

Winter Peak Load calculation – maintenance outages and future WPL addbacks



DRS Meeting
December 8th, 2017

- Consider how to handle WPL calculation when customer load is down due to maintenance outage during Winter Peak day
 - Atypically low WPL will impact DR registration nomination
- Consider winter add back if Load Management dispatched by PJM (so following year WPL does not go down)

- WPL should reflect customer's typical winter peak load
- CSPs do WPL calculation
 - But load data will come from EDC in most instances
- CSP for customer may switch year to year
- Efficient process to administer on an annual basis for large amount of customers
- WPL determines capacity nomination and test/event compliance

- Qualitative
 - Define “maintenance outage”
 - Exclude peak days impacted by maintenance outage from WPL calculation
 - Average remaining peak load days
- Quantitative
 - Leverage current CBL usage threshold (or some variation)
 - Exclude days that are less than 25% of WPL (average of peak load for 5 peak days)
 - Other?

- Recently updated PJM language only includes WPL add back for calculation of unrestricted peak load for use in load forecast
 - It does not include addback for future WPL calculation
- WPL add back distribution to CSPs
- WPL is based on max of hourly load so add back is not as significant as for PLC.

- Leverage WPL maintenance outage approach under discussion
 - Exclude event days (based on specific criteria) from WPL calculation
- Calculate hourly add backs and use to determine future WPL
 - CSP submits hourly data
 - PJM calculates and distributes back to CSP of record

- DR CP nomination process
- WPL calculation process (example of low usage day on WPL)
- Recent WPL addback language

- CSP determines Summer and Winter nominated capacity MWs with summer vs winter FSL
- **Annual nomination is the lesser of:**
 - Summer nominated capacity = $PLC - [FSL(\text{summer}) * \text{line loss factor}]$
 - Winter nominated capacity = $\{\text{Winter Peak Load} * \text{Winter Weather Adjustment Factor} - FSL(\text{winter})\} * \text{line loss factor}$

- **Customer Winter Peak Load**
 - PJM publishes winter 5 CP days (Dec/Jan/Feb)
 - CSP calculates Customer Winter Peak Load
 - Identifies customer's peak demand on PJM Winter 5 CP days from 6am through 9pm (CP availability window)
 - calculates the average of the 5 values
 - Customer Winter Peak Load based on Delivery Year minus 2
 - Example: registrations for 18/19 use winter 16/17
 - Exceptions if hourly load does not exist
- **Winter Weather Adjustment Factor by Zone (zonal WWAF)**
 - PJM calculates Zonal Weather Normalized Winter Peak / Zonal Average of 5 CP Loads in Winter
 - PJM applies during capacity nomination on the registration

Winter 5CPs and WWAF by zone - <http://www.pjm.com/-/media/markets-ops/demand-response/2016-2017-dy-winter-peak-for-18-19-wpl-calculation.ashx?la=en>



WPL calculation example

Based on PJM defined 5 Winter Peak Days					
EDC Account #	0820978302938		outage		
Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18
HE1	1,694	1,876	100	1,996	1,725
HE2	1,697	1,773	100	2,044	1,690
HE3	1,694	1,819	100	1,955	1,749
HE4	1,727	1,812	100	1,606	1,716
HE5	1,710	1,825	100	1,781	1,739
HE6	1,740	2,046	100	1,912	1,599
HE7	1,959	2,213	100	1,977	1,555
HE8	2,084	2,290	100	2,078	1,790
HE9	2,015	2,298	100	2,224	1,985
HE10	2,014	2,421	100	2,331	2,102
HE11	2,098	2,363	100	2,323	2,003
HE12	2,089	2,305	100	2,249	2,023
HE13	2,005	2,244	100	2,167	2,007
HE14	2,073	2,325	100	2,131	2,049
HE15	1,969	2,210	100	2,062	1,926
HE16	1,912	2,134	100	2,035	1,813
HE17	1,791	2,121	100	2,032	1,887
HE18	1,777	2,131	100	1,947	1,758
HE19	1,817	2,066	100	1,860	1,658
HE20	1,768	2,113	100	1,883	1,619
HE21	1,718	1,974	100	1,800	1,609
HE22	1,742	1,898	100	1,828	1,675
HE23	1,695	1,858	100	1,871	1,621
HE24	1,651	1,820	100	1,740	1,602
Peak7_21	2,098	2,421	100	2,331	2,102
			WPL (with outage) =		1,810
			WPL (without outage) =		2,238

- Apr 2017
 - PJM publishes Winter 2016/2017 (Dec 2016, Jan/Feb 2017) 5 CP days
 - PJM publishes Zonal Winter Weather Adjustment Factor
- Oct 2017
 - PJM publishes Summer 2017 5 CP days/hours
- Jan 2018
 - EDC distributes PLC for 2018/2019 based on summer load in 2017
 - CSP calculates Customer Winter Peak Load based on Winter 2016/2017 (Dec 2016 and Jan/Feb 2017)
- Jan – May 2018
 - CSP registers DR for 2018/2019 DY

Reason for Load Drop		PJM-Initiated Emergency or Pre-Emergency Event or CSP-Initiated Test	Economic Event	EDC- or CSP-Initiated Event
Program Registration	Emergency/Pre-Emergency Full (DR) or Emergency/Pre-Emergency Capacity Only (DR)	Load Drop Estimates must be produced for any interruption that occurs during a product-type registration's required availability window set forth in PJM Manual 18 or any interruption outside the required availability window for which such registration received Bonus MWs in the Performance Assessment Hour .	Load Drop Estimates must be produced for any settled interruptions.	No Load Drop Estimates required.
	Emergency Energy Only	Load Drop Estimates must be produced for any interruptions during Emergency/Pre-Emergency hours .	No Load Drop Estimates required.	No Load Drop Estimates required.
	Economic	No Load Drop Estimates required.	No Load Drop Estimates required.	No Load Drop Estimates required.

- “Load drop estimates are used to construct unrestricted loads used in the PJM Load Forecast Model, weather normalization of PJM seasonal peaks, and to calculate the unrestricted Peak Load Contributions used in formulating capacity obligations.”
- “Actual Emergency and Pre-Emergency Load Response and Economic Load Response load reductions for Load Management resources registered as Emergency Full or Emergency Capacity Only resources will be added back for the purpose of calculating peak load for capacity for the following Delivery Year and consistent with the load response recognized for capacity compliance as set forth in the Manual.”

FSL calculation

The calculation is represented by:

$$\text{Summer: } PLC - (\text{Load} * LF)$$

$$\text{Non-summer: } (WPL * ZWWAF * LF) - (\text{Load} * LF)$$

- Addback volume will be based on same calculation used to determine the load reduction
 - This is consistent with Summer process

Since M-19 was recently updated for CP, do we need to do anything else for this part of the problem statement?

- The Winter Peak Load is determined by the Curtailment Service Provider based on the customer's peak load between hour ending 7:00 EPT through 21:00 EPT on each of the PJM defined five coincident peak (5CP) days from December through February two Delivery Years prior to the Delivery Year for which the registration is submitted. The Winter Peak Load is calculated as the average of the customer's five peak demand values on the PJM defined winter 5 CP days. PJM posts the RTO winter 5 CP days on the pjm website. If no hourly load data exists for December through February two Delivery Years prior to the Delivery Year, then the CSP may use the most recent December through February hourly load data to calculate the Winter Peak Load. If no hourly load data for the customer exists for the last two December through February periods prior to the Deliver Year, the CSP may provide alternative data to support a Winter Peak Load subject to PJM's review and approval of the use of alternative data.