Session 3:
Introduction to Breakout Sessions

Asheya Patten – National Grid
INTRO TO AFTERNOON BREAKOUTS

System Needs & Product Strategy

Optimising the Use of Distributed Energy Resources

Customer Protection & New Business Models

Shaping Future Markets & Intersects

DIAL SQUARE

W CLUB

LEGENDS BAR

M CLUB
Breakout Session 1:

Simplifying Balancing Services

Patrick Cassels – National Grid
Adam Sims – National Grid
System Needs

Patrick Cassels
Senior Operability Strategy Analyst
Contents of the Session

1. System Needs
   a) Inertia and Rate of Change of Frequency
   b) Frequency Response
   c) Reserve
   d) Reactive Power
   e) Black Start

2. Product Strategy
   a) Quantitative consultation questions
Themes

• Balancing services needs are increasing, with greater extremes and more volatility.

• There is an increasing requirement for flexibility particularly closer to real-time.

• Today, we contract ahead for firm needs and access flexibility via trading and BM.

• Flexibility is becoming less available in the BM which reduces our ability to meet system needs using existing methods.

• Improvements are needed to facilitate access to flexibility closer to real-time.
Key Messages

System Inertia and RoCoF
- Inertia will continue to fall and be lower more often.
- It is presently most economic to manage large losses.

Frequency Response
- Faster response will help to reduce a growing requirement.
- Additional high frequency response is needed when demand is low.

Reserve
- We are exploring options to access reserve closer to real-time.
- Additional downwards reserve is needed when demand is low.

ReACTIVE Power
- Reactive power is not correctly valued and providers are less available.
- More reactive absorption is needed to reduce high volts when demand is low.

Black Start
- There are new contract opportunities from 2018.
- Alternative future approaches are being investigated.
Product Strategy

Adam Sims
SO Flexibility Manager
Product Strategy Consultation

• Consultation closes 18th July
• Responses via website form

• Today we are asking some questions to get early views on collective industry thinking
Q1: Balancing Services Market Issues

1. Too many markets with different technical requirements
2. Not been transparent to the market about our criteria for assessment
3. Some markets are over- and some undersubscribed, despite having overlapping delivery
4. Not being transparent about our requirements (both implicit and explicit) and how they interact with each other
Question 1

• Do you agree with the summary of the issues identified around balancing services markets?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree
Q2: Standardisation

• The values of variable parameters in the assessment of existing products are not apparent (FFR, FR, STOR)

• Those products can be better standardised

• More product definition will enhance transparency of market signals:
  • Diurnal availability windows, e.g. 24-hour, 24 Hour Triad Avoidance, Overnight, Evening Peak
  • Contract terms, e.g. 1 month, 6 month, 1 year, 2 years
  • Speed of delivery of reserve energy, e.g. 2 minutes, 5 minutes, 10 minutes, 20 minutes
Question 2

• What effect will fixing product parameters have on transparency and competition in the markets?

1. Very Positive
2. Positive
3. Neutral
4. Negative
5. Very Negative
Q3: Improvement

- Where should ancillary services sit on this spectrum?
Question 3

• On a scale of 1-5, where do you see the optimum balance being between single product and multiple products?

1. Multiple standard products, no variables
2. Multiple standard products, some variables
3. Multiple products with variables, (as today)
4. Small number of products, some variables
5. Small number of products, multiple variables
Q4: Secondary Trading

• If we moved to more standard products, could they be traded prior to delivery?

• Parties would all need to be pre-qualified, there may be limitations or exchange rates depending on location, etc.
Question 4

• The introduction of secondary trading in balancing services would be?

1. Very Positive
2. Positive
3. Neutral
4. Negative
5. Very Negative
Q5: Product Stacking

- Depending on product design, stacking of different products may be possible.
- This would allow providers to access multiple revenue streams.
- The interactions between products would need to be understood and valued.
- Interaction with available contract term (i.e. if long-term contracts are available, stacking may be less important).
Question 5

• How important is the ability to stack multiple products?
  1. Very Important
  2. Somewhat Important
  3. Not Important
Q6: Contract Term

Short Term Price Signal

Currently <2 years

Long Term Contracts
Question 6

• What is your preference for short or long term products?

1. Short
2. Mix
3. Long
Question 7

- What are your views on trialling different procurement approaches such as cleared price and day/week ahead markets?

1. Very Positive
2. Positive
3. Neutral
4. Negative
5. Very Negative
Simplification of Products Approach

Stage 1
Rationalise existing product suite through removal of obsolete products

Stage 2
Increase transparency of remaining services through standardisation of T&Cs, procurement windows and assessment methods

Stage 3
Develop improved services in conjunction with industry
Question 8

• Do you agree with our approach to resolving the issues identified through simplification of the product suite?

1. Strongly Agree
2. Agree
3. Neutral
4. Disagree
5. Strongly Disagree
Summary

• What does success look like in this area in 5 years?

• What are the key next steps to achieving this?
Thank You

Please join us in our networking break at the Woolwich Suite
Breakout Session 2:

Optimising the Use of Distributed Energy Resources

Rhiannon Marsh – National Grid
Sotiris Georgiopoulos – UK Power Networks
Matt Watson – Western Power Distribution
Session structure

What do we mean by ‘optimising the use of DER’?

Commercial principles, possible market models and examples

Discussion on your views
Decarbonisation, decentralisation, digitisation

-10GW gas

Electric vehicles

Demand side response

Onshore competition

-8GW coal

Storage

+10GW solar

Distributed generation

+10GW wind
### Possible routes to market for flexibility

<table>
<thead>
<tr>
<th>Market actors</th>
<th>BEIS/EMR delivery body</th>
<th>Suppliers</th>
<th>System Operator</th>
<th>SO/DNOs/DSOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB Markets</td>
<td>Capacity market</td>
<td>Wholesale market (&amp;BM)</td>
<td>Network Charging signals</td>
<td>Energy Balancing</td>
</tr>
<tr>
<td>Products</td>
<td>a</td>
<td>b</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>

**Route to Market & Potential Partners**

- 1: Aggregators
- 2: Suppliers
- 3: Brokers
Commercial principles

**DER perspective**
- Able to offer multiple services to multiple market participants
- Simplicity
- May require aggregation
- Demonstrate service delivery
- Solutions should be market-based and transparent

**Network perspective**
- Access and visibility required
- Whole system approach to transmission and distribution issues
- Align to service simplification
- Connect and manage principles extended to cover new distribution connections
Possible models

**SO coordinates**

- DNO
  - Commercial & call off data
  - Network Capability Data
  - Commercial Data
  - Call-off Data

- National Grid
  - Commercial Data
  - Call-off Data

- Aggregator System
  - Commercial Data
  - Call-off Data
  - Output Data

- DER
  - Commercial Data
  - Call-off Data

**DNO coordinates**

- National Grid
  - Commercial & call off data
  - Network Capability Data
  - Commercial Data
  - Call-off Data

- DNO
  - Commercial Data
  - Call-off Data

- Aggregator System
  - Commercial Data
  - Call-off Data
  - Output Data

- DER
  - Commercial Data
  - Call-off Data

**Multiple parties coordinate**

- National Grid
  - Commercial & call off data
  - Network Capability Data

- DNO
  - Commercial Data
  - Call-off Data

- Aggregator System
  - Commercial Data
  - Call-off Data
  - Output Data

- DER
  - Commercial Data
  - Call-off Data
Possible models

DNO and independent aggregation

DNO Aggregation

DNO Control

Independent Aggregation

DER

* Could be ANM or manual process

Other models?

Pros and cons?
Power Potential (TDI 2.0)
“Working together towards a sustainable energy future”

Sotiris Georgiopoulos – UK Power Networks
Power Potential - Key Facts

- Funding mechanism: Ofgem Network Innovation Competition (NIC)
- Official Name: Transmission and Distribution Interface 2.0 (TDI 2.0)
- Project Lead

In partnership with:

- Start Date: Jan 2017
- End Date: Dec 2019
Power Potential – In a nutshell

The project will focus on the creation of a regional market for DER connected to the distribution network to provide the following services to the System Operator:

1. Dynamic Voltage Support (MVAr for low and high volts).
2. Constraint Management (MW).

GSPs in the project scope
Customers and Stakeholder Benefits

- The project will help enable more customers to connect in the South East and for new and existing customers with the possibility of providing services to National Grid and accessing additional revenue streams.

- Services procured from DER will be coordinated such that operation of the distribution and transmission networks are kept within operational limits and constraints are not breached.

- Defer network reinforcement needs in the transmission system.

- When deployed, Power Potential can deliver:
  - 3720 MW of additional generation in the area by 2050.
  - Savings of £412m for UK consumers by 2050.
**High Level Plan**

1. **Design**
   - Jan 17 – Dec 17

2. **Build**
   - Jan 18 – Jun 18

3. **Test**
   - Jul 18 – Dec 18

4. **Trial**
   - Jan 19 – Dec 19

**DER Trial Requirements**
- Trial recruitment

**Testing of the solution**
- Commercial arrangements

**Trial Participation**
Market design – contract for trial

- Framework agreement to capture operational and commercial requirements of both parties
  - National Grid ↔ UKPN ↔ DERs
  - Use best practice and streamline content
- Framework agreement in place 12 months prior to trial commences
- Tenders to procure service will run closer to real time, driven by participant feedback and system requirements
Power Potential reactive power—roles and responsibilities

<table>
<thead>
<tr>
<th>DER</th>
<th>UK Power Networks</th>
<th>National Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 months ahead</td>
<td>Contract with UKPN</td>
<td>Contract with DER</td>
</tr>
<tr>
<td></td>
<td>Contract with National Grid</td>
<td>Run tender to procure service. Assess effectiveness based on location.</td>
</tr>
<tr>
<td>Closer to real time</td>
<td>Submit prices and technical information to UKPN</td>
<td>Forecast availability of DERs</td>
</tr>
<tr>
<td>12h to 10 mins ahead</td>
<td>Successful parties confirm energised</td>
<td></td>
</tr>
<tr>
<td>Within 30 to 10 mins ahead</td>
<td>Deliver service</td>
<td>Verify volume available and dispatch unit(s)</td>
</tr>
</tbody>
</table>
Commercial timeline

**ACTIVITY**

Now – July 2017: Agree data and financial flows to be captured in Framework Agreement (FAs)

August: FA finalised

Sept – November: Active recruitment and progression towards signing FA

December 2017: FA signed

Closer to real time (e.g. week ahead): Tender ahead of time (timeframes dependent on feedback and SO requirements)

January 2019: Start trial phase

January 2020: Trial reports

**ENGAGEMENT**

Webinars / workshops / one-to-one discussions to discuss Power Potential and other projects exploring the interface between transmission and distribution

Market Development Advisory Panel – advisory capacity and not part of the approval process
Thank you
NEXT GENERATION NETWORKS

Project Entire

Matt Watson
Innovation & Low Carbon Networks Engineer
Future Networks Programme

Assets
- Telemetry
- Decision support
- Improved assets
- New assets
- Flexibility
- Automation
- Incident response

Customers
- New connections
- Upgrades
- Information
- Self Serve
- Products/Service
- Tariffs
- Communities

Operations
- Reliability
- Forecasting
- DSO
- DSR
- GBSO Interface
- Efficiency
- SHE and Security

Network and Customer Data
- Airborne Inspections
- AIRSTART¹
- Telecoms Analysis
- Superconducting Cable
- SF6 Alternatives
- MVDC Test Lab
- Smart Energy Laboratory
- Statistical Ratings
- Primary Network Power Quality Analysis
- Hybrid Heat Pump Demonstration
- Hydrogen Heat & Fleet
- Carbon Tracing
- HV Voltage Control
- Solar Storage
- LV Connect and Manage
- Sunshine Tariff
- CarConnect
- Industrial & Commercial Storage
- DSO/SO Shared Services
- Project SYNC
- Project ENTIRE
- Smart Meter data for Network Operations
- Distribution Operability Framework
- Times Series Data Quality
- Voltage Reduction Analysis
- LV Connectivity
- Smart Systems and Heat²

Note: 1 – Funded by Aerospace Technology Institution; Note 2 – Funded by the Energy Systems Catapult
Project Entire

- A key DSR project following on from FALCON and SYNC
- Focus on commercial mechanisms and revenue stacking
- How to make DNO led DSR commercially viable
- Interaction between DNO and SO led DSR
- Understand scalability of DSR
- Fits into wider DSO and active networks innovation
- Looking for alternative solutions to 132kV reinforcement
What we are doing?

• Facilitating 5 WPD CMZ services in the East Midlands
• Developing managed service
• Developing technical systems and processes
• Wider engagement in target area
Customer proposition
Customer Proposition

• Creation of Flexible Power branding
• Simplifying DSR programmes into single service
• Customer engagement and recruitment
• Increasing profile of DSR in target area
• Revenue stacking from multiple programmes
Managed Service

- Advanced control capability from new centralised facility
- Continuous monitoring of assets with alerts and alarms
- Agreed operating procedures taking away local resource burdens.
- Customer has ultimate control of inhibiting dispatch
- Simplifying DSR for customers
- Asset optimisation
- Self service statements and reports through customer portal
Services

Simple CMZ service:

• Week ahead notification of probable requirement
• Arming fee assures of profit
• Utilisation fee covers operating costs
• Designed to integrate with other services
• No deductions for service payments

• Key driver behind the project
Services

Stacked service:

• CMZ
• Flexible STOR
• TRIAD Avoidance

• Simple managed services
• Flexible Power will declare participants in and out of the different revenue streams
Who are we targeting?

• Half hourly metered customer in the target area
• Ability to reduce demand or increase generation within 15 minutes of a signal and hold for at least 2 hours
• Simple or managed service
• Direct customers or through aggregators
How to get involved

- www.flexiblepower.co.uk

- Wpdflexiblepower@westernpower.co.uk
Discussion

What are your views in the possible models for optimising the use of DER?

What are your key concerns and priorities?

What does success look like to you in 5 years?

Within your groups, please agree:
• a facilitator (to ensure all views are heard)
• a scribe (to capture views)
Breakout Session 2:
Closing Remarks

Rhiannon Marsh – National Grid
Thank You

Please join us in our networking break at the Woolwich Suite
Breakout Session 3:

Customer Protection & New Business Models

Paul Lowbridge – National Grid
Louise van Rensburg – Ofgem
Jonathan Graham – Association for Decentralised Energy
Consumer protection and new business models

Break-out session at Power Responsive conference

Louise van Rensburg
27 June 2017
Our role

Protecting current and future consumers

• Regulating monopolies
• Access to the system
• Making markets work for consumers
• Overseeing regulatory and commercial arrangements
• Being independent – thinking long term, providing stability
Environmental change

Technological change

Integration with Europe

Changing generation mix

Loss of cheap flexibility of fossil fuel

Cheaper renewables and batteries

Smaller scale, distributed and intermittent sources

Capacity markets

New business models

Integration with Europe

Interconnection

Smart technologies

Self-generation

Active demand side participation

Context: The Changing World

Ofgem Future facing work: ensuring regulation supports developments
Benefits of a smart, flexible system

Reduce the costs of our future low carbon energy system, while ensuring system is secure and consumers are in control (£17-40bn cumulative savings for GB to 2050*)

- Defer or avoid network investments
- Reduce overall back up capacity required
- Reduce system operation costs (e.g. balancing)
- Maximise the use of low carbon capacity

Consumers more in control, benefiting from a secure energy system, with lower bills

Cumulative savings to 2050 are primarily on the distribution network side, with £4-13bn in avoided distribution costs and £0.04-1.5bn in avoided transmission costs) comparing flexibility option scenarios with a no-flex counterfactual*.

Cumulative savings to 2050 from avoided generation costs are £14-19bn compared to a no-flexibility counterfactual*, which reflects a reduced need for low carbon capacity (6-9GW) and peaking plants (3-29GW).

Cumulative savings to 2050 from avoided generation costs could be £13-15bn compared to a no-flexibility counterfactual* by improving the utilisation of low-carbon (low marginal costs) generation and reducing reliance on peaking fossil fuel plants.

Cumulative savings to 2050 from capital costs are £14-19bn compared to a no-flexibility counterfactual*, which reflects a reduced need for low carbon capacity (6-9GW) and peaking plants (3-29GW).

Energy consumers engaged through intermediaries or directly. Increased participation in energy markets with competition benefits.

Source: DECC Least regret flexibility project (2016)

*Cost savings in DECC Least-regret flexibility project reflects the benefits of all flexibility options, i.e. not just storage and DSR but also interconnection and flexible CCGTs.
Joint Call for Evidence

Removing policy and regulatory barriers
- Enabling storage
- Clarifying the role of aggregators

Providing price signals
- System value pricing
- Half hourly settlement
- Smart tariffs
- Smart distribution tariffs
- Other government policies

A system for the consumer
- Smart appliances
- Ultra low emission vehicles
- Consumer engagement with DSR
- Consumer protection
- Cyber-security

Different parties in system and network
- Innovation
  - The impact of system changes
  - The need for immediate action
  - Further future changes to arrangements

Even greater diversity in consumer engagement - Priority remains consumers
What this means

• Benefits to consumers in having a flexible energy system – we are working to allow for different possibilities and different entities and being alive to change:
  - Will be even greater diversity in consumer engagement – consumers will be exposed to new products and new interactions: e.g. Demand-side response
  - Important that consumers are protected
  - I&C and Domestic customers

• We regulate where necessary to protect consumers’ interests and we carefully consider whether any regulatory requirement is proportionate and necessary to protect consumers.... We have powers to take enforcement action where appropriate.
About the ADE

The voice for a cost effective efficient, low carbon, user-led energy system; a market in which the Association’s membership can flourish

Areas of focus:
- Combined heat and power
- Demand side energy services
- District heating and cooling
Why is there a role for aggregators?

- Customers may think that:
  - Electricity market without a portfolio is viewed as risky
  - Power market regulations are outside of core role
  - Unsure how to secure best value in markets

‘We make beer, not power’
What problems are we solving?

Energy user

- Who can I trust?
- How do I compare value?
- What should I expect?

DSR Code of Conduct:

- Assurance that ethical business standards are adhered to throughout the industry.
- Lets customers see which providers are meeting standards.
- Ensures bids/proposals include common elements so different products can be compared on a level basis.

Bringing Energy Together
How did we develop the Code?

- Developed through a Committee since early 2017
- Aggregators, suppliers, and industrial customers and their representatives.
- Ofgem and BEIS attended Committee meetings as observers.
- The draft Code of Conduct is nearly complete – A consultation will be published and shared in next two weeks.
## Code addresses five areas

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales &amp; Marketing</strong></td>
<td>Sales representatives are properly trained and introducing honest and factual marketing material to customers.</td>
</tr>
<tr>
<td><strong>Proposals and pre-contractual information</strong></td>
<td>The contracting process is transparent and does not make false promises to customers or obligate them to any unreasonable standards.</td>
</tr>
<tr>
<td><strong>Contract</strong></td>
<td>Contracts are accurate and representative of true savings and payback to customers.</td>
</tr>
<tr>
<td><strong>Technical Due Diligence &amp; Site Visit</strong></td>
<td>Critical energy assets are safe from the threat of cybercrime, requiring best practice to protect customer’s data and infrastructure. To protect on-site personal, site visits are conducted in a safe and secure manner.</td>
</tr>
<tr>
<td><strong>Complaints</strong></td>
<td>There are clear, transparent processes for cataloguing, processing and responding to complaints.</td>
</tr>
</tbody>
</table>
Sales & Marketing

- Sales materials must be accurate and sales representatives must behave with honesty and integrity.
- Sales staff must be properly trained to communicate technicalities to customers and provide honest data to back up product claims.
- Staff must behave in a manner that does not deceive, pressure, or harass potential customers.
Proposals and contracts

- The Code requires that all relevant benefits are clearly laid out, fees are thoroughly explained and the requirements of operating within various government schemes are clearly presented to customers.
- A contract must be presented that clearly states its terms and makes the customer aware of their risks, liabilities, and obligations.
Complaints

- By providing standards for members to process, respond to and register complaints, the Code installs mechanisms to resolve disputes that arise in a timely and attentive manner.
Technical Due Diligence

- The code ensures that best practices to protect electronic data and assets are considered as systems are implemented.
- Code Members must strictly adhere to rules and regulations relevant to the handling and protection of customer data.
- The Code sets processes to help prevent electronic invasion or theft of data, as well as procedures to react and strengthen systems in the event of cyberattack (in lieu of accepted standards).
- The Code requires that member installations are built to ensure protection of their employees and liability coverage is provided in the unlikely event of an accident.
Key questions for consultation

- Are there any proposed requirements which are too specific, given the changing nature of DSR technology and variability between different market participants?
- Are there any proposed requirements which are not sufficiently specific or prescriptive?
- Are there any market failures or market abuses, either potential or already present, which remain unaddressed? We would welcome specific examples.
Governance and enforcement

- Just as important as the commitments set out by the Code will be its enforcement.
- Vital that customers have assurance that an aggregator or supplier is meeting the expected standards when they are advertised as a member to the Code.
- The ADE will be developing an enforcement mechanism to provide this assurance over the coming months.
Governance and enforcement

Adjudication

- Triggered by
  - Complaints?
  - Audits?
  - Who delivers adjudication?

Enforcement

- Leads to:
  - Scorecard publication?
  - Other penalty?

Scheme removal

- At what stage?
  - Audit process for returning?

Bringing Energy Together
A balancing act for scheme design

- Scheme viability
- Cost to market
- Standards are met
- Market assurance
Breakout group discussions

- Are there any market failures or market abuses, either potential or already present, which remain unaddressed? We would welcome specific examples from customers of any specific market activity which raised any concerns.

- Have we captured the right outcomes for the different sections of the Code? Are there other outcomes which should be captured?

- As the ADE develops the structure to deliver the scheme, what enforcement mechanisms would you recommend to encourage compliance (i.e. removal from scheme; publicising issues; a combination)? Please explain why.
Further questions?

Thank you

Jonathan.graham@theade.co.uk
Twitter: @theade_UK @enerjg
Breakout Session 3:

Closing Remarks

Jonathan Graham – Association for Decentralised Energy
Thank You

Please join us in our networking break at the Woolwich Suite
Breakout Session 4:

Shaping Future Markets & Intersects

Asheya Patten – National Grid
Duncan Sinclair – Baringa
Aims of the Session

1. To gather views on market issues other than balancing services
2. Create possible developments that could improve those markets
3. Identify how to take these ideas forward, noting that control of these markets does not sit with the SO
Market Interaction

- Markets affect each other, and the economics of providers
- Decoupling of markets through the fundamental changes which have occurred in the last few years
- Dark and clean spreads are not linking all markets as they used to do
- Is a different relinking of markets required to deliver stronger investment signals in this more decentralised energy system?
Balancing Market (BM)

- Balancing Market is intended to allow the SO to balance supply and demand within gate closure.
- BM parties provide bid and offer prices to change their Final Physical Nominations (FPNs).
- SO uses these prices to choose the most economic solution to manage residual balancing role.
- BM is also used to facilitate access to mandatory balancing services (response and reactive) by repositioning units as required.
- This is effectively a ‘stacking’ of services, as the SO may achieve a more economic outcome by using a single unit to meet more than one requirement.
Balancing Market (BM): Issues

- Number of BM participants is reducing
- This lowers competition in the market, both for energy and flexibility
- Energy balancing actions are more expensive
- More difficult to secure the network
- Imbalance price more volatile

- Increase in DNO-connected parties wanting to actively manage their energy position
- This could increase competition in the market
- Reducing costs and imbalance price
- Increase network security by accessing new flexible assets

BM participation is difficult for smaller parties – what is the best way to unlock potential?
Balancing Market (BM): Talking Points

• Should the Balancing Market only include BM bids and offers requirements to balance the system?

• What are the issues around wider access to the BM? Should the costs of administration be smaller for smaller players?

• What are the benefits and risks of non-locational BMUs?

• Should BSUoS charging arrangements reflect local congestion signals?

How can clarity on the purpose of the BM be provided?
Wholesale Market

• Trading of electricity between generators, suppliers and non-physical traders
• Month ahead, day ahead or intra-day ahead of gate closure
• Over The Counter or via power exchanges
Wholesale Market: Issues

• Majority of electricity is traded OTC; power exchanges make up 10-15% of traded volume per month
  
• Near-term markets are important for enabling firms to match their contracted positions with their physical position, however long term contracts are important to hedge against price volatility
  
• Ofgem’s Secure and Promote initiative has increased liquidity and made it easier for smaller parties to trade, however baseload products still dominate and churn ratio remains low*
  
• Majority of trading is happening in market-making windows with little liquidity outside of these times

Wholesale Market: Talking Points

• What would be the benefits and risks to limiting day ahead physical hedges (e.g. a percentage of all positions must be traded intraday)?

• Could the development of regional markets create regional pricing signals, and would this be desirable or would it allow greater use of market power?

• Should there be further obligations on parties to balance their positions (e.g. reflecting regional scarcity)?

• Would a less socialised imbalance regime better reflect local congestion costs, and would this signal the need for more flexibility?

• How could behind-the-meter peer-to-peer trading affect the market (e.g. blockchain)?
Capacity Market

• Intended to drive investment in more sustainable, low-carbon capacity at the least cost

• Cleared price auction to deliver capacity at times of system stress 1 or 4 years ahead

• Parties receiving renewable subsidies, e.g. Contracts for Difference, are excluded
Capacity Market: Issues

• Low levels of competition in DSR* auctions, requirement not met, no further auctions planned

• 85% of successful capacity in the last T-4 auction was from existing generation; new build was 7%
Capacity Market: Talking Points

• How could the market signal be strengthened (e.g. procuring capacity that is able to provide both high and low frequency response services)?

• Does DSR need to be supported to increase participation?
European Developments

- Capacity Allocation and Congestion Management guidelines will create a pan-European day ahead and within day balancing tool
- Project Terre and [Mari] are creating new pan-European balancing products in timescales which could be used instead of balancing actions
- Forward Capacity Allocation guidelines creating pan-European forward trading platform
- Electricity Balancing Guidelines will harmonise imbalance pricing regime
Balancing at the Distribution Level

• Rapid expansion of Distributed Energy Resources (DERs) in a number of markets internationally – California, New York, South Australia – as well as GB is changing the way that distribution systems are operated

• Over the past 5 years over 10 GW of solar connected to the GB system, most of which is at distribution level

• Significant queues for connecting renewables and batteries on some networks

• Expected future growth in demand for Electric Vehicles
Options for Balancing Distribution Systems

- Wholesale markets with nodal pricing within distribution system
- Dynamic Distribution Use of System Charging
- Distribution System Balancing Platforms
- Local energy markets

combinations
Distribution Level Balancing: Talking Points

• How responsive would customers and DERs be to more granular and localised price signals?

• How would local energy markets interact with the national wholesale market?

• How would distribution level balancing platforms interface with the Balancing Mechanism?

• Would DERs have a single or multiple routes to market for flexibility?
Table Discussions

For each market and for different types of participant, what aspects are:

A. Most challenging or provide the biggest commercial opportunity?
B. Have the greatest interaction with other markets?
C. Necessary to better facilitate competition?

In developing and proposing changes to these markets:

A. What does success look like in this area in 5 years?
B. What are the key next steps to achieving this?
Breakout Session 4:

Closing Remarks

Asheya Patten – National Grid
Thank You

Please join us in our networking break at the Woolwich Suite