

Power Responsive Workshop to Scottish Customers Summary

Tuesday 25th October 2016 (10:00 – 16:00 hours) - The Roxburghe Hotel, Edinburgh, Scotland

This document provides a summary of the Power Responsive workshop to Scottish Industrial & Commercial (I&C) customers held on 25th October 2016. It includes the feedback collected from participants on the day with regard to suggested solutions to help grow participation. The suggestions from this workshop (as summarised in Annex A), will be considered and incorporated in to Power Responsive programme of activity.

Overview and Objectives

National Grid partnered with ScottishPower, and Scottish and Southern Energy Networks (SSEN) to host a workshop on Demand Side Flexibility to Scottish I&C customers. The aim of the workshop was to present and inform Scottish I&C customers of the Demand Side Response (DSR) opportunities available to them, the appropriate routes to market, and to answer any questions regarding perceived barriers to entry. A small exhibitor area was incorporated, allowing delegates to further educate themselves through discussions with aggregators during tea and lunch breaks.

Approximately 38 delegates attended the workshop.

Speakers

- **Paul Lowbridge** – Power Responsive Manager, National Grid (Chair)
- **Steward Reid** – Head of Asset Management and Innovation, SSEN
- **Gerard Boyd** – Commercial & Innovation Manager, ScottishPower
- **Richard Hanson** – Business Development Account Manager, National Grid
- **Frank Clifton** – Project Development Manager, SSEN
- **Alan McFadden** – Head of Gas Storage - Commercial, SSE Gas Storage

Exhibitors

- **Ameresco**
- **E.ON**
- **Energy Pool**
- **Flexitricity**
- **KiWi Power**
- **Open Energi**
- **Restore**

Introduction

Delegates were welcomed to the Power Responsive workshop, whilst ScottishPower and SSEN were thanked by Paul Lowbridge for partnering with National Grid to host the event.

The role of Power Responsive within National Grid and the energy market was introduced, the day's agenda and objectives outlined, and delegates encouraged to ask questions throughout each session and particularly in the exhibitor area during breaks.

Session 1 – The GB Energy Market Now and In The Future - How Scottish Businesses are Impacted

Paul Lowbridge - Demand Side Flexibility: System Operator View

PL provided an overview of electricity network actors and their roles, including Distribution Network Operators (DNO's), Interconnectors, and Offshore Assets. Further insight was given to National Grid's role as the System Operator and Residual Balancer of, on average, the final 3% of electricity for each half hour.

An outline of a decarbonised, decentralised, and digital future was illustrated due to rapid increases in renewable sources of energy becoming more prevalent, and therefore a need for greater flexibility within the balancing portfolio. Power Responsive's role in creating a level playing field, building confidence, and evolving markets was further identified.

Stewart Reid – SSEN

Stewart Reid highlighted the increasing need for flexibility driven by changing requirements from a DNO perspective. The need to engage in an active and commercially sensible way and contribute to the development of new business models and technologies was highlighted, with particular attention to innovation projects and a transition towards a Distribution System Operator (DSO). The complexity and number of stakeholders involved in moving towards a DSO were identified whilst the benefits of interaction between Transmission and Distribution in reducing constraints were explained.

Examples of current distribution projects within SSEN were provided, including NINES, Thames Valley Vision, My Electric Avenue, SAVE, and LEAN.

Gerard Boyd - Changing Landscape of the UK Energy Sector

An overview of ScottishPower Energy Networks (SPEN) was provided with detail of the connection numbers. ScottishPower and SSE were shown to be the first to experience offshore wind and therefore implement large scale distributed generation (DG). The need to facilitate generation whilst improving customer service and maintaining system security in a system with an aging asset base was identified as a challenge.

The primary drivers influencing a changing balancing market were deemed to be widespread penetration of DG, the closure of thermal plants, low carbon technology uptake, and the introduction of smart players to the market.

Final comments were made regarding SPEN's vision is that they will become a DSO.

Session 2 – Introduction to Demand Side Flexibility Opportunities

Richard Hanson - Changing Landscape of the UK Energy Sector

Following an introduction to the Frequency and Reserve categories of service, individual products and services were given detailed descriptions – including parameters, dispatch & metering information, and typical payments for Firm Frequency Response, Fast Reserve, STOR, and Demand Turn-Up (DTU).

Large amounts of renewable generation in Scotland meant DTU was given particular focus to help manage network constraints. This was identified as an area that Scottish businesses could particularly contribute to.

Delegates were also introduced to the various routes to market, including contracting directly with National Grid, or via an aggregator.

Frank Clifton - SSEN

Frank Clifton provided greater detail into the NINES distribution project previously referenced by Stewart Reid. Funding to the £15.33m project to create the first UK smart grid was agreed by Ofgem in 2011. The objectives have been a reduction in maximum demand – by using the connected assets to help manage peaks and troughs on the demand profile, and a reduction in the electricity units generated by fossil fuels by the introduction of managed renewable connections. 215.8 MW of flexibility were delivered in March-May 2016 via heat storage, water

cylinders, and flexible charging.

The NINES project has seen the introduction of non-firm generation contracts whereby generators accept they may be curtailed under certain conditions. Connections at North Hoo (500KW WF), Luggie's Knowe (3MW WF) and the Shetland Tidal Array (building to 500KW) have helped to dramatically increase the renewable generation capacity in Shetland.

It was further identified that through electricity storage, demand side response and distributed generation, constraint managed zones could be reduced.

Gerard Boyd - Flexible Technology Capabilities

Since the creation of the Low Carbon Network Fund SPEN have focused their innovation strategy on addressing current and future network challenges.

The ScottishPower ARC project will look to accelerate network access for renewable generators by technical and commercial innovation, and help communities develop ways of using locally produced energy with an estimated customer saving of ~£30m.

Through ScottishPower's innovation portfolio they are focusing on releasing real time capacity through understanding the real time capabilities of their existing network.

Alan McFadden – SSE Gas Storage

Alan McFadden provided a brief introduction into the experience of SSE Gas Storage as a DTU customer, before taking questions from the chair and delegates.

National Grid were commended for the DTU service creating the opportunity to keep renewable generation on in periods of low demand. With most DTU utilisation occurring in the months of July and August, the service had been recognised as a success for SSE Gas Storage and it was confirmed that they will be looking to participate in year 2 of the service.

Questions arose regarding the responsible use of DTU. It was explained that those participating in the service were vetted prior to service delivery.

Session 3 – The Customer Journey Discussion Groups

Facilitated roundtable groups took place in session 3 with delegates asked to discuss the challenges, barriers to entry, and solutions they have either experienced or perceive along the customer journey.



Each group considered all five stages of the journey. Groups were facilitated by at least two aggregators who were able to assist in answering pertinent questions and suggest solutions to perceived challenges. Notes were taken in each discussion group and have been collated in annex A.

Session 4 – Round-up, Key Messages, Final Q&A's

The final session saw each discussion group from the previous session report back to the workshop their considered challenges and solutions for one stage of the customer journey. Delegates were invited to contribute further thoughts that they considered to be relevant.

Delegates were invited to ask final questions to the days speakers, and aggregators before the

workshop was closed and delegates thanked by Paul Lowbridge.

Presentation slides from the day

Session1

- Paul Lowbridge – National Grid: [System Operator View On DSR](#)
- Stewart Reid – SSEN: [Head of Asset Management and Innovation](#)
- Gerard Boyd – ScottishPower: [Changing Landscape of the UK Energy Sector](#)

Session2

- Richard Hanson – National Grid: [Balancing Services Opportunities](#)
- Frank Clifton - SSEN: [Project Development Manager](#)
- Gerard Boyd – ScottishPower: [Flexible Technology Capabilities](#)

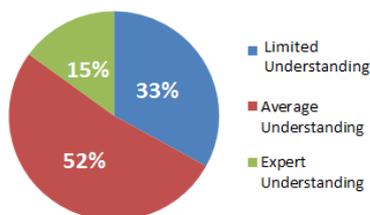
Feedback

Positive feedback from the day has been welcomed. Delegates were asked to complete a very quick questionnaire, rating three questions from 1 – 10:

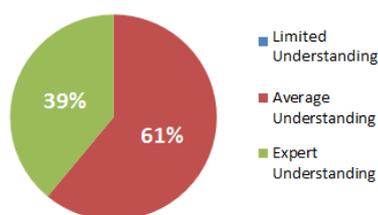
1. How would you rate your knowledge of demand side flexibility PRIOR to today's workshop?
2. How would you rate your knowledge of demand side flexibility AFTER today's workshop?
3. How likely are you to recommend demand side flexibility to your organisation?

Results are as follows:

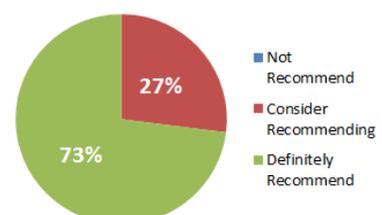
1. How would you rate your knowledge of demand side flexibility prior to today?



2. How would you rate your knowledge of demand side flexibility after todays workshop?



3. How likely are you to recommend demand side flexibility to your organisation?



Thank You

Thank you to ScottishPower, SSE Networks, and SSE Gas Storage for their valuable contribution to the day and to all those exhibiting in the exhibition space.

ANNEX A – Demand Side Response Customer Journey - Issues, Solutions & Materials

| STAGE | Challenges | Solutions |
|--|--|---|
| <p>1 - Understanding the Opportunity</p> | <p>Vast range of services on offer</p> <p>Understanding your demand profile and where you can exactly fit</p> <p>Different timescales and tendering processes</p> <p>Obtaining data both internally and NG</p> <p>Who might be responsible for decisions (organisational issues)</p> <p>Motivating organisations and internally engaging them to pursue it</p> <p>Amount of stakeholders involved</p> <p>Not core business</p> <p>Understanding the perceived risks</p> <p>Confusing terminology</p> <p>Cost/Time</p> <p>Understanding complexity of network around you</p> | <p>Utilise industry experts more often</p> <p>Case studies / animated films of success stories / live examples</p> <p>Easy accessible getting started guides</p> <p>More DNO involvement</p> <p>One stop shop markets + variants</p> <p>Put companies in touch with successful companies</p> <p>Information from DNO on opportunity in the network</p> <p>Greater education for both technical/financial stakeholders</p> <p>Identifying where the flexibility is</p> |
| <p>2 - Developing a Business Case</p> | <p>Availability of forecast info</p> <p>What are the penalties involved?</p> <p>Which aggregators and how to mitigate the risk?</p> <p>Understanding if any schemes will be detrimental to your business</p> <p>Future energy market uncertainty</p> <p>Extracting meaningful NG data to produce projections</p> <p>Capturing the actual benefits and quantifying potential financial return</p> <p>Different strategic objectives across the business</p> <p>Control limits - how much availability?</p> <p>How to write/assess tenders?</p> <p>Barrier between finance/technical teams</p> <p>Resource allocation and recognising certain level of complexity associated</p> <p>Funding as contracts too short</p> | <p>Trials (compliance confidence)</p> <p>Ensuring that this service is part of your business</p> <p>Credible scenario datasets for each service</p> <p>Templates for carrying out a BP</p> <p>Future scenarios about how markets might evolve</p> <p>Internal working groups</p> <p>On-going analysis</p> <p>Independent advice - NG?</p> <p>Negotiation amongst aggregators</p> <p>Longer contracts and financial stability</p> <p>Building confidence in utilising their own assets</p> <p>Sub-meters</p> <p>Diagram what's permitted or not regarding renewable assets</p> |



3 - Contract and Procure

- Timeframes to procure
- Continuity of the process
- Short length of contracts demotivating for businesses due to costs of participation
- Difficult to use balance revenue to underpin new tech roll out
- Complexity of contracts
- Dealing with the DNO
- Understanding how opportunities can work together (scared to sign up to multiple contracts)
- Strong commitments in capacity markets interfere

- Different contracts for new technology assets to stimulate markets (backing winners)
- Internal working group
- Level off appetite for complexity of contracts across industries.
- Timelines for how to proceed
- Streamline further contracts

4 - Set up Systems

- Comms, IT, building management, asset management, people, security (large range of stakeholders to consider)
- Resource to manage assets within organisation
- End to end testing
- Change management
- Interacting with existing systems, conflicting with legacy systems
- Identifying asset by asset which one could be available

- Standardisation
- Internal working groups
- Testing assets before signing contracts

5 - Manage and Review

- Market review
- Expansion
- Impact - quality, did anyone notice

- Compare against the original business case