

Distributed ReStart



Procurement Test Event – Launch Webinar 28 July 2021

Presenters:

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This session will be recorded and shared after this event. If you have any objection, please feel free to drop off the call and listen back in your own time.

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Agenda and purpose of the webinar



1. Explain the Test Procurement Event
2. Why this is important?
3. Reminder of the procurement process
4. What we have designed for this event
5. Assumptions and caveats
6. What we expect from you
7. Any questions





Our Test Procurement Event is designed to create a mock tender environment over a short period of time, in order to share draft tender documents and get data back to test our proposed assessment criteria.

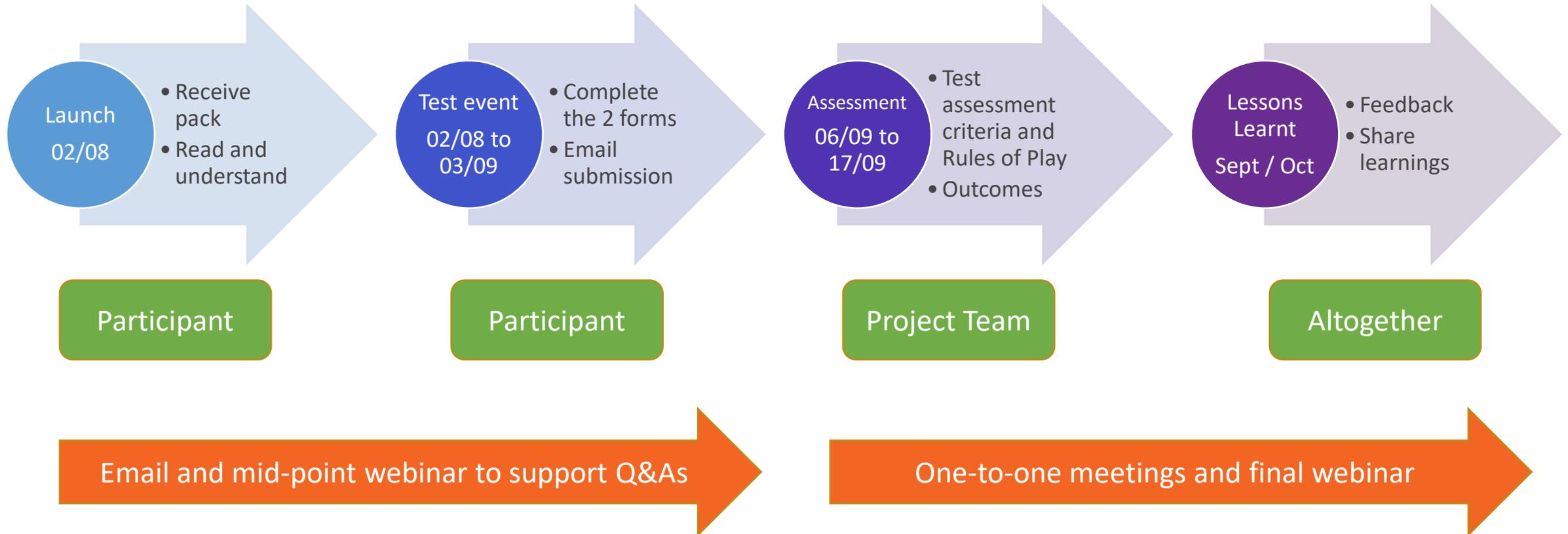
We get:

- ✓ To test if our proposed designs work as intended
- ✓ To bridge any gaps through DER feedback
- ✓ Good quality, as close to real, submission data for assessment
- ✓ Feedback to create tech agnostic services

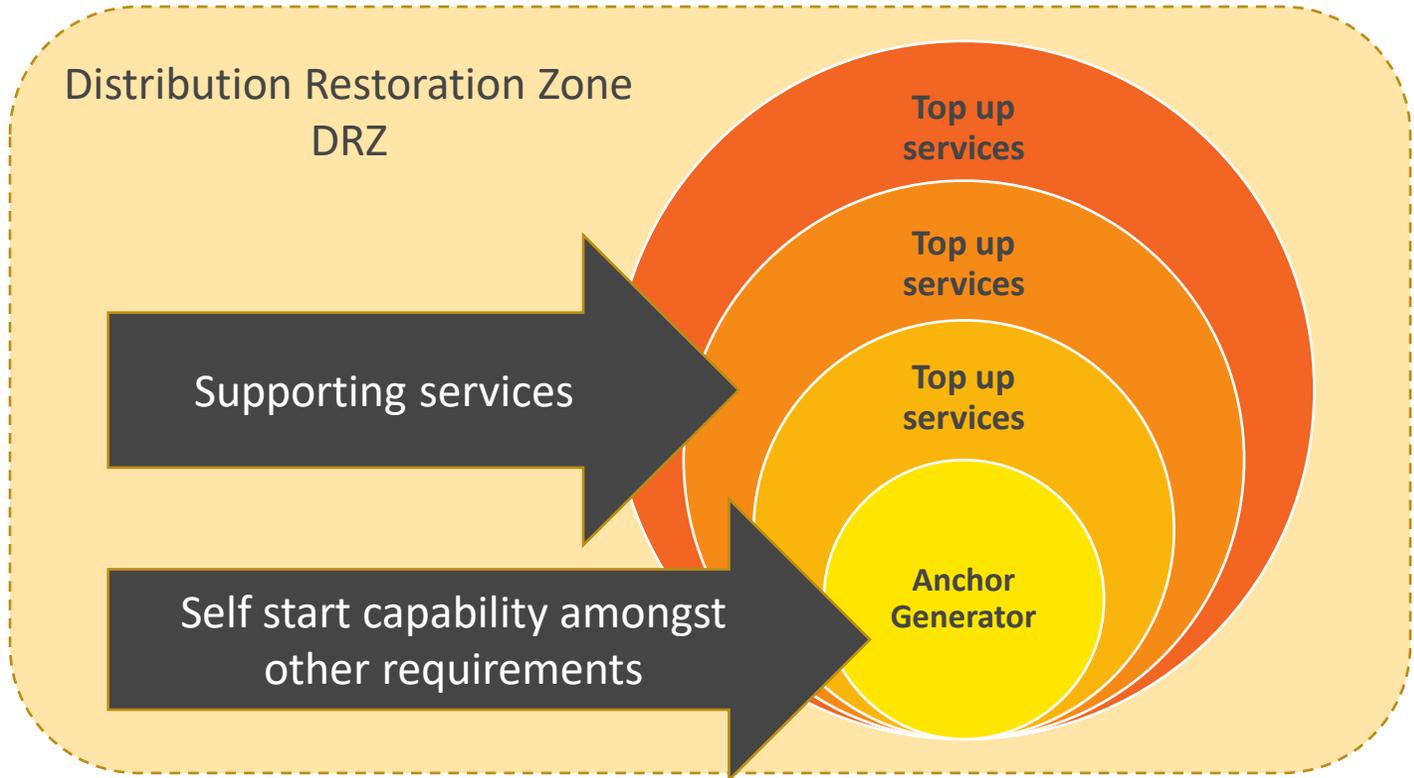
Participants get:

- First-hand trial of a mock tender event for Distributed ReStart
- To co-create the design of the future procurement process
- Acknowledgement in this world-first innovation project

What is the plan



RECAP - Procurement Services for One Distribution Restoration Zone



Yearly

3 Months

Procurement End to End Process Map



Anchor generator tender process



Top-up services tender process



For the Test Procurement Event, the stages outlined have been merged

What will happen next



On Monday 02 August, registered participants will receive:

- Invite to Test Procurement Event (information)
- Appendix 1 – Mock Tender Requirements Document (information)
- Appendix 2 – Mock Tender Submission Template (to be completed)
- Appendix 3 – Event Feedback Form (to be completed)

The deadline for submitting your information is 3 September



Participants are required to:

- Take part, ask us questions about the process, and challenge our thinking
- Fully familiarise with requirements and fill in as much close to real information as they can
- Note concerns and comments in the feedback form

We are most interested in understanding:

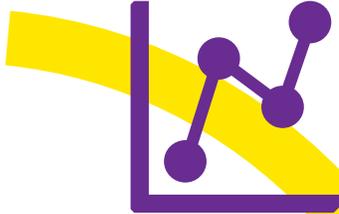
- ✓ If the information shared made sense?
- ✓ If you would be able to make an informed decision on what services to tender for?
- ✓ Estimated costs for meeting requirements?
- ✓ Comments on the timeline

Completing the Submission Template



We would like you to give us as close to real information as possible on the following:

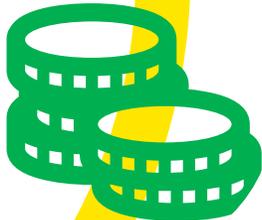
Appendix 2
Mock Tender
Submission
Template



Technical capabilities of your plant



Any changes necessary to meet requirements



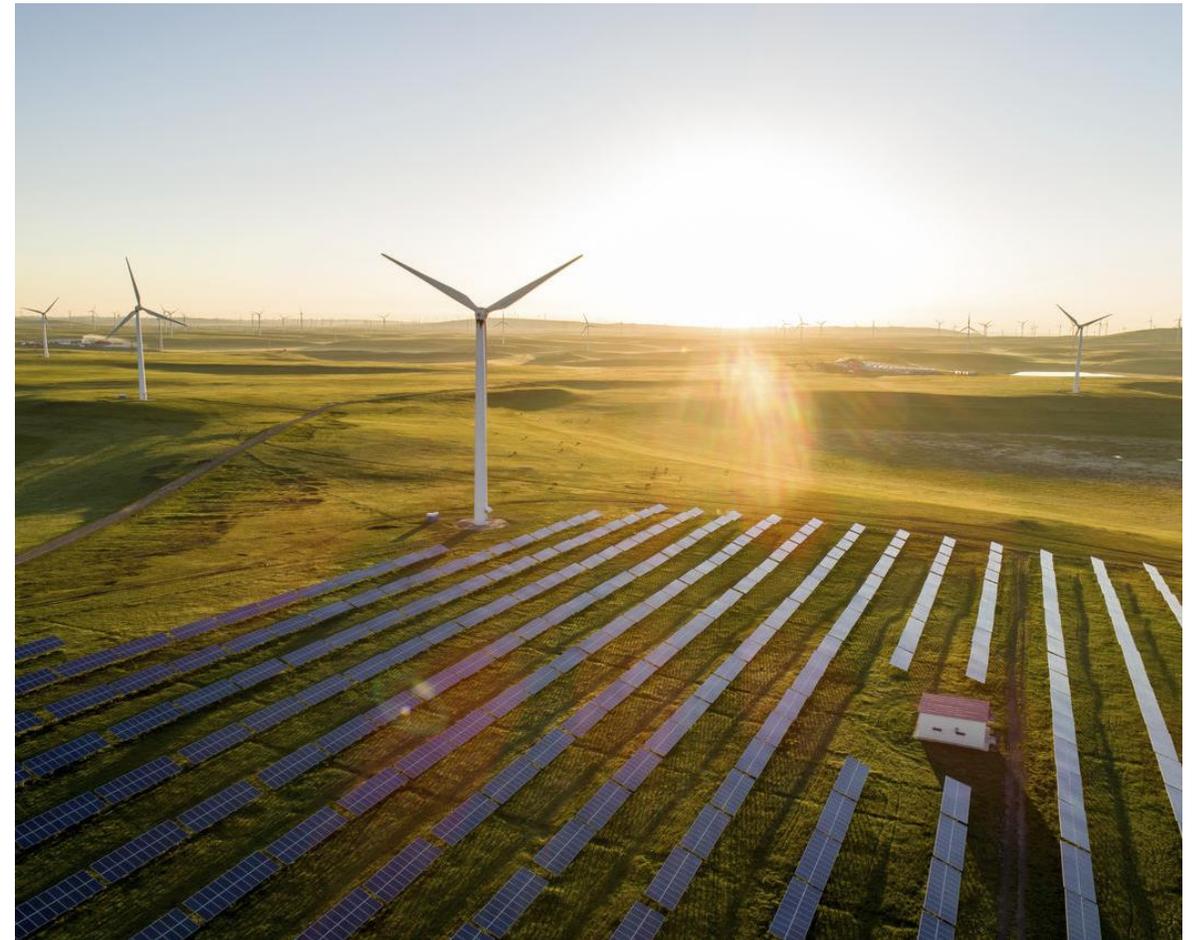
Estimated up-front one-off costs of making changes, such as, installation of auxiliary units



Commercial submission highlighting any ongoing costs, such as, maintenance to ensure continuity in meeting requirements and the inclusion of a service margin/fee



- This is a test exercise – **no contracts will be awarded** at the end
- These are not the final tender documents
- Any (commercially sensitive) information will be treated confidentially.
- Do not undertake detailed feasibility studies to submit your information
- You can bid for anchor generator, top up services or both
- In a Black Start event, there is no power on any systems and the electricity markets are suspended
- Our final recommendations will be published in the Procurement and Compliance Final Report due in December 2021



Distributed ReStart



Question time

- Are you clear on the test event process, and what you'll need to do to participate in this exercise?

Test Procurement Event submissions/questions email:

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Distributed ReStart



For Information – Presentation content from DER Webinar 20/05/21

For extra context on proposed functional requirements and rules of play

This information is not finalised and we are seeking feedback on it

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What services do we need from DER to achieve a DRZ



The total requirements for each DRZ will be site specific (depending on the scope of the DRZ and capability of DER within), but will consist of the following:

Service	Requirement	Description	Potential providers
Anchor generator (or power park)	Essential	Only one anchor generator is required per power island. Self-start and provide a controlled voltage source, able to energise the network to reach the next resource.	Synchronous generator, or other technology with required capability. A single point of connection is required with the DNO network.
Fast MW Control	Potential	May be required to supplement technical capability of anchor generator for example enhance block loading.	Battery, loadbank, flywheel, generator, others.
Inertia	Potential	Increase frequency stability of the DRZ and/or/ allow greater demand blocks to be picked up.	Synchronous generator, synchronous compensator (an inherent response is required without any measurement delays), others.
Frequency control	Potential	May be required to support the anchor generator to maintain frequency parameters during normal operation.	Synchronous generator, converter based sources with appropriate control, others.
Voltage control	Potential	May be required to enhance the MVAR capability of the DRZ to expand the island/energise to a higher voltage.	Wind farm, solar, battery, synchronous gen, Statcom, SVC, others.
Short circuit level	Potential	Increase the DRZ fault level. Facilitate protection operation at higher voltage levels or converter DER to connect	Synchronous generator, synchronous compensator, others.
Energy (MWh)	Potential	Enhance capability of the DRZ to restore demand above the capacity of the anchor generator. This could come from other any other gens on the island. (May be schedulable or intermittent.)	Schedulable MW - Synchronous generator (additional to the anchor), Intermittent resources (constrained and controlled by a set point), demand side management, others.

Requirements for an anchor generator (overview)



Technical:

Time to connect

- $\leq 8h$

Voltage Control

- continuous with set point and slope

Frequency Control

- fast action proportional control

Block Loading Pickup

- $\geq 2MW$

Reactive Capability

- 0.95 lead/lag pf minimum

Sequential Start-ups

- ≥ 3

Short Circuit Level

- $\geq 1xDER$ MVA rating

DRZC specific technical requirement

- tbc

Resilience:

Service availability

- $\geq 90\%$

Resilience of Supply (service)

- $\geq 72h$ up to 120h

Resilience of Supply (auxiliaries)

- 120h

Requirements for **Top up services** (technology neutral)



Technical:

Fast MW Control

- $\leq 200\text{ms}$

Inertia

- **inherent MW to f response (no measurement delays)**

Frequency Control

- **of active power (MWs)**

Voltage Control

- **slope or set point control**

Short Circuit Level

- $\geq 1 \times \text{DER MVA rating}$

Energy (MWh)

- **Generate MWs within 10s of request**

Resilience:

Resilience

- **Maintain control & comms up to 72h**
- **Service for minimum 72h duration**
- **Availability 90% of year**
- **Declare time to provide after black start (indicate if dependent upon length of time after the black out)**

Distributed ReStart – Rules of Play



- ✓ The requirements to be met by the combination of potential providers for a feasible Distribution Restoration Zone (DRZ).
- ✓ Supplement the technical requirements to be applied to Anchor Generators (AG) and Top-Up Service (TUS) providers individually.
- ✓ Specify what needs to be true with all participating Distributed Energy Resources (DER) in an area working together effectively.
- ✓ Will inform the assessment of potential DRZs and service providers in the early stages of the procurement process.
- ✓ The rules reflect the essential technical services and give a relatively simple set of key requirements.
- ✓ Might be assessed for all Grid Supply Points (GSPs) across Great Britain and the values published, possibly as part of the annual Long Term Development Statement (LTDS).

FOUR RULES

AVAILABLE

>

REQUIRED



Power Required = 60% * Maximum MW Demand in a DRZ

Power Available = Anchor MW * 90% + \sum (TUS MW * Intermittency Factor)

The excess Power Available will inform an assessment of what the DRZ may be used for, i.e. whether it can go beyond restoring demand within its own boundary.

If the rule is not satisfied there may, in some circumstances, still be interest in development of a DRZ that focuses on transmission restoration or network resilience services only.



BLPU Required = Largest Necessary MW Block Load in a DRZ

BLPU Available = \sum (DER BLPU Capability)

If BLPU Available is notably high then it suggests that the DRZ may be useful in energising other DNO areas, transmission-connected demand, or providing start-up power to large power stations or other resources.

If the rule is not satisfied with the resources considered in the initial assessment, then a review might be conducted to identify opportunities for improvement, e.g. the addition of a controllable load bank may enhance the BLPU Available sufficiently.



Mvar Required = The total Mvar gain of circuits in the DRZ distribution network

$$*Mvar Available = \sum (DER Mvar Absorb Capability) * Mvar Range Reduction Factor*$$

The excess Mvar Available will inform an assessment of what the DRZ may be used for, i.e. how far into the transmission network might be energised.

If the rule is not satisfied then the scope for providing additional Mvar capability might be considered, e.g. installation of reactive compensation.



Fault Level Required = Minimum Acceptable Fault Level at GSP

Fault Level Available = \sum (DER Fault Level Infeed) * Fault Level Reduction Factor

The excess Fault Level Available will inform an assessment of what the DRZ may be used for, i.e. how far beyond the DRZ boundary might be energised, and how much additional fault infeed may be necessary to support energisation up to 275/400 kV.

If the rule is not satisfied then the scope for providing additional Fault Level might be considered, or means of reducing the requirement might be considered, e.g. modifying network protection.