

Power Potential Regional Market Advisory Panel

18 May 2021

Participants:

Panel Chair	Dame Fiona Woolf	Chair, Regional Market Advisory Panel
Panel Members	Doerte Schneemann	BEIS
	Alastair Martin	Flexitricity
	John O'Toole	Gresham House
	Fernando Morales	Highview Power
	Goran Strbac	Imperial College London
	Chris Buckland Javier Adam	Lightsource BP
	Louise van Rensburg	Ofgem
	Andrew Robbins	RWE
	Dimitrios Agriostathis	Vattenfall
	Ned Ponsonby Laurence Copson	Zenobe Energy
Representing National Grid ESO	Julian Leslie	Head of Networks
	Colm Murphy	Electricity Market Change Delivery Manager
	Graham Stein	Network Operability Manager
Representing UK Power Networks	Barry Hatton	Director of Asset Management
	Stathis Mokkas	Energy Markets Lead
Power Potential project team attendees	Dr Biljana Stojkowska	Project Lead, National Grid ESO
	Dr Rita Shaw	Project Lead, UK Power Networks
	David Preston	Commercial Lead, National Grid ESO
	Richard Andrews	Innovation Workstream Lead, UK Power Networks
	Tim Manandhar	Lead Smart Grid Technology Engineer, UK Power Networks
	Kellie Dillon	DER Relationship Manager, UK Power Networks
	Kameesh Phillips	Senior Commercial Analyst, National Grid ESO
	Mike Robey	RMAP Secretariat, National Grid ESO
Apologies	Julie Finkler	BEIS
	Ian Larive	Low Carbon
	Rickard von Poten	Lightsource BP
	Ian Cameron	UK Power Networks
	Matt White	UK Power Networks
	Flo Silver	Ofgem

Meeting notes:

Progress on January 2021 actions

1. Would data volumes be a limiting factor on the number of DER able to participate in future service delivery? *Rita confirmed that DERMS had capacity for a large number of DER participants (see slide 10)*
2. Views on the Market Report template – *David and Kellie confirmed that DER trial participants were consulted on the draft market report template*
3. Project team to provide each DER with details of their service effectiveness at GSP, and to provide details of how this is calculated. *Complete (see slide 13)*

Presentation: *Project recap and trial learning followed by discussion*

Rita: Thinking of how with hindsight we would do things differently, I think we'd adopt a more staged approach. We have also learnt from combining learning for site commissioning for the project trials with the approach for Flexible Connections.

Biljana: We've been very happy with the learning from the project and congratulate the DER within the trials for demonstrating that they are within reach of providing the service. Solar, wind and battery sites have demonstrated that they can deliver a reactive power service. Generally, the trial findings are positive on speed of response and dynamic voltage control.

David: We have learnt from initial mistakes in the assessment and nomination process and we have observed market reactions to changes in the requirements we set.

Ned: The project has addressed our uncertainties and we better understand our assets as a result. The project has informed us on what we would need to buy in the future to be able to provide this service at other sites and also identified pitfalls to avoid.

Chris: Participation in the trials:

- Has been essential to our technical understanding of the capability of our assets, particularly where an inverter is not connected to a battery and our understanding of the speed of response in both directions.
- Established the inefficiency (in terms of Mvar losses) of solar providing this service.
- Highlighted implications for equipment in terms of warranties for running solar inverters at night.
- Appreciation for UKPN engineering support during the trials at night.
- A downside has been the speed of project delivery, with a long development period before the trials got underway.
- The market-based approach has been very good, fairer and more effective, compared to a network Licensee directly instigating through a bilateral agreement with one provider.
- The change to the connection agreement worked well – no warnings or penalties received for breaching the original rules.
- The project has been expensive for Lightsource BP. The learning is valuable, but the trial revenues have not made this commercially viable on its own. However, in January and February 2021, approximately 15% of solar site revenue came from trial service delivery of reactive power at night-time, so this could be a useful part of the business model in winter.

Andy: Generally, agree with the summary Chris has given. We have learnt about the technical integration required end-to-end to deliver the service. Commercially, the variation to the connection agreement in order to be able to provide the service was important.

Dimitrios: Chris and Andy make good points. Thanks to the project team for their help. What has been the learning on communication protocols from the trials (activate service then issue setpoint, or setpoint then activate)? What has been the learning regarding the interface for exchange of data?

Rita confirmed that the communication approach will be reviewed, including an alternative to the hard wire for some sites, such as via a web API.

Tim agreed and noted that UKPN is already investigating open standard scalable interfaces for DER dispatch and that this also supports Ofgem's expectation on Licensees for accessible dispatch interfaces. UKPN will work with the ENA to develop harmonised and standard interfaces so that market participants can get a consistent approach from all DNOs.

Fiona: David, can you say more about a trilateral agreement approach?

David noted that the trials had used back-to-back contracts (ESO-UKPN and UKPN-DER) and that in future another model to consider would be a trilateral approach bringing in a direct contract between ESO, UKPN and DER providing the service. Rita highlighted the

connection agreement UKPN-DER was separate and bilateral.

Kellie: A lesson learnt is that there would have been benefit in co-locating the UKPN, ESO and technology provider teams (pre-Covid).

Slide clarification:

Slide 32 – Clarification that AP -Availability Price within the table is £1.46/Mvarh

Next steps

Stathis: UKPN-ESO collaboration through the Regional Development Programme is ongoing and is key to co-ordination in constrained areas of the network. This provides a mechanism for further improvement and to address these issues in the future.

Graham: It is great to have got to this point, with successfully completed trials and a positive Cost Benefit Analysis. We need to draw on this learning alongside Distribution System Operator thinking, Flexibility and Balancing Services. I want to recognise the hard work of the providers who got the project this far – thank you!

Andy: We're disappointed that the wave 3 trials did not happen. However, we have learnt a lot and we are keen to not lose momentum. The service works. It may not be perfect, but let's not let the service disappear for a few months, let's build on this investment. If you build the capability, providers will come and provide the service.

Chris: We have appreciated the packaging of the whole project and the guidance received from UKPN, rather than having to create a similar innovation project ourselves and having to bid for funding. The open nature of the project was also a key feature. Please keep Demand Side Response projects coming, they're really valuable.

Louise: This has been a fascinating project looking at how ESO-DNO can interact efficiently on Whole System approaches. It would be helpful to understand more of what Rita raised in her presentation regarding the benefits of the DSO role in increasing DER participation in ESO markets. How does this compare to an aggregator's approach? Was the aggregator approach trialled?

Rita: Yes, I was noting the existing connection agreement between DNO/DSO and DER and the resource that we're able to bring to make things happen from technical, commercial, operations and so on. We also need to manage the impact on the distribution network of DERs providing services to the transmission system e.g. by managing the range of service offered. A reactive power service is locational, a DSO's focus is also beneficial, particularly as there can be very specific local distribution network factors impacting on service provision at the Grid Supply Point. These are reflected in the effectiveness factor calculated by the DSO. The DNO/DSO can also understand conflicts or synergies with what we are doing with outages and Flexible Connections.

Louise: I thought that on some of your sites you were working with aggregators?

Rita: No, DERMS communicated with all of the trial participants directly via their site RTU, though the project had engaged with aggregators during the recruitment and design phases. We [published a feasibility study](#) for an aggregator solution, but this did not proceed to physical trials. We understand how we would work with an aggregator to deliver the service, but it would still require changes to individual DER connection agreements for a reactive power service. A big benefit of the DERMS approach (which applies with and without an aggregator) was the ability to monitor each site to ensure the service stayed within its limits, which were expanded beyond the original connection agreement.

Fiona: What has been the learning on project timing and budgets?

Stathis: It has been a challenge to construct the project with this scale of investment for what is inherently uncertain innovation.

Biljana: We under-estimated the complexity of the integration of DERMS into the network and all of the work around that. In the future that sort of challenge needs more attention,

looking closely at the skills and knowledge needed to do the task.

Rita: Ideally, we would have also liked to explore the comparison between DERs providing this service to ESO and the full range of alternative approaches available to ESO. ESO has previously shared some details of this at a previous RMAP.

Fiona: System integration challenges are not uncommon for large and complicated projects such as this.

Louise: Data sharing is a hot topic. The learning noted the need for more data sharing. Can this be taken forward through the Open Networks initiative or through Code Modification?

Stathis: Yes, data sharing is included within the RDP between ESO and UKPN. Will this need codifying? We're not sure, but data sharing does need streamlining.

Rita: Yes, and we're taking on data learning from the ESO-SPN RDP including the enduring arrangements for the ICCP link

Louise: It highlights that data is such an important aspect for all DNOs. The learning from this project in SDRC9.6 will be a real win.

Fiona's Closing Remarks

- Note the 24 June Closing Event for the project. All welcome and please do share the invitation.
 - Register via [this link](#).
- A big thank you to everyone (including the DER participants and the project team) and to the wider UKPN and ESO teams
- The project has not been straightforward and there are positive outcomes.
- Thank you to Kellie for providing the regular and understandable newsletters