

# Status Quo of Generation Aggregation

MIC Special Sessions on DER  
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- *Generating units that are connected to the system at the same electrical location may be aggregated and offered into the PJM market as a single unit.*

### “Single bus” (Manual 11)

- A “single bus” will be any unit located at the same site and that has the identical electrical impacts on the transmission system.

### Transmission Bus

- A utility bus in the PJM EMS.

### Electrical location (Manual 11)

- “Generating units that are connected to the system at the same electrical location may be aggregated and offered into the PJM market as a single unit.”

### Point of interconnection (Tariff)

- “Point of Interconnection” shall mean the point or points, shown in the appropriate appendix to the **Interconnection Service Agreement** and the Interconnection Construction Service Agreement, **where the Customer Interconnection Facilities interconnect with the Transmission Owner Interconnection Facilities or the Transmission System.**
  - **WMPA has no Interconnection Service Agreement.** For EDC-connected DER on WMPAs: in some cases, POI is customer<>EDC. In other cases, POI is EDC<>TO.

### Point of common coupling (N/A - NOT A PJM DEFINED TERM.)

- IEEE 1547 “The point where a Local EPS [e.g, customer] is connected to an Area EPS [e.g., utility]”



# Examples of “participation aggregation” to form single unit in dispatch

Type	Individual generator	Aggregation scope	EMS Model
Wind farm	1.5 MW wind turbine	40 turbines in 900 acres w/ 1 POI	Single unit at 138 kV
Solar farm	1 MW solar inverter	200 inverters in 50 acres w/ 1 POI	Single unit at 34 kV
Distributed solar	200 W solar microinverter	3,000 inverters behind a single transmission bus	Single unit at 230 kV
Diesel block	2 MW engines	6 units at power plant w/ 1 POI	Single unit at 138 kV
Wired w/ load sells excess	2 x CTs + 1 Steam + Loads (60 MW)	Industrial cogen with three units w/ 1 POI	Single unit gross output plus gross load at 69 kV
Cogen	2 x CTs + 1 Steam (100 MW)	Industrial cogen with three units at 1 POI	3 units at 13 kV at 2 substations
Combined cycle	4 x CTs + 1 Steam (500 MW)	Power plant with many units at one POI	5 units at several adjacent transmission buses at 34 kV

- Note that aggregation for capacity market participation follows Capacity Injection Rights allocation.
- CIRs are defined in connection with the Point of Interconnection and other considerations by way of the relevant ISA or WMPA.
  - I.e., resources cannot aggregate from multiple queue positions into a single capacity resource.
- In general, generation “participation aggregations” are formed and/or modified by way of the interconnection process.