ESR Metering

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Agenda

- **Background**
- **Summary of Relevant Paragraphs from FERC Order No. 841**
- **Metering Requirements**
- **ESR's Collocated with Load**
  - Example
- **Next Steps**

Previous Discussions

Date	Working Group	Discussion points
08-04-16	MIWG	Initial discussion on alternatives for Energy Storage in the NYISO markets
09-29-16	MIWG	Market Design ideas discussion
11-29-16	MIWG	Presentation providing more detail on the Market Design that the NYISO will pursue
05-05-17	MIWG	Presentation addressing the proposed modeling enhancements as the cornerstone of the Energy Storage Integration phase
07-19-17	MIWG	Presentation delving into the eligibility criteria and RT scheduling logic for Energy Storage Resources ("ESRs").
08-25-17	MIWG	Discussion on the Settlements logic for ESRs.
10-03-17	MIWG	Day-Ahead scheduling logic and Mitigation framework
11-02-17	MIWG	Aggregations in the ESR model
12-20-17	MIWG	Market Design Concept Proposal Summary
02-21-18	MIWG	Ancillary Services Treatment in the ESR Participation Model
04-26-18	MIWG	ESR Energy Level Monitoring
05-23-18	MIWG	ESR Participation Model: Settlements

Background

- On February 15, 2018, FERC issued Order No. 841, directing "each RTO/ISO to revise its tariff to establish a participation model consisting of market rules that, recognizing the physical and operational characteristics of electric storage resources (ESR's), facilitates their participation in the RTO/ISO markets."[1]

- This presentation will discuss NYISOs proposal to comply with the metering directives in FERC Order No. 841.

1. Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 841, 162 FERC ¶ 61,127, at P3 (Feb. 15, 2018) ("Order No. 841") as amended by the Feb. 28, 2018 Errata Notice ("Order No. 841 Errata").

Summary of relevant paragraphs from FERC Order No. 841

- **Storage assets that are located on the interstate transmission system, on a distribution system, or behind-the-meter are defined as ESR's (P-29).**
  - Behind-the-meter resources that do not inject energy onto the grid are defined as "Demand Response" resources, not ESR's (P-32).
  - ESR's located at different points on the system may be subject to different metering and accounting practices (P-53).

- **RTO/ISO's are required to directly meter ESRs "so that all energy entering and exiting the resource is measured by that meter." (P-322)**
  - RTO/ISO's must ensure that the sale of electric energy from the RTO/ISO markets to an ESR that the resource then resells back to those markets be at the wholesale LBMP.
  - The Commission further states that it will consider alternative proposals that do not entail direct metering.

- **RTO/ISO's must prevent ESRs from paying twice (i.e. at both the retail and wholesale price) for the same charging energy (P-326).**

*P: Paragraphs from FERC Order No. 841

Metering Requirements

- **The NYISO proposes that ESR's be required to provide direct metering immaterial of where they are physically located (transmission system, distribution system, or behind-the-meter).**

- **The NYISO does not believe that existing metering requirements are a barrier to the participation of ESR's in the NYISO markets for assets that are either:**
  1. Interconnected directly to the bulk transmission system (or)
  2. Interconnected to the distribution network and directly metered as wholesale market participants.

- **The NYISO does not anticipate that significant changes to existing tariff rules concerning metering will be necessary to comply with FERC Order No. 841.**
  - Language will need to be added to accommodate ESR's that are collocated with a load behind a retail net meter, that wish to participate in the NYISO's wholesale markets.
    - An example is provided later in this presentation.

Metering Requirements Cont'd

- **ESRs will be defined as a type of Generator in the NYISO's tariff.**
  - Therefore, the NYISO proposes to extend the Existing Metering Requirements to ESRs.

- **Existing Metering Requirements[1] state that for the purposes of NYISO billing and settlements, Generator meters:**
  - Must be approved by a Metering Authority;
  - Must provide revenue-quality metering information;
  - Must provide 6-second updates; and
  - Must comply with minimum acceptable accuracy standards[2].

- **ESRs will be required to provide State of Charge (SoC) telemetry in Real Time.**

- **Dual participation will not be contemplated as part of the NYISO's Order No. 841 compliance filing.**
  - The NYISO expects that a discussion of dual participation rules will take place as part of the DER Participation Model project that will be taking place in Fall, 2018.

1. Revenue Metering Requirements Manual, Section 2
2. Guide for Uniform Practices in Revenue Quality Metering

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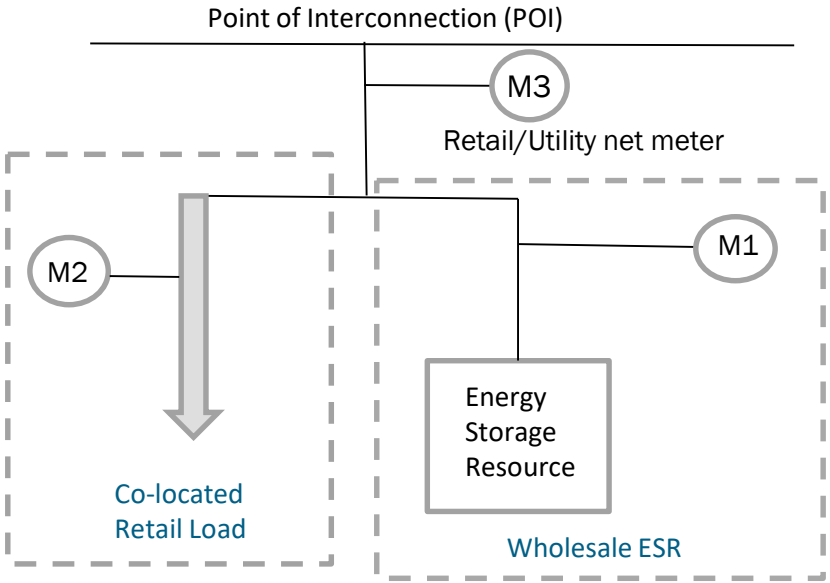
Metering Proposal for an ESR Collocated with a Load

- **Figure 1 is a simplified diagram of an ESR collocated with a Load.**
  - The ESR has a unique identifier (PTID) in the NYISO markets.
  - The NYISO receives telemetry from the ESR (metered by M1) through LSE's SCADA system.
    - This enables the NYISO to measure performance of the ESR independently of the Load.
    - The collocated Load (metered by M2) is accounted for as part of the LSE's retail load.
    - This configuration requires the Meter Authority to adjust LSE's retail load calculation to exclude the energy that the ESR exchanges with the grid.
    - Ensures that the ESR is not paying for the same charging energy twice.
- **The NYISO will require, as part of the interconnection process, evidence that the Meter Authority agrees to account for wholesale charging energy in the LSE's retail load settlement calculation.**

Figure 1. ESR Collocated with a Load



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Metering Proposal for an ESR Collocated with a Load

Example:

- For purpose of this example, assume that meters read and transmit information on an hourly basis.
- The ESR would be paid/charged based on the energy metered by meter M1.
- The ESR pays the wholesale LBMP for charging energy and is paid the wholesale LBMP for injecting energy.
- The Load is included as a part of the sub-zonal load calculation and is settled separately with the LSE.

Time	ESR (M1)	Load (M2)	Net Meter (M3)	Sub zonal Load (M3 - M1)
HB	[MW]	[MW]	[MW]	[MW]
0	2	-3	-1	-3
1	2	-3	-1	-3
2	-1	-3	-4	-3
3	-1	-3	-4	-3
4	-1	-3	-4	-3
5	2	-3	-1	-3

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Next Steps

- June - August 2018:
  - Continue discussions at MIWG on key topics:
    - Settlements rules
    - Capacity market participation
    - DA and RT market prototyping efforts
    - Mitigation rules
    - Credit implications
    - Consumer impact analysis

- June - September 2018
  - Draft Tariff language and discuss with stakeholders.

- September - November 2018
  - Prepare and finalize FERC Order No. 841 compliance filing

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Questions?

We are here to help. Let us know if we can add anything.

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