New York ISO
Independent System Operator

Energy Storage Resource Revenue Metering and Station Power Program

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Agenda

- Energy Storage Resource (ESR) participation in NYISO Station Power program
- Hourly revenue metering for generator injections and withdrawals

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Station Power Background

- **Station power withdrawals are reported to the NYISO as load on a load bus rather than negative generation on a generator bus**
  - Generators required to identify metering configuration used to measure station service as part of station power registration process
  - Meter Authority must agree to configuration in order to account for station service load and report station service load to the NYISO
- **See Tech Bulletin 117, Station Power Data, Metering, and Program Requirements**

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Station Power Metering for ESR

- Energy withdrawals by Energy Storage Resources when that Energy is stored for later injection back onto the grid is not "Station Power"
  - See revised definition for Station Power in Tariff revisions filed on December 3, 2018
- Energy Storage Resources will need to have adequate metering in place to separately account for Energy withdrawals for Station Power

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Hourly Revenue Metering for Generator Injections and Withdrawals

Generator Injections & Generator Withdrawals

- ESR withdrawals will be treated as negative generation, i.e. not load
- Hourly Injection MW and Withdrawal MW must be reported as separate fields rather than as a single net MW value for the hour
- Similar to how hourly revenue meter data is reported for Limited Energy Storage Resources (LESR)

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Why Separate Injection and Withdrawal MWh Fields?

- Existing meter profiling process does not support resources that transition between injection and withdrawal within in the same hour
- See next slide for example of enhanced meter profiling with independent profiling of injection MWh and withdrawal MWh*

**from July 30, 2019 Metering Task Force presentation*

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Meter Profiling Example with Separate Injection & Withdrawal Adjustments

	RTD Avg Actual Injection MW	RTD Avg Actual Withdrawal MW	RTD Adjusted Injection MW	RTD Adjusted Withdrawal MW	Final Adjusted MW
:00	10	0	10.4854	0.0000	10.4854
:05	10	0	10.4854	0.0000	10.4854
:10	10	0	10.4854	0.0000	10.4854
:15	10	0	10.4854	0.0000	10.4854
:20	10	0	10.4854	0.0000	10.4854
:25	1.5	-2	1.5728	-1.9024	-0.3296
:30	0	-5	0	-4.7561	-4.7561
:35	0	-6	0	-5.7073	-5.7073
:40	0	-7	0	-6.6585	-6.6585
:45	0	-7	0	-6.6585	-6.6585
:50	0	-7	0	-6.6585	-6.6585
:55	0	-7	0	-6.6585	-6.6585
	4.2917	-3.4167	4.5000	-3.2500	1.2500

Revenue Meter MWH	4.5000	-3.2500
Adjustment Ratio	1.0485	0.9512

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Meter Profiling Example with Single Net Meter MWh Adjustment

	RTD Avg Actual MW	RTD Adjusted MW
:00	10	14.2857
:05	10	14.2857
:10	10	14.2857
:15	10	14.2857
:20	10	14.2857
:25	-0.5	-0.7143
:30	-5	-7.1429
:35	-6	-8.5714
:40	-7	-10.0000
:45	-7	-10.0000
:50	-7	-10.0000
:55	-7	-10.0000
	0.8750	1.2500
Revenue Meter MWH	1.2500	
Adjustment Ratio	1.4286	

- On this slide is an example of the results of the meter profiling process using identical meter data represented as a single net meter value.
- Dual channel approach (previous slide) results in significantly less distortion and allows the current meter profiling approach to be extended to generator withdrawals

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- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

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