**WEQ Annual Plan Item 7**

**Proposed List of Information Requirements for**

**Resources Participating in Wholesale Markets Under**

**FERC Orders 841 and 2222**

The WEQ Business Practices Subcommittee (BPS) was tasked with developing business practices, to support energy storage resources (under Order 841) and distributed energy resource aggregations (under Order 2222) participating in wholesale markets, which:

* define an index/registry;
* create information and reporting requirements; and
* establish performance metrics.

On February 25, 2021, the WEQ BPS decided to focus first on developing business practices that create information and reporting requirements. Toward that end, we developed a proposed list of information requirements for consideration by the WEQ BPS after reviewing and considering:

* FERC Order Nos. 841, 841-A, 2222, and 2222-A;
* RTO/ISO compliance filings and tariffs under Order 841;
* certain RTO/ISO stakeholder materials; and
* certain issues we have seen arise in transactions between market participants.

Please note:

* Some of the below terms are not required information under FERC’s orders, but nonetheless might benefit from standardization to facilitate effective and efficient market participation.
* RTOs/ISOs, utilities, asset or resource owners, and aggregators might decide to use additional information requirements (or alternative nomenclature).
* We do not intend for the proposed list to be exhaustive or definitive.
* Rather, it is designed as a starting point for identifying: (1) information requirements for which standardization might be beneficial, and (2) the different nomenclature that entities currently are using to describe each of those requirements.

1. **Proposed Information Requirements for Energy Storage Resources**

* Name of Asset Owner
* Name of Scheduling Coordinator
* Name of Energy Manager
* Nameplate Capacity (in MW)
* Available Energy and Available Storage (in MWh)
* State of Charge
* Maximum State of Charge
* Minimum State of Charge
* Maximum Charge Limit
* Maximum Discharge Limit
* Maximum Charge Rate
* Maximum Discharge Rate
* Minimum Charge Time
* Maximum Charge Time
* Minimum Run Time
* Maximum Run Time
* Discharge Ramp Rate
* Charge Ramp Rate
* Minimum Discharge Limit
* Minimum Charge Limit
* State of Charge Management
* Entity responsible for State of Charge Management
* Maximum Daily Energy Limit
* Maximum Daily Consumption Limit
* Interconnection Rights/Limits
* Megawatt amount of interconnection capacity.
* Nature of rights/limitations—*e.g.*, does the interconnection service render the resource’s output sufficiently deliverable to sell into the capacity market?
* Transmission Charges
* Is the resource subject to them?
* If so, under what conditions and/or dispatch intervals?
* Retail Sales
* Is the resource making retail sales in addition to wholesale sales?
* If so, during which dispatch and settlement intervals?
* Metering
* Who owns the metering equipment?
* What are the technical metering specifications?
* What information is it collecting and over what time intervals?
* Who is responsible for reading and telemetering the data?
* For what purposes is the meter data used: just for RTO/ISO purposes, or also to coordinate operation of the storage asset with a solar or wind resource co-located with the storage asset?
* Telemetry
* Who is responsible for telemetry?
* To whom is the data provided: RTO/ISO, energy manager, scheduling coordinator, asset owner, or a combination of such entities?
* What are the technical telemetry requirements that must be satisfied?

1. **Proposed Information Requirements re Distributed Energy Resource Aggregations**

* DER Aggregation-Level Information
* Name of DER Aggregator
* Name of Scheduling Coordinator
* Name of Energy Manager
* DER Aggregation Capacity (in MW)
* DER Aggregation Available Energy (in MWh)
* DER Aggregation Consumption Capability (in MWh)
* DER Aggregation Regulation Capability (in MWh)
* Is the DER Aggregation homogenous (*i.e.* one technology type) or heterogenous (*i.e.* multiple technology types)?
* List of individual registered DERs in the DER Aggregation
* Metering
* Who owns the metering equipment?
* Are the individual behind-the-meter DERs sub-metered?
* What are the technical metering specifications?
* What information is it collecting and over what time intervals?
* Who is responsible for reading and telemetering the data?
* Telemetry
* Who is responsible for telemetry?
* What are the technical telemetry requirements that must be satisfied?
* Individual DER-Level Information
* Requirements Applicable to Every DER in an Aggregation
  + Name of DER Owner
  + Geographic Location
  + Electrical Location
  + Interconnection Information
  + Possible Operating Modes—*e.g.*, peak shaving, emergency power, etc.
  + Intended Use—*e.g.*, wholesale market, retail market, net metering, demand response, etc.
  + Is the DER dispatchable?
  + Inverter(s)
    - [Note: Should inverter information vary based on resource technology—*e.g.*, solar, wind, storage?]
  + Metering
    - [Note: Should metering information vary based on resource technology—*e.g.*, solar, wind, storage, DR?]
  + Telemetry
    - [Note: Should information vary based on resource technology—*e.g.*, solar, wind, storage, DR?]
* Requirements Specific to Solar DERs
  + Solar Array Information
    - Number/Capacity of PV Cells
    - Azimuth
    - Autotracking Capability
    - Obstructions
    - Historical Production
    - Expected Production
    - Forecasted/Actual Weather Data
* Requirements Specific to Wind DERs
  + Turbine Information
    - Number/Capacity of Turbines
    - Historical Production
    - Expected Production
    - Forecasted/Actual Weather Data
* Storage DERs
  + Storage Asset(s)
    - [Note: should we include here all of the requirements listed above for Order No. 841 storage resources?]
    - [Note: should this list also include requirements specific to electric vehicles used as DER storage devices?]
* Demand Response DERs
  + Demand Reduction Capability
  + Historical Performance
  + Expected Performance
  + Forecasted/Actual Weather Data
* Energy Efficiency DERs
* Other DERs

# **Questions**

* Is it necessary or appropriate to subdivide any of the above information requirements into separate requirements for day-ahead market and real-time market purposes?
* Do we need requirements identifying the source(s) of the charging energy—*e.g.*, energy from a co-located renewable resource vs. energy taken from the grid?
* Do we need requirements for pricing node(s)?
* If individual DERs are directly sub-metered, should we consider a standardized approach to load reconstitution, to avoid double-counting a DER’s service at both the retail and wholesale levels during a given interval?