



PJM Loss of Load Expectation (LOLE) Criterion

SCRSTF Meeting

April 18, 2016

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<http://www.nerc.com/pa/Stand/Reliability%20Standards/BAL-502-RFC-02.pdf>

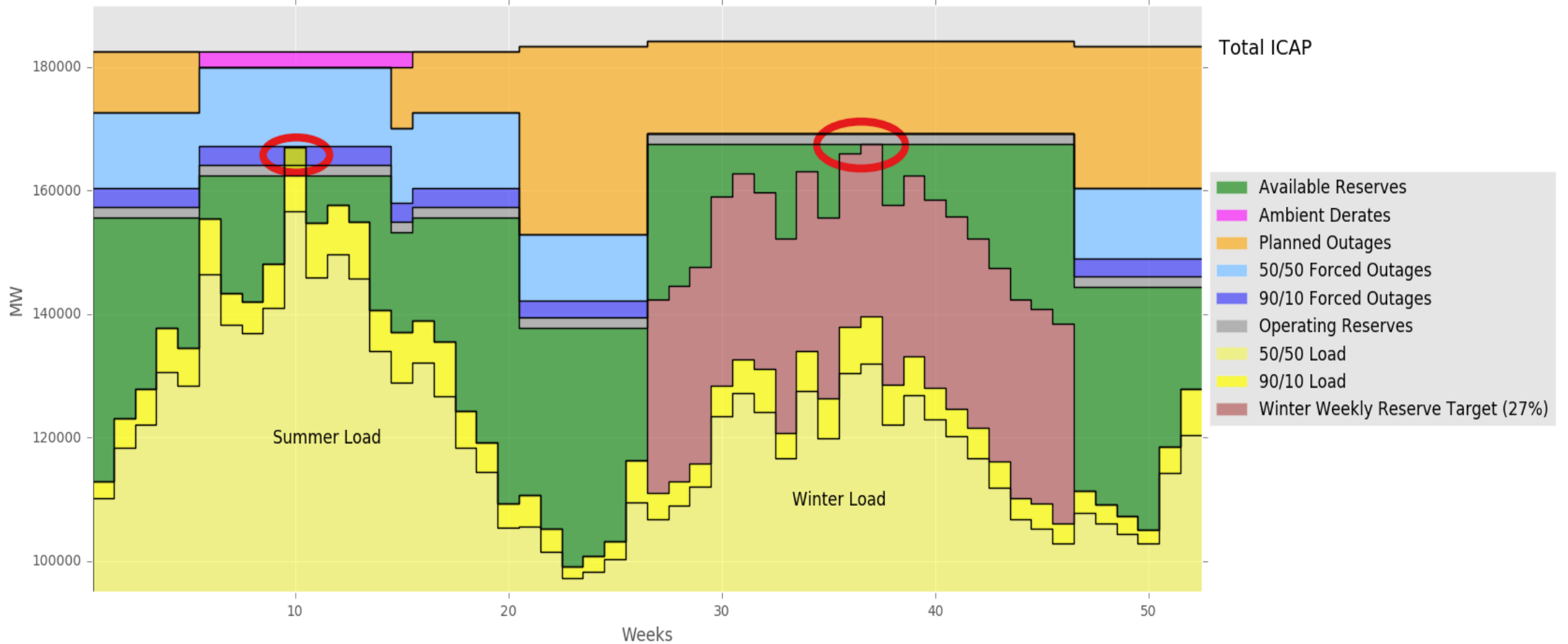
B. Requirements

R1 The Planning Coordinator shall perform and document a Resource Adequacy analysis annually. The Resource Adequacy analysis shall [*Violation Risk Factor: Medium*]:

R1.1 Calculate a planning reserve margin that will result in the sum of the probabilities for loss of Load for the integrated peak hour for all days of each planning year¹ analyzed (per R1.2) being equal to 0.1. (This is comparable to a “one day in 10 year” criterion).

- R2** The Planning Coordinator shall annually document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis [*Violation Risk Factor: Lower*].
- R2.1** This documentation shall cover each of the years in Year One through ten.
- R2.2** This documentation shall include the planning reserve margin calculated per requirement R1.1 for each of the three years in the analysis.
- R2.3** The documentation as specified per requirement R2.1 and R2.2 shall be publicly posted no later than 30 calendar days prior to the beginning of Year One.

- Objective of the IRM Study is to compute the minimum installed reserve margin required to satisfy the “1 in 10” LOLE standard.
- PJM is a summer-peaking region. (The winter W/N peak is typically about 85% of the summer W/N peak.)
- Therefore, the IRM is minimized when virtually all the annual LOLE risk is permitted in the summer.
- With all the loss of load risk in the summer, the non-summer LOLE risk must be essentially zero. The non-summer period must also allow for generator planned maintenance. These two factors are why the winter reserves must be ~35% to satisfy the “1 in 10” LOLE criterion.



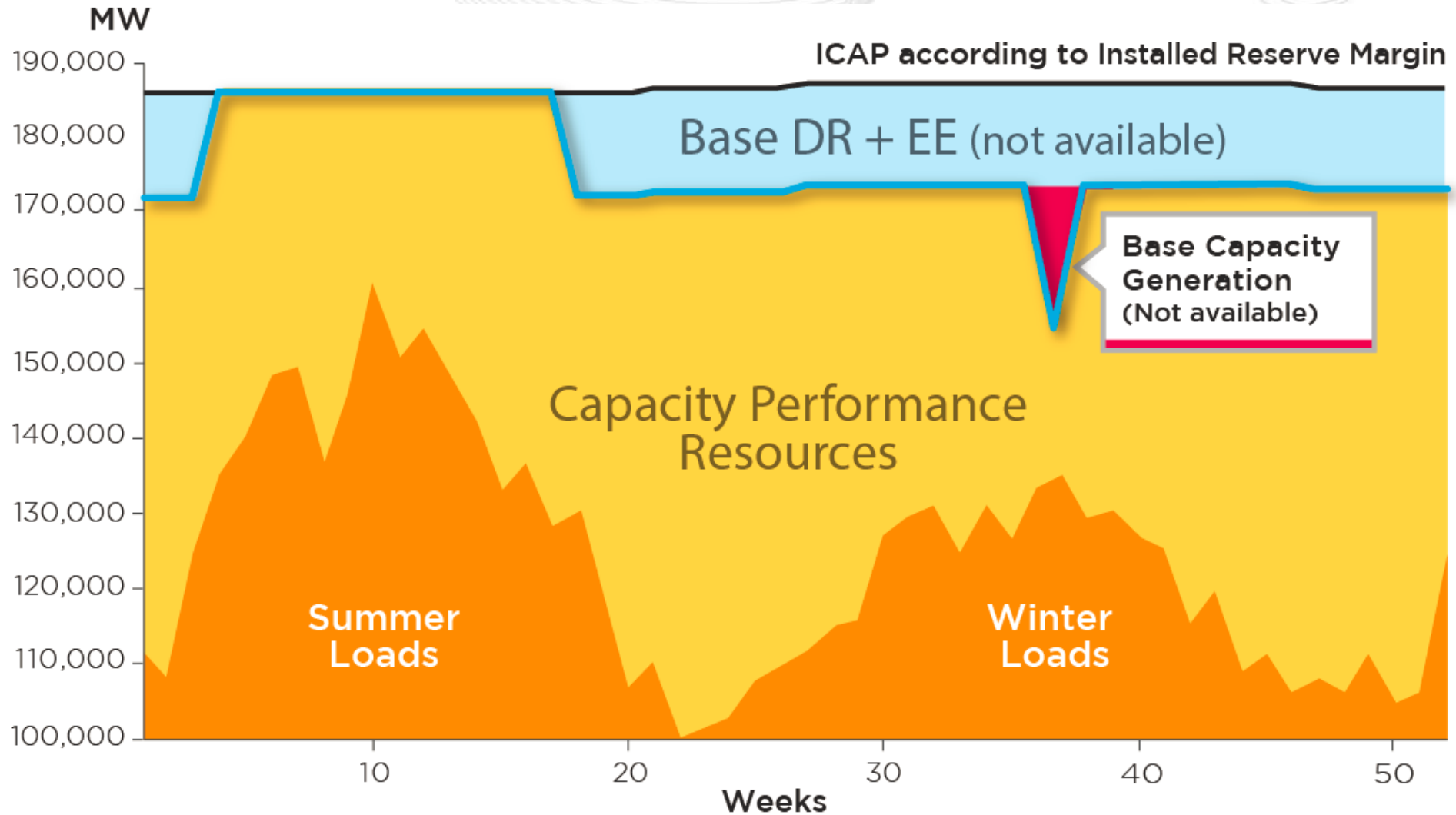
NOTE: Forced Outages in Winter are covered by the Winter Weekly Reserve Target



Limited Product Constraints under Capacity Performance

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- The Capacity Performance rules allow RPM participation of Limited Availability Resources for the 2018/19 and 2019/20 Delivery Years.
- Base Capacity DR is available for interruption every day from June 1 through September 30 and unavailable rest of DY.
- Base Capacity Generation is assumed unavailable only during the peak winter week.
- Constraints must be established on the two Limited Availability products to ensure reliability is maintained at close to “1 in 10” LOLE.



- Constraints are computed using the LOLE model PRISM and the most recent IRM Study case for the respective DY.
- The amount of Base Capacity DR is increased in the case until the PJM LOLE is increased by 5%. This establishes the Base Capacity Demand Resource Constraint.
- Base Capacity Generation is then added to the case until the combined impact of both Limited-Availability products increases the PJM LOLE by 10%. This establishes the Base Capacity Resource Constraint.

- The constraint computation is performed for the RTO and for any LDA that is modeled separately in the RPM auction.
- The details of the procedure were added as Section 6 of Manual 20. The manual section is based on the language approved in 151 FERC ¶ 61,208

RTO Constraints posted for the 2019/20 Base Residual Auction

Base Capacity Demand Resource Constraint = 8.7%

Base Capacity Resource Constraint = 19.9%

Constraints are expressed as a percentage of the forecasted peak load and are updated for each Incremental Auction