

Balancing Services Workshop



Introduction & Background
Mark Ripley

Housekeeping

- No Fire Alarm test planned
- Fire Exits
- Amenities
- Safety Message

Workshop Agenda

10:00	Workshop introduction and background to the proposals
10:15	Ofgem : Options to deal with an uncertain security of supply outlook
11:00	Overview of Demand Side Balancing Reserve
11:30	Working Session – Questions and Feedback on DSBR Issues
12:15	Q&A on DSBR
12:30	Lunch
13:15	Overview of Supplemental Balancing Reserve
13:45	Working Session – Questions and Feedback on SBR Issues
14:45	Q&A on SBR
15:00	Close

Objectives for the Workshop

- To share the background on how we got here
- To build understanding on the proposals
- Interactive discussions to answer your questions
- Gain feedback on the design of our proposed measures
- Discuss how we propose to move forward

27th June 2013 Announcements

- **EMR Capacity Mechanism Design**
 - Initiation of first capacity auction in 2014 for delivery 2018/19
- **Ofgem press release / open letter consultation highlighting**
 - Narrowing margins compared to the 2012 Capacity Assessment report, and uncertainty around the security of supply outlook
 - No disruptions to consumers' supply imminent or likely, providing the industry manages the problem effectively
 - DECC/Ofgem/NG working together to develop options
 - NG to consult on two new Balancing Services
 - Ofgem would need to approve any proposals
- **NG informal consultation on potential procurement of additional 'reserves' to balance the system if margins get tight**

Background (1)

- Narrowing margins mid-decade in Ofgem's 2012 Capacity Assessment Report and subsequent closure announcements
- Recognition that the Capacity Market would not address these short term concerns
- Security of supply is the responsibility of the market and underlying energy policy, but recognition that additional intervention may be required given the emerging situation
- DECC/Ofgem/National Grid working together in recent months to consider options

Background (2)

- Narrowing margins could ultimately result in imbalances on the day which would fall to National Grid to resolve in balancing the system in operational timescales
- DECC, Ofgem and National Grid agree it is prudent to consider additional measures to support us in balancing the system against this uncertain security of supply outlook
- We have proposed additional tools that could be used to address these concerns as an interim measure and agreed to consult
- This would be an extension of our traditional balancing role

New Balancing Services

- Two new Balancing Services are being developed:
 - **Demand-Side Balancing Reserve (DSBR)**
 - **Supplemental Balancing Reserve (SBR)**
- Subject to Ofgem's approval, National Grid would contract for these services where it is considered necessary and economic to do so

Demand Side Balancing Reserve



Peter Bingham

DSBR - Concept

- Simple, low cost solution allowing the demand side to offer balancing services to the System Operator
- New opportunity designed to stimulate significant volumes of new demand side resources
- Preparation for DSR transitional arrangements in the Capacity Market (beginning 2016/17)
 - Supporting prequalification and verification activities
- To provide additional reserves to support security of supply
- Designed not to impact on existing balancing services providers (e.g. by depriving of scarcity rents)
- Likely to be despatched infrequently

DSBR - Participation

- Consumers at sites which are half-hourly metered in central settlement, capable of delivering demand reduction in response to an instruction from the SO
- Spirit of offering is to attract new participants from categories 1 and 2:
 1. Load Reduction
 2. On site back-up generation (satisfying demand, no spill)
- Excludes BM participants and resources with a utilisation price < £500/MW, for which alternative mechanisms exist

DSBR - Product

- Demand reduction capable of being sustained for 2 hours or more, between 4 and 8pm, winter weekdays
- Delivery measured against a baseline
 - Metered demand for each half-hour averaged over previous 10 peak demand days
- Initial requirement for winter 2014/15 and 2015/16,
 - Interested in trials with a small number of providers ahead of this
- Thereafter, demand side resources expected to participate in the DSR transitional arrangements under EMR

DSBR – Setup Payments

- Optional set-up fee payable ahead of each winter – designed to cover the cost of establishing and operating processes to reduce demand when instructed
- Intended to encourage demand reduction services from existing resources, rather to invest in new resources
- Fixed in the region of £5/kW to £10/kW
 - Pro-rata for demand reduction that cannot be sustained for 2 hours
- Small(ish) payment avoids the need for complex qualification/verification processes and penalty regime, thus lowering barriers to entry

DSBR – Utilisation Payments

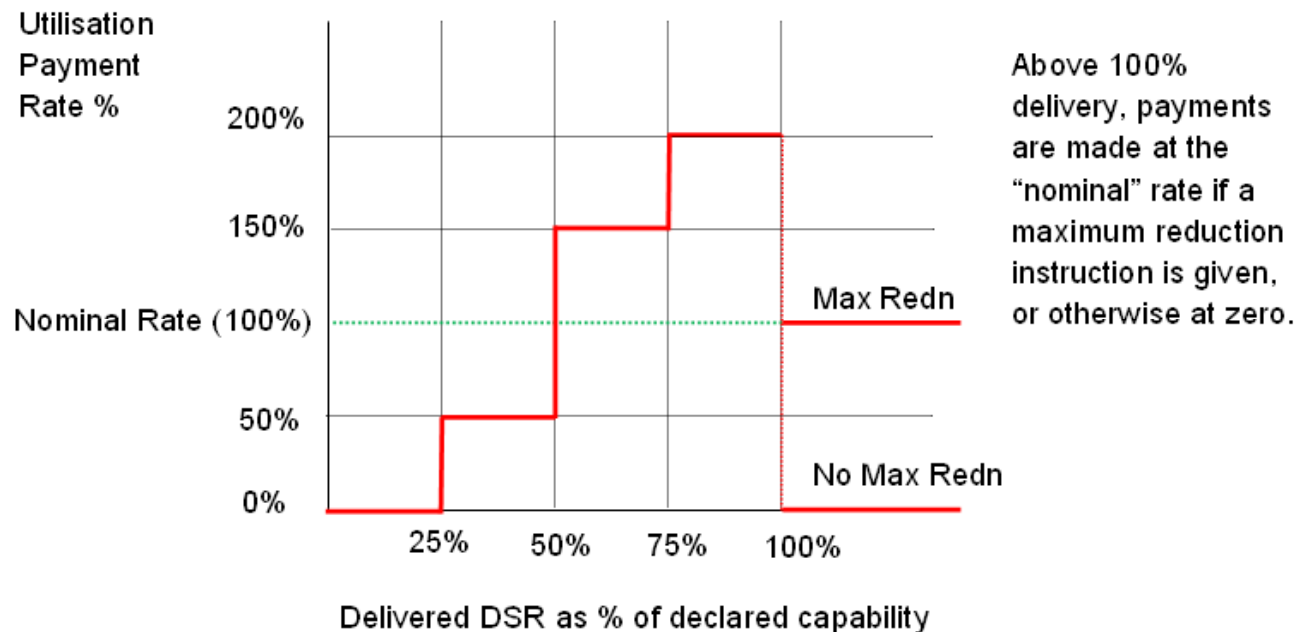
- Consumer specifies the price they would wish to be paid for reducing demand (effectively tendering their value of lost load):

Tranche	Utilisation	Tranche	Utilisation
1	50p / kWh	6	£3 / kWh
2	75p / kWh	7	£5 / kWh
3	£1 / kWh	8	£7.50 / kWh
4	£1.50 / kWh	7	£10 / kWh
5	£2 / kWh	8	£15 / kWh

- Maximum price dependent on VoLL
- Intended to provide a strong incentive to deliver when called
- No penalty for non-delivery
- Impact on cash-out subject to Electricity Balancing SCR

DSBR - Utilisation Payment Profile

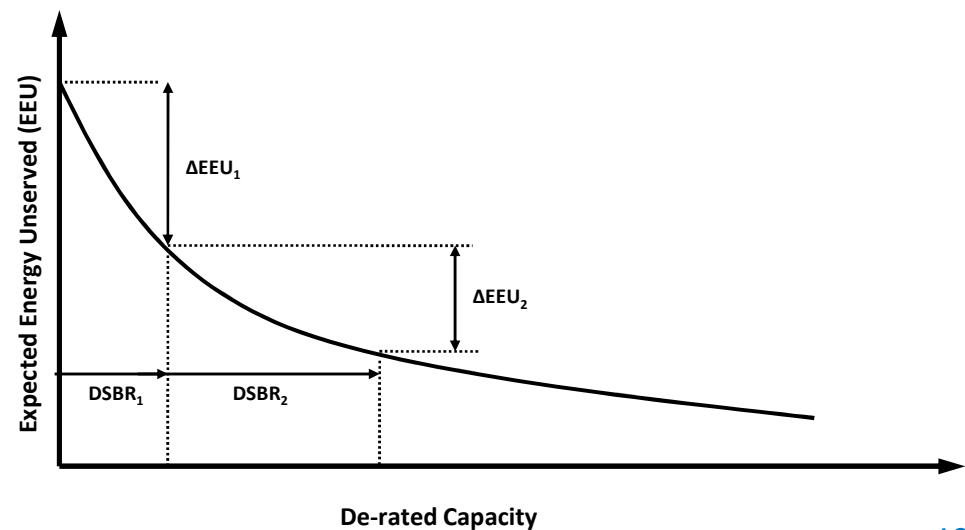
Figure 1: Utilisation Payments vs. Delivered Demand Reduction



- Incentivises delivery with 0% rate paid for first 25%, 50% rate for next 25%, 150% for next 25% and 200% for final 25%
- Incentive to provide an accurate assessment of capability
- £0 payment for first 25% also minimises risk of delivery by way of normal / random deviations from the baseline – true demand reduction only

DSBR – Validation / Assessment

- Validation to confirm Service Provider can control demand, and demand reduction offered is consistent with demand profile
- All valid bids for Product 2 (no setup fee) would be accepted
- Valid bids for Product 1 satisfying an economic assessment would be accepted, evaluated in order of ascending cost against value
 - i.e. $\text{Cost} < \text{Reduction in unserved energy } (\Delta\text{EEU}) \times \text{VOLL}$
- DSBR would be de-rated to 75% in the assessment
- DSBR accepted would be de-rated to 25% in terms of its contribution to capacity adequacy
- No explicit volume target



DSBR - Despatch

- DSBR would be despatched in economic merit order, after more economic Balancing Services have been used
- As much notice as possible would be provided to maximise volume of response delivered
- Despatched in material blocks (e.g. 250MW), from low to high Utilisation Price
- Likely to be called infrequently
- Despatch via Secure Smartphone App and discrete Control Room system. (secure, reliable, simple, auditable) or via Aggregators

DSBR - Procurement Options

NG's consultation proposes a number of different procurement options and invites feedback from the industry:

- Procure direct from end consumers
- Set a de-minimis level and procure from Aggregators, Suppliers, DNOs, larger users only
- Procure direct from end consumers, but subcontract supporting functions to Agents (i.e. sales & marketing, contract administration, despatch and settlement)

DSBR Working Session

In your groups / tables – discuss the proposals and consider the questions on your workmat(20 mins):

nationalgrid	
Demand Side Balancing Reserve Table: _____	
Do you agree with the basic product proposals?	
What are your key issues or concerns with the proposals?	
What improvements to the proposals would you suggest?	

Supplemental Balancing Reserve



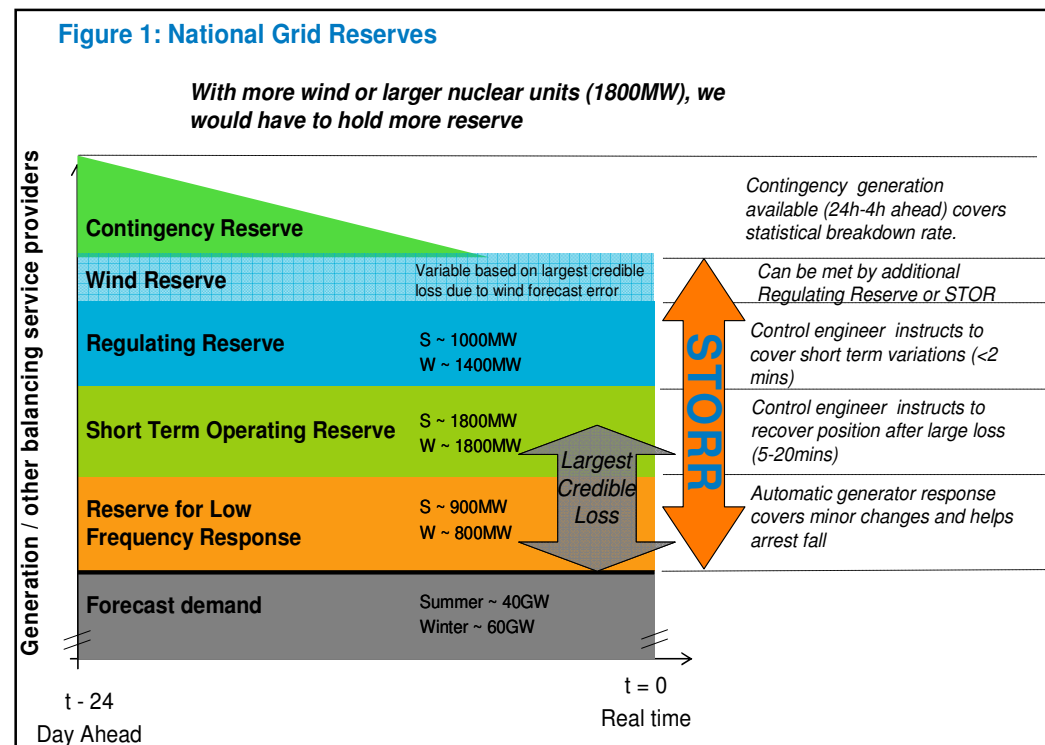
Peter Bingham

SBR - Concept

- System Operator contracts with plant that has exited the market to hold in reserve to be despatched only as a last resort in preference to emergency measures
- Likely to be plant that would be otherwise closed or mothballed, but legally able to generate
- Intended not to impact on the wholesale market or existing balancing services providers (e.g. by depriving of scarcity rents)

SBR – Why not just extend STOR?

- Short-Term Operating Reserve is used to cover against short term plant losses, demand forecast errors, wind intermittency and minor imbalances not resolved by market participants
- Typically 20min response time; 3,800 hours of availability
- Operational tool not intended to deal with capacity shortfalls
- No upward driver of volumes
- Hence new ‘longer-term’ reserve product proposed



SBR - Participation

- Open to generation and demand-side resources
- Must be able to demonstrate ‘additionality’ (e.g. generating plant that would otherwise be closed)
- Minimum of 50MW, capable of operating between 6am and 8pm during winter weekdays
- Plant would be excluded from participating in the wholesale energy market or provision of other Balancing Services
- Capable of Control Room despatch, with real-time operational metering

SBR – Payments & Charges

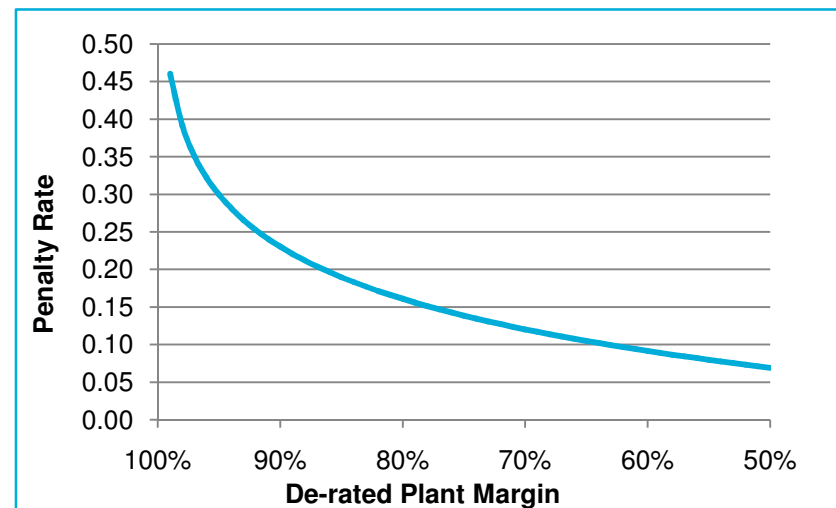
- Contracts would be for one year or two, during 2014/15 and 2015/16
- SBR providers paid an annual Capability Fee (£/kW)
- 20% on demonstration of capability, 80% after the winter
- Tendered prices paid for warming / testing / utilisation
- Non-delivery charges would apply for a delivery shortfall during a stress event (i.e. Emergency Measures deployed)
- Costs recovered via BSUoS charges

SBR – Despatch

- SBR would be despatched by the System Operator as a last resort, after all other balancing services (including DSBR) have been exhausted
- Subject to dynamics and other technical considerations
- Testing instructions may be given to validate capability
- Warming instructions given as appropriate to access capability
- Very unlikely to be used!
- Impact on cash-out subject to Electricity Balancing SCR

SBR – Non-delivery charges and de-rating

- Plant would be procured to cover unlikely events (e.g. LOLE 2.85 hrs per year)
- Plant has no value if unavailable when required; hence mechanism required to incentivise delivery and recover capacity payments for non-delivery
- Also need to determine plant reliability to assess value – difficult for old plant with limited running / maintenance
- We are seeking to identify relationship between plant reliability and the penalty plant owners would be willing to accept for non-delivery
 - Owners of reliable plant would be more willing to accept a higher non-delivery charge
 - Owners of unreliable plant would favour a lower non-delivery charge



SBR – Non-delivery charges and de-rating

- Service Provider chooses a de-rating factor appropriate to their plant and a corresponding non-delivery charge from a menu of options, as per the illustrative example below:

Reliability Factor	Non-Delivery Charge in (£/kwh)	Cap on Non-Delivery Charges
90%	0.23 x CP	2.3 x CP x Q
85%	0.19 x CP	1.9 x CP x Q
80%	0.16 x CP	1.6 x CP x Q
75%	0.14 x CP	1.4 x CP x Q
70%	0.12 x CP	1.2 x CP x Q

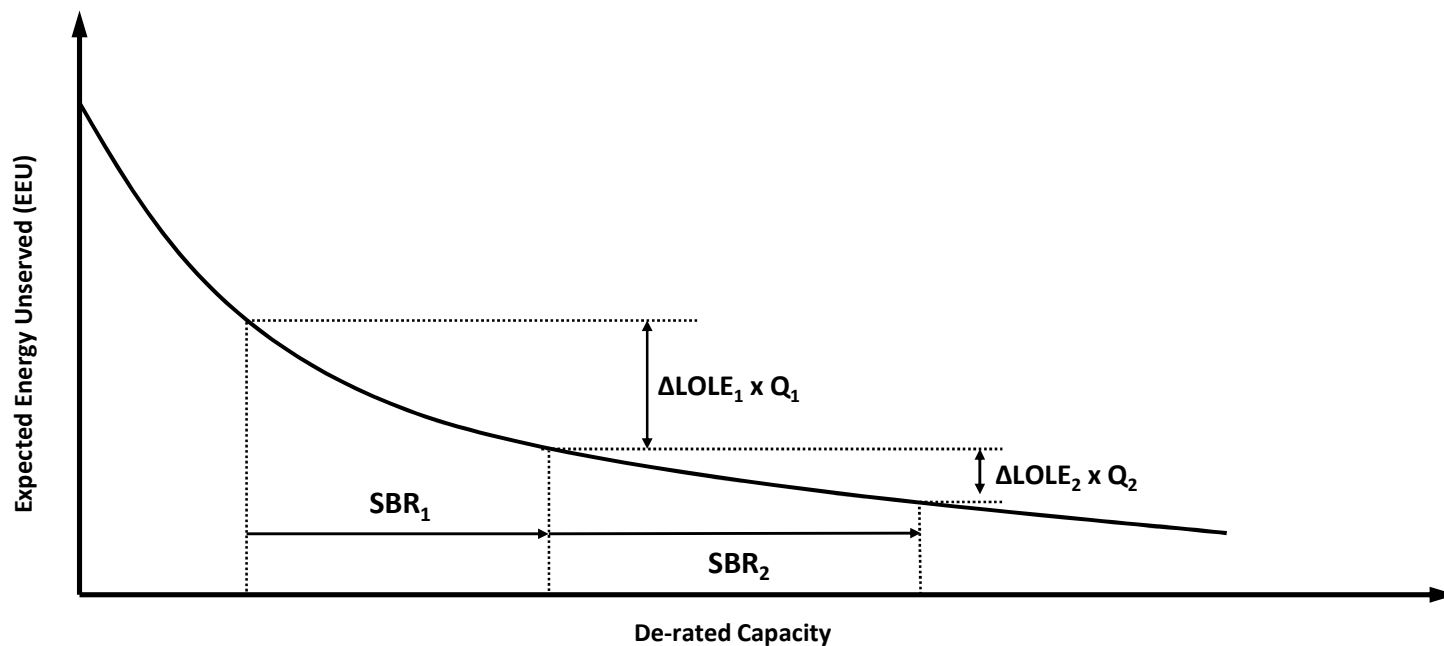
CP = Capability Payment Rate in (£/kW)

Q = Quantity of SBR in kW

- Intended to encourage accurate declaration of reliability
- Non-delivery charges would apply for a delivery shortfall during a stress event (i.e. Emergency Measures deployed)

SBR – Assessment

- Contracts assessed in ascending cost order
- Cost = Capability Payments + likely warming/testing/utilisation costs
- Value = SBR Volume x Reduction in LOLE x VOLL - Cost
- Reduction in LOLE dependent on declared reliability factor
- No explicit volume target



SBR Working Session

In your groups / tables – discuss the proposals and consider the questions on your workmat (20 mins):

nationalgrid	
Supplemental Balancing Reserve Table: _____	
Do you agree with the basic product proposals?	
Do you support our approach to ensuring additionality?	
Do you agree that this resource should sit outside the market?	
Do you support our approach to de-rating and non-delivery charges?	
What improvements to the proposals would you suggest?	

Summing Up



Peter Bingham

Overview

- Ofgem open letter consultation highlights an uncertain security of supply outlook against a range of sensitivities
- NG informal consultation requests feedback on potential design, procurement and use of the proposed DSBR and SBR products
- Ofgem will decide whether to authorise procurement of these products
- Both NG and Ofgem consultations close on 26th July
- Industry Working Groups to be run in August to progress development

Proposed Arrangements – High-level product descriptions

	Demand-Side Balancing Reserve	Supplemental Balancing Reserve
Participation	Half-hourly metered consumers aggregators/Suppliers/DNOs	Generating plant (or demand reduction), >50MW, that would otherwise be closed/mothballed. Must demonstrate additionality. Would be excluded from participation in the energy market.
Availability	Reduce demand on request for at least 2 hours between 4pm-8pm on winter weekdays	Generate specified output/duration on request between 6am and 8pm.
Price	Utilisation price (£500/MWh - £15,000/MWh), option to receive payment to cover set-up costs (in the region of £5-10/kW)	Providers bid capacity and utilisation prices, tender process to procure most economic plant
Penalties	No penalties for non-delivery, high utilisation payments provide incentive to deliver	Non delivery penalties apply- menu choice of plant de-rating factors / penalty rates
Despatch	Despatched via Smart Phone App in ascending price order, most likely after other Balancing Services	Despatched as last resort (including after DSBR) ahead of emergency measures - subject to dynamics.
Cash-out	Neither product impacts on the calculation of Imbalance Prices ahead of the outcome of Ofgem's Electricity Balancing Significant Code Review	

Potential Timeline

