



Behind the Meter Generation Education

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CIFP-RA

June 1, 2023

MAY 2004

JULY 2005

DEC 2005

2019

2021

- FERC accepted filing to allow BTMG at same, single electrical location to net against load (subject to condition)
- PJM to examine whether appropriate to expand netting rules to NRBTMG
- **Docket ER04-608**

- FERC established hearing and settlement judge procedures to investigate expanding netting provisions
- **Docket EL05-127**

- FERC accepted **Settlement Agreement** which established NRBTMG rules

- Reporting, netting, and operating requirements of NRBTMG clarified through Issue Charge at OC

- BTMG Business Rules on Status Changes clarified through Issue Charge at MIC
- **Docket ER22-548**

Retail BTMG

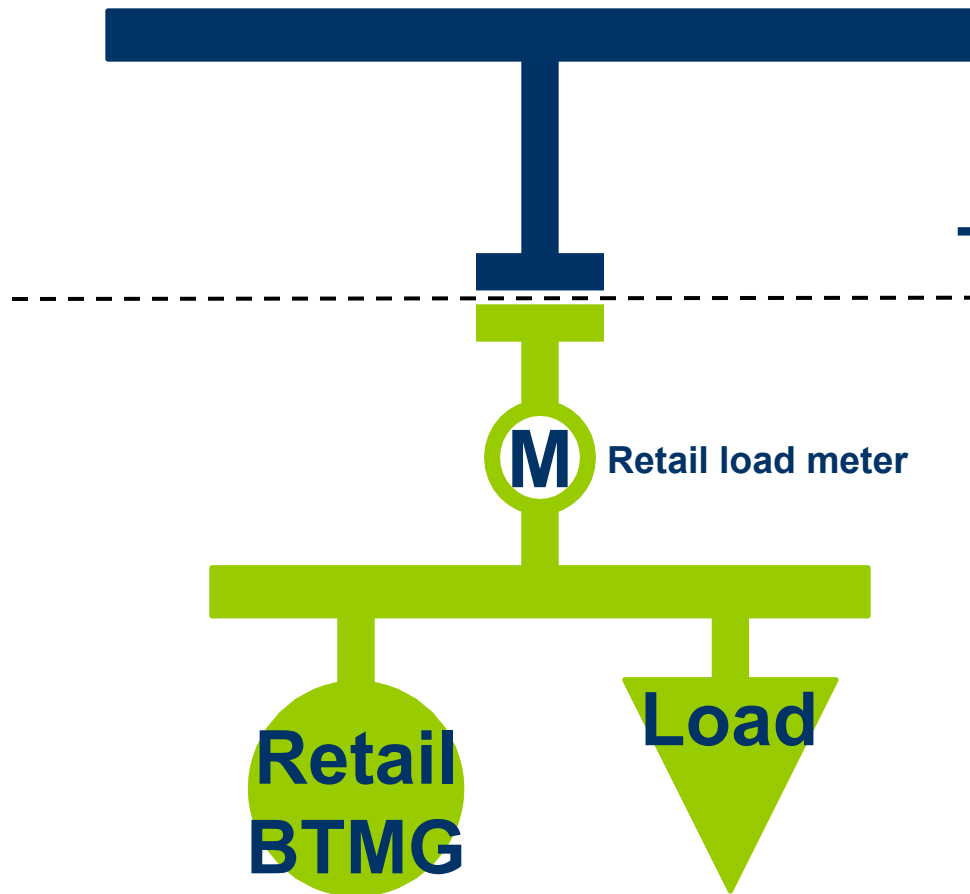
- Unit is co-located with load at same site
- Unit typically serves load for one retail electric customer (unless there is a net-energy metering arrangement with utility)
- Unit is located behind the retail electric customer's meter
- Unit is not classified as generation capacity resource, demand resource, or energy-only resource

Non-Retail BTMG

- Unit is not co-located with load at same site
- Unit serves load for multiple retail electric customers on distribution system
- Unit is located behind the muni/coop/EDC wholesale meter
- Unit is not classified as generation capacity resource, demand resource, or energy-only resource

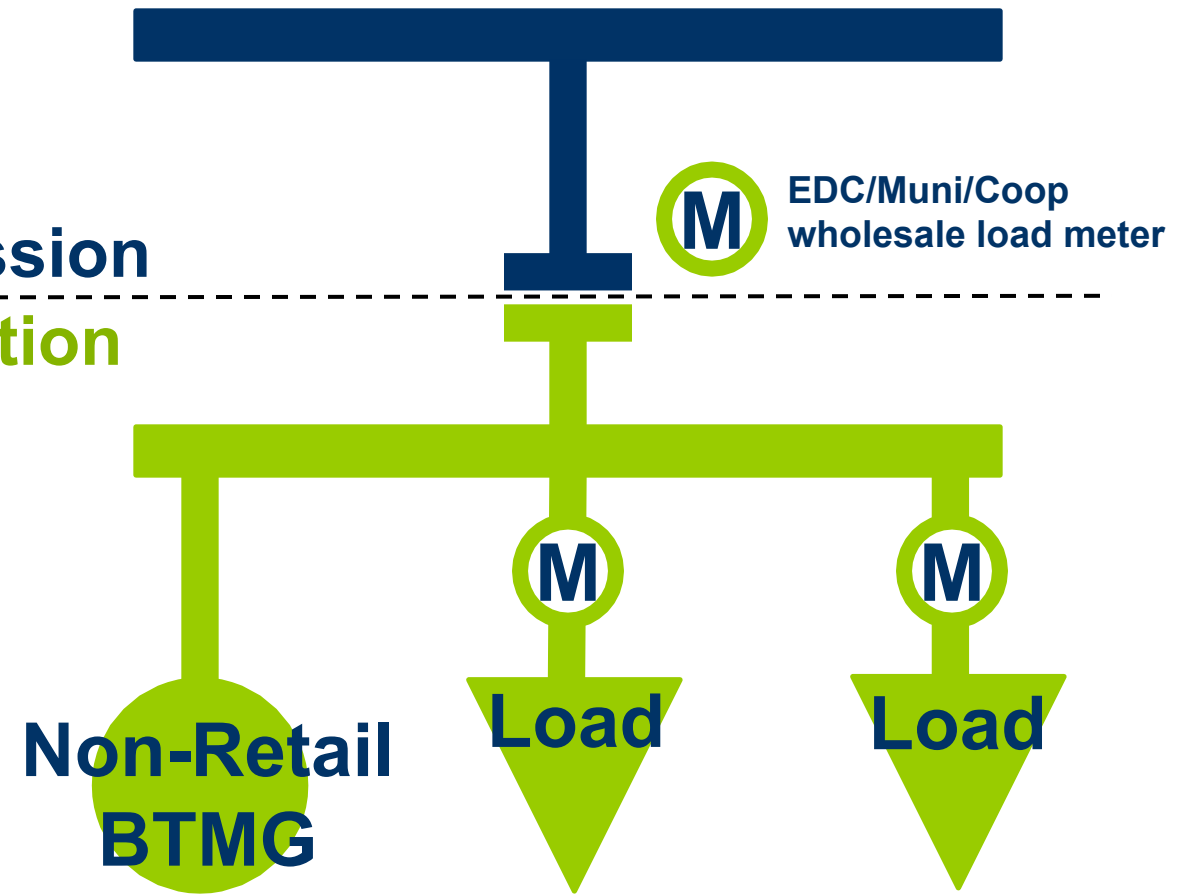
Retail BTMG

Serves load for one retail electricity customer.

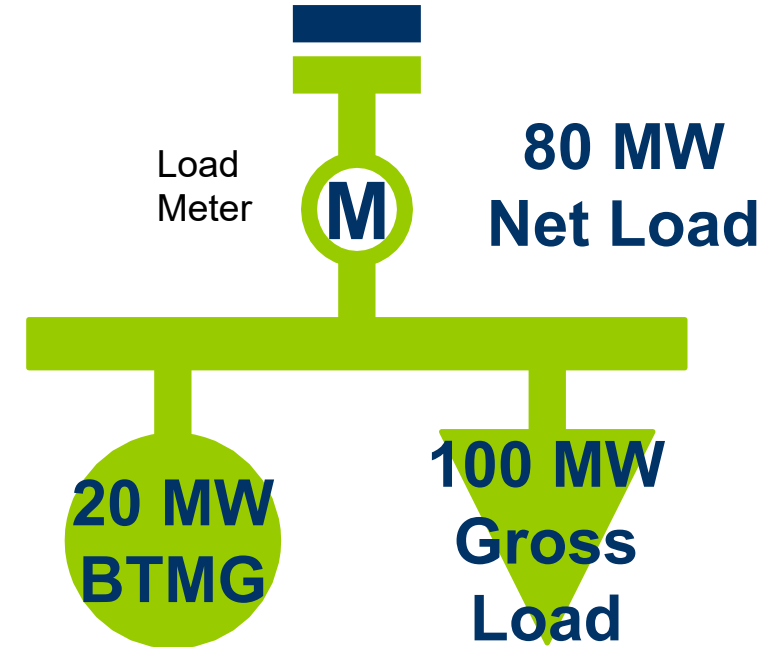


Non-Retail BTMG

Serve load for multiple retail electricity customers.



- Output is allowed to reduce the actual gross load at retail-end use customer site or at the wholesale area level (in the case of Non-Retail BTMG).
- Net load (gross load minus operating BTMG, not to be less than zero) is able to be used in the determination of LSE's charges for energy, ancillary services, capacity, transmission, and administrative fee charges.





Non-Retail BTMG Threshold

- Ability of NRBTMG to net against wholesale area load is subject to a Threshold (not to exceed 3000 MW).
- Threshold is increased based on load growth.
- If total amount of NRBTMG in PJM exceeds the Threshold, the amount of operating NRBTMG eligible to net for NSPL and OPL purposes will be pro-rated back to the Threshold through a ratio adjustment.
- EDC that is responsible for calculating NSPL and OPL shall apply the ratio adjustment to the amount of operating Non-Retail BTMG in their NSPL and OPL calculation procedures.

Calendar Year (NSPL)	Delivery Year (OPL)	Total Amount of Non-Retail BTMG in PJM (MW)	Non-Retail BTMG Threshold (MW)	Ratio Adjustment	Reporting date
2020	2020/2021	1171.5	2,051	1.00	11/27/2019
2021	2021/2022	1186.4	2,080	1.00	11/24/2020
2022	2022/2023	1355.2	2,085	1.00	11/29/2021
2023	2023/2024	1452.9	2,090	1.00	11/29/2022

<https://pjm.com/-/media/markets-ops/rpm/non-retail-btmg-threshold-posting.ashx>

- NRBTMG in PJM shall be capped at 3000 MW for netting purposes unless modified pursuant to a filing
- If 3000 MW cap is reached, no additional NRBTMG will be eligible for netting for purposes of determining charges for transmission service, reactive service, black start service, and capacity obligations
- In event 3000 MW cap is reached, within 6 months of the date the cap is reached, PJM shall make a section 205 filing to justify either continuation of existing BTMG rules (including any expansion of rules to include additional MWs) or any changes to the rules.
 - Filing to address the effect of the implementation of current BTM rules on reliability and equitable allocation of cost responsibility

- Non-Retail Behind the Meter Generation (NRBTMG) that has output netted from load for purposes of determining LSE's Network Service Peak Load (NSPL) & Obligation Peak Load (OPL) is required to operate during the first 10 occurrences of Maximum Generation Emergency conditions in the zone where the unit resides between the period of November 1 through October 31
 - Applies to MGE condition called for generation or transmission emergencies
- Maximum Generation Emergency Action and Deploy All Resources Action trigger requirement to operate
 - Operate at maximum net or gross electrical power output, subject to equipment stress limits of unit
- Performance of a unit during emergency event will be measured against an expected performance level of such unit

NRBTMG operation during CP hours in November 1 – October 31 period

NRBTMG required to operate during emergency events from Nov 1-Oct 31

- If unit operated during CP hours in prior Nov 1-October 31 period, required to operate during first 10 events
- Performance measured against Expected Performance value



Generation Output for CP hours due November 30

PJM calculates Expected Performance value in December for Nov 1 – Oct 31 compliance period

NRBTMG required to operate during emergency events from Nov 1-Oct 31

- If unit operated during CP hours in prior Nov 1-October 31 period, required to operate during first 10 events
- Performance measured against Expected Performance value

Failure to operate during first 10 events impacts NSPL for wholesale area

- Upward adjustment to NSPL for subsequent calendar year



Dec. 23 & 24
Emergency
Events

Generation
Output for
event
hours due
Feb 4, 2023

Performance results for
Dec 2022 events
available early April
2023

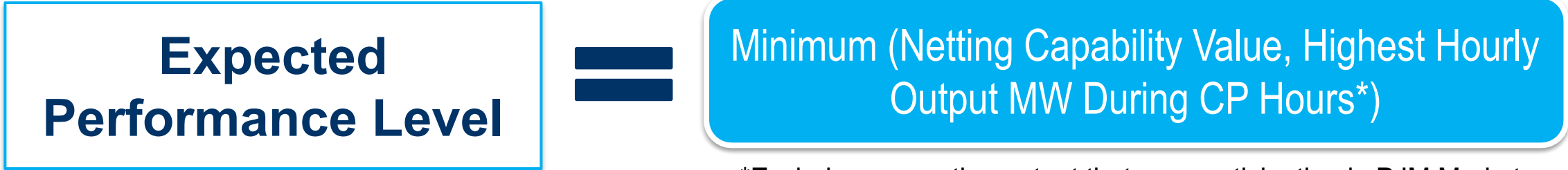
- Unit performance shortfalls
- Netting reduction penalty amount for wholesale area

Final total netting
reduction penalty
amount for wholesale
area as a result of first
10 events

- Available no later than Nov. 30

Failure to operate
during first 10 events
impacts OPL for
wholesale area

- Upward adjustment to OPL for subsequent delivery year



*Excludes generation output that was participating in PJM Markets





- Excused MWs may be granted due to scheduled outages or transmission restrictions
- No excused MWs for scheduled outages that occur during emergency events from June through September



Output in PJM Markets is reported if unit is tied to a Pre-Emergency/Emergency DR Hub registration ID

Average Output for Event

12/23/2022 Event: 17:30 – 23:00 EPT

Unit Name	Emergency Event	HOUR ENDING (EPT)	TOTAL OUTPUT (MW)	OUTPUT IN PJM MARKETS (MW)	PERFORMANCE OUTPUT (MW)	Number of Intervals in Event Hour	Performance Output * Number of Intervals in Event Hour (MW)
NRBTMG DIESEL UNIT 3	12/23/2022 Max Gen Emergency Action	12/23/2022 18:00	2.5	0	2.5	6	15
		12/23/2022 19:00	3.2	0	3.2	12	38.4
		12/23/2022 20:00	3.3	0	3.3	12	39.6
		12/23/2022 21:00	3.3	0	3.3	12	39.6
		12/23/2022 22:00	3.3	0	3.3	12	39.6
		12/23/2022 23:00	3.3	0	3.3	12	39.6
							TOTAL

Performance Output MW = Total Output MW – Output in PJM Markets

Average Output for Event = Sum of (Performance Output * Number of Intervals in Event Hour)/Total Number of Intervals for Event = 211.8 MW/66 = **3.2 MW**

Excused MW due to Scheduled Outage

- If Average Output MW < Expected Performance, Excused MWs may be granted if scheduled outage reported to PJM in advance of the emergency event
- Outages submitted to PJM or modified during the emergency event will not be considered
- No Excused MW will be granted for emergency events occurring during June through September

Excused MW due to Transmission Restrictions

- If Average Output MW < Expected Performance, Excused MWs may be granted if unit was unable to generate due to the actual wholesale area load level and restrictions placed on the unit to prevent injections into the PJM transmission system

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Capacity Exchange

Compliance Year: 11/01/2022-10/31/2023 | Events: 12/23/2022 Max Gen Eme

Refresh | XML | CSV

Expected Performance | **Event Performance** | Netting Reduction

PJMTST >> 11/01/2022-10/31/2023 >> 12/23/2022 Max Gen Emergency Action | Row Count: 5

Zone	Area	Unit ID	Unit Name	Start Time	Stop Time	Expected Performance MW	Average Output MW	Excused MW Due To Scheduled	Excused MW Due to Transmissior Restriction	Unit Performance Shortfall MW
▼ AEP	AREA2									-0.3
AEP	AREA2	9900	NRBTMG LFG UNIT 1	01/15/2020 06:30	01/15/2020 08:45	2.9	3.400			-0.5
AEP	AREA2	9901	NRBTMG SOLAR UNIT 2	01/15/2020 06:30	01/15/2020 08:45	0.8	0.600			0.2
▼ DAY	AREA3									1.1
DAY	AREA3	9902	NRBTMG DIESEL UNIT 3	01/15/2020 06:30	01/15/2020 08:45	4.2	3.200			1.1

Net Shortfall

Wholesale area with positive net shortfall subject to netting reduction penalty

Unit Performance Shortfalls netted for NRBTMG units in wholesale area

Total Netting Reduction for Wholesale Area

**Event Netting
Reduction**



10% of the Net Performance Shortfall for
wholesale area for the emergency event

**Total Netting
Reduction**



Sum of event netting reduction amounts for
wholesale area for the first 10 emergency
events in compliance period

- ▶ Load & Obligation
- ▶ Resource Position
- ▶ Transactions
- ▶ Auctions
- Credit
- FRR
- ▶ Performance
- ▼ NRBTMG
 - Unit Reporting
 - Generation Output
 - Outages
 - Performance**

Compliance Year Refresh

Expected Performance | Event Performance | **Netting Reduction**

PJMTST >> 11/01/2022-10/31/2023 Row Count: 2

Zone	Area	Start Date	Stop Date	Netting Reduction
Show All ▼	Show All ▼	Show All ▼	Show All ▼	Show All ▼
AEP	AREA2	11/01/2019	10/31/2020	0.0
DAY	AREA3	11/01/2019	10/31/2020	0.1

The total netting reduction amount for a wholesale area due to the first ten emergency events during the compliance year is displayed.

The EDC that is responsible for calculating the NSPL and OPL for wholesale areas in the zone will be able to view netting reduction data for all wholesale areas in the zone.

In EDC procedures for calculating a wholesale area's NSPL or OPL for the subsequent calendar year/delivery year, the total amount of operating NRBTMG that is allowed to net against the wholesale area's actual load during the relevant hours is to be reduced by the total netting reduction amount for the wholesale area.

	Area Gross Load (MW)	Operating NRBTMG (MW)	Area Net Load (MW)	Total Netting Reduction Amount (MW)	Operating NRBTMG Minus Total Reduction Amount (MW)	Adjusted Area Net Load (MW)
CP Hour	10	5	5	3	2	8

- EDC is to account for total netting reduction amount in procedures for calculating wholesale area’s NSPL or OPL for subsequent calendar year/delivery year
- Operating Non-Retail BTMG that is eligible to net against the wholesale area’s actual load during the relevant coincident peak hours is to be reduced by total netting reduction amount
- Results in an upward adjustment to NSPL and OPL for wholesale area

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