

# Benefits from Generation and Storage on the Distribution System

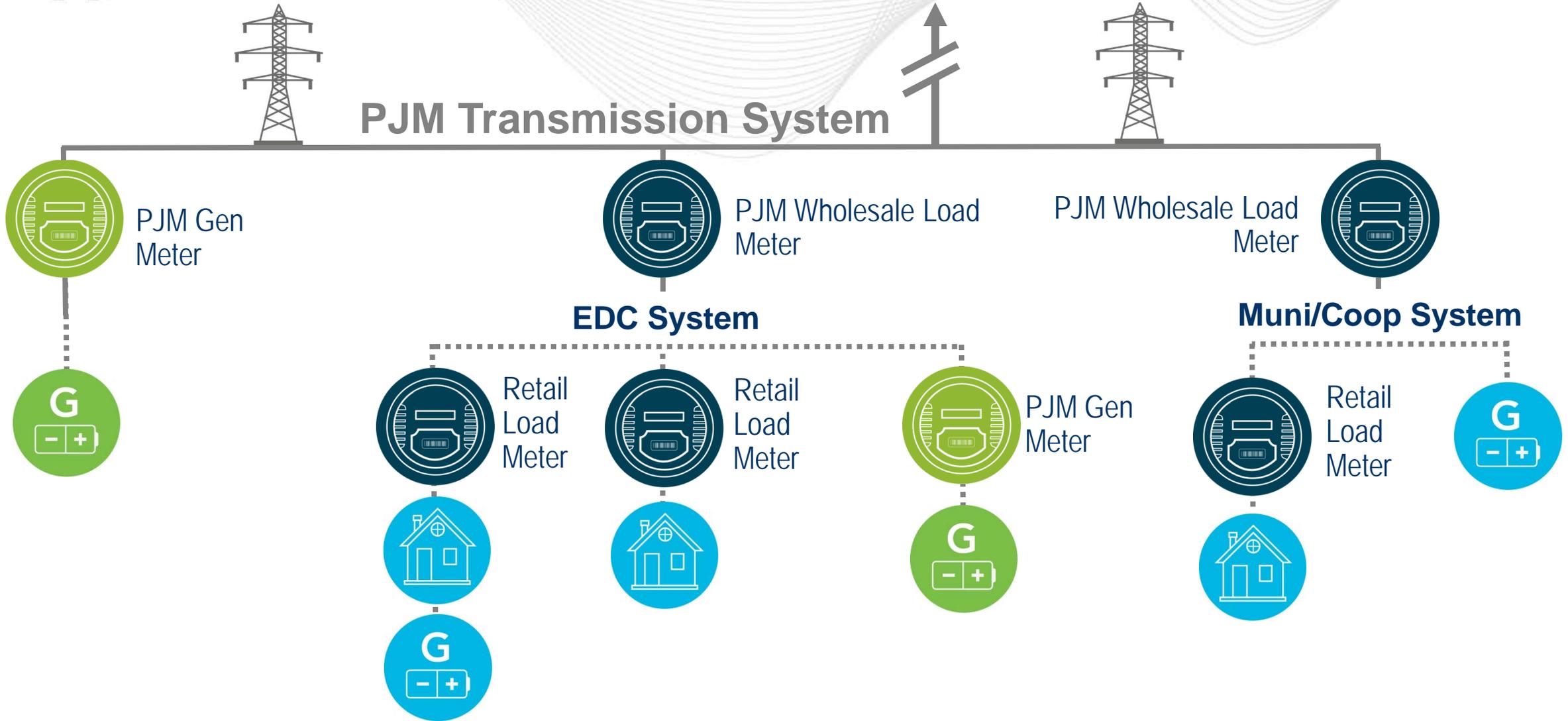
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# Generation/Storage Resource Location and Meter Types



Qualified resources can provide services in the following PJM markets:

- Energy
- Capacity
- Ancillary services such as Synchronized Reserve and Regulation
- Other PJM services like black start, etc.

- Provision of energy in PJM markets is in parallel with PJM capacity commitment.

PJM gen metered resources providing synch and reg:

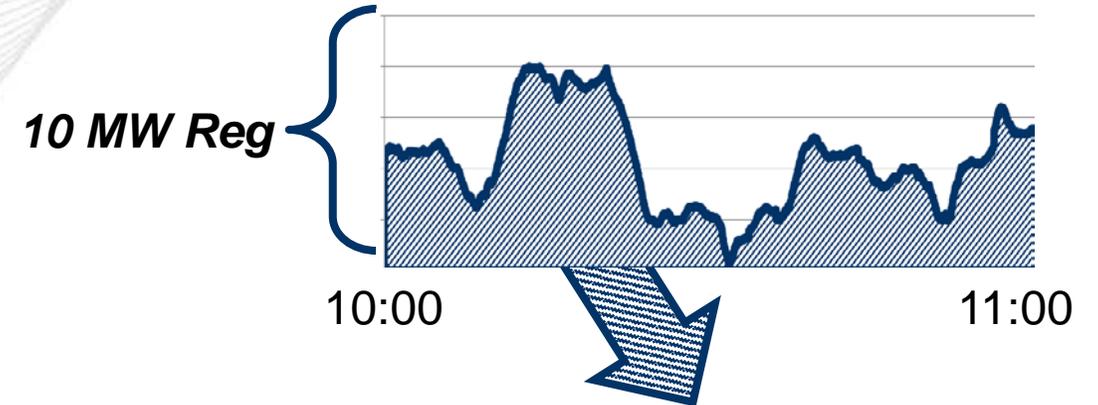
- Reserve the appropriate MW capability to follow PJM signal;

-AND-

- Produce or consume according to PJM signal.

Units get 2 categories of payments:

- A/S payment based on market clearing price, performance, LOC, etc. as appropriate;
- Settlement for energy provided at LMP.

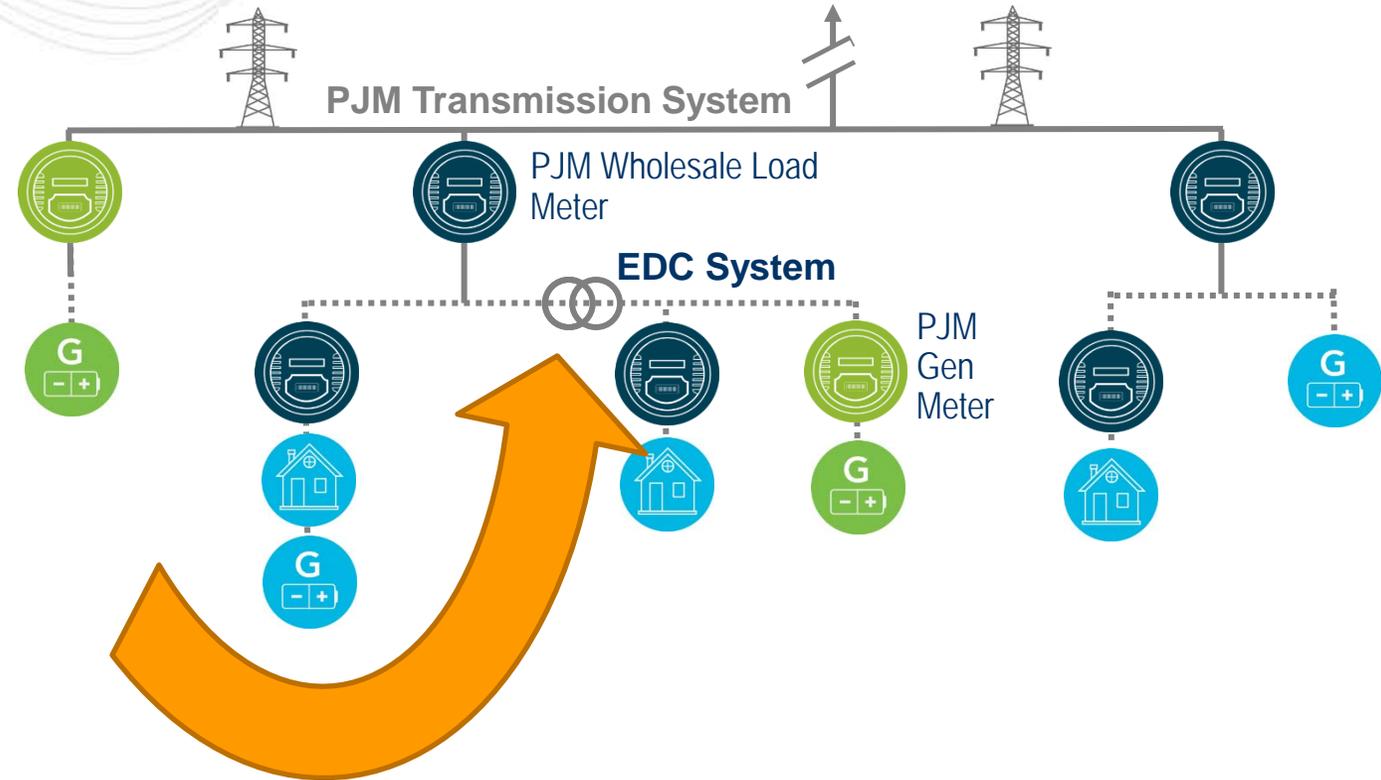


**Example:**

**8 MWh Energy**

- 10 MW regulation compensated from regulation market
- 8 MWh of energy produced in the process of following regulation signal, paid at RT LMP

- “Distribution constraint management”
- E.g., EDC transformer is at thermal limit
  - PJM is called to dispatch generator out of merit order
  - Energy is provided, and benefit to the EDC also provided simultaneously





# Grid-Tied Gen/Storage Services

By Column: Can Do All Checks w/ Given MW Over Applicable Time

Service	Resource Location →	Load Metered		PJM Generation Metered	Off-Grid
	Service Jurisdiction ↓	Not DR	DR		
<b>PJM Energy Sales</b>	Federal		✓	✓	
<b>PJM Capacity Sales</b>	Federal		✓	✓	
<b>PJM Ancillary Services Sales</b>	Federal		✓	✓	
<b>Bill Reduction: Consume Less Energy</b>	Federal/State	✓	✓		
<b>Bill Reduction: Capacity</b>	Federal/State	✓			
<b>State Sale/Credit: Inject Energy</b> (including Net Metering)	State	✓			
<b>Distribution Constraint Management</b>	State	✓	✓	✓*	
<b>Distribution Voltage Support</b>	State	✓	✓	✓*	
<b>Emergency Backup for Customer</b>	State				✓*

Note: This table does not include Federal Transmission Assets

\* "Energy Storage" may only use energy bought at wholesale for PJM Energy, Capacity and Ancillary Services

<b>Demand Response (DR)</b>	<p>Unit cannot inject past applicable meter when in market as PJM DR.</p> <p>In practice, each DR MW of capability may participate in Energy <u>or</u> Ancillary Services market.</p> <p>Each MW of capability may participate as a wholesale DR capacity resource <u>or</u> peak shave to reduce retail capacity commitment.</p> <p>DR in energy market is compensated for load reductions done specifically for PJM dispatch when it would not have otherwise reduced load. - <i>Enforced by PJM</i></p>
<b>PJM Generation Metered Unit</b>	<p>Only resources studied as capacity resources may provide PJM capacity. – <i>Enforced by PJM</i></p> <p>Eligible resources choosing to be “Energy Storage” or “Capacity Storage Resource” under PJM Tariff must be used solely to participate as Market Seller in PJM capacity, energy and/or Ancillary Services markets. – <i>Enforced by PJM</i></p>
<b>State Sales: Net Metering</b>	<p>Net Energy Metering units cannot inject onto the transmission without being compliant with applicable PJM rules. – <i>Enforced by PJM</i></p>
<b>Bill Reduction: Capacity</b>	<p>Use of Non-Retail Behind The Meter Generation to net against load for reducing LSE RPM capacity charges is subject to PJM business rules. Non-Retail Behind the Meter Generation cannot inject onto the transmission system. – <i>Enforced by PJM</i></p>

<b>Applicable Periods</b>	
<b>PJM Energy Sales</b> <b>Bill Reduction: Consumer Less Energy</b> <b>State Sale/Credit: Inject Energy</b>	1 hour
<b>PJM Ancillary Services Sales</b>	1 hour
<b>PJM Capacity Sales</b> <b>Bill Reduction: Capacity</b>	Delivery Year: e.g. June 2018 – May 2019