2024 Probabilistic Assessment
Data Form Description

The purpose of this document is to provide guidance on the completion of the data form for the 2024 Probabilistic Assessment (ProbA) data request. NERC collects data from the Regional Entities (Regions) on an Assessment Area-basis. While each Assessment Area adheres to various planning assumptions, methods, and terminology, NERC collaborates with representatives from all Regions through the Reliability Assessment Subcommittee (RAS) and Probabilistic Assessment Work Group (PAWG) to promote consistency for high-level data assumptions. Please direct any questions regarding the content of these instructions to NERC Staff.

Form A
Net Energy for Load (NEL) - Monthly
This worksheet should match the assessment area's LTRA input.

Form C
Capacity Transfers (Imports/Exports)
This worksheet should match the assessment area's LTRA input.

Form - ProbA_Demand_Capacity_Peak_hour
Summary Data. This worksheet is similar to the 2022 ProbA Input. It can be populated from LTRA and other tabs and calculations.

Form - ProbA_Demand_Capacity_Risk_hour
Summary Data. This worksheet is similar to the 2022 ProbA Input. It can be populated from LTRA and other tabs and calculations.

Form – Monthly ProbA Statistics
Summary Data. This worksheet is similar to the 2022 ProbA Input. It can be populated from the monthly summaries of the assessment tool output.

Form - 8760_Hourly_2026
Form - 8760_Hourly_2028
This tab is for the provision of hourly data for EUE, LOLH, expected resource performance and load levels to determine what is happening behind the annual and monthly EUE and LOLH metrics. This will provide insight into the magnitude, duration, frequency, clustering and spacing of events and provide for a common visualization.

Columns B-E
This provides the date/time stamp for the data.

Hour Ending
The time stamp for the time series of data entered for the full 8760 hours.

Instructions
Enter the data for Index, Year, Date and Hour of the day.

Columns F-H
This data should be reported for each assessment area.

Deficit (Expected Unserved Energy) The MWHr amount of shortfall for the hour (Expected, or PWA). The shortfall can be a different amount for each iteration exhibiting a shortfall. Since this is an expected value by definition, this is expressed as the probability weighted average (PWA) of the shortfall of all shortfall iterations. It is aggregated for any sub-areas within the assessment area.

Instructions
Enter in MWs for the hour.

Excess (Surplus Margin): The MW amount of capacity above the demand for the hour after accounting for all adequacy requirements for operating reserves, dispatch impacts etc. that can impact the ability to shift to another hour in the zone or export to another zone. (Expected, or PWA)

Instructions
Enter in MWs for the hour.

LOLH: The expected value of Loss of Load Hours for the hour (Expected, or PWA). It is aggregated for any sub-areas within the assessment area.

Instructions
Enter in hours.

Columns I-K
This section is for providing 8760 hours of the average values for the quantities specified.

Demand Aggregated: The expected amount of demand for the hour.

Instructions
Enter in MWs for the hour.

Import/Transfer Level Aggregated: The expected amount of supply resources for the hour.

Instructions
Enter in MWs for the hour.

Resource Aggregated: The expected amount of supply resources for the hour.

Instructions
Enter in MWs for the hour.

Form - EventDay_2026
Form - EventDay_2028

In addition to the 8760 hourly data provided, the drivers of the events can be shown with an examination into the resource performance levels and the variances of load levels. This can be from the input distributions of a convolution-based model. For models that will change the input distributions and levels of resources and demands (production cost based), this information can be determined from examining the events (shortfalls) from the simulation, if saved during the simulation. This will provide some quantitative (data) analysis to support the qualitative narrative descriptions of the drivers. This data would be collected for each sub-area exhibiting a shortfall event. If this sub-area is a subset of a larger aggregate, its shortfall could be masked by the larger aggregate. This could be a BA but is dependent on the model setup.

Provide the requested data in this worksheet for at least one full 24-hour period in each month where the base case probabilistic analysis reveals a shortfall event. A shortfall event is one or more hours where results indicate unserved energy or loss-of-load. Data for only one 24-hour period is required per month with a shortfall event. Any month that does not have a shortfall event can be omitted. Assessment Areas should review their probabilistic analysis output information to determine what 24-hour period provides best representation of the risk drivers for reporting. If necessary to adequately describe the risk drivers, assessment areas can provide more than one 24-hour period per month.

Column F
Shortfall (EUE) from 8760 Hourly Tab

Column G-I
Optional user defined columns for other data such as number of iterations, comments, descriptors that would be of interest.

Columns J-AP
This section is intended to collect information on the distributions of values for the quantities specified on a more granular basis for only these event day hours. Data will be provided for the full 24 hours of the day. For the non-zero hours, the same set of weather years and LFU levels (iterations) will be used for alignment.

Note: For the following the exact list of resources and demand components listed in the columns would be the data file input and resource type identification in other tabs in this spreadsheet. The examples are representative of the LTRA generator type groupings. They are listed in Form C and used in the ProbA_Demand_Capacity_Peak_hour tab. Differences should be explained in the narrative question on differences between the LTRA and the ProbA.

Distributions of Load and Supply Resources

As only the hours and iterations with an event shortfall are included, the dataset population can range in size and not necessarily be appropriate for full statistical analysis involving standard deviations etc. This dataset is not the input or derived from weather full distributions, but data only from the events. For small sample sizes, reporting on a PWA or center value, with a min and a max value gives insight into the range of uncertainty and variability in the drivers of the event by giving a center and spread of the event data (skewness). This can be expanded to more than the three shown if available in the population data for the event hours generated from the software model and data input. As there are possible events in every iteration (or convolution strip) some populations can be large and give rise to many percentiles (more statistical reporting like standard deviation, mean/min). The number of data entries and columns can be flexible depending on the availability of data extraction and level of sufficient understandable detail in the weather, LFU, Monte Carlo replication (draw), etc. For any reference to an individual value in a singular iteration would be the actual value and not an average value.

Some models and applications allow for an analysis more directly from the input distributions or have a more "isolated" method to perform the iterations. An example would be LFU applied to a constant Monte Carlo application of outages.

Demand				Demand/LFU							
Median	Min	Max		0.98	0.99	1	1.01	1.02			
600	200	1800									
OR by sigma, percentile				LFU input definition							
or other statistical basis											
OR all iteration values											
can be put in columns											
and post processed from											
this datafile											
			Demand Iteration								
1	2	3	4	5	6	7	8		23	Number of iterations	

Demand

The distribution of the demand for the events in an event hour.

Instructions
Enter the data for the appropriate ranges of the demand during event hours.

Total Resource Capacity

Thermal Capacity:

Instructions
Enter the data for the appropriate ranges of the supply resources during event hours.

Variable Resources

Run-of-River Hydro

Instructions
Enter the data for the appropriate ranges of the hydro resources during event hours.

Conventional Hydro

Instructions
Enter the data for the appropriate ranges of the hydro resources during event hours.

Wind

Instructions
Enter the data for the appropriate ranges of the wind resources during event hours.

Solar

Instructions
Enter the data for the appropriate ranges of the Solar resources during event hours.

Hybrid

Instructions
Enter the data for the appropriate ranges of the hybrid resources during event hours.

Energy Storage Systems

Instructions
Enter the data for the appropriate ranges of the energy storage resources during event hours.

Other Resource

Instructions
Enter the data for the appropriate ranges of the other resources during event hours.

Form - Examples

Some examples from various tools and outputs are provided.