



On-Site Generation Economic DR settlements process

(Update to 5/14/2021 DRS meeting)

- Current Manual settlement process
- High level DR Hub changes to enhance the process
- Use Cases
- CBL Exclusions

Current Manual Energy Settlement Process

- On the 1st business day of the month, the CSP to provide (via email) PJM with agreed upon data including cost and retail rate (supply and delivery rate components) for the prior month, if there are any settlements.
- PJM reviews submitted information and notifies CSP via email within a week when CSP can proceed and submit settlements for the prior month
- During the review, PJM will uncheck hours for the settlement where retail cost exceeds the cost of operating the generator.
- Upon notification (via email) by PJM, the CSP may upload meter data, calculate CBL and submit settlement for normal EDC review.

CSP's with On-Site Generators that will participate as Economic DR in the energy market should understand the process before they are dispatched to avoid confusion.



DR Hub enhancements to simplify the settlement process

- PJM will modify DR Hub to automate settlement process to be more effective (less manual)
 - Automated process in place by the end of summer '21.
 - New section which will appear on economic registration that uses on-site generation. CSP enters:
 - Retail: Rate type, Delivery charges (\$/Kwh), Supply Charges (eg fixed price) (\$/Kwh)
 - Generator: Fuel cost (\$/Mwh), Variable O&M (\$/Mwh)
 - Registration data applied to settlements where displayed hourly and as an average over all event hours
 - CSP can modify these inputs to reflect changes.



DR Hub enhancements to simplify the settlement process (cont'd)

Example of Generator Cost section on Registration in DR Hub:

Generator Cost

Retail Rate Type:

Delivery (\$/Kwh):

Supply (\$/Kwh):

Marginal Cost to run generator:

Fuel Cost (\$/Mwh):

Variable O&M (\$/Mwh):

Locations

Energy Loss Factor:

Maximum Load Reduction Capability (kW):

Actions	Location ID	Location	Zone	EDC Account Number	Pricing Point	Account Name
	64700	aly LM testing 2	PEPCO	5334434444	PEPCO MD	one very large t 64434

Records Per Page: << < (1 of 1) > >>

1 record(s)

- Calculate average retail rate over event hours in a settlement day
- Calculate average generator cost over the event hours in a settlement day
- If average generator cost < average retail rate then that settlement is not eligible for settlement
 - Settlement will not be processed
 - No BOR charge
 - If cleared in DA energy market then no charge or credit for cleared amount
 - Excludes that date from being used in subsequent Customer Baseline (CBL) calculations
 - Create a resource outage for that event date in DRHUB since generator operated to reduce load
- Current Manual settlement process



- Case #1 Average Gen Cost \geq Average Retail Rate

eventDate	eventHour	Generator Cost	Retail Rate
4/29/2021	9	\$60.00	\$43.12
4/29/2021	10	\$60.00	\$27.81
4/29/2021	11	\$60.00	\$33.89
4/29/2021	12	\$60.00	\$43.33
4/29/2021	13	\$60.00	\$43.34
4/29/2021	14	\$60.00	\$37.00
4/29/2021	15	\$60.00	\$36.89
4/29/2021	16	\$60.00	\$42.72
4/29/2021	17	\$60.00	\$46.34
4/29/2021	18	\$60.00	\$89.86
4/29/2021	19	\$60.00	\$78.13
4/29/2021	20	\$60.00	\$44.92
4/29/2021	21	\$60.00	\$61.51
4/29/2021	22	\$60.00	\$46.75
Average:		\$60.00	\$48.26

- Eligible for settlement
 - Settlement will be processed



- Case #2 Average Gen Cost < Average Retail Rate

eventDate	eventHour	Generator Cost	Retail Rate
2/18/2021	9	\$60.00	\$138.86
2/18/2021	10	\$60.00	\$139.47
2/18/2021	11	\$60.00	\$194.00
2/18/2021	12	\$60.00	\$135.79
2/18/2021	13	\$60.00	\$192.05
2/18/2021	14	\$60.00	\$109.53
2/18/2021	15	\$60.00	\$114.15
2/18/2021	16	\$60.00	\$90.95
2/18/2021	17	\$60.00	\$98.37
2/18/2021	18	\$60.00	\$88.90
2/18/2021	19	\$60.00	\$87.20
2/18/2021	20	\$60.00	\$85.49
2/18/2021	21	\$60.00	\$79.03
2/18/2021	22	\$60.00	\$95.90
Average:		\$60.00	\$117.83

- Not eligible for settlement
 - Settlement will not be processed
 - No BOR charge
 - Resource outage created for this date



- Case #3 Average Gen Cost < Average Retail Rate are not contiguous hours

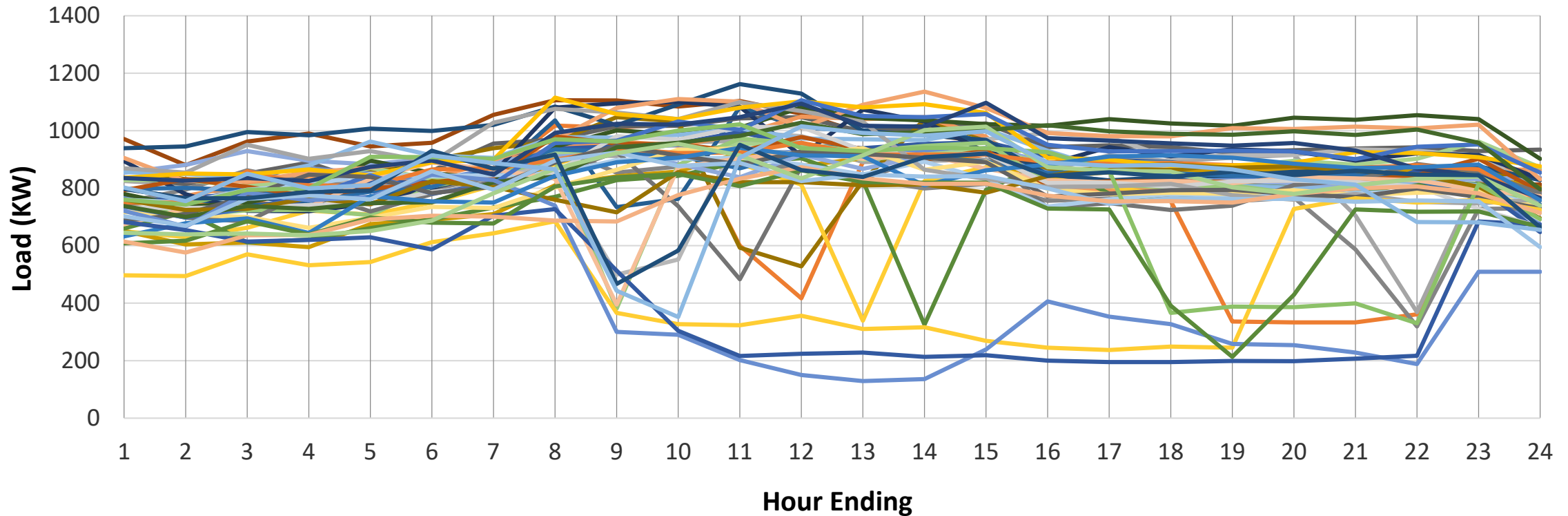
eventDate	eventHour	Generator Cost	Retail Rate
4/28/2021	11	\$60.00	\$29.24
4/28/2021	12	\$60.00	\$24.18
4/28/2021	19	\$60.00	\$137.49
4/28/2021	20	\$60.00	\$165.05
4/28/2021	21	\$60.00	\$180.77
4/28/2021	22	\$60.00	\$62.47
Average:			
		\$60.00	\$99.87

- Not eligible for settlement
 - Settlement will not be processed
 - No BOR charge
 - Resource outage created for this date

- CBL day will be excluded when energy settlement is:
 - Pending
 - Confirmed
 - Denied by PJM because it is ineligible based on this process
 - PJM will include a resource outage
- CBL days are included for all other days
 - Settlements that are Expired, Withdrawn, or Denied (for other reasons)
 - Non-settlement days

Case #1: CBL based on historic days (Days with Generator output are not excluded)

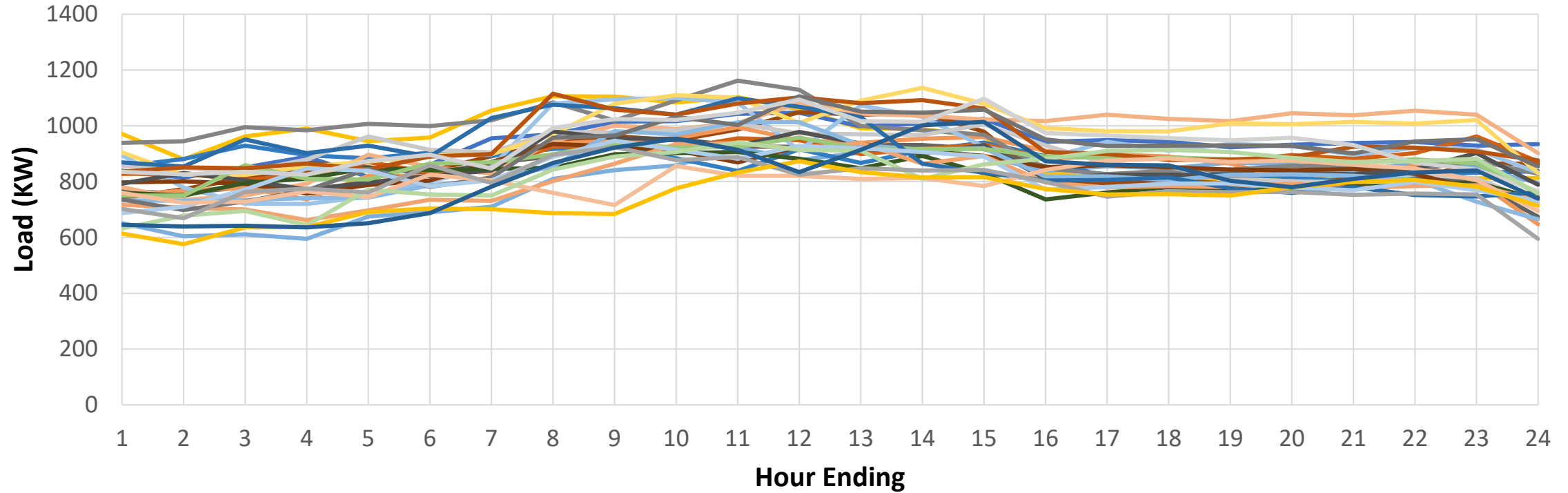
Daily Meter Readings



Default CBL accuracy (RRMSE) for HE13 - HE22 = 19%

Case #2: CBL based only on historic days when generator did not operate

Daily Meter Readings



CBL much more accurate
Default CBL accuracy (RRMSE) for HE13 - HE22 = 12%

APPENDIX

- BTMG – output used to net load and therefore operates to reduce electricity cost. Does not participate in wholesale market
- On-Site Generator – output used to reduce load that only operates to participate in the wholesale market (Economic or/and Emergency/Pre-Emergency DR). If generator will operate on their own then it is BTMG and not DR
- Generator (Capacity and/or Energy Resource) – interconnected through the PJM queue and participates in the wholesale market

1 MW of output from generator may only be in 1 of 3 categories

On-Site Generator eligible energy settlements

- Generator without injection rights – marginal cost > retail cost, only reason generator operates is because of wholesale market energy revenue, otherwise it is cheaper to buy power at retail
 - Retail cost includes supply and delivery rate charges
- Generator with injection rights (WMPA, ISA) – Typically, only eligible for Economic DR energy revenue in hours when generator does not inject power unless:
 - PJM and CSP finalize below before PJM will consider Economic DR settlements in same hour as injection,
 - Cost (Total Gen output * marginal cost) > Benefit {gen export revenue (Gen export output * LMP) + implied retail savings (Gen load reduction MWs * retail rate)}
 - If Generator is also a Capacity Resource (“front of the meter”) for injection and is dispatched by PJM then Economic DR is not eligible for same interval