

3.3 Reliability Calculations and Analysis

The capacity model used in PRISM, GEBGE and MARS is probabilistic. For each week of the year, except the winter peak week, the PRISM model uses each individual generating unit's capacity, forced outage rate, and planned maintenance outages to develop a cumulative capacity outage probability table for each week. For the winter peak week, to better account for the risk caused by the large volume of concurrent outages observed historically during this week, the cumulative capacity outage probability table is created using historical forced outage data, aggregated across the RTO. Also for the winter peak week, the amount of planned generator outages will be based on the average historical planned outages aggregated across the RTO.

The specific historical period to be used for the winter peak week modeling will be reviewed by the Planning Committee on an annual basis as part of the Reserve Requirement Study process.

Planned maintenance scheduling can be specified by the user or performed by the program based on one of two approaches:

- *Levelized Reserves Option* — uses the capacity of units on planned maintenance to attempt to levelize the MW amount of available reserves for each week.
- *Levelized Risk Option* — follows the same approach but uses a modified MW value for each unit based in part on the reliability of the unit. This method results in scheduling units on maintenance that are less reliable for the more critical weeks.

The Levelized Reserve Option has been used in recent studies. Because most of the risk occurs in the summer when very little maintenance is scheduled, the results of the two options are nearly identical. Also, actual planned maintenance scheduling of the units is not based on unit reliability; therefore, that characteristic of the levelized risk option is not an advantage.