



# Capacity Offer Opportunities for Generation that Serves Co-Located Load

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- MIC PS/IC to explore potential changes to rules regarding generation resources that serve co-located load with focus on capacity market rules
  - Under existing rules, the capacity value of a Generation Capacity Resource must reflect a reduction commensurate with the peak MW quantity of any co-located load to which the generator is directly connected and against which its output is netted
- Package proposals were developed separately for each of two different co-located load configurations:
  1. “with supply from the system”: co-located load receives energy from the system when not being supplied by its co-located generation
  2. “without supply from the system”: co-located load energy is supplied exclusively by its co-located generation and is designed/configured to ensure energy is never delivered from the system to the co-located load

- In August, the MIC endorsed a single package for the “without supply from the system configuration only”
  - The Exelon package was endorsed with 103 (51%) in favor, 100 (49%) opposed, and 34 abstentions. A second vote showed stakeholders preferred the Exelon Package over status quo with 104 (51%) in favor, 99 (49%) opposed, and 49 abstentions
  - MRC Main Motion
- The MIC did not endorse any package that was proposed for the “with supply from the system” configuration
  - Existing Behind-the-Meter Generation Rules still applicable

Proposal is applicable to co-located generation that supplies co-located load under the “without supply from the system” configuration:

- The CIR/Capacity Value of such co-located generation is not affected by the existence of the co-located load
- No portion of the capability of such co-located generation may operate as BTMG (i.e., the output of the co-located generation shall not be netted against the co-located load for the purpose of determining PJM charges and credits)
- Requires that the co-located load and the co-located generation be separately metered with these separately measured values reported each settlement interval for all settlement purposes

- In each settlement interval, the full co-located generation output (equal to the MW amount measured at the actual POI plus the separately metered MW value of the co-located load) is reported as generation output in PowerMeter and the full co-located load amount is reflected in the interval-metered load of PJM and the relevant Transmission Zone
- The co-located generation shall be billed as a Load Serving Entity for settlement purposes based on the full co-located load MW
- Proposal is to be effective with any Interconnection Service Agreement that is amended to reflect such co-located load and that is executed after January 1, 2024

	<b>First Read</b>	<b>Endorsement</b>
MIC	July	August
MRC	September	October
MC	November	December

# Appendix A

## Detailed Design Components

	Status Quo	Proposed – MIC Approved
Configurations	Co-Located Load without Service from the System: The co-located load is served exclusively by the co-located generation and is disconnected whenever not being served by the co-located generation. The arrangement is electrically designed and configured to ensure that the co-located load can never be served from the system.	The co-located load is end-use retail load, and it should pay the charges for all the services it uses (e.g., standby and backup service costs, applicable ancillary services and retail delivery system costs, benefits charges and fees, and taxes). A wholesale generator that desires to serve co-located retail load would also need to be treated by PJM as a Load Serving Entity for the load it is serving. Both the generator and co-located load must physically reside in PJM.
Jurisdiction	Any modification made to a Generation Interconnection Customer’s facility, including the addition of co-located load, is premised on the Market Seller’s adherence with any and all applicable state and local rules for serving co-located behind the meter load.	Status Quo:
Load Trip/Frequency Control	Following load trip, no special scheme in place to reduce generator output. Generator would reduce net output to achieve net MW basepoint under the generator existing control mode (AGC or manual dispatch).	Status Quo:
Generator Trip	Co-Located Load without Service from the System: Upon generator trip, the load is curtailed automatically (net POI output never goes negative).	Relay scheme established to automatically curtail load contemporaneous with generator trip or shift load to another generator at the station, consistent with all other requirements. If the load shifts to a second generator, that second generator must also comply with all co-located business rules.
RT Metering and Telemetry	MW/MVAR Metering (real-time quality only) required for significant sized loads $\geq$ 10 MW.	Wholesale metering and telemetry is established at the Point of Interconnection; subject to any modifications or additions directed in the Necessary Studies Agreement to assure system reliability. If required by PJM, local utility, or RERRA separate load meter (behind the point of interconnection) will measure real power, reactive power, etc. and be provided to PJM and local utility.
Settlement Metering	Wholesale meter reflects output of generator net of BTML	Separate Generator and Load meters - plus any metering as required by the Interconnected TO
Reactive Modeling	Load needs to be modeled explicitly with MVAR metering to accurately assess reactive impact of the load at the POI. Generator and load modeled separately. Generator D-curve still based on physical reactive capability at generator terminals (not netted against the load).	Status Quo



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Credits for Reactive Supply & Voltage Control	A Generation Owner shall not be eligible to receive payments, pursuant to Schedule 2 of the PJM Tariff, for reactive supply and voltage control service for the portion of a generating unit's capability that changes to BTMG status. A Generation Owner subject to this rule shall submit a FERC filing to amend its cost-based revenue requirement for supplying reactive supply and voltage control service under Schedule 2 to account for the status change to BTMG at least 90 days prior to the effective date of such a status change.	Status quo: . Plus the clarification that the reactive revenue requirement must be reduced by the amount of the co-located load
Contingency Modeling	Model separate generator and load contingencies to reflect reality (no netted generator/load contingency). Question about who will define the load contingency (PJM or the GO). Typically the TO reviews or supplies contingencies for PJM's analysis.	Status Quo
Capacity Market Must Offer Requirement	With the exception of Intermittent Resources and Capacity Storage Resources, all existing generation resources must offer available MW in each RPM Auction.	Status Quo
Capacity Offer Development	A sell offer above \$0 for an existing generation resource must seek unit-specific exception request by submitting ACR data in accordance with section 6.8 of Attachment DD, or may utilize an offer cap based on default gross ACR if available.	Status Quo
Capacity Accreditation	Capacity value of co-located generation is reduced by MW quantity of BTML, regardless of whether or not the BTML is curtailable. Reduction is applied to ICAP MW of thermal generation and to accredited UCAP MW of ELCC Resource.	Capacity value of co-located generation is NOT reduced by MW quantity of co-located load provided the load can curtail in order to make the full capability of the co-located generation available to the system in accordance with all other requirements of this package.
CIRs	CIRs are reduced by MW quantity of BTML, regardless of whether or not the BTML is curtailable	CIRs are not reduced provided all other requirements of this package can be satisfied.  Ancillary Services charges apply to this configuration regardless of whether or not CIRs are retained

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Capacity Testing	Net Test Capacity equal to gross capability less station service/auxiliary load less co-located host/process load where gross capability and station service/auxiliary load are based on measurements made at time of each seasonal capacity verification test and co-located host/process load is based on the highest hourly MW quantity measured during the most recent 36 months at time of verification test.	Net Test Capacity equal to gross capability less station service/auxiliary load where gross capability and station service/auxiliary load are based on measurements made at time of each seasonal capacity verification test.
Demand Response Eligibility	End-use customers may participate in RPM as DR in a MW quantity not to exceed the customer's Peak Load Contribution ("PLC").	Co-located load is eligible to provide demand response and/or PRD.
Energy Market Must Offer Requirement	A generator with a capacity commitment must submit a cost-based offer into the PJM DA and RT energy market each day (unless unavailable due to outage) in a MW quantity commensurate with the resource's ICAP commitment level. A market-based offer submitted by such generator must also be in a MW quantity commensurate with its ICAP commitment level. A Capacity Storage Resource or an Intermittent Resource may satisfy this energy market must offer requirement by either self-scheduling or offering the unit as a dispatchable resource where the hourly DA self-scheduled values may vary hour to hour from the capacity commitment.	Status Quo
Cost-based Offer Development (Section 1.2 of Schedule 1 of OA)	Cost-based offers for energy from generating resources shall not exceed the variable cost of producing such energy as determined in accordance with Schedule 2 to this Agreement and applicable regulatory standards, requirements and determinations; provided that, a Market Seller may offer to the PJM Interchange Energy Market the right to call on energy from a resource the output of which has been sold on a bilateral basis, with the rate for such energy if called equal to the curtailment rate specified in the bilateral contract.	Status Quo
Permissible Components of Cost-based Offers of Energy (Section 1.1 of Schedule 2 of OA)	<p>(a) For generating units powered by boilers; Firing-up cost, Peak-prepared-for maintenance cost</p> <p>(b) For generating units powered by machines; Starting cost from cold to synchronized operation</p> <p>(c) For all generating units; Incremental maintenance cos, No-load cost during period of operation, Labor cost, Operating Costs, Opportunity Costs, Emission allowances/adders, Maintenance Adders, Ten percent adder, Charging costs for Energy Storage Resources, Fuel Cost</p>	Status Quo

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Market-based Offer Development	Market-based offers cannot exceed \$1,000/MWh, except (1) when the cost-based offer is above \$1,000/MWh and less than or equal to \$2,000/MWh, then the market-based offer must be less than or equal to the cost-based offer; and (2) when the cost-based offer is greater than \$2,000/MWh, then the market-based offer must be less than or equal to \$2,000/MWh.	Status quo plus  Hydro resources with co-located load shall have the option to make DAM market based offer (Hydro resource owner may not currently make DAM offer).
Response Time (how quickly load must be able to be interrupted)	N/A	<10 Minutes, consistent with primary reserve response time
Energy Settlements	Generator settlements measured at generator revenue meter.	The generator becomes a Load Serving Entity for the co-located load and all PJM LSE-related credits and charges apply
Transmission Costs	PJM network load customers pay transmission-related costs based on their Network Service Peak Load ("NSPL"). The NSPL is determined by each EDC using EDC-specific procedures that, in general, base the NSPL on the customer load (net of operating BTMG) at the time of specific peak load hours.	The generator becomes a Load Serving Entity for the co-located load and all PJM LSE-related credits and charges apply
Distribution Costs	N/A	Distribution costs established by state law as administered by RERRA.

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Capacity Costs	LSEs pay capacity costs (i.e., RPM charges) based on their Peak Load Contribution ("PLC"). The PLC is determined by each EDC using EDC-specific procedures that, in general, base the PLC on the LSE's load (net of operating BTMG) at the time of specific peak load hours.	The generator becomes a Load Serving Entity for the co-located load and all PJM LSE-related credits and charges apply
Ancillary Services Costs	LSEs pay ancillary services costs based on their real-time load served by the system.	The generator becomes a Load Serving Entity for the co-located load and all PJM LSE-related credits and charges apply
Inclusion in billing determinants used to assess Member Default Charges and PJM Administrative Charges	<p>PJM Default Allocation Assessments are billed according to Section 15.2.2 (Default Allocation Assessment) of the OA. Each PJM member receives an equal share of 1/10 of the default allocation amount. The remainder of the default allocation amount is allocated to all members based on their pro rata share of PJM billing, where PJM billing is the sum of all absolute values of the charges and credits on the monthly billing statement for the month of default and the two prior months.</p> <p>PJM Administrative Charges refers to Schedules 9 and 10. These charges are billed in accordance with Section 2 of Manual 27. In general, it is charged based on hourly transmission usage, load, generation and/or market activity.</p>	Status Quo:
Reserve Must Offer Obligation	Per Manual 11 Section 4.2.2, Any generator that is a PJM generation capacity resource that has a Reliability Pricing Model (RPM) or Fixed Resource Requirement (FRR) Resource commitment that is eligible to provide Reserves must offer their 10-minute and 30-min reserve capability, unless the unit is unavailable due to an approved planned outage, maintenance outage or forced outage. PJM will calculate the Reserve MW quantity available from each generation resource, not including ESR and Hydroelectric resources, based on the bid in energy parameters, reserve parameters, Regulation status and current energy output data. Additional information provided in Manual 11	Status Quo:

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Load Interconnection (Planning)	The generation owner must notify PJM and the Interconnected TO of any modification to the generation facility, including the addition of co-located load, at least 90 days in advance of the beginning of physical construction so that PJM and the Interconnected TO can evaluate potential reliability impacts of the modification. The modification request will initiate the Necessary Study process.	Status Quo plus compliance with the state rules that are applicable for retail loads of that size
Load Forecasting	Load that is netted out by co-located BTM generation in any given hour is not included in the hourly PJM metered load for that hour. Historical hourly PJM metered load is used in developing the PJM peak load forecast therefore load that is normally netted out by operating BTM generation will not be reflected in the peak load forecast. The MW quantity of such load that is reflected in the peak load forecast is dependent upon historical hourly operation of the BTM generation as it relates to netting out the co-located load.	Not included in the PJM load forecast
Treatment in PJM planning studies (e.g., Reserve, CETO, CETL, ELCC, Market Efficiency, etc.)	BTM co-located generation/load is not modeled separately in the Reserve Requirement Study model, the ELCC model or the Market Efficiency model. This is predominately the case with CETL & CETO, however, there are a small number of instances where the TO has separately reflected BTM co-located generation/load in the transmission planning power flow models that are ultimately used for CETL purposes. In these instances, the CETO model is updated to separately reflect this BTM generation/load for purpose of maintaining consistency between the two models.	Status Quo
Amendments to ISA	The ISA or other relevant service agreement is amended to reduce CIRs to an amount equal to the generator's current CIRs less the capacity dedicated to the BTML (based on the highest expected hourly demand of the BTML). The MFO in the agreement may remain unchanged, provided the generator's full output capability remains available to the system whenever the host load is offline. The ISA is also modified to reflect the facility modifications to incorporate the load (description of the load facility, updated one-line diagram in ISA Schedule B), as well as any additional required load metering (ISA Schedule C).	CIRs are not reduced by the amount of BTML that can satisfy all requirements of this package including requirements that (1) the co-located load is never to be served from the system when not being served by its co-located generation and (2) must be capable of reducing from full consumption to 0 MW in no more than 10 minutes.  Include requirements in Schedule F of the ISA for non-standard terms and conditions that specify the type and MW quantity of co-located load that is never to be served from the system when not being served by its co-located generation and must be capable of reducing from full consumption to 0 MW in no more than 10 minutes.
Posting Requirement	Identification provided in Interconnection Agreement and posted on pjm.com	Within 10 business days of the Generator Owner providing notice to PJM and the Interconnected TO, the co-location request is made public on pjm.com.
Accommodation for existing Co-Location Configurations	Several co-location configurations already exist in PJM where the Host generator has taken a capacity market derate and would continue to operate under the terms of their existing commercial arrangement.	Grandfather the PJM market rules provisions only for prior co-location configurations that have been fully implemented before 1/1/24

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