

EDC review process and Order 2222

DIRS

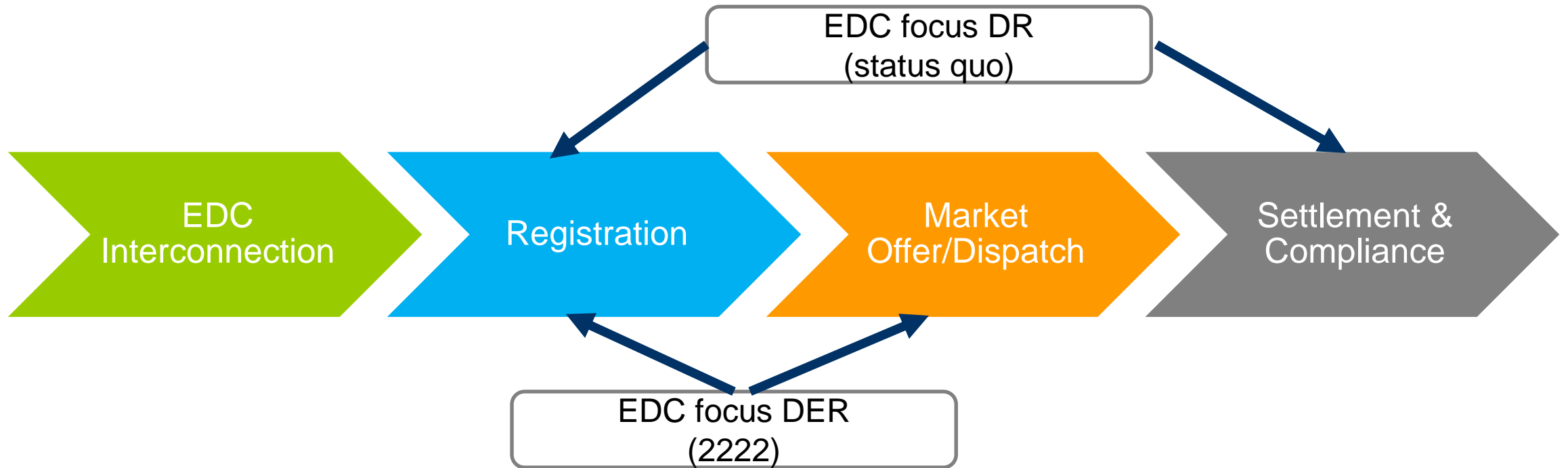
February 3, 2021

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Andrea Yeaton

- DR process - continue with current process
- DER review process – items added to existing DR EDC review process
 - DR with injection (DRwl)
 - Front of the meter DER (FtmDER) - Generator/Storage connected to distribution (that does not go through existing PJM queue process)

Proposed DER Process



DRwl or FtmDER goes through EDC interconnection before wholesale market registration

- State Interconnection
- **Registration**
- Market Offer/Dispatch
- Settlements/Compliance

Registration Process – EDC data verification & visibility (DR & DER process)

Maintain status quo

- Verification/Approval

- RERRA restrictions or qualifications to market participation (DR, DRwl)
 - Opt in and Opt out, EDC provides RERRA evidence
- Transmission Zone (all)
- EDC account number associated with address
- Energy Pricing Point
 - DR – based on retail settlement (typically residual zonal aggregate)
- Peak Load Contribution (PLC) – DR, DRwl
- EDC Interval meter (as needed) – DR, DRwl
- Loss Factors – DR, DRwl

- Visibility

- Registration start & end dates (all)
- CSP and LSE (DR, DRwl)
- Registration Status (all)
- CBL Test (DR, DRwl)
- Winter Peak Load (DR, DRwl)
- Max Load Reduction (DR, DRwl)
 - Max offer for Energy, SR and Reg Range
- Market eligibility. DRwl/FtmDER
 - Capacity, Energy, Synchronized Reserve, Regulation
- Max Load (DR, DRwl)

EDC may approve or reject registration if Verification data is inaccurate.

Registration Process – EDC data verification & visibility (DER process only)

Additional requirements

- Verification/Approval
 - RERRA restrictions or qualifications to market participation, FtmDER
 - Opt in only (no opt out), EDC provide evidence
 - Energy Pricing Point – Transmission load bus (pnode), DRwl/FtmDER
 - State Interconnection details, DRwl/FtmDER
 - EDC-specific interconnection reference number
 - NEM agreement (other retail programs), DR?, DRwl/FtmDER
 - PURPA agreement? DR?, DRwl/FtmDER
 - Aggregation, DRwl/FtmDER
 - This may be different by market & exact aggregation may change prior to Offer/Dispatch
- Visibility
 - Technology
 - Solar, CT, Battery, HVAC, etc.
 - Max Market eligibility, FtmDER/DRwl

PJM plans to extend functionality in DR Hub for the implementation.

Registration Process – current EDC data approval in DR Hub

Tasks

Tasks | Locations | Registrations | Events | Meter Data | Energy Settlements | Compliance | Dispatch Groups | Account and Users | Reports | RERRA

CSP Review Denial Duplicate Registration Review **EDC Registration** LSE Registration CBL Review EDC Registration Extension LSE Registration Extension Meter Equipment Review Meter QA Plan Review CSP Submit Settlement CSP Review Denial Settlement EDC Settlement PJM Settlement PJM Review Dispute Settlement PJM Review Dispute

Refresh Reset Submit Selected Reviews Export: CSV XML

Select	Due Date	Reg ID	Program	Effective Date	Termination Date	CSP	EDC	LSE	Zone	Location ID	Address	EDC Account Number	Meter Type	Peak Load Contribution (kW)	Capacity Loss Factor	Energy Loss Factor	Pricing Point	RERRA
<input type="checkbox"/>	02/09/2021	3304353	Economic	01/28/2021	03/04/2022	ENOC	BC	BC	BGE Pending	78133	57 Trout Lane, JimmyLane, MD 43089	43243232423 Pending	EDC Meter Pending	N/A No action needed	N/A No action needed	1.02 Pending	BGE_RESID_AGG Pending	Pending
									BGE Pending	78134	57 Trout Lane, JimmyLane, MD 43089	43243242423 Pending	EDC Meter Pending	N/A No action needed	N/A No action needed	1.02 Pending	BGE_RESID_AGG Pending	Pending
<input type="checkbox"/>	02/05/2021	3304352	Economic	01/24/2021	02/28/2022	ENOC	BC	BC	BGE Pending	78132	57 Trout Lane, JimmyLane, MD 43089	2345436786 Pending	EDC Meter Pending	N/A No action needed	N/A No action needed	1.02 Pending	BGE_RESID_AGG Pending	Pending

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- EDC task list with ability to approve/deny or edit (w approval) by field
- CSP/Aggregator automatic notification of any issues
- Email notification to all parties to reduce communication issues
- All tasks can be automated through API (webservices)
- Share written comments to improve communication

Load Management Registration Example

Capacity Market Participation

Registration Detail

- Tasks
- Locations
- Registrations
- Events
- Meter Data
- Energy Settlements
- Compliance
- Dispatch Groups
- Account and Users
- Reports
- RERRA

Cancel Search ▾

Export: [XML](#)

Name * CSP Status ⓘ

Reg ID Program * Hold Scheduling Hold Settlement

Effective Date * Termination Date * Allow Modification EDC LSE

EDC ZONE Pricing Point

CBL Test

CBL Method

[Add CBL Test](#) [Upload Meter Data](#)

Basis Window						RRMSE							
Action	Report Type	Start Date	End Date	Start Hour	End Hour	CBL Method	Date Run	Score (%)	Result	# of Days	Run status	Summary	Submitted by
No records found.													
Records Per Page: 10 << < (1 of 1) > >>													
0 record(s)													

Max Capacity market participation

Locations

Capacity Loss Factor Energy Loss Factor Peak Load Contribution (kW) Winter Peak Load (kW) Maximum Load Reduction Capability (kW)

Location ID	Location	Zone	EDC Account Number	Pricing Point	Address	Capacity Loss Factor	Energy Loss Factor	Peak Load Contribution (kW)	Winter Peak Load (kW)	DY	Winter Peak Load Report	Max Load Reduction (kW)	Meter Type
77934	Test Location	PECO	3275801951	PECO_RESID_AGG	236 Ellicott Rd, Avondale, PA 19311	1.1031	1.1031	215.03	94.256	2		225	EDC_METER

Economic DR example Energy and Ancillary Service Market Participation

Registration Detail

Tasks
Locations
Registrations
Events
Meter Data
Energy Settlements
Compliance
Dispatch Groups
Account and Users
Reports
RERRA

Cancel
Search
Export: [XML](#)

Name * CSP Status H

Reg ID Program * Hold Scheduling Hold Settlement

Effective Date * Termination Date * Allow Modification EDC LSE

EDC PE (Large) ZONE LSE NEV Pricing Point

Residential Registration?

Markets

RT Energy Regulation Synchronized Reserve Inflexible Flexible
 DA Energy DA Scheduling Reserve Batch Load

CBL Test

CBL Method [Add CBL Test](#)

Action	Report Type	Basis Window				CBL Method		RRMSE		# of Days	Run status	Summary	Submitted by
		Start Date	End Date	Start Hour	End Hour	CBL Method	Date Run	Score (%)	Result				
<input type="checkbox"/>	RRMSE	08/22/2017	10/20/2017	14	19	3 Day Types with SAA (DEFAULT)	11/27/2017	3.829	Pass	60	Successful		CMUSSER
<input type="checkbox"/>	RRMSE	07/25/2017	09/22/2017	14	19	3 Day Types with SAA (DEFAULT)	10/12/2017	4.444	Pass	60	Successful		CMUSSER

Records Per Page: << < (1 of 1) > >>

2 record(s)

Market eligibility

Economic DR example

Energy and Ancillary Service Market Participation (cont')

Max market eligibility

Locations

Energy Loss Factor: Maximum Load Reduction Capability (kW):

Location ID	Location	Zone	EDC Account Number	Pricing Point	Address	Energy Loss Factor	Max Load Reduction (kW)	Meter Type	RERRA
69625	Test Economic Location	PECO	252824409	PECO_RESID_AGG	3032 South Bend Avenue, Philadelphia, PA 19112	1.0397	8000	CSP_METER	N/A

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1 record(s)

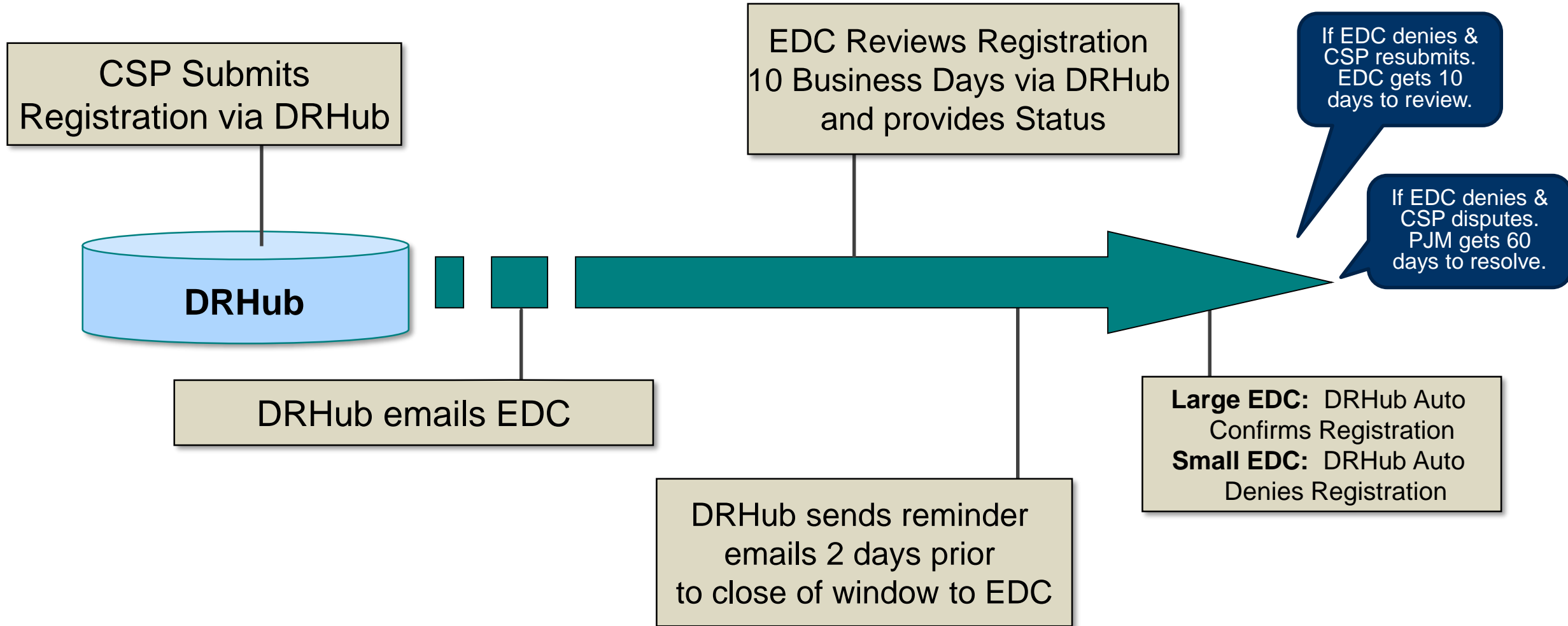
Comments

Timestamp	Comment Detail	Updated By Company
No records found.		

Records Per Page: 5 << < (1 of 1) > >>

0 record(s)

Proposed EDC Registration Review Timeline (DR and DER process)



- Process for DR to convert to DR with Injection
- Work out details on aggregation levels
 - Registration with multiple resources/locations (MOPR issues?)
 - Aggregate Resource with multiple Registrations
- Full Reconciliation of fields (visibility/approval, DR/DRwl,FtmDER)
 - Can we try to align DR & DRwl more?
- Detailed approval process use cases with associated time line

- State Interconnection
- Registration
- **Market Offer/Dispatch**
- Settlements/Compliance

- Tbd – discussed at last meeting but will drill into more detail at future meeting
 - Operational coordination

- State Interconnection
- Registration
- Market Offer/Dispatch
- **Settlements/Compliance**

Settlements/Compliance Process – EDC data verification & visibility (DR process)

Maintain status quo

- Verification/Approval
 - Load Data, DR/DRwl
 - Line Losses, DR/DRwl
- Visibility
 - After the fact Market Activity
 - Energy – hourly load reduction activity
 - Capacity – zonal events
 - SR – zonal events
 - Reg - none

Settlements/Compliance Process – EDC data verification & visibility (DER process – DRwl, FtmDER)

Additional requirements

- Verification/Approval
 - None?
- Visibility
 - Gen output or injection information

Not much detail in Order 2222 but this might be method for operational visibility instead of RT data

Settlements/Compliance Process – EDC data verification & visibility

EDC

Tasks | Locations | Registrations | Events | Meter Data | Energy Settlements | Compliance | Dispatch Groups | Account and Users | Reports | RERRA

CSP Review Denial | Duplicate Registration Review | EDC Registration | LSE Registration | CBL Review | EDC Registration Extension | LSE Registration Extension | Meter Equipment Review | Meter QA Plan Review | CSP Submit Settlement | CSP Review Denial Settlement | **EDC Settlement**

PJM Settlement | PJM Review Dispute Settlement | PJM Review Dispute

Refresh | Reset | Export: [CSV](#)

Actions	Due Date ↕	Event Date ↕	Settlement ID ↕	Settlement Type ↕	Adjustment ↕	Reg ID ↕	CSP ↕	EDC ↕	Load Data Review
<input checked="" type="checkbox"/> <input type="checkbox"/>	02/04/2021	01/26/2021	1822347	Economic Energy	No	3246731	EGTI	DOMEDC	Load Data Review

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Settlements/Compliance Process – EDC data verification & visibility

Settlement Details

Tasks
Locations
Registrations
Events
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Energy Settlements
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Dispatch Groups
Account and Users
Reports
RERRA

Cancel

Settlement Id

CSP TANGT

Registration ID 3257383

Program

Zone *

Dispatch Group

LSE NEV

Registration Name

Invoice Date

Status H

EDC PE

Event Date

Pricing Point

[XML](#)

Details

Reduction Hour?	HE	Market	Scheduled (kW)	Dispatched (kW)	Load (kW)	CBL/Gen (kW)	Reduction (kW)	Loss Factor
<input checked="" type="checkbox"/>	16	DA Energy	7800.0	0.0	18083.0	23016.3	4933.3	1.0397
<input checked="" type="checkbox"/>	17	DA Energy	7800.0	0.0	17921.0	22240.3	4319.3	1.0397
<input checked="" type="checkbox"/>	18	DA Energy	5800.0	0.0	17276.0	20998.0	3722.0	1.0397
Total/Average			21400.0	0.0	53280.0	66254.5	12974.5	1.03970

CBL Calculation

CBL Method *

Summary

Status

Valid as of

[Download Meter Data](#) [Load Data Review](#) [CBL Detail Report](#)

- Order guidance
- RERRA

Additional EDC coordination based on Order 2222 (Registration – market entry process)

Work in Progress

- each proposed distributed energy resource is capable of participation in a distributed energy resource aggregation; and
- the participation of each proposed distributed energy resource in a distributed energy resource aggregation will not pose significant risks to the reliable and safe operation of the distribution system.
 - EDC may request PJM to impose operational limitations for specific resources on case by case basis
- Additional information necessary for the EDC review
 - This may include specifics (e.g. generator type, etc.) on DER that will participate.
- Review process should be less than 60 days
- EDC will not directly decide if DER may participate in the wholesale market but is subject to interconnection process, as required.

Must be transparent review process that does not create a barrier to entry

Additional EDC coordination based on Order 2222 (Market Offer/Dispatch and Settlement/Compliance)

Work in Progress

- establish a process for operational coordination, between PJM, EDC and DER aggregator
- require the DER aggregator to report to the RTO/ISO any changes to its offered quantity and related distribution factors that result from distribution line faults or outages.
- coordination protocols for the operating day that allow distribution utilities to override RTO/ISO dispatch of a distributed energy resource aggregation in circumstances where such override is needed to maintain the reliable and safe operation of the distribution system.

Wholesale market participation by DR may be impacted by Relevant Electric Retail Regulatory Authority (RERRA) Restrictions

- If EDC is large (>4 million MWh) then DR may participate in wholesale markets unless there is RERRA evidence that prohibits or qualifies participation.
 - Opt Out – no action by RERRA means DR may participate
- If EDC is small (= \leq 4 million MWh) then DR may not participate in wholesale markets unless there is RERRA evidence that allows participation.
 - Opt In – no action by RERRA means DR may not participate
 - Municipalities and cooperatives typically fit in this category

Reference:

EDCs by Zone by State by RERRA Size:

<https://www.pjm.com/-/media/etools/dr-hub/elrs-large-and-small-edcs.ashx?la=en>

RERRAs that Prohibit, Permit or Condition Retail Participation in PJM

Demand Response Programs:

<https://www.pjm.com/-/media/etools/dr-hub/opt-in-opt-out-rerra-evidence-for-dsr.ashx?la=en>

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DER Aggregation Utility Review Process



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