PECO
An Exelon Company

Calculations of
Peak Load Contribution (PLC)
AND
Network Service Peak Load (NSPL)

As of 1/1/2015

Overview

- ✓ PLC = Peak Load Contribution (aka “ICAP”)
  - Capacity-related
  - Individual customer ticket representing customer allocation of PECO’s share of PJM’s **weather-normalized** peak load from the previous summer (June through September)
- ✓ NSPL = Network Service Peak Load
  - Transmission-related
  - Individual customer ticket representing customer allocation of total actual network transmission service in the PECO zone
  - Based on peak **actual metered** zone load from within the previous 12 months (November through October)

Overview

- ✓ PECO assigns both by premise (physical location)
- ✓ PECO calculates both annually and makes available for all EGSs by mid-December
- ✓ Effective Dates
  - PLCs: PJM planning period (6/1-5/31)
  - NSPL: Calendar year (1/1-12/31)
- ✓ For a new premise, PECO will apply a default value calculated annually based on the customer's rate class and procurement class

Customer Account Types for Annual PLC/NSPL Determination

- ✓ Monthly consumption metered (Rates R, RH, OP)
- ✓ Interval metered (MV-90 only)*

  See note on next slide relative to PLC scaling

- ✓ Monthly metered with billed demand
  - Metered demand (HT-151, PD-157, GS-101)
  - GS unmetered (rate codes UCF/UCG, strata=107)
  - GS consumption metered (rate code UC0, strata=107)
- ✓ Constant Load
  - GS constant load (a subset of accounts specifically identified by PECO within rate codes UCF and UCG, strata=100)
  - Traffic Lighting (rate class TL)
- ✓ Other Lighting (rate classes SLE, SLP, SLS, POL, and AL)

How PECO Annually Determines Customer PLCs

- ✓ Calculate all individual PLC tickets
- ✓ Correct all PLC tickets for normal peak weather
  - Effective temperature = 99
  - Time = Hour ending 1700
- ✓ Scale PLC tickets to annual PLC load target for PECO zone
  - The sum of all tickets must equal the PLC load target for the PECO zone (PJM provides annually)
  - PECO scales PLCs for all account types **except** those calculated for interval metered customers

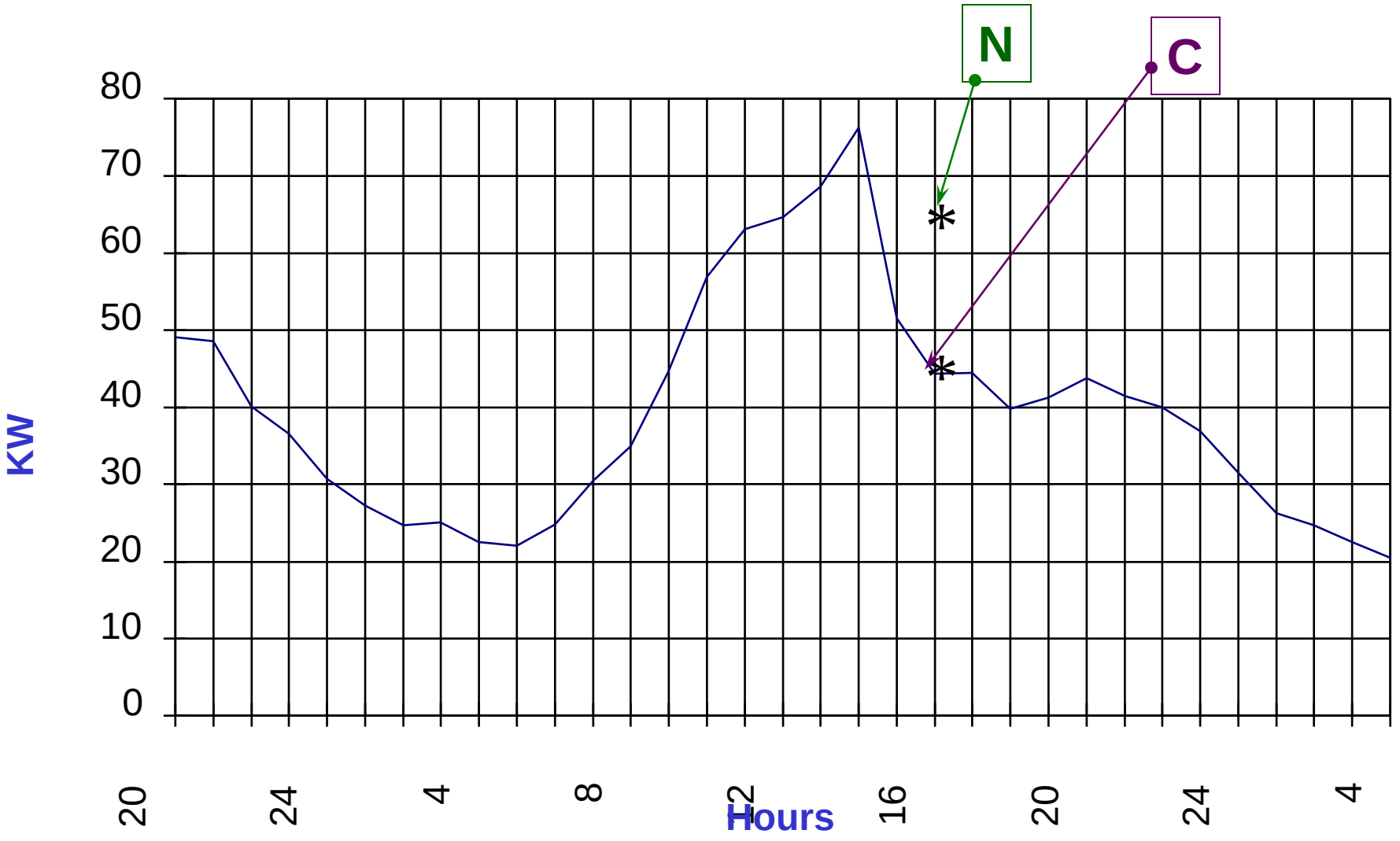
Example Calculation: Interval Metered (HT)

Step 1: Identify the 5 PJM coincident peak days based upon the weather normalized peak for PJM's entire footprint

Step 2: For each day, calculate a weather correction factor based on:

- Customer's rate class load shape for the day (GS uses strata 101)
- The kw reading on energy strata load shape at normal peak time (1700 hours) = C (coincident)
- The kw reading on energy strata load shape at normal peak time (1700 hours) and weather (99) = N (normal)
- The weather correction factor = N/C

Summer Profile (Graphical Example only)



$$\frac{N}{C} = \frac{61.03\ KW}{45.84\ KW} = 1.33$$

N = Normal peak for profile

C = Coincident peak of profile

Example Calculation: Interval Metered (HT)

Step 3: For each day, calculate the customer's weather corrected load based on:

- Actual customer reading at HE 1700 (e.g. 1000 KW). This includes any customer add-back load provided by PJM to PECO
- Daily weather factor calculated in Step 2 (1.01)
- Rate class loss factor (1.0397 for HT)

1000 KW * 1.01 *1.0397= **1050.1 KW**

Step 4: Repeat Step 3 for the other four PJM CP days

Step 5: Final Customer PLC ticket =

Average of the weather corrected load calculated in Steps 3-4 for all five PJM CP days

Example Calculation: Monthly Consumption Metered (R-113)

Step 1: Using the summer weekday load shape for the strata, calculate the point on the curve at normal peak weather & time (effective temp=99, HE 1700)

From the strata load shape for R-113, weekday load at 99, HE 1700 = **2.394061 kw**

Step 2: Multiply the results of step 1 by the rate class loss factor (rate class loss factor for R = 1.1031)

Load with losses = 2.394061 * 1.1031 = **2.6409 kw**

PLC Scaling Factor = 0.969423 for sample calculations

Example Calculation: Monthly Consumption Metered (R-113)

Step 3: Calculate the initial PLC by multiplying the results of step 2 (load with losses) by the summer load shape scaling factor for the strata (0.97 for example only)

Initial customer PLC = 0.97* 2.6408 kw

= **2.5616 kw**

Step 4: Calculate the Final PLC by multiplying the results of step 3 (initial customer PLC) by the PLC scaling factor

Final customer PLC = 2.5616 kw * 0.969423

= **2.48 kw**

PLC Scaling Factor = 0.969423 for sample calculations

Example Calculation: Monthly Metered w/Billed Demand (GS)

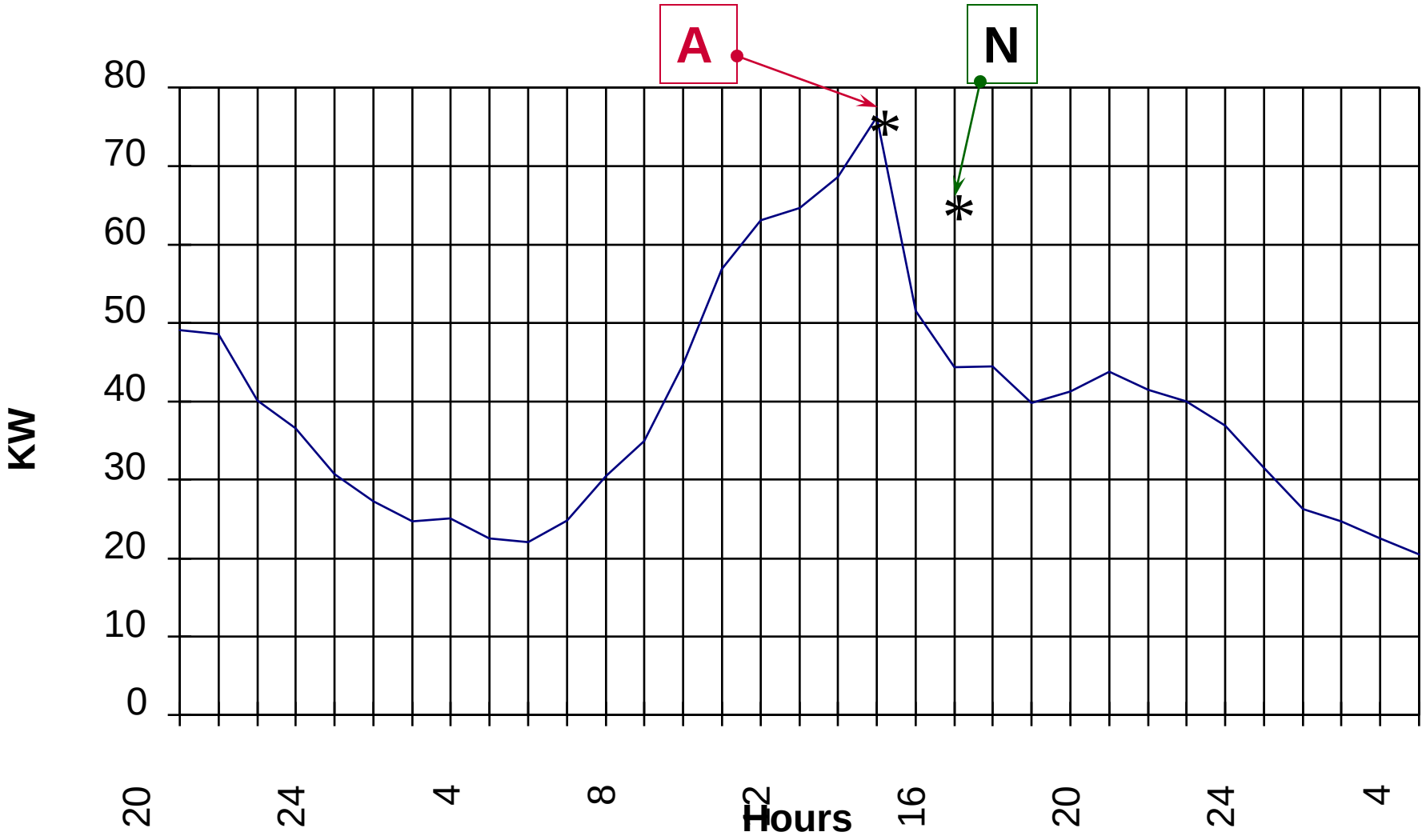
Step 1: Identify 5 load days consistent with PJM allocation of pool normalized peak

For a summer period:

6/9, 6/17, 6/18, 8/4, 8/20 (for example purposes)

Step 2: Using actual historical weather and the energy strata load shapes, create a load profile for each of the five selected days

Summer Profile (Graphical Example only)



$$\frac{N}{A} = \frac{61.03\ KW}{76.84\ KW} = 0.79$$

A = Actual non-coincident profile peak

N = Normal peak for profile

Example Calculation: Monthly Metered w/Billed Demand (GS)

Step 3: For each day, calculate the energy strata weather correction / coincidence factor based on the profile created in Step #2 using:

- The actual energy strata peak KW = A (actual)
- The energy strata load at normal peak time, TI=99 on the day of the energy strata peak KW (A) = N (normal)

$$\text{Weather correction} = \frac{N}{A}$$

Example Calculation: Monthly Metered w/Billed Demand (GS)

Step 3 (continued)

Then average daily weather correction factors just calculated.

06/09 = 1.00 KW

06/17 = 1.02 KW

06/18 = 1.06 KW

08/04 = 1.09 KW

08/20 = 1.03 KW

Average weather correction factor = 1.04

Example Calculation: Monthly Metered w/Billed Demand (GS)

Step 4: Calculate the customer's average non-coincident on-peak demands for the summer period (bill end date June through September)

Strata 101 (metered demand) – Use registered on-peak demands

Strata 107, rate codes UC0 and UCF (GS consumption metered) – Calculate demand as [billed usage / 175]

Ignore minimum billed demand in calculations

Strata 107, rate code UCG (GS unmetered) – Use customer-specific contract demands

Example Calculation: Monthly Metered w/Billed Demand (GS)

Step 4 (continued)

Customer readings (for example purposes only):

6/2 = 20 KW

7/5 = 10 KW

8/4 = 30 KW

9/5 = 15 KW

Average of above = 18.75 KW

Example Calculation: Monthly Metered w/Billed Demand (GS)

Step 5: Calculate the customer initial PLC ticket using:

- The customer's average peak registered demand for the summer period (June through September), just calculated
- The strata average weather correction factor (1.04, calculated previously based on load profile)
- Rate class loss factor (1.1031 for GS)

18.75 KW * 1.04 * 1.1031 = 21.51 KW

Step 6: Calculate the customer Final PLC ticket by multiplying by the PLC scaling factor:

Final customer PLC = 21.51 KW * 0.969423

= **20.85 KW**

PLC Scaling Factor = 0.969423 for sample calculations

Example Calculation: Constant Load (TL)

Traffic Lighting, GS 100

Step 1 – Identify billed usage and billed period number of days for the summer period (June through September)

6/14 = 500 kwh for 30 days

7/15 = 500 kwh for 31 days

8/15 = 500 kwh for 30 days

9/15 = 500 kwh for 30 days

Example Calculation: Constant Load (TL)

Step 2 – Calculate the hourly load based on billed usage for each summer month

6/14 demand

= (500 kwh)/(24 hours*30 days) = 0.69 kw

7/15 demand

= (500 kwh)/(24 hours*31 days) = 0.67 kw

8/15 demand

= (500 kwh)/(24 hours*29 days) = 0.72 kw

9/15 demand

= (500 kwh)/(24 hours*30 days) = 0.69 kw

Example Calculation: Constant Load (TL)

Step 3 – Calculate the initial customer PLC by averaging the demands and multiplying by the rate class loss factor (1.1031 for rate TL)

Average Demand (based on previous slide) = 0.69

Initial customer PLC =

Average demand * rate class loss factor

= 0.69 * 1.1031KW

= 0.76 kw

Example Calculation: Constant Load (TL)

Step 4 - Calculate the customer Final PLC ticket by multiplying the initial customer PLC by the PLC scaling factor:

Final customer PLC = 0.76 kw * 0.969423

= **0.74 kw**

PLC Scaling Factor = 0.969423 for sample calculations

PLCs and NSPLs for Other Lighting Customers (excludes traffic lighting)

PECO sets all PLC **and** NSPL tickets for lighting customers on rate classes SLE, SLS, SLP, POL, and AL to **zero**

How PECO Annually Determines Customer NSPLs

- ✓ Calculate all individual NSPL tickets (one-step)
- ✓ Exclude all load curtailed under PJM's load management / demand response programs, also known as "add-backs", as provided by PJM
- ✓ Scale NSPL tickets to annual target for PECO zone
  - The sum of all tickets must equal the annual transmission load target provided by PJM for the PECO zone
  - Annual load target is defined as the actual metered zonal peak (excluding "add-backs") from previous 12 months

How PECO Annually Determines Customer NSPLs

✓ Transmission Load Scaling Factor =

$$\frac{\text{PECO's Annual Transmission Load Target}}{\text{PECO's PLC Load Target}}$$

- Directly applied to individual tickets for all customers that did **NOT** curtail load under PJM's load management / demand response programs
- For customers that curtailed load, PECO removes the curtailed load from the individual ticket calculation process BEFORE applying the scaling factor

How PECO Annually Determines Customer NSPLs

✓ Final Customer NSPL =

(Final Customer PLC w/add-backs removed)

*

(Transmission Load Scaling Factor)

✓ Example:

- Final Customer PLC w/add-backs removed = 20.5 kw
- Transmission Load Scaling Factor = 0.98
- Final Customer NSPL = 20.5 * 0.98

= **20.09 kw**