

Comparison of Consumer Costs for Various Co-location Configurations

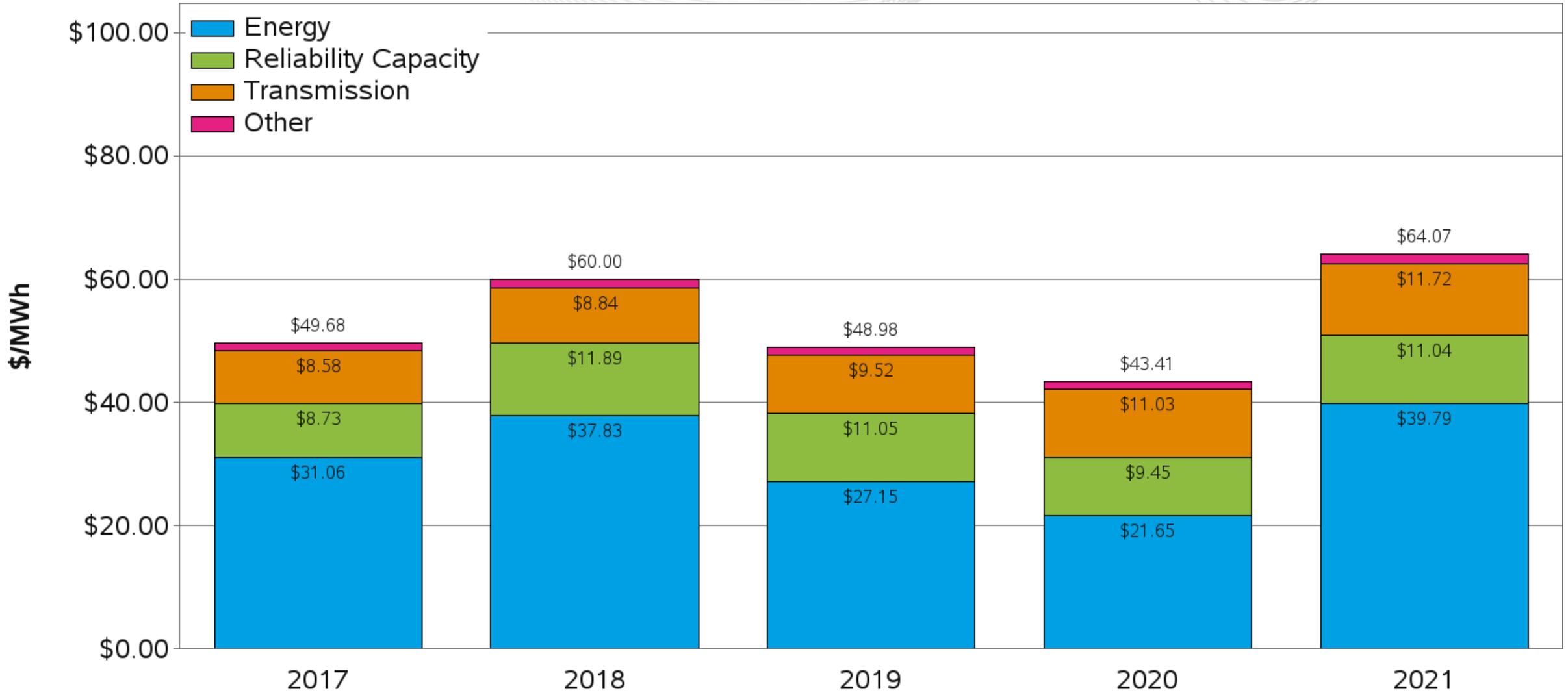
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- This presentation examines the costs associated with the assumed addition of a large new load served under 3 different scenarios
- This high-level examination includes:
 - A comparison of the category of cost that the new load customer is subject to under each of the 3 scenarios, and,
 - A comparison of the directional impact that the addition of the new load has on the costs of existing PJM load under each of the 3 scenarios

- The examination considers costs by the categories shown on the PJM Wholesale Cost diagram of Figure 1:
 - These categories include Energy, Capacity, Transmission, and Other (where Other includes ancillary services and various administrative fees)
 - The costs of Figure 1 represent the total dollars that pass through the PJM settlement process associated with billing line items charged to PJM load divided by the total MWh of demand in PJM; these costs are therefore average costs per MWh whereas actual costs/prices vary by location
- Figure 1 expresses the costs of each category in \$/MWh terms even though the costs of each category are not charged on a per MWh basis:
 - For example, Transmission charges are based on each network customer's Network Service Peak Load ("NSPL") and Capacity charges are based on each LSE's Peak Load Contribution ("PLC")

Figure 1 - PJM Wholesale Costs

(from Markets Report of 1/24/22 MC Webinar)



- The example assumes the addition of a new 1,000 MW load that is served under one of three different scenarios
- The load has the ability to quickly curtail to 0 MW and desires to monetize this capability in order to further reduce its total electricity costs
 - The form of monetizing this curtailment capability differs by scenario
- The new load is assumed to consume 1,000 MW per hour unless it intentionally curtails to 0 MW
 - The situation driving an intentional curtailment to 0 MW varies by scenario

The new 1,000 MW load is assumed to be served under one of three different scenarios:

1. Front of Meter Load: The new load is directly connected to and served entirely from the grid.

2. Co-Located / Status Quo: The new load is connected directly behind the meter of an existing 2,200 MW generation facility and is served exclusively by the co-located generation (i.e., the load is shutdown whenever the generation is unavailable). As per Status Quo rules, the CIR MW and ICAP MW of the generation facility is reduced to 1,200 MW.

3. Co-Located / No ICAP De-Rate: Same service arrangement as Scenario 2 with exception that the generation facility retains CIR and ICAP of 2,200 MW. This scenario assumes that some form of proposed solution is approved that permits the generation to retain its CIR and ICAP MW.

- In this example, for Scenario 2 and Scenario 3, it is assumed that:
 - The configuration/arrangement complies with, among other things, State and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any governmental authority having jurisdiction over the generating facilities and/or the respective services they provide
 - The new co-located load is “measured” at the generator’s POI as the net output of the generation facility - it is not separately metered for billing purposes.
 - The location at which the load is measured may vary based on state rules governing end use customer load



Cost Category Applicable to the New Load under Each Scenario

Is the New Load Subject to PJM Billing by Cost Category?

Cost Category	Scenario 1 Front of Meter Load	Scenario 2 Co-Located / Status Quo	Scenario 3 Co-Located / No ICAP MW De-Rate
Energy	YES	NO Hourly Metered Load = 0 MW	NO Hourly Metered Load = 0 MW
Capacity	YES	NO PLC = 0 MW	NO PLC = 0 MW
Transmission	YES	NO NSPL = 0 MW	NO NSPL = 0 MW
Ancillary Services & Adminstrative Fees	YES	NO All Billing Determinants = 0	NO All Billing Determinants = 0

Use of New Load's Curtailment Capability in Reducing Cost to New Load under Each Scenario

Use of New Load's Curtailment Capability in Reducing Costs to New Load

Cost Category	Scenario 1 Front of Meter Load	Scenario 2 Co-Located / Status Quo	Scenario 3 Co-Located / No ICAP MW De-Rate
Use of New Load's Curtailment Capability in Reducing Cost to New Load	Participation as DR in RPM provides the new load with RPM credits that offset its Capacity costs	Voluntary curtailment during periods of high energy prices or during PAIs would allow co-located generation to provide higher output levels thus increasing revenues during such periods. Such curtailment may provide load with lower costs depending on terms of its bilateral agreement with co-located generation.	New Load would be required to curtail to permit co-located generation to provide full output in accordance with the details of any proposed solution that may be approved that permits the co-located generation to retain its full CIR and ICAP MW value.
Load Curtailment Requirement	New load required to curtail in accordance with DR commitment obligation	No PJM requirement to curtail. Curtailment is voluntary consistent with terms of bilateral agreement.	New load required to curtail in accordance with the requirements specified in any proposed solution that may be approved that permits the co-located generation to retain its full CIR and ICAP MW value.

- The table of Slide 10 provides a comparison of the directional impact that the addition of the new load is expected to have on the costs of existing PJM load under each of the 3 scenarios
- This comparison assumes the only system change to be the addition of the new load and any change directly related to the treatment of the new load under each scenario
 - all else is assumed to be held constant

Directional Impact of New Load on Costs of Existing PJM Load by Cost Category

Cost Category	Scenario 1 Front of Meter Load	Scenario 2 Co-Located Status Quo	Scenario 3 Co-Located No ICAP MW De-Rate
Energy	Energy price will increase due to increased energy demand associated with new load	Energy price increase of Scenarios 1 & 3 may likely be mitigated depending on marginal energy cost of any new capacity that is procured in RPM to displace derated capacity of co-located generation	Energy price will increase due to decreased output of co-located generation. Energy price increase consistent with increase of Scenario 1.
Capacity	No impact assuming the increased reliability requirement associated with the new load is offset by DR participation by the new load	RPM clearing price is likely to increase due to procurement of new capacity needed to displace derated capacity of co-located generation	No Impact
Transmission	Decrease if new load is located in same zone as the existing network customer otherwise no impact	No Impact	No Impact
Ancillary Services & Administrative Fees	Slight decrease due to category costs being spread across larger volume of load	No Impact	No Impact

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Appendix

Links to Various Documents Relevant to PJM Charges to Load

- Quick Reference Guide To Market Settlements By Type of Business:

<https://www.pjm.com/markets-and-operations/~media/0FE1D93C5E61457185BB7652F2F18668.ashx>

- More detailed information on PJM charges, credits and market settlements can be found in the PJM Guide to Billing:

<https://www.pjm.com/-/media/markets-ops/settlements/custgd.ashx>

- PJM Wholesale Cost from Markets Report of 1/24/22 MC Webinar:

<https://www.pjm.com/-/media/committees-groups/committees/mc/2022/20220124/20220124-item-06a-markets-report.ashx>