# Current rules and practices for various Behind-the-Meter (BTM) Scenarios

**Key Points:**

Key point driving the table below is that today’s setup of metering and Resource telemetry is such that ERCOT Dispatch (MW, LMPs) and Settlements ($, meter prices) are in alignment:

* A site that is net-gen cannot have a Controllable Load Resource (CLR) participating in energy and AS while the site is injecting energy into the ERCOT System. (For transmission-connected Resources, the POI; for distribution-connected Resources, the point of common coupling (PCC). *For purposes of this document we use the term POI to represent either scenario*).
* A site that is net-load cannot have a Generation Resource (GR) or Energy Storage Resource (ESR) participating in energy and AS while the site is withdrawing energy from the ERCOT System at the POI. One exception to this is a Load Resource that is not a Controllable Load Resource (aka, an NCLR controlled by Under Frequency Relay (UFR) and providing RRS).
* ERCOT real-time Load is summation of Telemetered Net Generation Resource MW minus summation of Net DC Tie interchanges (DC Tie Exports positive; DC Tie Imports negative)
* ERCOT Load Forecast today is forecasting net load which excludes any PUN load and other load behind the meter which meets Generation netting rules.
* **Net-Generation:** Net-Generation injections at the POI from GRs and ESRs are settled nodally. Net-Load sites are settled zonally. Cannot settle a Net-Load only site for unplanned/incidental energy injections into the POI.
* **Net-Telemetry:** Telemetry that reflects netted information at the POI or the capability at the POI.
* **Gross-Telemetry:** Telemetry that reflects capabilities/actual flow at the GR/ESR/CLR terminal.
* A frequently asked question is whether or not the various BTM scenarios require registration as a PUN when there is customer load behind the meter, and when the load in some cases may itself be a registered Load Resource. Current understanding is that co-location of customer load with GRs and or ESRs behind the same POI does not require registering the site as a PUN; PUN is a classification selected by the Resource Entity. However, ERCOT is assessing the appropriate registration approach going forward for various BTM scenarios that will address ERCOT's data requirements and impacts to other Market Participants.
* A combination of Distribution Generation Resource (DGR) and Settlement Only Distributed Generator (SODG), or a combination of Transmission Generation Resource (TGR) and Settlement Only Transmission Generator (SOTG) are not allowed at a single site. In other words, you cannot locate a Capital ‘R’ Resource and a Settlement Only generator behind the same POI.
* ESR-GR and ESR-CLR references in the table are specific to the combo model era. CLR reference that is not an ESR-CLR is assumed to be a pure demand response CLR (not a storage system).

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| **Combinations of Resources behind a shared meter with BTM customer Load (may potentially inject or withdraw energy at the POI).**  **Site may include other Load, such as auxiliary Load. This discussion is limited to sites with a single POI.** | | | | | |
|  | **Scenarios Raised through Stakeholder Questions** | | | **Other Scenarios to Consider for Review**  **or which may Provide Context** | |
|  | **GR or ESR with Load (and NO Load Resources) Equivalent to many PUN sites we have today** | **GR or ESR with non-Controllable Load Resource (NCLR)** | **GR or ESR with CLR** | **Multiple GRs and/or ESRs (common occurrence today)** | **GR or ESR with NCLR and CLR** |
| **General Registration** | Each Resource is registered separately  Today, ERCOT has several sites with one or more GRs behind a shared meter with BTM customer load. At this time there are no sites with an ESR and customer load behind a shared meter. | Each Resource is registered separately  Today, ERCOT has several sites with one or more GRs behind a shared meter with one or more NCLRs. At this time there are no sites with an ESR and customer load behind a shared meter. | Each Resource is registered separately  No sites like this in ERCOT today. | Each Resource is registered separately  Today, ERCOT has several sites with one or more GRs and/or ESRs behind a shared meter. | Each Resource is registered separately  Today, ERCOT has several sites with one or more GRs behind a shared meter with one or more NCLRs, but no sites with a CLR present. At this time there are no sites with an ESR and customer load behind a shared meter. |
| **Operations Model** | Each Resource is modeled separately. In the case of Combined Cycle GRs, physical resources are also modeled separately. | Each Resource is modeled separately. In the case of Combined Cycle GRs, physical resources are also modeled separately. | Each Resource is modeled separately. In the case of Combined Cycle GRs, physical resources are also modeled separately. | Each Resource is modeled separately. In the case of Combined Cycle GRs, physical resources are also modeled separately. | Each Resource is modeled separately. In the case of Combined Cycle GRs, physical resources are also modeled separately. |
| **Market Model** | Each Resource is modeled separately. In the case of Combined Cycle GRs, the model has separate Resources represented to reflect each possible configuration. | Each Resource is modeled separately. In the case of Combined Cycle GRs, the model has separate Resources represented to reflect each possible configuration. | Each Resource is modeled separately. In the case of Combined Cycle GRs, the model has separate Resources represented to reflect each possible configuration. | Each Resource is modeled separately. In the case of Combined Cycle GRs, the model has separate Resources represented to reflect each possible configuration. | Each Resource is modeled separately. In the case of Combined Cycle GRs, the model has separate Resources represented to reflect each possible configuration. |
| **Resource Telemetry Expectation** | Telemetry for GR or ESR-GR (e.g., HSL and MW) are net values based on injection at the POI. If the GR or ESR-GR is serving Load at the site, the net telemetry values from the GR or ESR-GR are required.  If the Load being served is greater than the capability (HSL/output MW) of the GR or ESR-GR then the values are zero. ESR-CLR could be showing non-zero MWs in this case. | Telemetry for GR or ESR-GR (e.g., HSL and MW) are net values based on injection at the POI. If the GR or ESR-GR is serving Load at the site, the net telemetry values from the GR or ESR-GR are required.  If the Load being served is greater than the capability (HSL/output MW) of the GR or ESR-GR then the values are zero. ESR-CLR could be showing non-zero MWs in this case. The telemetry for the NCLR reflects gross value at the terminal of the NCLR. | Telemetry for all Resources (e.g., HSL/MPC and MW/NPC) are net values based on injection/consumption at the POI. If the GR or ESR-GR is serving Load at the site, the net telemetry values from the GR or ESR-GR are required.  If the Load being served is greater than the capability (HSL)/output (MW) of the GR or ESR-GR then the values are zero and there are positive MWs for the CLR and/or ESR-CLR. If the GR or ESR-GR output and capabilities exceed the Load, the net telemetry from the GR or ESR-GR is positive and the CLR telemetry reflects zero capability (inactive). In no case can there be positive net telemetered values for both the GR or ESR-GR and CLR or ESR-CLR at the same time. | Telemetry values for GR or ESR (e.g., HSL and MW) are net values based on injection at the POI. | Telemetry values for GR or ESR (e.g., HSL and MW) are net values based on injection at the POI. NCLR telemetry reflects NCLR consumption which if interrupted via UFR (set at ≥59.7 Hz) should provide at least 95% but no more than 150% of its RRS Responsibility.  The RRS Responsibility for an NCLR must be equal to or less than NPC-LPC and is not limited to its net capabilities at the POI. The RRS Responsibility for a CLR must reflect its net capability at the POI absent any deployment and is limited to its net consumption. |
| **COP Expectations** | COP values for GR or ESR-GR (e.g., HSL) are net values based on expected capability at the POI after serving the Load. If the full capability of the GR or ESR-GR is expected to be serving Load at the site, the values from the GR or ESR-GR are zero. ESR-CLR could be showing non-zero MWs in this case. | COP values for GR or ESR-GR (e.g., HSL) are net values based on expected capability at the POI after serving the Load. If the full capability of the GR or ESR-GR is expected to be serving Load at the site, the values from the GR or ESR-GR are zero. ESR-CLR could be showing non-zero MWs in this case. The COP values for the NCLR reflect gross values at the terminal of the NCLR. | COP values for GR or ESR-GR (e.g., HSL) are net values based on expected capability at the POI after serving the Load. If the full capability of the GR or ESR-GR is expected to be serving Load at the site, the values from the GR or ESR-GR are zero and there are positive MWs for the CLR and/or ESR-CLR. If the GR or ESR-GR output and capabilities exceed the Load, the net telemetry from the GR or ESR-GR is positive and the CLR telemetry reflects zero capability. | COP values for GR or ESR (e.g., HSL) are projected net surplus quantities based on injection at the POI. | COP values for GR or ESR (e.g., HSL) are net values based on injection at the POI. NCLR COP reflects its expected consumption and RRS Responsibility. CLR is active only when the site is net load. LPC and MPC should reflect the CLR’s capability at the POI. |
| **Dispatch by ERCOT for Energy** | SCED Dispatch Instructions are based on Net capabilities (HSL, LSL) and QSEs must ensure energy delivery at the POI.   * ESRs are not eligible for WSL treatment in this scenario. | SCED Dispatch Instructions for GR and ESR are based on telemetered Net capabilities (HSL, LSL) and QSEs must ensure energy delivery at the POI. NCLRs are not dispatchable for energy by SCED and can only provide AS based on interruptible MW capability (behind the UFR). There are performance checks undertaken to ensure NCLR response was delivered at the POI.   * ESRs are not eligible for WSL treatment in this scenario. | SCED Dispatch Instructions are based on Net capabilities (HSL, LSL, LPC, and MPC). QSE must ensure energy delivery at the POI. CLRs are considered SCED-Dispatchable Resources like GRs and ESRs. There are additional performance checks ERCOT does to ensure CLR response was delivered at the POI.   * ESRs are not eligible for WSL treatment in this scenario. | SCED Dispatch Instructions are based on Net capabilities (HSL, LSL) and QSEs must ensure energy delivery at the POI.   * ESRs are eligible for WSL treatment in this scenario. | ERCOT Dispatch Instructions are based on Net capabilities (HSL, LSL) and QSEs must ensure energy delivery at the POI. GR, ESR, and CLR are considered SCED-Dispatchable Resources.   * ESRs are not eligible for WSL treatment in this scenario. * NCLR is eligible for providing RRS on UFR. |
| **Self-Dispatch for Energy** | Self-Dispatch is allowed and reflected by the Resource telemetering net capability and net flow at the POI. | For GR and ESR-GR Self-Dispatch is allowed and reflected by the Resource telemetering net capability and net flow at the POI. NCLRs carrying an AS Responsibility are not allowed to self-deploy. | For GR and ESR-GR Self-Dispatch is allowed and reflected by the Resource telemetering net capability and net flow at the POI. Load Resources including CLRs are not allowed to self-deploy. | Self-Dispatch is allowed and reflected by the resource telemetering net capability and net flow at the POI. | For GR and ESR-GR Self-Dispatch is allowed and reflected using by the resource telemetering net capability and net flow at the POI. Load Resources including CLRs are not allowed to self-deploy |
| **Ancillary Services** | GR and ESR can provide AS from the remaining capability after serving its auxiliary and other BTM load.  AS quantity must be no greater than the surplus capacity. | GR and ESR can provide AS from the remaining capability after serving its auxiliary and other BTM load.  AS quantity from GR and ESR must be no greater than the surplus capacity.  NCLR can provide RRS. | GR and ESR can provide AS from the remaining capability after serving its auxiliary and other BTM load.  CLR can only participate in Energy Market and provide AS when the site is net-Load to the grid. | GR and ESR can provide AS from the remaining capability after serving its auxiliary and operational load. | GR and ESR can provide AS from the remaining capability after serving its auxiliary and other BTM load. NCLR can provide RRS. CLR can only participate in Energy Market and provide AS when the site is net-load to the grid. |
| **Performance Measurement (Energy and Ancillary Services)** | Telemetered values for each Resource are to reflect the net capability at the POI. Net-telemetry is used to measure performance. | Telemetered values for GR are to reflect the net capability at the POI. Net-telemetry is used to measure performance. NCLR performance is measured at the Resource and checked to ensure delivery of interrupted Load at the POI. | Telemetered values for each Resource are to reflect the net capability at the POI. Net-telemetry is used to measure performance. | Net-telemetry is used to measure performance. | Telemetered values for each Resource are to reflect the net capability at the POI. Net-telemetry is used to measure performance. CLR can only be active when the site is net load; CLR performance also validated at the POI. NCLR performance is measured at the Resource and checked to ensure delivery of interrupted Load at the POI. |
| **WSL Treatment** | Not Eligible. Needs Gen Accumulator type construct proposed in NPRR-995. There is a KTC approved by TAC that would need to be re-worked to apply to ESRs. | Not Eligible. Needs Gen Accumulator type construct proposed in NPRR-995. There is a KTC approved by TAC that would need to be re-worked to apply to ESRs. | Not Eligible. Needs Gen Accumulator type construct proposed in NPRR-995. There is a KTC approved by TAC that would need to be re-worked to apply to ESRs. | Eligible with station/auxiliary load BTM. If other Load is present the KTC approved by TAC would need to be re-worked to apply to ESRs. | Not Eligible. Needs Gen Accumulator type construct proposed in NPRR-995.  There is a KTC approved by TAC that would need to be re-worked to apply to ESRs |
| **General Settlement** | Energy Settlements determined based on net energy flows at the POI; Site is settled as generation or settled as Load per applicable Protocol formulas. Net-gen is settled based on nodal prices. Net load is settled based on zonal prices | Energy settlements determined based on net energy flows at the POI; Site is settled as generation or settled as Load per applicable Protocol formulas. Net-gen is settled based on nodal prices. Net load is settled based on zonal prices. | Energy settlements determined based on net energy flows at the POI; Site is settled as generation or settled as Load per applicable Protocol formulas.  Net-gen is settled based on nodal prices. Net load is settled based on zonal prices | Energy settlements determined based on net energy flows at the POI; Site is settled as generation or settled as Load per applicable Protocol formulas.  Net-gen is settled based on nodal prices. Net load is settled based on zonal prices | Energy settlements determined based on net energy flows at the POI; Site is settled as generation or settled as Load per applicable Protocol formulas.  Net-gen is settled based on nodal prices. Net load is settled based on zonal prices |