Use Case Data Usage Description

1. Registration for the resource aggregation from the ISO/RTO perspective

* DER Aggregation ID
* Locational information
* Geographic location
  + Longitude and latitude (conditionally required i.e. offshore wind)
  + Street name and number (conditionally required i.e. land-based facilities)
  + City (conditionally required i.e. land-based facilities)
  + State (required)
  + County
  + Country (required)
  + Province (required)
  + Apartment number
* Zonal information (network)
  + Load zone
  + Load aggregation point
  + Reserve zone
  + Capacity zone
* Market nodal information (p-node) (may or may not be a single p-node)
  + Default distribution factors (for multi-nodal DER aggregations)
* Electrical nodal information (e-node aka service points (RTO/ISO point of interconnection)
* Distribution Utility
* Energy Authority (relevant electric retail regulatory authority)
* Load Serving Entity
* Market Participant/Aggregator Name
* Metering agent
* Balancing Area
  + Pseudo-ties/dynamic schedules
* Service location (maybe point of interconnection?)
  + Customer account
  + Service delivery point
* Attestation/certificates (to avoid double counting)
  + Double counting
  + Distribution utility/load serving entity attestation
  + Relevant electric retail regulatory authority permission
* Operational characteristics of the aggregation
  + Nameplate capacity in megawatts
  + Ramp rate
  + Response time
  + Maximum run time
  + Minimum run time
  + DER aggregation type (homogeneous or heterogeneous)
  + Dispatchable energy resource (yes/no)
  + Ability to reverse direction (supply vs. demand switching)
  + Voltage control (yes/no; volt-r) – see NERC guidance
  + Frequency control – see NERC guidance
  + Inertial control – need SME input
  + Feeder voltage – need SME input
  + Reactive support – need SME input
  + Total energy capacity/maximum state of charge (megawatt hours or kilowatt hours)
  + Market product eligibility (capacity, energy, regulation, etc.)

Are these needed in a registry?

* + Telemetry infrastructure to communicate operational characteristics
  + Metering infrastructure (RMQ metering standards applicability – R. Berdahl)
  + Efficiency rating
  + Battery technology
  + Battery performance over time
  + Solar panel performance over time
  + Manufacturer of DER
  + Types of communication protocols supported
  + Operating status
  + Known/planned outages or maintenance
  + Duration of outage or maintenance
  + Start/end time of outage or maintenance
  + Mobility flag
  + Single phase/three-phase fault indicators
  + Loss of line faults (transformer configuration)
  + Weatherization applications
  + Designated dispatch entity
  + Joint ownership/JOU operations
  + Nominal amperage/voltage
  + (Review NERC materials to be provided by R. Berdahl for additional potential characteristics)
  + Heat rate – need more input, possibly market monitoring
  + Transient ability limits – need SME input
  + Number of resources in the aggregation
  + Types of resources in the aggregation

2. Registration for the individual resource from the ISO/RTO perspective

* DER ID
* Locational information
  + Geographic location
    - Longitude and latitude (conditionally required i.e. offshore wind)
    - Street name and number (conditionally required i.e. land-based facilities)
    - City (conditionally required i.e. land-based facilities)
    - State (required)
    - County
    - Country (required)
    - Province (required)
    - Apartment number
  + Zonal information
    - Load zone
    - Reserve zone
    - Capacity zone
  + Market nodal information (p-node)
  + Electrical nodal information (e-node aka service points)
    - Meter information
    - Substation
    - Feeder/circuit
    - Phase information
    - further details needed from SME
  + Distribution Utility
  + Energy Authority (relevant retail electric regulatory authority)
  + Load Serving Entity
  + Balancing Area
  + Service location
    - Customer account
    - Service delivery point
    - Retail rate (net metering, dynamic pricing, etc.)
* Operational characteristics of resources comprising aggregation
  + Nameplate capacity of a DER (in megawatts or kilowatts)
  + Ramp rate
  + Response time
  + Maximum run time
  + Minimum run time
  + DER type
  + Known operational constraints (i.e. analogue to permitting restrictions, environmental restrictions, contractual limit on when individual DER in aggregation can be dispatched)
  + Time delay to initiate response (start time)
  + Dispatchable energy resource (yes/no)
  + Ability to reverse direction (supply vs. demand switching)
  + Voltage control (yes/no; volt-r) – see NERC guidance
  + Ride through capability (yes/no)
  + Frequency control – see NERC guidance
  + Inertial control – need SME input
  + Feeder voltage – need SME input
  + Reactive support – need SME input
  + Sensitivity to ambient weather conditions
  + Relevant weather station id
  + Total energy capacity/maximum state of charge (megawatt hours or kilowatt hours)
  + Telemetry infrastructure to communicate operational characteristics
  + Metering infrastructure (RMQ metering standards applicability – R. Berdahl)
  + Efficiency rating
  + Battery technology
  + Battery performance over time
  + Solar panel performance over time
  + Manufacturer of DER
  + Types of communication protocols supported
  + Applicable operating status conditions
  + Mobility flag
  + Single phase/three-phase fault indicators
  + Loss of line faults (transformer configuration)
  + Weatherization applications
  + Joint ownership/JOU operations
  + Nominal amperage/voltage
  + (Review NERC materials to be provided by R. Berdahl for additional potential characteristics)

Are these needed in a registry?

* + Forecast weather data
  + Actual weather data
  + Distribution level data
  + Interconnection data
  + Known/planned outages or maintenance
  + Duration of outage or maintenance
  + Start/end time of outage or maintenance
  + Designated dispatch entity