


Smart Grid Forum
Workstream 6

I&C DSR experience from the Customer-led Network Revolution

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NORTHERN POWERGRID

Questions

Introduction

- What are you aiming to find out?
- What does the trial consist of?

Engagement

- What challenges have you experienced in recruiting and communicating with consumers taking part in DSR, and what solutions have you developed? What is the learning on the uptake?
- Which party would you say is best placed to lead engagement?

Proposition, consumer reaction and outcomes

- What is the customer proposition and how effectively does the trial suggest it could be realised?
- What is the learning on customer reaction, changes in behaviour and attitudes?
- What have been the most effective incentives and the main sources of complaints?
- Have any consumer risks been identified and what protection measures have been identified to overcome these?

Technical

- What notification of DSR actions or coordination with other parties would be required if this approach becomes business-as-usual to ensure any interactions or impacts could be managed?

Introduction

What are you aiming to find out?

To what extent are customers flexible in their load and generation, and what is the cost of this flexibility?

- How easy is it to recruit I&C customers with sufficient flexibility to address localised network constraints?
- How willing are I&C customers to sign up to DSR contracts with DNOs?
- Can I&C provide the speed, depth and duration of response required by the DNO?
- Is the response sufficiently reliability to be useful?

What does the trial consist of?

- 2012 trials – 3 customer sites
- 2014 trials – 14 customer sites
- A recruitment survey
- The trial of different contract forms and payment methodologies
- Manual dispatch
- Automatic dispatch initiated via an ANM system driven by transformer RTTR

Engagement

What challenges have you experienced in recruiting and communicating with consumers taking part in DSR, and what solutions have you developed?

Challenges

- Customer identification and recruitment is a challenge but it is possible.

Engagement	Total
Sought to engage	251
Managed to speak	107
Initially interested	52
Still interested	21
Still interested (> 200kVA)	15

We engaged aggregators to test how easy (or hard) it would be to recruit customers in areas fed from 10 primary substations.

The investigation of over 250 sites resulted in 15 customers interested in participating.

The exercise showed the potential to secure a cumulative total of 10MW of DSR resource from a total of 74MW available across the 10 primary substations.

- The whole process from initial identification to the signing of contracts can take a year

Solutions

- Better access to customer details to help us make contact with named individuals
- We have developed good relationships with aggregators
- We have trialled a range of contract options
- We are supporting the development of a DSR sharing framework

Engagement

Which party would you say is best placed to lead engagement?

- The DNOs can build effective relationships with both the aggregators and direct with I&C customers. We recruited 13 sites via aggregators and one directly.

- Contracting directly was successful with one customer for the trial,

but..

- Working via third parties might be more efficient in the long-run as DSR participant numbers increase, especially if parties are able to share this resource.

Engagement

Which party would you say is best placed to lead engagement?

- The advantage of working with third parties (aggregators) is that they:
  - Identify the customers with flexibility (who may or may not already be party to other DSR agreements, such as STOR) and put forward the proposition;
  - Work with the customers new to DSR to develop the capability to provide the flexibility & provide technical assistance with metering, communications, etc;
  - Execute the commercial agreements to monetise the arrangements;
  - Manage the sharing of the resource (where applicable); and
  - Implement & manage the operating procedures, validation, payments, etc.
- Leaving the DNO to concentrate on its core business of optimising network performance.

Engagement: Types of companies recruited

Mining
- Contracted DSR: 2 MW
- DSR Type: **CHP Generation**

Water treatment (3 sites)
- Contracted DSR: 3MW
- DSR type: **Diesel generation**

Supermarkets (2 chains)
- Contracted DSR: 0.36 & 3.6 MW
- DSR type: **Diesel generation**

Telecomms (5 sites)
- Contracted DSR: 3MW
- DSR type: **Diesel generation**

Web-Hosting
Contracted DSR: 0.8 MW
DSR Type: **Diesel Generation**

ICE production
- Contracted DSR: 0.6MW
- DSR type: **Load reduction**

Hospital
- Contracted DSR: 0.5MW
- DSR type: **Diesel generation**

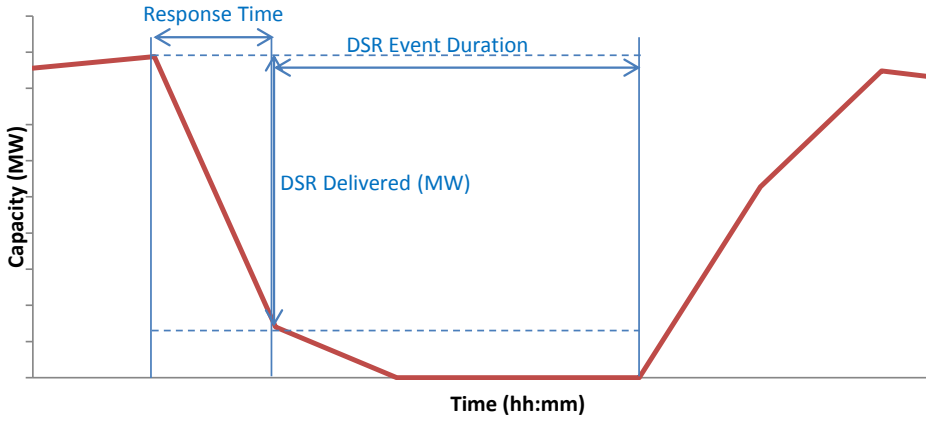
Gas production
- Contracted DSR: 5MW
- DSR type: **Load shifting**

Proposition, consumer reaction and outcomes

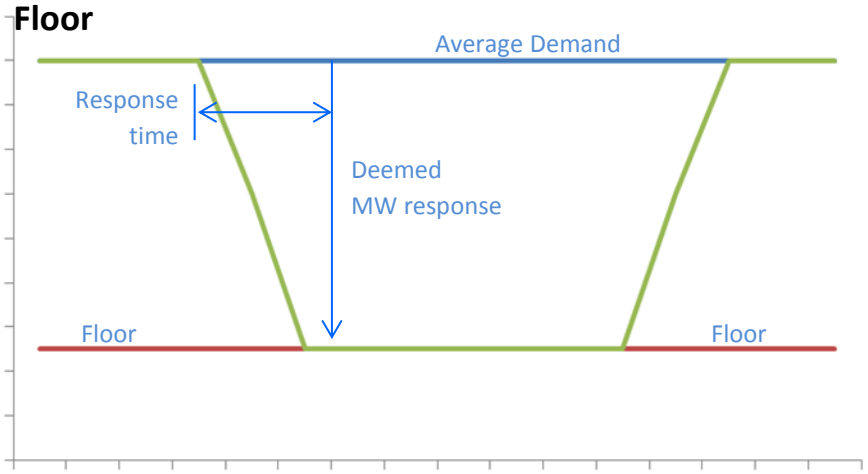
What was the customer proposition and the customer response?

Two performance verification methods

Benchmarking



Floor



Two pricing options

Availability and utilisation

Availability Price of £10/MW/h

paid for each day the response is notified as being available during the Availability window

PLUS

Utilisation Price of £300/MW/h

Paid for the number of hours that each MW is delivered.

Daily charge

£306 per MW per day for HV customers

£150 per MW per day for EHV customers

Paid for each MW for each day of the Availability Window

10 customers chose the Benchmarking methodology and 4 chose the Floor methodology.

Proposition, consumer reaction and outcomes

Pros and cons of each options

Contract Type	DNO perspective		Customer Perspective	
	Pro	**Con**	**Pro**	**Con**
Benchmarking **Availability & Utilisation**	DSR availability is notified & visible each week Lower cost (if not called as often as contracted)	More complicated to operate and validate	Pays more if utilized more.	Requires weekly notifications. Only the availability payment is guaranteed
Floor **Daily Charge**	Simple to operate and validate Costs are fixed (subject to performance when called)	Higher cost option if not called as often as contracted	Simple - No availability notification required Guaranteed income to cover costs.	

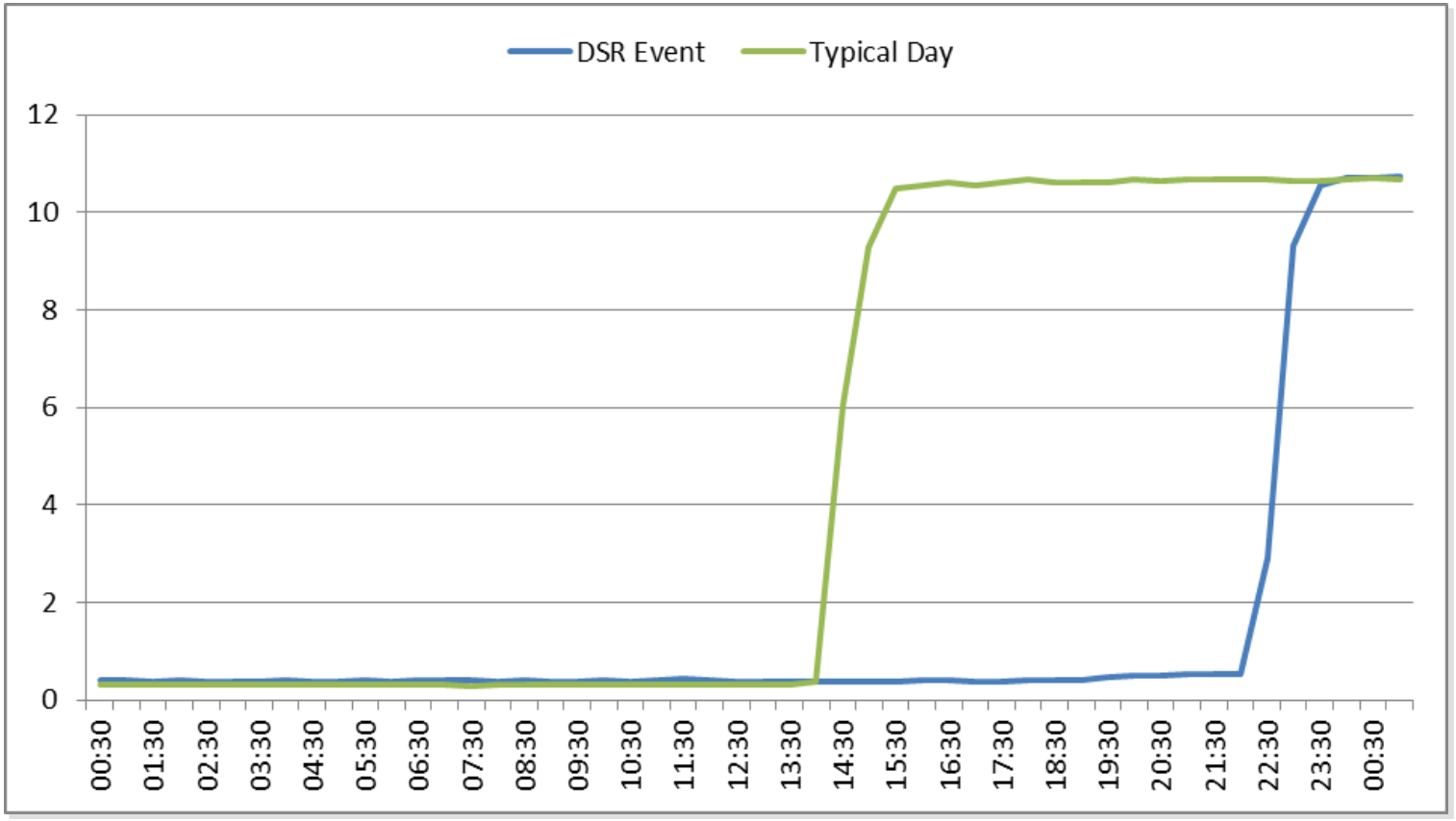
Protection measures

- The customer is free to choose their preferred option
- The DNO is protected against non-performance in both cases

Outcomes – demand shifting

Customer A: **Gas Production & Distribution**
Contract Type: Floor
Payments: Daily Payments
Contracted DSR: 5 MW

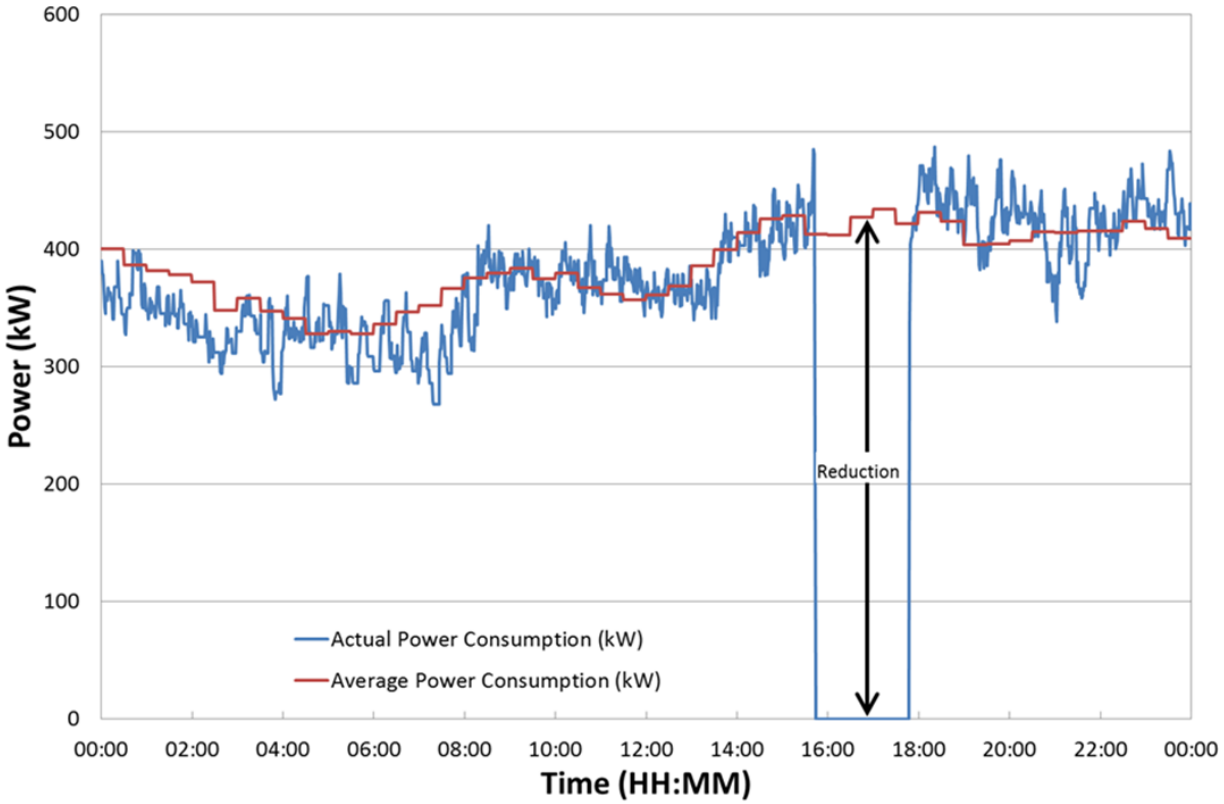
Availability: 3pm – 7pm, weekdays
Run hours cap: 4 hours
Response Time: 20 minutes
Season: March – April 2014



Outcomes – generation support

Customer B: **Supermarket**
Contract Type: Benchmark
Payments: Availability & Utilisation
Contracted DSR: 0.36 MW

Availability: 3pm – 6pm, weekdays
Run hours cap: 2 hours
Response Time: 20 minutes
Season: November – March 2014



DSR called at 15:40:27

Generator started 15:43:28

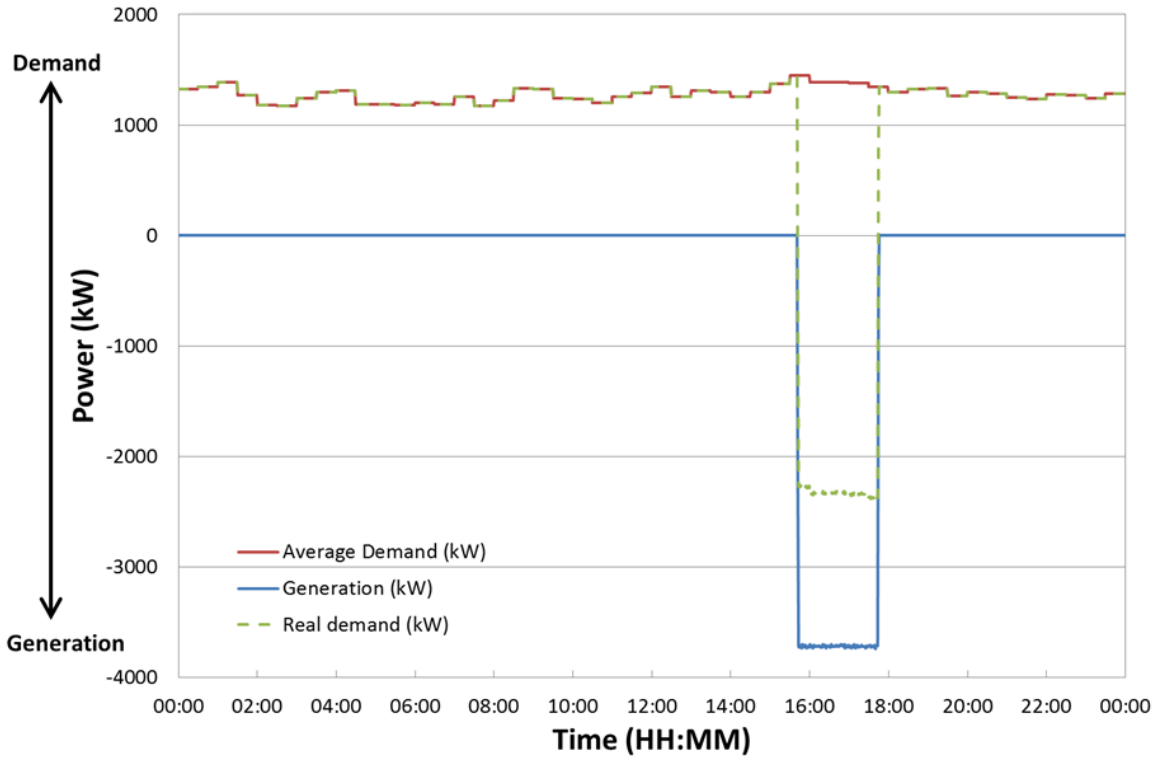
Zero kW reached at 15:43:49

Consumption restored at 17:48:19

Outcomes – generation support

Customer C: **Supermarket**
Contract Type: Benchmark
Payments: Availability & Utilisation
Contracted DSR: 3.6 MW

Availability: 3pm – 6pm, weekdays
Run hours cap: 2 hours
Response Time: 20 minutes
Season: November – March 2014



DSR called at 15:40:27

Generators start at 15:41:36

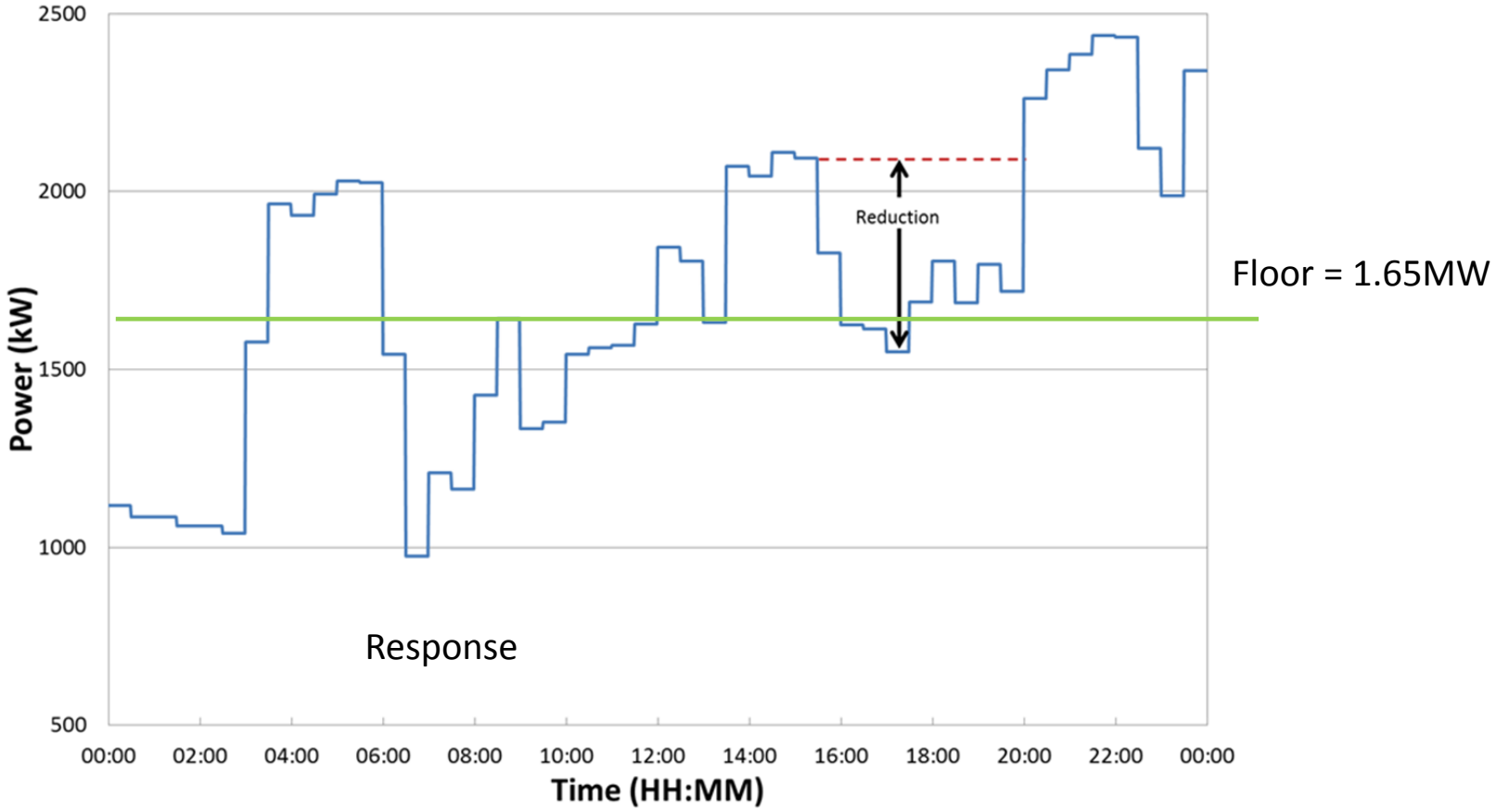
Full power output reached at 15:42:50

Generation reduce to zero at 17:49:56

Outcomes – demand reduction

Customer E: **Refrigeration**
Contract Type: Floor
Payments: Daily Payments
Contracted DSR: 0.60 MW

Availability: 3pm – 7pm, weekdays
Run hours cap: 4 hours
Response Time: 20 minutes
Season: February – March 2014



Technical

What notification of DSR actions or coordination with other parties would be required if this approach becomes business-as-usual to ensure any interactions or impacts could be managed?

- This aspect of operation did not form part of the CLNR trials

but

- The availability windows would be known in advance and so could be pre-notified for each year of operation;

- However, the utilization would not be definite and, when initiated, may be called either
  pre- or post gate closure depending on the circumstances.

Outcomes – Overall learning

- Customers are willing to sign contracts with DNOs at STOR prices
- Customers can deliver the agreed contracted response (magnitude and timescales).
- We achieved a utilisation reliability in the order of 80%.
- This indicates that DSR could be a viable alternative to reinforcement but a probabilistic approach is needed when planning / purchasing.
- Customer identification and recruitment is a challenge but it is possible.
- It's easier to sign-up customers that participate in STOR as they are already comfortable with the concept and have found the flexibility required……but sharing arrangements are needed if this is to transition from trial to BAU.
- In order to participate customers are looking for a bankable business case with guaranteed returns from their investment in the required metering, controls, changes to business practices and processes, etc. They may therefore need to provide their DSR services to other parties as well as DNOs.

Any Questions?

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