

Winter Weekly Reserve Target (WWRT)

RAAS Meeting
05/31/2016

- Rationale:
 - Most of the planned generator maintenance in PJM is scheduled during spring, fall and winter.
 - Of these 3 seasons, winter exhibits higher and more uncertain peak loads.
 - Thus, to manage the Loss of Load risk during winter, a limit on the amount on maintenance that may be scheduled is calculated.
 - This limit takes the form of a reserve target, the WWRT, that should be preserved by PJM Operations Department during the winter season.

- Background
 - Analysis run in GEMARS
 - GEMARS allows for the inclusion of Emergency Operating Procedures which is an acceptable representation of Operation's actual practices
 - RRS case for upcoming winter is input into GEMARS
 - Thus, the GEMARS case for entire delivery year that includes upcoming winter has an LOLE of 0.1 days/year
 - Such a case has a certain amount of “optimized” maintenance scheduled in the winter (including a small amount during the winter peak) so that total Winter LOLE is practically “zero” (but technically ~0.000001 days/year)

- Procedure
 - As a proxy to simulate additional maintenance in the winter, the winter peaks (in the period December-February) are increased.
 - This increase of the peaks stops when the total LOLE risk in each of the winter months is 0.0001 days/year (a threshold set arbitrarily)
 - Now the total winter LOLE risk in the case is $0.000001 + 3 * 0.0001 = 0.000301$ days/year
 - Next, the reserves during the winter period are extracted from the above case (computed as percent of each weekly peak)

- Procedure
 - Lastly, the weekly reserve values are averaged.
 - The average corresponds to the Winter Weekly Reserve Target.
- Application
 - The Winter Weekly Reserve Target is then applied to each winter week's forecasted peak load.
 - PJM Operations will then attempt to schedule generator maintenance such that the WWRT is maintained each week of the winter.

Month	% Weekly Reserves	LOLE (days/yr)	Monthly LOLE (days/year)
December	22.45	6.20E-05	0.0000992
	22.24	3.31E-05	
	23.56	4.13E-06	
	27.79	0.00E+00	
January	31.57	0.00E+00	0.0001024
	23.99	1.02E-04	
	28.68	0.00E+00	
	30.73	0.00E+00	
	34.83	0.00E+00	
February	22.33	7.85E-05	0.00010333
	27.06	0.00E+00	
	31.52	0.00E+00	
	24.86	2.48E-05	
Average Weekly Reserves	27.0		