RPM Cost Allocation Education

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Purpose

- Provide an overview of the cost allocation structure used in the Capacity Market

RPM Locational Reliability Charge

- LSEs are charged for their Daily Unforced Capacity Obligation in a zone priced at applicable Final Zonal Capacity Price for the Delivery Year
- Charges are calculated daily and billed weekly

Daily Zonal UCAP Obligation MW

- Each zone with RPM load receives a share of the RTO-procured UCAP based on its share of forecasted peak load
- LSEs receive share of Zonal UCAP based on EDC allocation

Final Zonal Capacity Price

Weighted average price of capacity in zone (weighted by UCAP cleared in auctions):

- Marginal value of system capacity
- Locational Price Adders, if any, for zones in constrained LDAs
- Any required adjustments (e.g. make-whole payments)

Determining UCAP Obligations in RPM

Zonal UCAP Obligation MW

Total RTO-procured UCAP MW across all RPM auctions for the Delivery Year is allocated to each zone based on its share of forecasted peak load

Example (for RPM load)**:**

- RTO procured UCAP MW in RPM Auctions = 140,000 MW
- RTO forecasted peak load for Delivery Year = 150,000 MW
- Zone A forecasted peak load = 15,000 MW (10% of total)
- Zone A UCAP Obligation = 14,000 MW (140,000 MW * 10%)

LSE Share of Zonal UCAP Obligations

Zonal UCAP Obligation MW are allocated to customers and LSEs in the zone based on EDC-defined methodologies

- EDCs are responsible for allocating prior summer weather normalized peak load of zone to customers and determining obligation peak loads (typically based on 5 CPs)
  - THEO, PLC & NSPL Methodology Inventory
- EDCs are also responsible for uploading obligation peak load data into system for each LSE serving load in their zone
- Obligation peak loads are multiplied by zonal scaling factors and FPR to determine each LSE's Daily Zonal UCAP Obligation MW

CTR Credit for LSEs in Constrained LDAs

CTR Credit: Capacity Transfer Rights (CTRs) are used to allocate the economic value of transmission import capability in constrained LDAs, and help provide an offset to RPM Locational Reliability Charges for LSEs in zones of a constrained LDA

CTR MW: Set to the difference between the Final UCAP Obligation for an LDA and the amount of internal cleared capacity from RPM auctions for such LDA (i.e. imported MW to meet UCAP obligation)

- CTR MW are first allocated to holders of ICTRs or cleared QTUs, as applicable
- Remaining CTR MW allocated to LSEs based on Daily UCAP Obligation MW share

CTR Credit to LSEs: The payment received by LSEs is equal to their allocated CTR MW times the weighted average locational price adder of the LDA

Numerical Example of Capacity Payments for LSEs in Constrained LDA

Locational Reliability Charges for Zone A (constrained LDA):

- Total RTO Procured UCAP = 140,000 MW
- RTO Forecasted Peak Load = 150,000 MW
- Zone A Forecasted Peak Load = 15,000 MW (10% of total)
- Zone A UCAP Obligation = 14,000 MW
- Zone A Final Zonal Capacity Price = $200/MW-day (constrained in RPM auctions)

Locational Reliability Charges for Zone A ($/day) = **$2.8 million** (14,000 MW * $200/MW-day)

Key Takeaway: Zonal capacity charges in constrained regions are based on Locational Reliability Charges and offsetting CTR Credits, representing the economic value of imported capacity to meet the zone's UCAP obligation.

CTR Credits for Zone A:

- Zone A Internal Cleared MW = 10,000 MW
- Zone A CTR MW = 4,000 MW (14,000 MW – 4,000 MW); Assume all CTR MW allocated to LSEs in zone
- CTR Credit Rate = $50 (RTO clearing price of $150, locational price adder for LDA of $50)

Offsetting CTR Credits for Zone A ($/day) = **$200,000** (4,000 MW * $50/MW-day)

Net Load Capacity Payments ($/day) = $2.6 million (Locational Reliability Charges net of CTR Credits)

- Effectively paying for internal cleared UCAP (10,000 MW) * constrained price ($200) + imported UCAP (4,000) * RTO price ($150)

Cost Impact of Retaining Resources in Constrained LDA

Impact Type	Impact to Load in Constrained LDA	Impact to Load in Unconstrained Region
Final Zonal Capacity Price	Typically results in a **lower** constrained LDA clearing price and Final Zonal Capacity Price	Also typically results in a **lower** unconstrained clearing price and Final Zonal Capacity Price for zones in unconstrained regions
UCAP Obligation	Typically **increases the** UCAP Obligations of load in the zone proportional to the zonal share of forecasted peak load	Same impact (proportional to zonal share of forecasted peak load for zones in unconstrained region)
CTR Credits	Typically results in **lower** CTR Credits (Increase in UCAP obligation is more than offset by increase in internal cleared UCAP from retained resource, and may see a reduction in the CTR Credit Rate as well)	Not applicable

Key Takeaway: The cost impact of retaining a resource in a constrained LDA is typically not limited to just the load in zones within the constrained LDA. It can also impact the clearing prices of parent regions or the RTO, and an increase in total procured capacity for the RTO would be shared across all zones.

Cost Impact of Retained Resources in Unconstrained Region

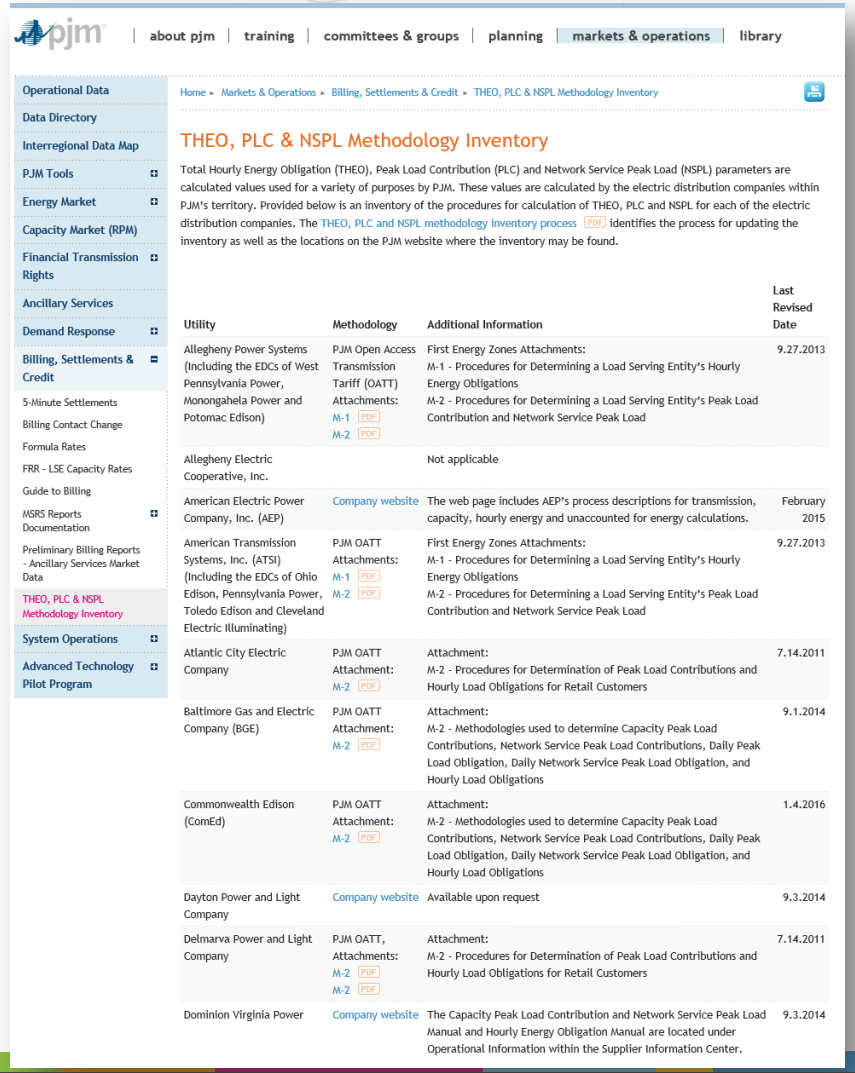
Impact Type	Impact to Load in Unconstrained Region	Impact to Load in a Constrained LDA
Final Zonal Capacity Price	Typically results in a **lower** unconstrained clearing price and Final Zonal Capacity Price	Likely no impact
UCAP Obligation	Typically **increases the** UCAP Obligations of load in unconstrained zones proportional to the zonal share of forecasted peak load	Same impact (proportional to zonal share of forecasted peak load for zone(s) in constrained LDA)
CTR Credits	Not applicable	Typically results in **higher** CTR Credits (increase in UCAP obligation would increase the CTR MW all else equal, and the CTR Credit Rate based on the locational price adder would also likely increase with a lower unconstrained clearing price)

Key Takeaway: The cost impact of retaining a resource in the unconstrained region is likely to have less of an impact on load in zones within constrained LDAs. An increase in the UCAP Obligation for load in a constrained LDA would likely be offset by an increase of the CTR MW. However, load in the zones of the constrained LDA can still benefit from the lower unconstrained clearing price by receiving a higher CTR Credit Rate and CTR Credits.

Appendix

Peak Load Contribution (PLC)

- Capacity-related parameter
- Calculated and submitted to PJM by Electric Distribution Company (EDC) using established procedures
  - Each EDC's methodology is presented on PJM website at THEO, PLC & NSPL Methodology Inventory
- Represents LSE's share of PJM's weather normalized peak load from previous summer (June through September)
- Used by PJM in capacity market to determine LSE's Locational Reliability charge, which is based on daily Unforced Capacity Obligation (UCAP)



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Operational Data
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PJM Tools
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Capacity Market (RPM)
Financial Transmission Rights
Ancillary Services
Demand Response
Billing, Settlements & Credit
5-Minute Settlements
Billing Contact Change
Formula Rates
FRR - LSE Capacity Rates
Guide to Billing
MSRS Reports Documentation
Preliminary Billing Reports - Ancillary Services Market Data
THEO, PLC & NSPL Methodology Inventory
System Operations
Advanced Technology Pilot Program

Home ▸ Markets & Operations ▸ Billing, Settlements & Credit ▸ THEO, PLC & NSPL Methodology Inventory

THEO, PLC & NSPL Methodology Inventory

Total Hourly Energy Obligation (THEO), Peak Load Contribution (PLC) and Network Service Peak Load (NSPL) parameters are calculated values used for a variety of purposes by PJM. These values are calculated by the electric distribution companies within PJM's territory. Provided below is an inventory of the procedures for calculation of THEO, PLC and NSPL for each of the electric distribution companies. The THEO, PLC and NSPL methodology inventory process PDF identifies the process for updating the inventory as well as the locations on the PJM website where the inventory may be found.

Utility	Methodology	Additional Information	Last Revised Date
Allegheny Power Systems (Including the EDCs of West Pennsylvania Power, Monongahela Power and Potomac Edison)	PJM Open Access Transmission Tariff (OATT) Attachments: M-1 PDF M-2 PDF	First Energy Zones Attachments: M-1 - Procedures for Determining a Load Serving Entity's Hourly Energy Obligations M-2 - Procedures for Determining a Load Serving Entity's Peak Load Contribution and Network Service Peak Load	9.27.2013
Allegheny Electric Cooperative, Inc.		Not applicable	
American Electric Power Company, Inc. (AEP)	Company website	The web page includes AEP's process descriptions for transmission, capacity, hourly energy and unaccounted for energy calculations.	February 2015
American Transmission Systems, Inc. (ATSI) (Including the EDCs of Ohio Edison, Pennsylvania Power, Toledo Edison and Cleveland Electric Illuminating)	PJM OATT Attachments: M-1 PDF M-2 PDF	First Energy Zones Attachments: M-1 - Procedures for Determining a Load Serving Entity's Hourly Energy Obligations M-2 - Procedures for Determining a Load Serving Entity's Peak Load Contribution and Network Service Peak Load	9.27.2013
Atlantic City Electric Company	PJM OATT Attachment: M-2 PDF	Attachment: M-2 - Procedures for Determination of Peak Load Contributions and Hourly Load Obligations for Retail Customers	7.14.2011
Baltimore Gas and Electric Company (BGE)	PJM OATT Attachment: M-2 PDF	Attachment: M-2 - Methodologies used to determine Capacity Peak Load Contributions, Network Service Peak Load Contributions, Daily Peak Load Obligation, Daily Network Service Peak Load Obligation, and Hourly Load Obligations	9.1.2014
Commonwealth Edison (ComEd)	PJM OATT Attachment: M-2 PDF	Attachment: M-2 - Methodologies used to determine Capacity Peak Load Contributions, Network Service Peak Load Contributions, Daily Peak Load Obligation, Daily Network Service Peak Load Obligation, and Hourly Load Obligations	1.4.2016
Dayton Power and Light Company	Company website	Available upon request	9.3.2014
Delmarva Power and Light Company	PJM OATT, Attachments: M-2 PDF M-2 PDF	Attachment: M-2 - Procedures for Determination of Peak Load Contributions and Hourly Load Obligations for Retail Customers	7.14.2011
Dominion Virginia Power	Company website	The Capacity Peak Load Contribution and Network Service Peak Load Manual and Hourly Energy Obligation Manual are located under Operational Information within the Supplier Information Center.	9.3.2014

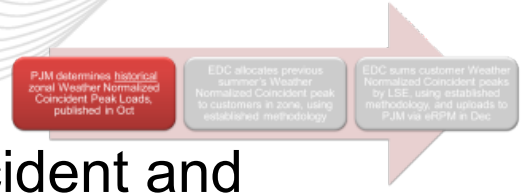
Determining PLC

PJM determines historical zonal Weather Normalized Coincident Peak Loads, published in Oct

EDC allocates previous summer's Weather Normalized Coincident peak to customers in zone, using established methodology

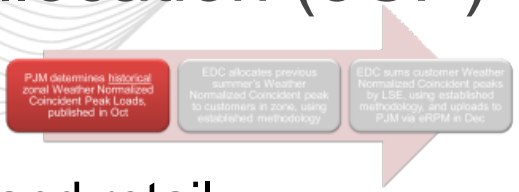
EDC sums customer Weather Normalized Coincident peaks by LSE, using established methodology, and uploads to PJM via Capacity Exchange in Dec

Weather Normalized Coincident Peak (1CP)



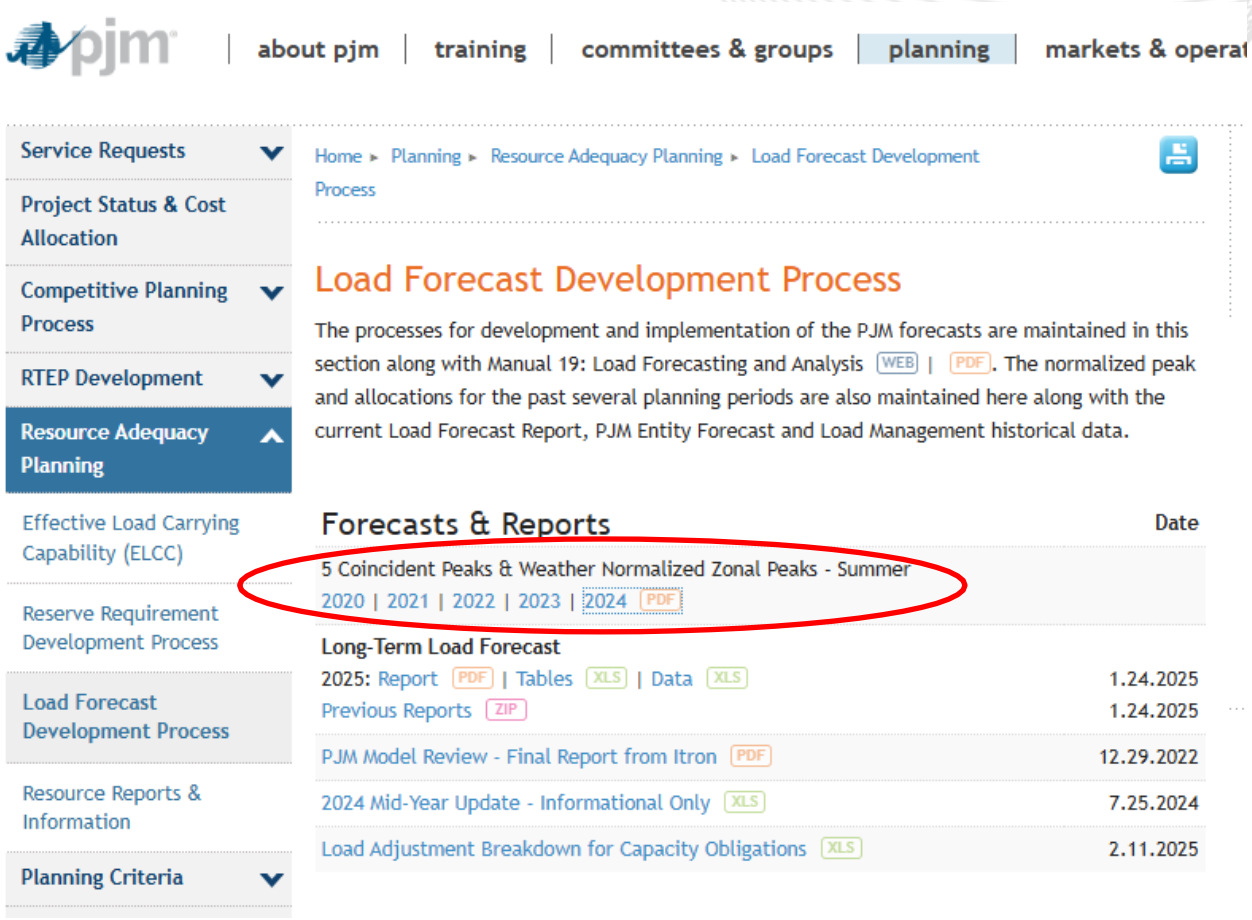
- PJM performs load studies on summer and winter loads, for both coincident and non-coincident peaks
- Weather normalized (W/N) non-coincident peaks (1CP) are provided by PJM for use by stakeholders in reviewing PJM load forecast
  - Long-term trend of each zone's seasonal coincident and noncoincident peak loads
  - Reasonable portrayal of anticipated growth in each zone's first year forecast
- W/N coincident peaks are used by EDCs to determine capacity peak load shares for wholesale and retail customers
  - Used in RPM to set total load EDCs allocate to customers as Peak Load Contributions (5CP)
  - Capacity obligations are ultimately set by coincident peak load forecast

Peak Load Allocation (5CP)



- Zonal W/N RTO-coincident summer peak loads are allocated to wholesale and retail customers in zones using EDC-specific methodologies that typically employ customer's shares of RTO actual peaks
- For each summer…
  - Hourly metered load and load drop estimate data are gathered for period June 1 through September 30
  - RTO unrestricted loads are created by adding load drop estimates to metered load
  - From unrestricted values, 5 highest non-holiday weekday RTO unrestricted daily peaks (5CP) are identified
- 5CP data are typically released in mid-October

5CPs & Weather Normalized Zonal Peaks



[5 Coincident Peaks and Weather Normalized Zonal Peaks]

PJM Interconnection

Summer 2022 Weather Normalized RTO Coincident Peaks (MW)

Zone		Peak
AE		2,410
	AECO 2,263.6	
	Vineland 146.4	
AEP		21,289.4
APS		8,363
ATSI		12,140
BGE		6,210
COMED		20,080
DAYTON		3,120
DEOK		4,930
DLCo		2,630
DOM		19,910
DPL		3,790
	DPLCO	
	EASTON	
EKPC		
JCPL		
METED		
OVEC		
PECO		
PENLC		
PEPCO		
	PEP	
	SMECO	
PL		
PS		
RECO		
UGI		
PJM RTO		

Summer 202

Notes: A

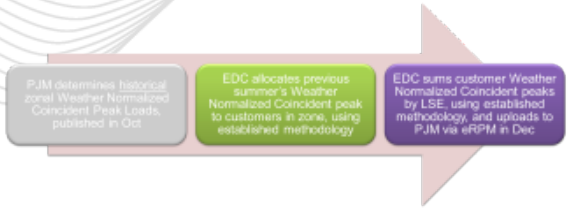
Day
Wednesday
Thursday
Friday
Monday
Wednesday

PJM INTERCONNECTION

Summer 2022 - Coincident Peaks, By Zone (MW)

Date	7/20/2022	7/21/2022	7/22/2022	8/8/2022	8/3/2022
Hour End (EPT)	18:00	17:00	18:00	16:00	18:00
AE	2,477.4	2,404.7	2,506.0	2,292.0	2,394.4
AEP	21,476.1	20,521.0	20,753.2	20,870.7	20,970.4
APS	8,405.3	8,160.2	8,151.9	8,355.5	8,303.2
ATSI	11,936.1	11,569.2	11,531.5	11,851.4	12,285.8
BGE	5,995.5	6,102.0	6,084	5,940.4	5,883.9
COMED	17,807.7	19,092.2	17,964.0	14,952.5	17,043.4
DAYTON	3,292.0	3,031.0	3,039.0	3,223.0	3,225.0
DEOK	5,150.8	4,776.2	4,919.8	4,891.4	4,850.1
DLCo	2,537.6	2,439.4	2,497.0	2,295.0	2,546.7
DOM	20,174.1	19,422.8	20,022.6	20,377.5	19,701.7
DPL	3,839.4	3,882.5	3,792.9	3,817.2	3,740.5
EKPC	1,947.1	1,877.2	1,976.0	1,930.5	1,998.0
JCPL	5,994.1	5,928.7	5,688.3	5,761.4	5,253.8
METED	2,935.6	2,895.5	2,821.2	2,957.3	2,757.2
OVEC	51.0	67.0	59.0	54.0	67.0
PECO	7,988.7	8,119.1	7,887.7	8,084.8	7,405.6
PENLC	2,781.6	2,672.4	2,660.3	2,742.2	2,740.8
PEPCO	5,479.5	5,359.0	5,487.6	5,518.5	5,285.6
PPL-EU	6,957.7	6,912.5	6,611.3	7,059.6	6,505.7
PS	9,515.4	9,327.1	9,267.8	9,549.2	8,622.8
RECO	390.5	385.1	351.7	378.5	349.0
UGI	201.3	199.5	173.0	199.0	180.9
PJM RTO	**147,334.5**	**145,144.3**	**144,245.9**	**143,101.4**	**142,111.6**
EASTON	52.7	47.2	52.7	54.9	50.4
SMECO	732.5	685.8	721.3	732.5	706.9
Vineland	146.3	153.3	144.5	144.1	144.4

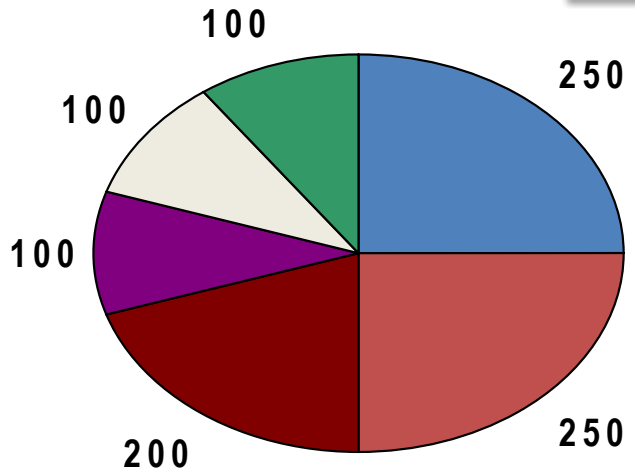
Annual Obligation Peak Load Allocation

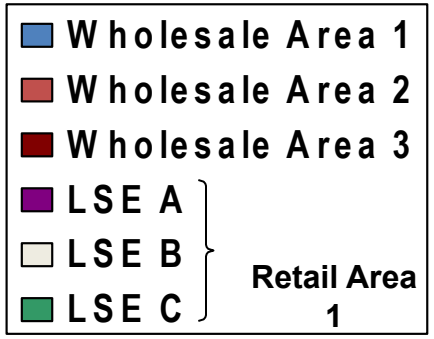


Each PJM EDC is responsible for allocating previous summer's weather normalized peak to end-use customers in zone (both retail and wholesale) by Dec. 31 prior to start of DY

Often referred to as "PLC" or "capacity ticketing" process

Zonal WN Peak = 1000 MW





Obligation Peak Load allocation for zone/area is constant and effective for entire DY

Contact

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Potential 202c Cost Allocation Methods

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