



Ancillary Services Measurement for Wholesale DER Behind a Customer Meter

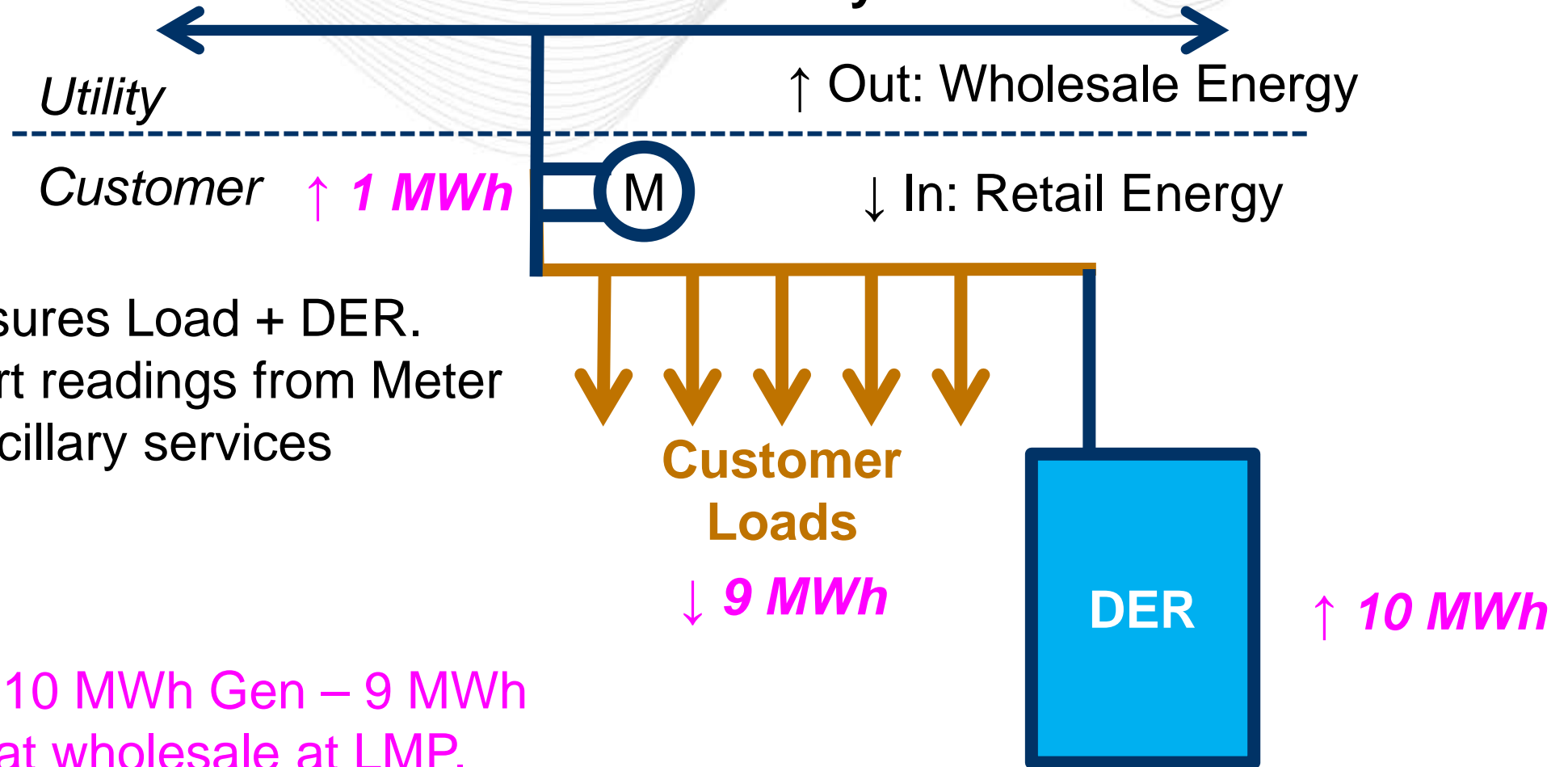
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Distributed Energy Resource Subcommittee

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Status Quo for “Net Excess” PJM Generator Utility



- Meter “M” measures Load + DER.
- Real-time export readings from Meter “M” used for ancillary services measurement.

Example:

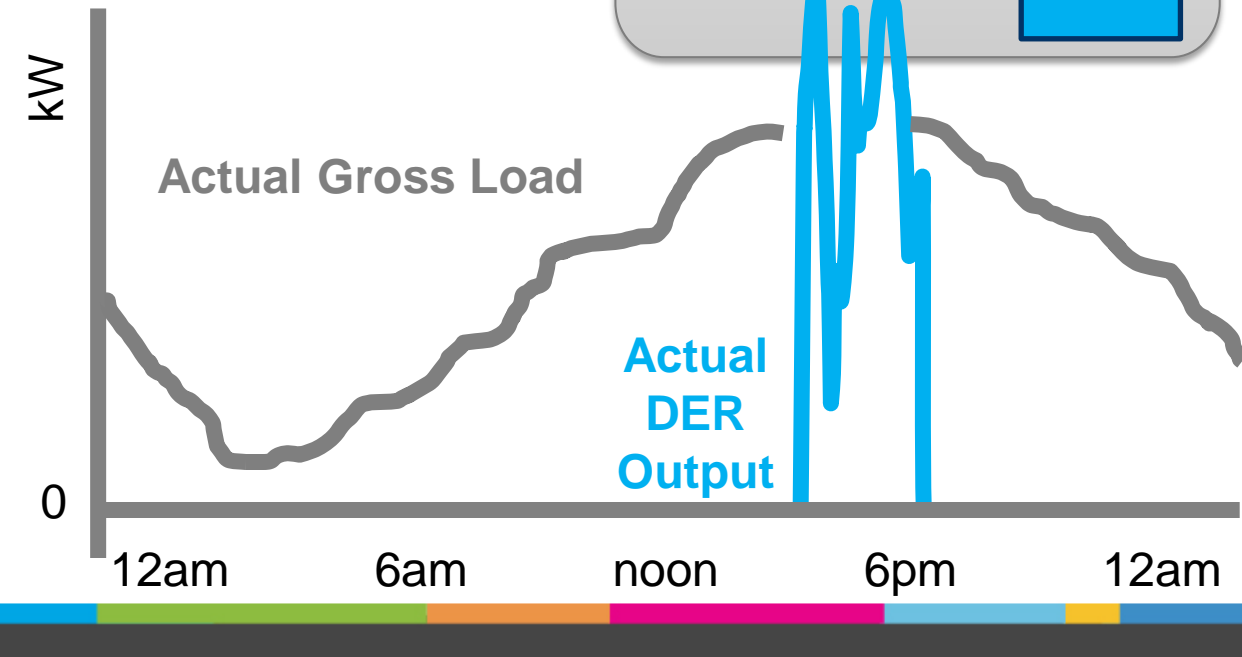
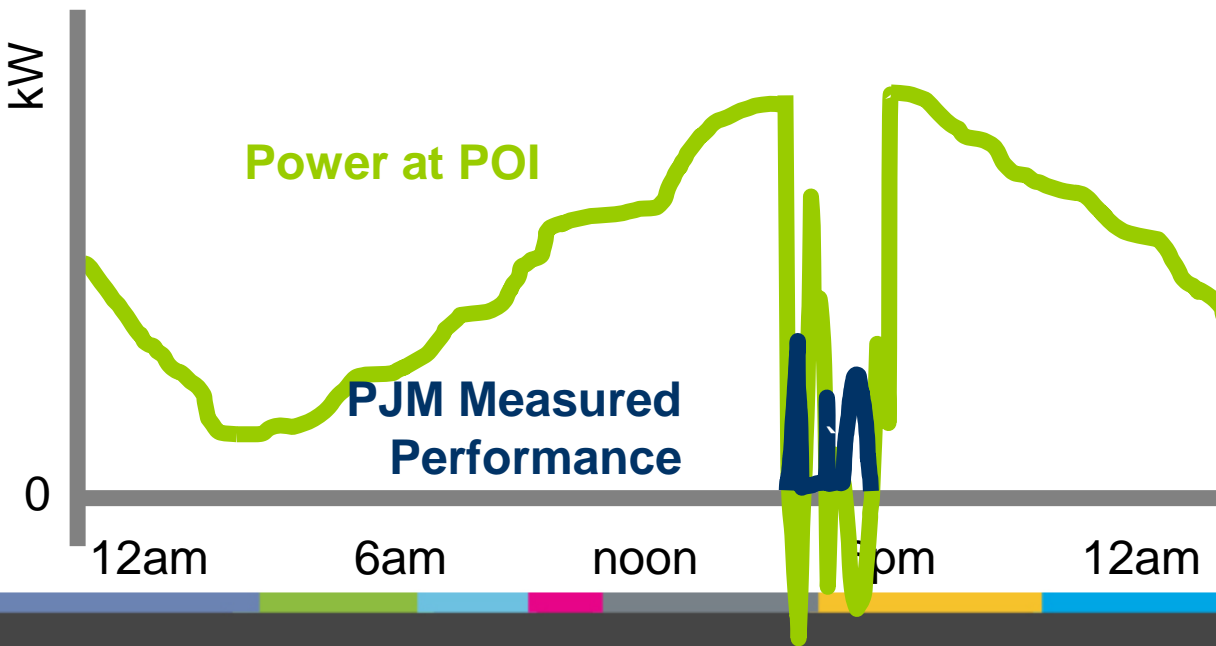
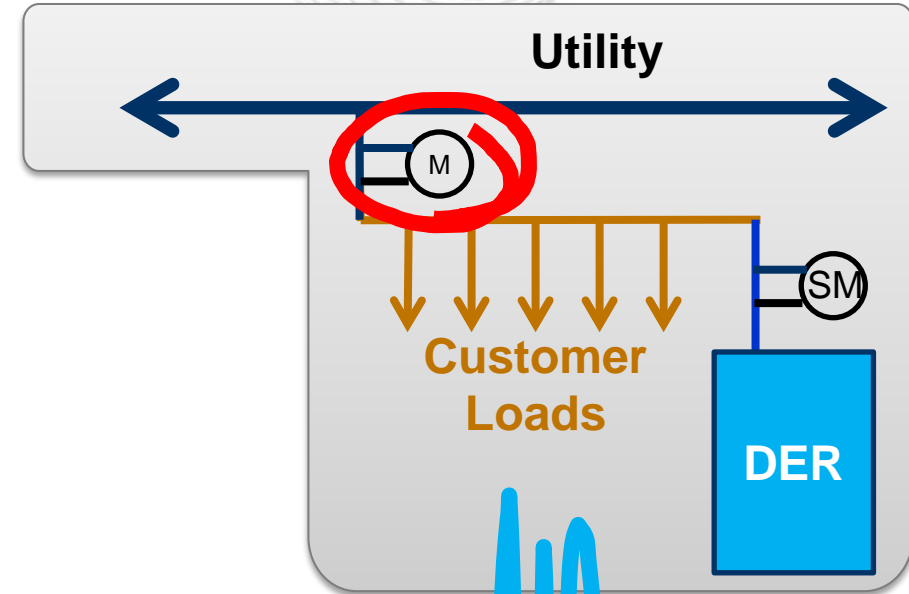
- 1MWh excess (10 MWh Gen – 9 MWh load) is settled at wholesale at LMP.



Ancillary Services

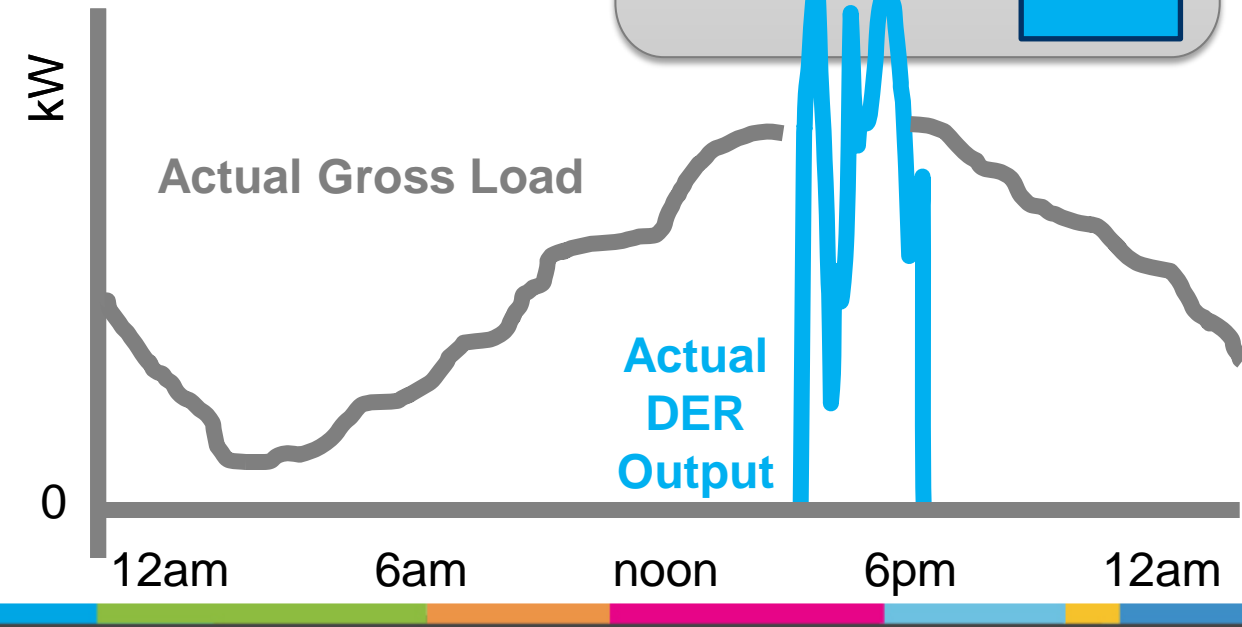
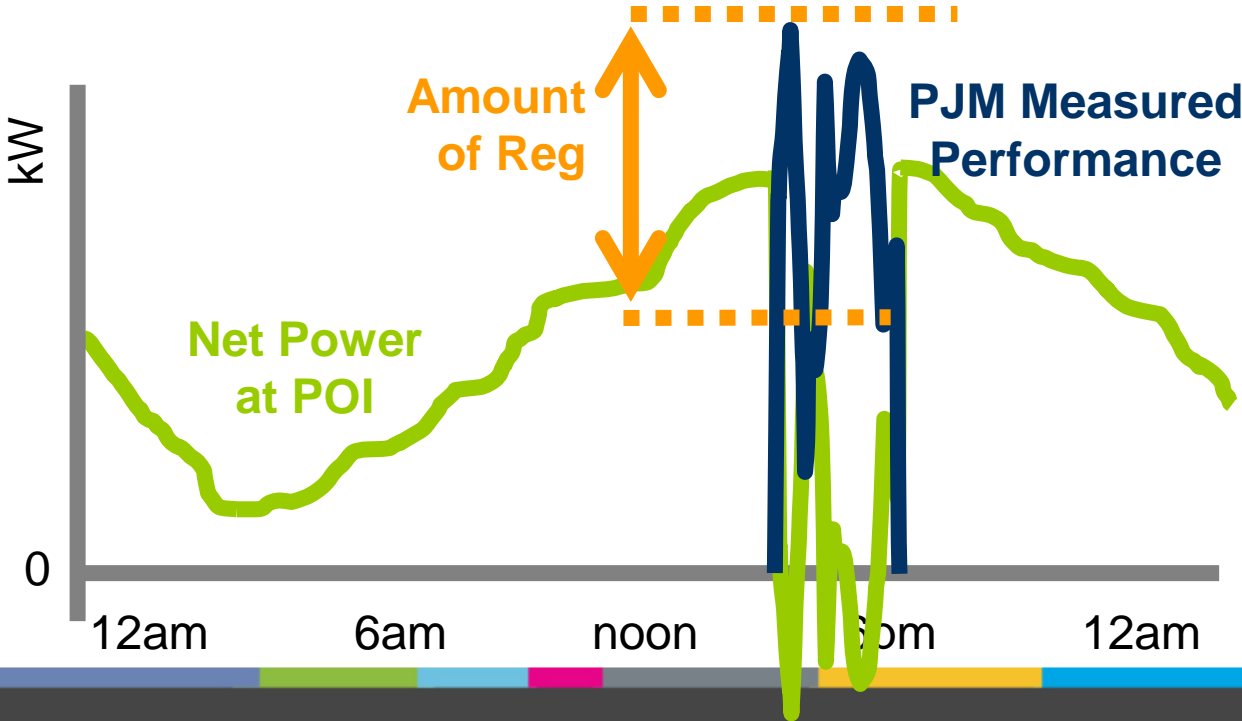
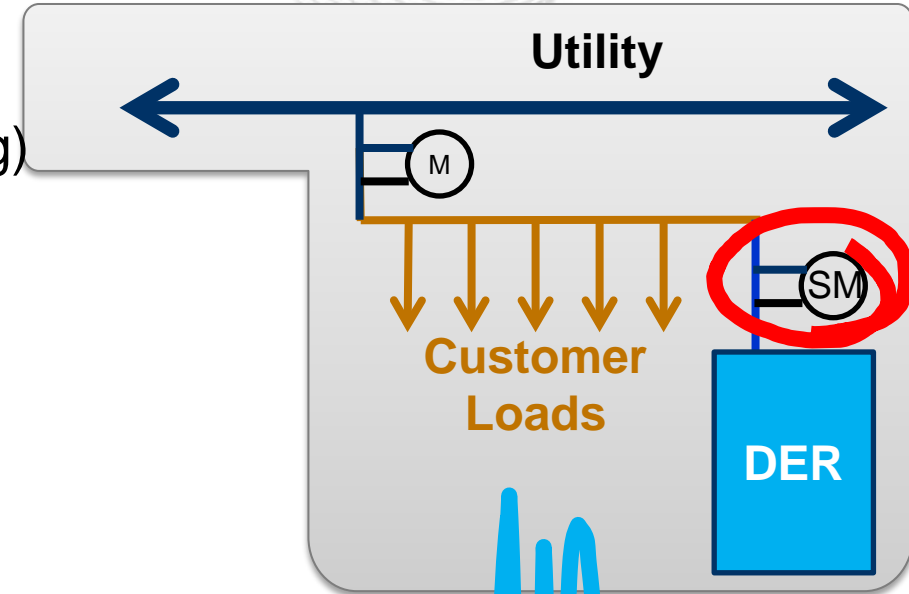
- Regulation is a precise and high-speed service
- Load devices provide Regulation via Demand Response
- Demand Response rules were adjusted in 2011-2012 to allow a submetering option for such devices (including DER), in order to directly measure the response of the relevant device (battery, water heater, etc).
 - This allowed the resources to demonstrate higher fidelity, since uncontrolled loads were not part of the submetered performance measurement.
- Similar functionality maybe useful for PJM generators that are DER connected behind a customer meter (i.e., that have come through the PJM queue and the applicable interconnection process in order to inject as PJM generators on a “net excess” basis)..

DER Performance for Regulation: POI Meter



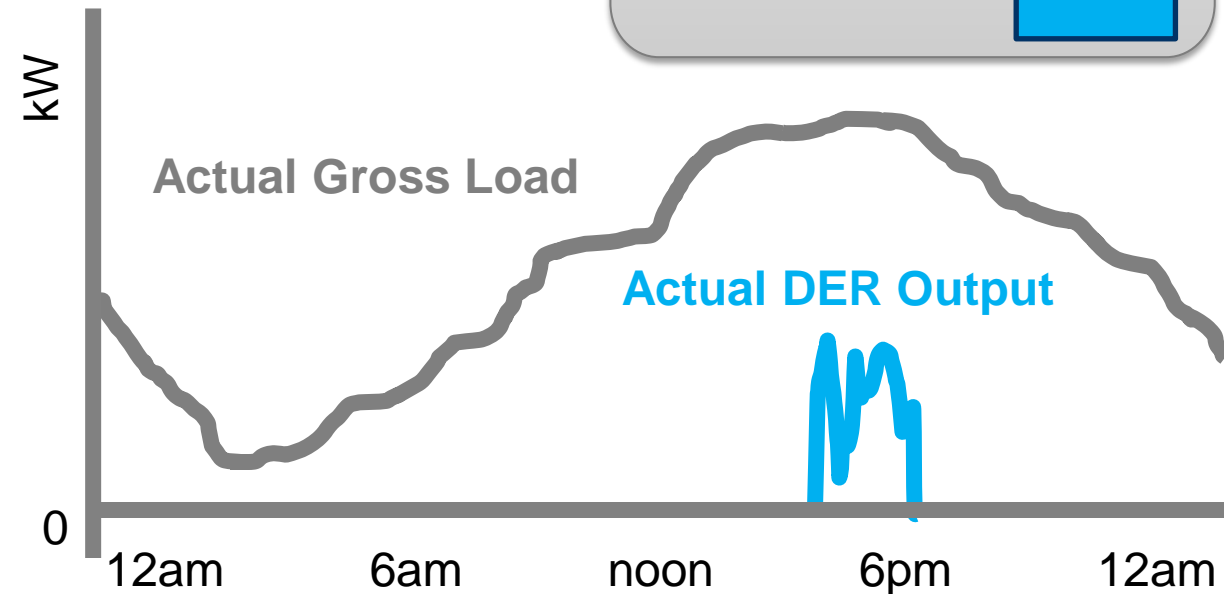
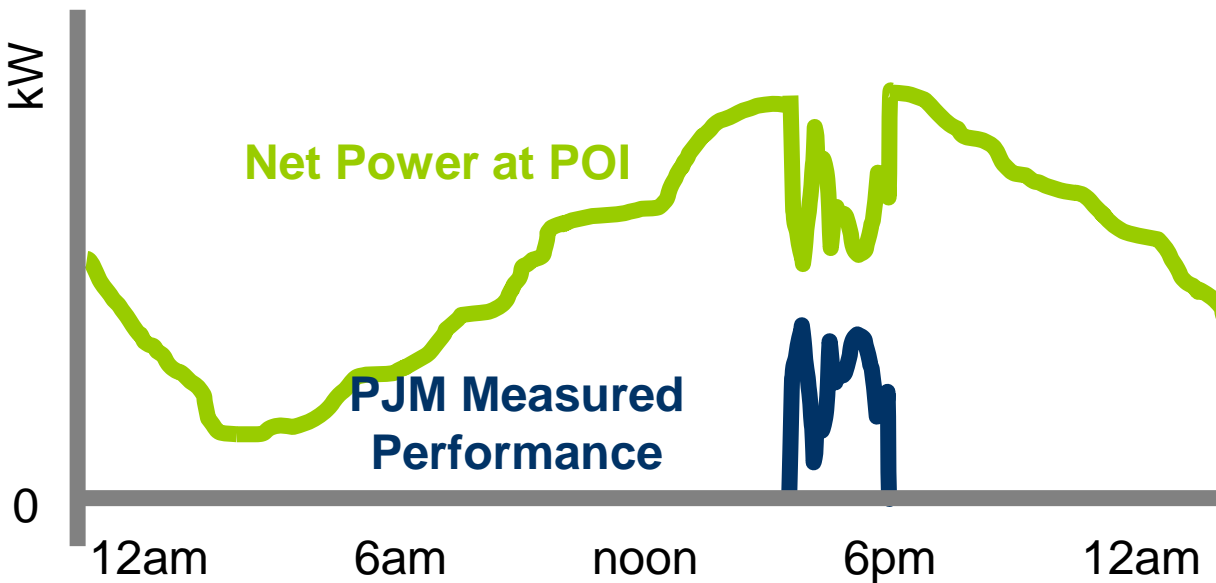
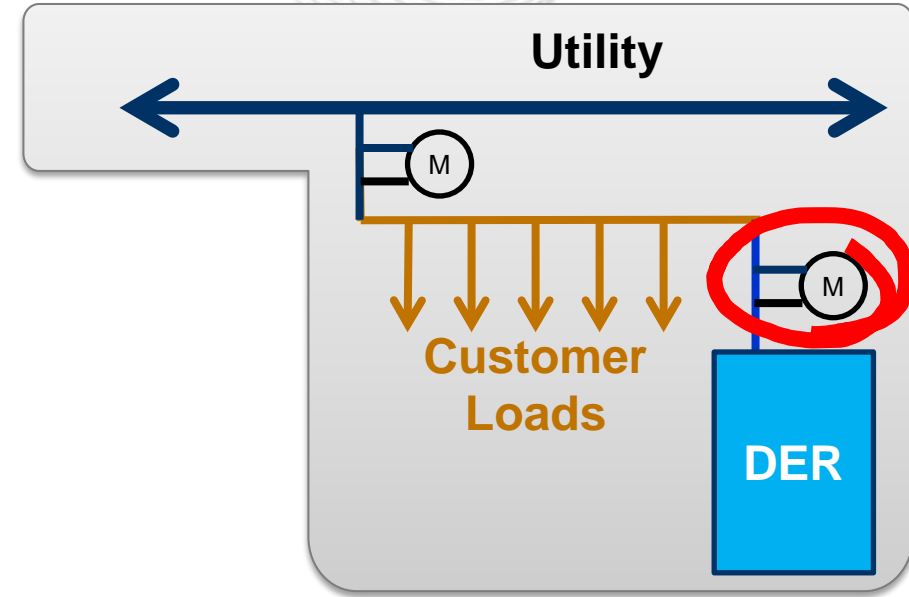
DER Performance for Regulation: **Submeter** Option

- WDER proposal would allow metering at either i) POI or ii) direct at the DER for Ancillary Services (both Synch and Reg)
- Submetering works because at any point on the grid:
 - reductions (increases) in withdrawal, and
 - increases (reductions) in injection
 are effectively equivalent for providing ancillary services.

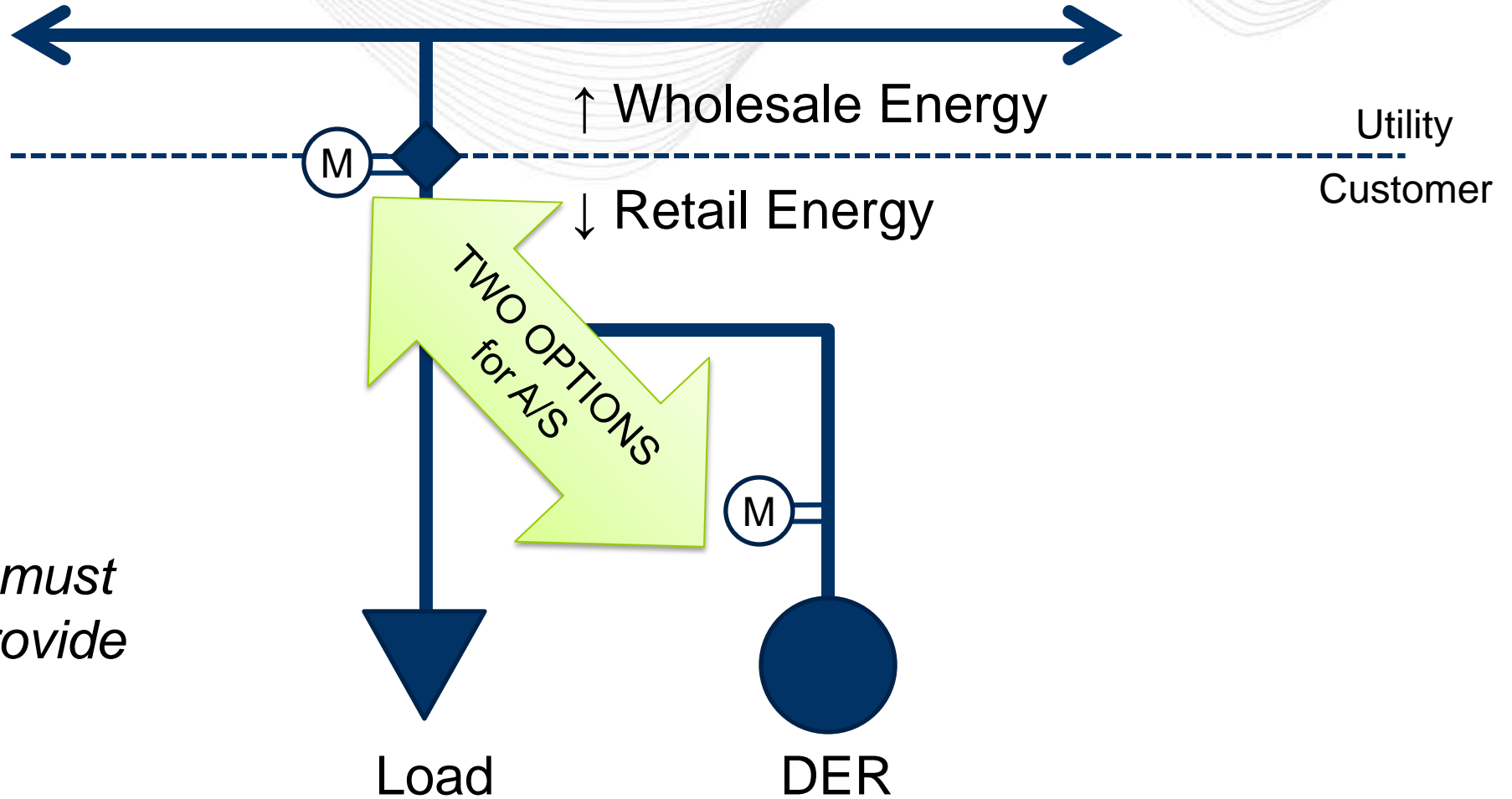


DER Performance for Regulation: Submetering

- Submetered DER in Ancillary Services also works even if DER is only reducing load.



Ancillary Services Performance Measurement Proposal



Note: W-DER must be online to provide Synchronous reserves

- For POI measured resources--expand Synch Reserve performance measurement for “net excess” generators to include load reductions?
- Submetering: Regulation Only vs. All Ancillary Services
- Submeter ownership
- Eligibility requirements to use submeter rules
- Submeter setup and process and real-time communications options