

# PPL Electric Utilities Peak Load Contribution Calculation Methodology



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# Conceptual Overview

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- Peak Load Contribution (PLC)
  - Assigning a value for each customer's typical contribution to a typical peak load day
  - Initially allocated out to the customers that existed at the time of the 5 peak loads
  - Default values are used for new customers that are based on the average PLC in for the customer's rate class
    - The values are adjusted where better information suggests a more appropriate value
    - For large commercial and industrial customers PPL attempts to develop appropriate PLC values that are agreeable to the customer and PPL
  - Purpose is to allocate responsibility to suppliers for the recovery of:
    - Capacity cost from the PJM RPM auction
    - Revenue requirements for transmission facilities in the PPL Zone

# Capacity PLC

- Defined in the Reliability Assurance Agreement (RAA)
  - Calculated in November/December
  - Applied from June 1<sup>st</sup> to May 31<sup>st</sup> of the next year
- Based on the PJM peak allocated to PPL Zone<sup>1</sup>
  - The PPL Zone peak was the PPL Zone share of the load that was the basis for the amount of capacity purchased in the PJM capacity auctions (eRPM)
    - PPL Zone allocation is calculated by PJM
    - The PJM peak is weather normalized and adjusted for interruptions
  - Allocation to the customers based on PJM 5 Coincident Peaks (5CP method)
    - Customer PLCs are based on the 5 peaks from prior year
      - June 1<sup>st</sup> – September 30<sup>th</sup> (Excluding Holidays and Weekends)
      - By definition these are 5 Summer Peaks
  - Allocation is to provide the customer's average contribution to a typical PJM peak load day

<sup>1</sup> PPL Zone includes PPL Electric and UGI Electric.

# Transmission PLC

- Defined in the PJM Open Access Transmission Tariff (OATT)
  - Calculated in November/December
  - Applied from January 1<sup>st</sup> to December 31<sup>st</sup> of the next year.
- Based on the PPL Zone metered peak from the prior year
  - The PPL Zone peak was the PPL Zone load from the prior year that was the basis for the Network Integration Transmission Service (NITS) charge for the PPL Zone
    - The PPL Zone peak is the metered peak and is not weather normalized nor adjusted for interruptions
  - Allocation to the customers based on PPL Zone 5 Coincident Peaks (5CP method)
    - Customer PLCs are based on the 5 peaks from prior year
      - November 1<sup>st</sup> – October 31<sup>st</sup>
      - PPL Zone peaks vary between summer and winter
  - Allocation is to provide the customer's average contribution to a typical PPL Zone peak load day

# Use of Interval Load Data for All Customers

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- Beginning in 2011 PPL calculates each customer's PLC values based on the interval load data for the 5CPs
  - PPL had interval data for all customers in 2004. In 2011, PPL was able to start using its new Meter Data Management (MDM) system to calculate PLC's using the actual interval data
  - This allows PPL to calculate each customer's PLC based on their actual contribution to the 5 peak load days/hours

# PLC Calculation

- Each customer's load for the day/hour of the 5CPs will be adjusted for:
  - Losses based on the customer service level associated with their rate class.
    - These loss factors are those stated in the PPL Electric Utilities Supplier Coordination Tariff
  - Adjustment to the target load value for PPL Zone (Reconciliation Factor)
    - The generation level load (meter load + losses) for every customer is summed
    - A reconciliation factor is then determined by dividing the target load by the sum of the metered load + losses
    - The reconciliation factor is then applied to each of the customer's load plus losses, to determine their daily responsibility for the capacity or transmission requirement each day
  - The 5 adjusted peak loads for each customer are then averaged to create the customer's PLC

# PPL Electric Utilities PLC Calculation Method

Below is a 10 meter example of the PLC calculation.

Rate Class/Meter Peak Load Values w/ Losses	Metered Load w/ Losses					Reconciled Meter Load w/ Losses					PLC (Average)	PLC for Active Meters
	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5		
A1	0.5	0.4	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4
A2 Retired Meter	1.4	1.3	1.2			1.4	1.4	1.3			1.4	
A3	0.7	0.5	0.9	0.8	0.9	0.7	0.5	0.9	0.8	0.9	0.8	0.8
B4	3.5	3.5	3.5	3.5	2.4	3.5	3.8	3.7	3.4	2.5	3.4	3.4
B5 New Meter			8.2	8.2	8.5			8.6	8.0	8.8	8.4	8.4
B6 New Meter (after 5CPs)											<b>Default</b>	5.1
B7	4.7	3.5	3.5	3.5	2.4	4.7	3.8	3.7	3.4	2.5	3.6	3.6
C8	23.7	23.7	22.1	22.7	25.5	23.8	25.8	23.1	22.1	26.3	24.2	24.2
C9 Meter 1	108.9	109.0				109.6	118.5				114.0	
C9 Meter 2 (Replaced Meter 1)			108.9	110.0	110.5			113.8	107.3	114.1	111.7	112.6
C10	35.5	23.7	23.7	35.5	23.7	35.7	25.8	24.8	34.6	24.5	29.1	29.1
<b>Total</b>	178.9	165.6	172.3	184.5	174.3	180.0	180.0	180.0	180.0	180.0	297.0	187.7
<b>Target Load</b>	180.0											
<b>Reconciliation Factor</b>	1.01	1.09	1.04	0.98	1.03						B Class Default 5.1	

The 10 meters in above example represent meters in 3 rate classes (secondary, primary, and transmission level rate classes).

The values shown are assumed to already be adjusted for the losses associated with their service level.

# Unforced Capacity Obligation (UCO)

- The Capacity PLC is the load plus losses value provided to suppliers for each customer they serve. It does not include any reserves
- Each day PPL provides to PJM the aggregated Capacity PLC for all of the supplier's customers rounded up to the next highest tenth of a megawatt
- PJM then adjusted the supplier's aggregated PLC value by:
  - First scaling each supplier's PLC so that the sum of all suppliers PLCs in the PPL Zone equals the PPL Zone Target
    - This scaling factor changes daily as customers are added and dropped in the PPL Zone
    - The daily scaling factors can be found on the PJM website
  - And a second scaling factor that includes:
    - The PJM Forecast Pool Requirement (FPR) which added the suppliers share of the reserve capacity purchased in the auction, and
    - An adjustment to reflect difference in Demand Management purchased through the RPM not assumed in the capacity obligation used for the PJM auction.
- The product of the aggregated capacity PLCs and the scaling factors is the suppliers UCO



# Transmission Obligation

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- The Transmission PLC is the load plus losses value provided to suppliers for each customer they serve
- Each day PPL provides PJM with the supplier's Transmission Obligation which is:
  - Each supplier's aggregate PLCs scaled so that the sum of all supplier's PLCs in the PPL Zone equals the PPL Zone Target
    - This scaling factor changes daily as customers are added and dropped in the PPL Zone
    - PPL provides to PJM the aggregated Capacity PLC for all of the supplier's customers rounded up to the next highest tenth of a megawatt

# Do We Make Changes to Assigned PLC Values?

- A PLC value is intended to be a measure of the amount of generation or transmission capacity that PPL must secure or build to serve the customer
  - It is based on the customer share of the system's typical peak load
    - The prior year value is the basis for the capacity secured for the next year
  - On this basis the value of the PLC once assigned is considered fixed and is not changed as the customer load and demand changes
    - It is not increased if the customer load goes up, nor
    - is it decreased if the customer load goes down
    - It will increase or decrease in the following year
- A PLC value will be corrected if it is found to be in error due to:
  - Missed Peaks
  - Meter or Account number changes
  - Meter error or failures
  - Etc.

# Assignment of PLC to New Large C&I Customers

- The assignment of PLC to a new Large C&I Customer is done based on input from:
  - Customer provided estimate of their expected demand for the next summer
  - PPL Electric Utilities Key Account Manager (KAM) estimation of the customer demand (Engineering reports, anticipated diversity, etc.)
  - Rate at which the new load will be ramping up
    - What do they think their demand will be by mid summer (July)?
    - Is the load being transferred from a prior facility?
- Issues we have experienced:
  - Estimated demand based on equipment design for ultimate demand at the facility which the customer will not reach by mid summer if ever
  - Ambitious construction schedules or delays in construction
- We need to be as realistic as possible of what we expect their demand to be without unfairly impacting the requirements on other customers
  - Their supplier will be billed by PJM based on these values
  - They may experience bills that seem to be outrageous
  - All other customer requirements are scaled to meet the targeted load requirement.
- It is a start up value so we should be reasonably conservative
  - Help the customer understand the impact the estimate can have on their bill

# Material Available on the Supplier Website

- **Peak Load Contribution Information can be found at:**

<https://www.pplelectric.com/at-your-service/for-generation-suppliers/general-supplier-reference-information/peak-load-contribution-information.aspx>

- There you will find:

- Dates and Hours of the 5CP for ICAP and NITS
  - 2013 PJM & PPL Zone Peak Load Dates for 2014-15 PLC Calculation (.pdf)
- Calculator Sheet to estimate or check PLC using interval data
  - 2014 Transmission and 2014-15 Capacity PLC Calculator (.xls)
- Default Values and Loss Factors by Rate Class
  - 2014-15 PPL Electric PLC Default Values and Loss Factors (.pdf)
- This Power Point Presentation for your reference
  - How PPL Calculates Customer PLCs (.pdf)
- Time Table of showing when PLC are calculated and applied.
  - PLC Development and Application Time Table (.xls)