DECC/Ofgem Smart Grid Forum Meeting April 2015

The meeting discussed the findings of NPG's CLNR project, the role of storage and the Power Networks Demonstration Centre	From	DECC/Ofgem	April 2015
	Date and time of Meeting	21st April 2015 13.30-16.00	
	Location	BIS Conference Centre	

1. Present

See Appendix 1 for the list of attendees and apologies.

1.1. Maxine Frerk (Ofgem) opened the meeting and welcomed members. There were no comments on the minutes and it was confirmed that actions from the previous meeting had been undertaken.

2. Customer Led Network Revolution (CLNR) – Major Findings

2.1. Mark Drye and Iain Miller of Northern Powergrid (NPG) presented the key findings of its Customer-Led Network Revolution project, one of the largest funded through the Low Carbon Network Fund. The project had looked at the potential for customer and network-led flexibility options in managing the networks. NPG noted that the project featured: domestic use of time of use tariffs, industrial and commercial demand side response (DSR), storage, domestic heat-pumps, electric vehicles, rooftop Photovoltaic (PV) and smart washing machines. The key findings of the project were:

- domestic demand contributed up to 40% less to system peak than was previously thought;
- the impact of heat pumps and electric vehicles was more benign than previous assumptions;
- little evidence of low carbon technologies creating power quality problems;
- I&C DSR which was contracted proved to be up to 83% reliable, and was most reliable when used with standby generation;
- largest benefits of storage were seen at lower voltage levels;
- thermal ratings can increase capacity by between 10-15%;
- reducing voltage by 3% can release enough capacity to accommodate anticipated small PV generation out to 2050; and
- smart grid control systems can be used to resolve multiple constraints across multiple assets.

2.2. NPG noted that the main benefits of storage and smart grid control systems would be when the electrification of heat and transport becomes more widespread.

2.3. Judith Ward suggested that a generic "in principle" discussion would be helpful on how distribution charges might evolve in the long-run at low voltage. If a main aim was to better incentivise suppliers and their customers on flexibility, time of use distribution charges at low voltage might be one option to consider, but it was premature to consider this as the only desirable approach or indeed the most effective.

2.4. Tim Rotheray asked whether those that had participated in the I&C DSR scheme had needed guidance, in particular in relation to agreeing constraints. Iain Miller said most of them had standby generation and participation provided an opportunity to use these assets and receive some reward. Dave Openshaw confirmed that I&C DSR had been extensively trialled in the Low Carbon London project and is a key plank to their ED1 "smart" strategy for their 3 networks. Dave also made an important point about I&C DSR is that if used "post fault" it would be dispatched infrequently and wouldn't

therefore significantly interfere with its use for services to the System Operator such as STOR.

2.5. Duncan Botting asked if the project was relevant to other DNOs due to the different nature of networks within ENW and London Power Networks. Phil Jones said that the findings were fully relevant to all other networks and this had been one of the major selling points in receiving the funding under LCNF.

2.6. David Capper asked what impact projects like these had on future plans for the network operators. Phil Jones and Steve Johnson both felt these projects gave excellent learning to all DNOs which are shared on an ongoing basis. Phil Jones added that some of the solutions/technologies may not be rolled out immediately but were likely to become more beneficial over time.

3. Storage

3.1. Iain Miller (NPG) outlined the findings from the storage element of the CLNR project. The project included a 2.5MVA battery in a primary substation and two 100kVA and three 50kVA batteries in distribution substations. The main findings were that storage was most valuable at the lower voltage levels.

3.2. Northern Powergrid noted that they expected the cost of the primary equipment (which was the major cost of the project) to come down significantly over time, which would help to make storage more economically viable. Dave Openshaw added that it was important to leverage the capability of storage to deliver whole system benefits such as STOR, frequency response, supplier imbalance hedging and TRIAD management- as well as constraint management. These were all being explored in UKPN's Smarter Network Storage project.

3.3. NPG also noted that they expected in the future to see hybrid approaches to energy trading, which combined networks with third party storage devices providing DSR services for DNOs in the same way generators do.

3.4. NPG also said there is a need for clearer indications on what life is left in the batteries to make their use more effective.

3.5. Stewart Reid outlined SSE's new commercial mechanism in which innovative solutions can be selected and deployed within constraint managed zones. SSE had identified six areas within their networks where constraints were evident and solutions were requested to avoid the need for reinforcement. The solutions that had currently been offered were battery storage, commercial DSR and diesel response.

3.6. SSE had given a clear indication of the payments that would be available per annum if reinforcement was not required, these varied in each area from between £18,500 to £439,000 per annum, initially for four year contracts. SR noted that SSE had now received eight formal responses from energy storage technology providers, aggregators, generation businesses, commercial business aggregators and consultancies. SR noted that SSE expected these proposed solutions to also look at interactions with other interested parties e.g. National Grid to create other income streams for these proposed solutions. SSE would keep the Smart Grid Forum (SGF) informed of the project as it progresses.

3.7. Chris Wright outlined Moixa's 'behind the meter' storage system, Maslow, which he described as a new 'brief case' sized storage device, which can be mounted on a wall. The device could store unused energy from solar PV generation to ensure generators can optimise the use of their generation. CW noted that the system could also work in a co-ordinated way with parties like National Grid, SSE and Good Energy to sell ancillary services. CW noted that the key advantage of the system is the easy

installation and lack of planning permission needed for the product. The system could reduce the impact on the grid and reduce costs for community energy. The system currently has 250 sites in progress with a total of 0.5WMh and expects to have 500 sites with 1MWh by end of 2015. CW argued that with the right incentives from the regulator/Government, they could have 1 million sites with 2GWh by 2020.

3.8. Dave Holmes from Quarry Battery outlined the opportunities for increased pumped hydro, stating that over 50GW could still be developed in the UK. To realise this, DH argued that investors needed more confidence on the return that the UK market could offer, particularly given significant up-front capital costs. DH stated that currently storage providers were charged twice - when they energise their system, but also and when they discharge. He argued that the planning system also restricted the size of plants that are being developed due to the large additional costs when plants go above 50MW and 99.99MW. DH argued that Government and Ofgem need to provide leadership until some schemes started to get off the ground.

4. Power Networks Demonstration Centre

4.1. Dave Rutherford from the Power Networks Demonstration Centre (PNDC) explained that the demonstration centre (attached to the University of Strathclyde) allowed utilities, vendors and suppliers to test products and solutions in a safe environment. The PNDC had an 11kV network with four feeders; 65km of overhead lines; and 5.6km of underground lines (using simulated impedances). Their clients and partners include network operators, manufacturers and service providers who are currently carrying out projects that include evaluation of fault passage indicators, testing hybrid generators and testing and demonstration of metal theft detection systems. DR said that he was keen for members of the SGF to visit the Demonstration Centre either individually or as part of a group.

5. P2/6 Review

5.1. There was insufficient time to discuss the P2/6 review, but MF noted that members would have noted the outline programme and hoped that many members would be attending the workshop being held on 1st May.

6. Workstream 9 update – TOR/ work programme

6.1. There was insufficient time to discuss the terms of reference for WS9, but MF noted that members would have seen the terms of reference which were included in the papers for this meeting.

7. Closing Doors – Standing Item

7.1. It was noted that SMETS3 smart meter may warrant a discussion at the Forum in the future.

8. AOB

8.1. It was agreed that it was useful to have more strategic discussions at the SGF, but also important that it did not lose touch with the workstreams. Workstream Six would warrant a full discussion at the next meeting before it finalises its report. The next meeting will be held on 21st July at Ofgem.

Appendix 1

Attendees:

Maxine Frerk	Ofgem (Chair)
David Capper	Department of Energy and Climate Change
Tim Rotheray	Association of Decentralised Energy
Vincent Thornley	BEAMA
Andrew Perry	Demand Response Association
Ash Pocock	EDF
Gavin Jones	Electralink
Steve Johnson	Electricity North West
Duncan Botting	Global Smart Transformation
Chris Welby	Good Energy
Chris Wright	Moixa
Vandad Hamidi	National Grid
Iain Miller	Northern Powergrid
Mark Drye	Northern Powergrid
Phil Jones	Northern Powergrid
Dave Rutherford	Power Networks Demonstration Centre
Dave Homes	Quarry Battery
Chris Harris	RWE npower
Stewart Reid	Scottish and Southern Energy
Jim Sutherland	Scottish Power
Judith Ward	Sustainability First
Dave Openshaw	UK Power Networks
Phil Swift	Western Power Distribution

DECC: John Christie, Henrietta Issac, Sam Balch

Ofgem: Judith Ross

Apologies

John Scott	Chiltern Power
Nick Jenkins	Cardiff University
Audrey Gallacher	Citizens Advice Bureau