Affecting Resource Adequacy Impacting NYCA, Import Regions and the System Elements That Are Affected” lists the weather impacts that affect this planning. So far, we have noted that outages of wind and solar are highly correlated. Obviously no solar is available at night. The wind speeds are reduced in high-pressure systems and those systems can be so large that all expected wind resources in the State could be reduced at the same time. In addition, the high-pressure systems not only affect the winds but they are also associated with the highest and lowest temperatures so there is a correlation with highest loads. In addition, there are other weather events that affect resource adequacy.

There also is a longer-term resiliency concern. In the present system there is a one in ten-year criterion for reliability planning. Even if resource adequacy modeling analysis procedures are modified to address the effect of wind and solar variability over ten years, longer-term worst-case meteorological conditions must be addressed. In addition to the primary concern regarding the correlation between high loads and low renewable resource availability, the resiliency of the renewable resources could also be a concern. Table 2: “Types of Extreme Weather Events Affecting Resiliency Planning Impacting NYCA, Import Regions and the System Elements That Are Affected” is intended to address the weather events that affect this planning requirement.