Response to PJM Order 2222 Design Discussion

DIRS

September 24, 2021

IMM

Monitoring Analytics

Guiding Principles

- Preserve integrity of the nodal market
- Complete and thorough review of all design aspects
  - Plan for significant amounts of DER participation
  - Rules are harder to change once entrenched
- Same standards across resource types
  - Operational requirements should be the same
  - There should be no option to choose DER aggregation in order to avoid existing rules.
- No double counting should be allowed.
- Demand Response DERs should be subject to the same rules as all other DERs

Registration Process

- **PJM needs to have as accurate information as possible**
  - **Jurisdictional issues and the lack of interconnection process should not lead to reliability issues, control issues, visibility issues or market inefficiencies.**
- **An increase in DERs will change flows on the power grid.**
  - **The impact of DERs on the transmission system has not been sufficiently explored.**
- **DERs need to be correctly and fully evaluated if they want to participate in the capacity market.**
  - **The evaluation has to be based on underlying technology and occur before entering the market.**

Issues with PJM Proposal

- **Maximum DER and DERA size requirements are not specified.**
- **Static modeling impact factors are inaccurate and too restrictive.**
- **No detailed plan on how to separate DR operations and settlements from generation of a DR unit with injection.**
- **Lack of discussion and details on mass market residential participation.**
- **Market power concerns when utilities and EDCs participate as DER aggregators.**

DER and DERA Size Requirements

- **There should be a maximum size requirement on the DERs in a DERA and the DERAs.**
- **Without a maximum size requirement, larger generators can use DERAs to inappropriately avoid obligations and costs.**
- **The lack of a maximum size requirement conflicts with PJM's restriction on the amount of non-retail BTMG participation in the market.**
- **The goal of Order 2222 is to encourage small size DER participation in wholesale markets. Not large DERs and not to avoid obligations of market participation.**

DERA Size Requirement

- **There need to be clear rules about the definition of a DER so that aggregations cannot define small components to avoid the DER size requirement.**
- **The maximum size requirement of 5 MW should apply to the DERA, rather than individual DERs.**
- **The maximum size requirement for individual DERs should be 1 MW.**

Modeling Impact Factors

- **Modeling impact factors should be as accurate as feasible.**
- **Known changes to DER max output and nodal impacts should be incorporated by PJM.**
  - **For example, solar and wind forecasts should be used.**
  - **For example, EDCs should inform PJM of line outages that change nodal impacts.**
- **The IMM agrees with PJM that market participants should not control these factors in the PJM models.**

Modeling Impact Factor

	DERA	Nameplate/ RT output	Capability factor	Locational factor	Modeling Impact Factor		RT LMP	Pnode price	Settlement
PJM Proposal	DER 1	10kW	0.25	A 100%	A	0.75	$ 65.04	$ 65.12	$ 65.12/MW * 40kW
	DER 2	10kW	0.25	A 80% B 20%	B	0.2	$ 65.38		$ 2.60
	DER 3	10kW	0.25	A 70% B 20% C 10%	C	0.05	$ 65.29		
	DER 4	10kW	0.25	A 50% B 40% C 10%					
RT scenario	DER 1	10kW	0.333	A 100%	A	0.95	$ 65.04	$ 65.05	$ 65.05/MW * 30kW
	DER 2	5kW	0.167	A 100%	B	0	$ 65.38		$ 1.95
	DER 3	10kW	0.333	A 90% C 10%	C	0.05	$ 65.29		
	DER 4	5kW	0.167	A 90% C 10%					

- **Scenario: RT dispatch MW < nameplate MW and distribution line to node B is disconnected**
  - **Small inaccuracy could get bigger as it accumulates and DERs grow.**
- **PJM needs to have flexibility to update as needed.**

DR with Injection in DERA

- **Order 2222 requires different settlement for DR in a DERA.**
- **Both DR rules and DERA rules will be applied to a DR unit with injection.**
- **There should be clear rules and processes for correct dispatch and settlements.**
  - **Will resources be able to clear as both DR and generation in the energy market in the same interval?**
  - **What is the Customer Baseline Load (CBL)?**
  - **How will the performance be aggregated?**
- **DR should be kept separate or follow DERA rules.**

DR with Injection in DERA

- **Current rule does not allow a BTMG unit to clear as both a generator and Economic DR in the same interval in the energy market.**
  - **“Load reductions done in order to inject power onto the grid are considered part of normal operations and therefore not eligible for Economic DR settlements.” – PJM Manual 11.**
- **There is no reason to treat DER differently from larger generators that are in the same circumstances.**

Mass Market Residential

- **PJM has not provided sufficient details about mass market residential participation**
  - **Participation of residential batteries, rooftop solar and/or EVs is expected.**
- **These resources may be unpredictable and dynamic.**
- **Mass market residential participants should not be allowed to provide any market product for which they cannot meet necessary telemetry/metering requirements.**

Potential Dual Role of EDCs

- **PJM's proposal would allow EDCs to participate both as a DER aggregator and the distribution system operator. This should be prohibited.**
- **Open access transmission tariffs provide this protection on the transmission system.**
- **PJM has a role in protecting open access in its markets.**
- **Vertical market power issues are unavoidable with dual role.**
  - **Control of access to the market for competitors**
  - **Ability to curtail the output of competitors**
  - **Access to market sensitive information on competitors**

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