

Demand Side Balancing Reserve

Supporting Report to Authority
18th November 2013

This report is provided to the Authority in support of a formal report submitted by National Grid Electricity Transmission in accordance with Standard Condition C16 (C16 Para 8 (a)(iii)) of its Electricity Transmission Licence, seeking approval from the Authority to modify the Procurement Guidelines, the Balancing Principles Statement, and the Balancing Services Adjustment Data methodology statement to incorporate the proposed new Demand Side Balancing Reserve Balancing Service

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1. This report is provided for Ofgem in support our formal report seeking GEMA approval to make changes to the statements under Condition C16 of our transmission licence that govern the procurement and use of Balancing Services. These changes seek to incorporate the proposed Demand Side Balancing Reserve (DSBR) as a new Balancing Service.
2. Balancing Services are used by National Grid in its role as the National Electricity Transmission System Operator to balance supply and demand in real time and operate a secure electricity transmission system across Great Britain in accordance with our transmission licence obligations. Historically, the margin of supply over demand in the market, together with a range of contracted balancing services, has provided sufficient resources to support us undertaking this activity in an effective, economic and efficient manner.
3. However, given concerns over tightening margins in the mid-decade period, National Grid has agreed to develop two new Balancing Services that would provide additional tools to help in balancing the electricity transmission system against this background.
4. One of these service, Demand Side Balancing Reserve (DSBR), would enable the System Operator to request large energy users to reduce their demand during winter weekday evenings in return for a payment. This service would only be used in extreme circumstances, in the unlikely event that there is insufficient generation available in the market to meet demand.
5. However, while this service might not be required, we consider it prudent to develop this service to be available in our toolbox of balancing services, such that it could be called up on if the need arises. It would also promote the development of an active demand-side market, which will play an increasingly important role alongside the growth of intermittent generation as the UK decarbonises electricity supply.
6. We consulted with the industry on our initial proposals for this product in June 2013, and following the feedback received, we made a number of amendments to the product and published a further Final Proposals Consultation in October 2013. We hosted two industry workshops to discuss these proposals and had numerous bilateral meetings with interested parties from across the industry.
7. We have now finalised our proposals for the DSBR product, drawing on the feedback received from the industry and through the consultation process. This document describes the final product design, including how we will determine the requirement for this service, and, assuming a requirement is identified, how we would procure and use it.
8. Section 2 describes the design of the Demand Side Balance Reserve product. Section 3 summaries the views on the product put forward by the industry in response to our Final Proposals Consultation, Section 4 details how we have addressed the key issues raised by the industry though the consultation process and Section 5 provides our conclusions.

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9. If you have any questions on these proposals or require further information please contact Peter Bingham on 01926 655568 or via email at peter.bingham@nationalgrid.com.

Overview

10. Demand-Side Balancing Reserve (DSBR) has been developed as a simple, low cost solution to stimulate rapid growth in the provision of demand-side services to the System Operator. DSBR would provide additional support to the System Operator in balancing the transmission system against a background of tightening capacity margins during the mid-decade period.
11. The product is aimed at non-domestic consumers with the ability to reduce demand /load shift or run small embedded/on-site generation for at least an hour during the winter evening peak. At the highest level, this proposal would enable the System Operator to ask large energy users to reduce their demand in exceptional circumstances, and would remunerate them for doing so.
12. The service has been designed around demand reduction / load shifting, with low investment costs but high delivery payments that reflect the value that consumers place on the continuity of their electricity supplies. It is not intended to stimulate investment in new generation or storage facilities, but to tap into the huge potential for non-domestic consumers to reduce their demand in response to a strong commercial incentive.
13. This service is unlikely to be called frequently, if at all, during a winter period. However, in the unlikely event there is insufficient plant available to meet demand, consumers signed up to the scheme may be asked to reduce demand in return for a payment. There would be no obligation to respond or penalties for not responding; the scheme relies on payments for delivery as the incentive to deliver.
14. The DSBR product is designed to facilitate demand-side participation in balancing the system, which will become increasingly important as traditional thermal generation is replaced with increasing volumes of intermittent plant. DSBR should help develop the market for demand side resources to meet this growing need.

Participation

15. DSBR is targeted at non-domestic consumers able to reduce or shift demand, able to increase 'behind-the-meter' generation, and owners of small embedded generation or storage accruing to a supplier's consumption account.
16. DSBR could be provided by non-domestic consumers directly or by third parties, including suppliers, aggregators or other intermediaries.
17. DSBR providers would declare their capability to reduce demand (or increase generation output) against a baseline for at least an hour any time between 4pm and 8pm on non-holiday weekdays in the months November to February, given at least two hours notice.

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18. DSBR could be provided by sites which are half-hourly metered and subject to the BSC settlement arrangements (i.e. > 100kW). However, in light of responses, we suggest that it may also be feasible to establish bespoke metering/baselining arrangements on an exceptional basis at large, complex sites if it were economic to do so.
19. We propose that individual DSBR Units should have a demand reduction capability of at least 1MW, thus encouraging intermediaries to aggregate smaller sites.
20. DSBR is not intended for parties that already provide a demand reduction service during winter weekday evenings (e.g. Committed STOR, triad/red band¹ avoiders).

Establishing the requirement for DSBR

21. Before tendering for DSBR, we would determine whether there is a requirement for additional reserves to support us in balancing the system, taking account of the prevailing supply and demand outlook and the associated uncertainties, together with the Government's draft reliability standard. As detailed in the report on Supplemental Balancing Reserve, the requirement for additional reserves will be based on the equivalent level of capacity that would be required in the market to achieve the reliability standard.
22. In assessing the volume of DSBR required, we would not take account of any SBR procured. DSBR should in theory be procured ahead of SBR since DSBR simply extends the balancing market to demand-side providers, whereas SBR is a last resort service that would only be used after market opportunities have been exhausted.
23. In practice we may need to procure SBR ahead of DSBR, and in so doing, make a judgement on the level of DSBR that might come forward. This could result in the over procurement of SBR, but only if we significantly underestimate the interest in DSBR.
24. We propose to publish the required quantity of DSBR and how this was derived ahead of any tender to provide transparency to the market on the quantity of DSBR we would be looking to procure.

Tendering Process

25. If we identify a requirement for DSBR in the winters of 2014/15 and/or 2015/16, we propose to tender for this requirement in the spring preceding each winter delivery season. Contracts will be offered for the upcoming winter season.
26. We are not proposing to tender for DSBR beyond 2015/16 at this stage, given the proposed introduction of the DSR Transitional Arrangements for the Capacity Market in 2016/17. However, rather than DSBR being time limited, we proposed that the arrangements are reviewed in 2016, and either removed, modified to align with the capacity market proposals,

¹ We refer to triad or red band avoidance throughout this report. This refers to consumers/suppliers who actively reduce their demand at peak times in order to reduce their transmission charges or exposure to higher distribution charging rates which apply between 4pm and 7pm

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or retained. If an ongoing need for DSBR is identified, we will consider tendering for subsequent years.

27. Tenderers will be invited to offer a declared quantity of demand reduction² (in MW) that can be delivered relative to their baseline, the Meter Points through which that quantity would be delivered, and the length of time demand reduction could be sustained.
28. Tenderers would indicate whether they wish to receive an optional setup fee to support them in establishing the demand reduction capability. This would be £10/kW for demand reduction that can be sustained for at least two hours, and pro-rated for demand reduction that can be sustained only for a period of less than two hours.
29. They would also tender the Utilisation Rate at which they would wish to be paid for reducing demand from a range of nominal rates: £0.25/kWh, £0.50/kWh, £1/kWh; £1.5/kWh; £2/kWh; £3/kWh; £4/kWh; £5/kWh; £7.50/kWh, £10/kWh; £12.50/kWh; and £15/kWh. This reflects the wide range of values that consumers' place on the continuity of their electricity supply, and would provide the opportunity for consumers to express this value in the tender.

Verification and Tender Assessment

30. In assessing each DSBR tender, we would undertake a number of desktop validation checks to verify that the sites tendered are capable of providing the quantity of demand reduction offered.
31. All valid DSBR tenders electing not to receive the set-up fee would be accepted, subject to the tendered utilisation rate being less than VoLL.
32. Valid DSBR tenders electing to receive the set-up fee would be assessed in ascending cost order, and accepted subject to the expected cost of each tender being less than reduction in energy unserved (ΔEEU) valued at the Value of Lost Load (VoLL). The forecast cost of each DSBR contract would be determined as follows:

$$\text{DSBR Cost} = \text{Capability (kW)} \times ((\text{Setup Fee } \text{£/kW}) + (\Delta EEU \text{ (hrs)} \times \text{Utilisation Rate (} \text{£/kWh)}) \times \text{RF}))$$
33. As the volume of DSBR accepted increases, so the level of expected energy unserved would reduce, valid tenders would be accepted in strict cost order until the reserve requirements were reached. No further DSBR tenders would be accepted where costs are likely to exceed VoLL.
34. We propose initially to set the reliability factor (RF) for DSBR at 75%, reflecting a balance between the voluntary nature of the service and the strong incentives to deliver through high utilisation payments. We propose to use the same value of VoLL in the assessment as used by DECC to determine the draft reliability standard (i.e. £17/kWh).

² References to demand reduction include the ability to increase output from on-site or embedded generation

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35. The results of each DSBR tender would be published after the tender event, including the quantity of DSBR procured for each Utilisation Rate and the associated set-up fees paid. These details will also be published in the annual Procurement Guideline Report.

Testing and Despatch

36. DSBR would only be despatched by the System Operator after all feasible offers and bids in the Balancing Mechanism have been used, or expect to be used, in balancing the system. DSBR Units would be grouped into tranches defined by the utilisation rate, with each tranche despatched in ascending price order.
37. DSBR will be given as much notice as possible, recognising that the longer the notice period, the more likely a response will be delivered. Accordingly, DSBR may need to be despatched ahead of Gate Closure, in anticipation of insufficient BM actions being available.
38. We propose that a simple but secure method of despatch is adopted, where DSBR is despatched directly by the System Operator using a Smartphone App, SMS, email, telephone broadcast or other such method. The chosen method would need to be secure but avoid the need for costly and complex monitoring and control facilities to be installed at each consumer's site.
39. To promote transparency, we propose to notify the industry whenever a DSBR despatch instruction is issued. We propose to publish the volumes, price and duration of any DSBR tranche that was despatched, although the actual volume delivered will not be known until meter data is compared to the baseline. We will also publish information about the use of DSBR in the Monthly Balancing Services Summary Report and our annual report (which is accompanied by an auditor's statement) on our compliance with the Balancing Principles Statement.

Measurement and Non-delivery

40. The quantity of demand reduction delivered when despatched by the System Operator would be calculated from half-hourly settlements data by reference to a baseline which is determined as the aggregate consumption in each half-hour settlement period that the sites making up the DSBR Unit would have taken had demand reduction not been instructed. Again, there may be scope for bespoke arrangements at large, complex sites.
41. The baseline for each DSBR Unit would be calculated as the average of the consumption in the corresponding settlement periods in the previous ten days of highest peak system demand on which demand reduction was not called from that DSBR Unit on a rolling basis over the previous 12 months. Days on which such resources previously provided STOR would also be excluded from this calculation.
42. Many large consumers reduce demand regularly during the evening winter peak to reduce their transmission and distribution charges (so called 'triad avoiders'). The DSBR proposals

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have been targeted at large energy users who do not currently respond to these signals, either because this would be too disruptive or not commercially viable.

43. In the event that a DSBR Unit in receipt of a set-up payment fails to provide demand reduction materially in accordance with its declared capability, National Grid would have the right to investigate whether the DSBR provider has established the capability to provide DSBR. If it has reasonable grounds to suspect that this is not the case, National Grid would have the right to test the DSBR Unit without making a utilisation payment and recover the set-up fee in the event that a test is not successfully completed.

Payments and Cost Recovery

44. Those who elected to receive the setup fee would be paid at the start of the winter availability season.
45. DSBR providers would be paid for utilisation at their tendered utilisation rate for the demand reduction that is despatched and delivered. These payments would be made within three months of demand reduction being delivered. Except under certain circumstances, the utilisation payment to each DSBR Unit would be calculated according to a stepped payment schedule whereby: the first 25% of demand reduction is not paid; the second 25% is paid at 50% of the nominal utilisation rate; the third 25% at 150% of the utilisation rate; and the last 25% being paid at 200% of the utilisation rate. This arrangement is designed to incentivise accurate declarations of demand reduction capability and delivery of this capability when called. Demand reduction would be paid up to the declared MW capability at the nominal utilisation rate if called with less than three hour notice or demand is instructed to reduce for less than one hour.
46. The costs of DSBR, including set-up fees, utilisation fees and any administration fees would be recovered through BSUoS charges. These costs would initially sit outside the Balancing Services Incentive Scheme (BSIS).
47. The external costs of DSBR, including set-up fees, utilisation fees and any administration fees paid to intermediaries would be recovered through BSUoS charges. We also propose that any additional internal costs associated with DSBR are recovered via BSUoS charges.

Market Imbalance Prices

48. To sharpen the incentive on market participants to balance their positions ahead of gate closure, the cost of DSBR should be reflected in the calculation of imbalance prices. This could be achieved by including the cost calculation of imbalance prices, by setting System Buy Price (SBP) to the Value of Lost Load (VoLL) or the cost of demand reduction. Alternatively, the Reserve Scarcity Pricing function proposed in Ofgem's Electricity Balancing Significant Code Review (EBSCR) could be used to set the price at which DSBR is included in the calculation.

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49. However, rather than make proposals on how DSBR should be factored into Imbalance Prices, we suggest that the pricing of DSBR into imbalance prices should, like SBR and other reserves, be addressed as part of the wider review of setting imbalance prices under the EBSCR. Ideally these arrangements would be in place for the winter of 2014/15 (assuming we need to procure DSBR and SBR for that winter), but we recognise that these may not be established until 2015.
50. If the DSBR proposals are approved, we propose to work with Ofgem's Electricity Balancing SCR team and the industry to consider how best to price DSBR into imbalance prices ahead of any enduring EBSCR changes being implemented. This may require an interim measure to be established, potentially via a BSC modification proposal.
51. DSBR does not feed into imbalance prices under the proposed C16 modifications; hence the use of DSBR would neither weaken nor sharpen price signals in the market in 2014/15 if an interim measure could not be established.

The Role of Intermediaries

52. Suppliers and Aggregators are well placed to act as intermediaries to aggregate smaller consumer sites into material quantities of DSBR. They could help us market the product, contract with individual sites, and establish their own settlement arrangements. While we would envisage the same despatch system to be employed across all sites providing DSBR, aggregators may wish to receive a single despatch instruction for each DSBR Unit and use their own despatch systems to communicate with individual sites.
53. As part of implementation, we will consider how best to engage intermediaries in supporting us with the roll out of DSBR. This may involve Suppliers and Aggregators tendering to provide large volumes of DSBR in return for an administration fee. Any such payments would need to be subject to an economic assessment, and recovered as part of the external costs of the DSBR service. If these proposals are approved, we propose to discuss implementation with Suppliers and Aggregators, as suggested by respondents to the consultation.

Changes in response to consultation

54. Following the initial consultation in July 2013, we made a number of changes to the DSBR product in response to comments received. Our final proposals reflecting these changes were set out in our Final Proposals Consultation published in October 2013.
55. We confirmed that small embedded generation could participate and fixed the upfront set-up payment at £10/kW. We added the ability to recover these payments if the capability to deliver a DSBR service is not established. We refined the calculation of the baseline against which delivery is measured, based on demand for the same settlement periods on the previous ten days of peak demand in the past 12 months. We added a contract threshold of one MW to encourage intermediaries such as aggregators and suppliers to group individual consumers together into material quantities of DSBR.

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56. Following the Final Proposals Consultation which closed on 11th November 2013, we have made a number of further amendments to the DSBR product:
- We have clarified that DSBR would be called after all feasible BM actions have been exhausted, to address concerns over DSBR distorting the Balancing Mechanism;
 - We have introduced lower utilisation rates (£0.25/kWh and £0.50/kWh) in response to feedback received;
 - We will review the ongoing need for DSBR in 2016, and either remove it, amend it to be compatible with the DSR product in the capacity market, or retain it;
 - We will consider bespoke arrangements for metering and baselining at large complex sites where this may be justified; and
 - We have suggested that intermediaries such as Suppliers and Aggregators may be better placed to procure and manage this product on our behalf. If the product is approved, we will engage these intermediaries to determine what role they could play in its implementation. Any associated administration fees would need to be economically justified and recovered as part of the cost of the DSBR service.

Section 3 - DSBR Consultation Feedback

57. This section of the report provides a summary of the key views and issues raised as part of our Final Consultation Proposals which closed on 11th November 2013.

Summary

58. We received a total of seventeen non-confidential responses to the consultation with sixteen addressing the questions on the DSBR product. The questions asked whether the amendments made to the product design sufficiently addressed the issues that stakeholders had raised previously and whether or not there was support for this product with the proposed amendments. This section of the report highlights the themes of the responses we received to these questions.

59. We received a total of seventeen non-confidential responses to the consultation with sixteen addressing the questions on the DSBR product. The questions asked whether the amendments made to the product design sufficiently addressed the issues that stakeholders had raised previously and whether or not there was support for this product with the proposed amendments. This section of the report highlights the themes of the responses we received to these questions.

DSBR amendments

60. In response to the question regarding the product amendments, three parties suggested that the amendments sufficiently addressed the issues, whilst three respondents suggested they did not agree with the changes. Nine parties proposed further amendments that would be required to make the product more attractive to the market.

Increased market participation

61. There was a consensus that the overall idea of bringing forward a demand side product could provide an opportunity for as yet undiscovered DSR providers to work with suppliers and aggregators to facilitate increased quantities of DSR in the market. Currently the market for DSR is well understood by the aggregators, it is felt that over the past five years a lot of research has been conducted to discover new participants but the current market incentives do not provide sufficient signals to bring forward more providers. There was a view that the current design of this product would not bring forward the amount of DSR required.

Set up fees

62. A number of parties commented that the payment mechanism proposed does not strike the right balance between set up and utilisation fees and is not sufficient to attract new participants. The need to market this product across a wide range of participants is considered to be a resource intensive activity that will need to be reflected in the set up fees. There was a suggestion that an agency fee might be required.

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Maximum running limit

63. One respondent commented that the operating timescales could be too onerous for some DSR participants. They requested a higher set up fee in the region of £20 - £25/kW to which they would commit to a maximum of four hours running per year, essentially this suggestion creates an upfront payment for four hours of DSBR in a year.

Baseline methodology

64. A number of respondents welcomed the change in baseline methodology to the previous proposals whilst others expressed concern that the requirement to provide twelve months of half hourly demand data was discriminatory and would prevent new build facilities from taking part.

Existing Market distortion

65. Concern was raised about the potential for this product to undermine existing market signals which may then have an impact on continued participation in other existing services such as frequency response or STOR products. This was expressed against a view that the current incentives in the market are sufficient to bring forward enough DSR at peak.

Taking forward DSBR

66. The consultation asked whether parties would support us taking forward the DSBR product. Only one stakeholder responded 'No', six responses were 'Yes' and eight were supportive subject to the product being amended to take account of concerns raised.
67. One respondent did not support the product and expressed concern that the introduction of these measures would have a detrimental impact on the functioning of the existing electricity market. The DSBR product would cause power price distortion as a result of the new balancing service reserving demand side capacity.

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Bring forward the DSR Transitional Arrangements

68. DECC have proposed a set of transitional measures to support the demand side towards participation in the capacity market, with demand side capacity contracts being first tendered in 2015 to commence delivery in 2016/17. A number of respondents have suggested that this should be brought forward to 2015/16 delivery to support security of supply, which could run alongside our DSBR proposals.
69. The timing of these arrangements is a matter for DECC. We have developed DSBR to help support us in balancing the system in the mid-decade period, assuming that (a) the DSR transitional arrangements will not start until 2016/17 at the earliest, (b) as a pilot these may be on a relatively small scale and (c) investment in new capacity to provide demand side response will take time to develop. Bringing forward these arrangements may well stimulate the longer-term development of the DSR market, but in our view is less likely to bring forward new DSR resources to support us in balancing the system in the shorter-term.
70. We recognise that the two products could operate together as they are targeted at different audiences. The DSR Transitional Arrangements will bring forward new demand-side resources that will provide capacity in the market and therefore be used regularly; DSBR is targeted at large energy users who would be asked to reduce demand in extreme circumstances where there is insufficient capacity available to meet demand. DSBR is more about changing behaviours; DSR is more about investment in demand side resources. However, there is a risk that operating the two schemes in parallel would confuse and fragment the DSR market.
71. Accordingly we have suggested that if an ongoing need for DSBR is identified beyond 2015/16, and this would not undermine the DSR Transitional Arrangements, we will consider tendering for DSBR in subsequent years. We propose that a review is undertaken in 2016 to determine whether the DSBR service should be removed, modified or retained. DSBR may evolve into a vehicle for accessing balancing services from DSR resources with capacity contracts, much in the same way as the BM will continue to provide access to balancing services from generation with capacity contracts.

Different from the EMR Capacity Product

72. An ongoing concern raised through the consultation process is that our DSBR proposals are too dissimilar to those proposed for demand side participation in the capacity market, and therefore do little to stimulate the development of the DSR market.
73. We acknowledge that the product we are seeking to procure is different; it is a balancing service rather than a capacity product. It has been designed around our need for additional reserves as the residual system balancer, rather than the wider requirements for capacity in the market. However, an active demand-side will play an important role in the market going forward to support increasing volumes of intermittent generation, and some of this will come from changing consumer behaviours via price signals, time-of-use tariffs etc. Therefore,

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DSBR, which uses a price signal to encourage large energy users to reduce their demand, should help stimulate such behavioural change.

74. Accordingly, while different to the EMR product, DSBR is designed to quickly access the potential for demand reduction on winter weekday evenings from larger consumers, thus promoting the type of behavioural change that will be important going forward. We acknowledge that it will be less effective at promoting investment in new demand-side resources, but these will take time to develop and the DSR arrangements under EMR are designed to achieve this.

Comments on the DSBR Payment Structure

75. Respondents have previously expressed concerns over the payment structure for DSBR (a low up-front payment with higher payments for delivery if called), suggesting that a stable income stream is required to encourage participation by way of a larger upfront payment and penalties for non-delivery.
76. Our view is that generally, payment on delivery (as with the BM) offers the best value to consumers when procuring balancing services, particularly if the service is likely to be used infrequently. However, we recognise that option fees help ensure such resources are made available, and the DSBR set-up fee was included for this reason. A larger upfront payment may well stimulate growth, but if seldom used may not represent good value for consumers.
77. In addition, the payment structure has been designed around demand reduction/load shifting (low up-front costs to establish the ability to reduce demand, but higher delivery payments to compensate for the inconvenience caused). This is in contrast to investment in demand side generation, storage and demand management systems, which would require a stable income stream to support such capital intensive investments.
78. DSBR is in effect targeting a different end of the spectrum to established demand-side services (e.g. STOR and Triad avoidance), which receive an upfront payment in return for regular use. DSBR is targeted at those resources who do not wish to be called regularly because the financial benefits of such do not justify the disruption caused, and instead require a higher payment for delivery corresponding to their value of lost load in the unlikely event that they do get called.

Impact on the Demand Side Market

79. Some respondents have suggested that there is already an active and growing demand side market, with demand-side participation in STOR, increasing triad/red band avoidance etc. DSBR would be an unhelpful and unnecessary addition which could confuse and undermine this developing market. One respondent suggested that current incentives are sufficient to deliver a substantial element of demand side response at peak.
80. Our view is that the demand side could offer a valuable contribution to security of supply in the mid-decade period by stimulating the latent potential from resources that are currently not

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engaged in actively reducing or shifting demand at peak. There are approximately 100,000 consumers in the 100kW market, accounting for up to 30GW of demand on a typical winter weekday. Some of these consumers, particularly the larger consumers, will already be engaged in demand management activities (triad/red band avoidance, STOR etc). However, we suggest that many do not participate in such activities, or if they do, these will be limited to those activities where regular demand reduction or load shifting justifies the corresponding saving in their transmission /distribution charges.

81. DSBR is targeted at quickly recruiting some of this latent potential to support us in balancing the system over the next few winters. Stimulating growth in this way should help build understanding around demand management amongst consumers, and help grow a more active demand side into the future.

Limited Uptake

82. A common theme coming from industry participants, particularly aggregators and suppliers, is that that uptake may be limited, and may not justify the costs involved in setting up the service. They suggest that the relatively low upfront payment and the short-term nature of the scheme will limit interest and participation. Aggregators in particular suggest that recruiting individual consumers into providing demand side services takes time and effort, and our vision of quickly building a meaningful demand side resource in the way proposed is overly ambitious and misguided.
83. We recognise and acknowledge these comments. However, we have also received a number of contrasting views particularly from large energy users. Some have suggested that we may actually be overwhelmed by the response we get and have questioned how we would manage the large volumes that might come forward.
84. Clearly there are a range of views on whether or not this would be a success. Aggregators clearly have experience in this area, but also have a product to sell which is not the product we are looking to buy.
85. In considering all these views, we have concluded that DSBR has the potential to access large quantities of new demand side resources that could support us in balancing the system. Recruiting these will no doubt be challenging, particularly given the duration of the scheme, but we believe the proposition could be attractive to a large number of consumers if marketed effectively.
86. DSBR providers would receive an upfront payment as an incentive to sign up to the scheme and to support them in putting processes in place to reduce demand if requested (i.e. switch off). It would be straightforward to sign up and not involve onerous and complex commercial agreements. They need not invest in complex system to do this. If they are called they will be remunerated at the rate they requested, which could be as much as £15/kWh. If they cannot respond, they forgo any such payments but do not have to worry about onerous penalties. It is a no-regrets proposition that many consumers may find attractive.

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87. For this to be a success, DSBR is likely to require an extensive marketing and recruitment exercise. Suppliers and Aggregators, with their experience in managing consumers and operating demand-side initiatives, would be well placed to support us in this and act as intermediaries to aggregate smaller consumer sites into material quantities of DSBR. They could help us market the product, contract with individual sites, and establish their own settlement arrangements. However, in response to the consultation, suppliers and aggregators have said there may not be sufficient value in the scheme to encourage their involvement.
88. Therefore as part of implementation, we will consider how best to engage intermediaries in supporting us with the roll out of DSBR. This may involve Suppliers and Aggregators tendering to provide large volumes of DSBR in return for an administration fee. Any such payments would need to be subject to an economic assessment, and recovered as part of the external costs of the DSBR service.

Market Distortion

89. One respondent to the Final Proposals Consultation reiterated concerns raised throughout the process around DSBR distorting the market. We maintain that rather than creating a distortion, DSBR is correcting an existing distortion. The cost and complexity of providing balancing services have meant limited demand-side participation in balancing the system such that these services are predominantly provided by generation. DSBR affords the demand side a simple, low cost means of accessing the balancing market on equal footing to generation.
90. However, we recognise that if DSBR resources that receive an upfront payment are dispatched alongside resources in the BM that do not receive such payments, this would have a distortional effect on the BM. Accordingly, we have amended our proposals for despatching DSBR such that it would only be used after all feasible offers and bids in the Balancing Mechanism have been used, or expect to be used, in balancing the system.

DSBR before SBR

91. The design of DSBR is such that it is assessed and despatched ahead of SBR, even if SBR appears more cost effective. It is important that the rationale for this and why we believe this to be an economic and efficient approach is understood.
92. In theory, demand reduction/load shifting should represent a more efficient and environmentally friendly alternative to building and running generation, particularly when used infrequently as is intended for these services. DSBR is designed to extend the balancing market to the demand side, and therefore to be used alongside existing balancing market resources. In contrast, SBR is not an extension of the balancing market; generation resources have access to the balancing market via the BM, but in applying for SBR have explicitly chosen to exit this market, only to be used in the provision of SBR after the balancing market has been exhausted. Any generation that is more efficient than DSBR

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would be better staying in the market to ensure it gets called ahead of DSBR. Also, giving SBR priority over DSBR would undermine the objective of stimulating clean and efficient demand side resources.

93. From a consumer perspective, the most cost effective means of meeting our reserve requirements would be to meet these entirely from DSBR resources (ideally without a setup fee), and then not needing to use these resources. Only if there is insufficient DSBR available would we have to resort to generation (in the form of SBR) which is too expensive to be competitive in the market.

Baseline Calculation and Triad Avoidance

94. Respondents to the initial consultation in particular suggested that our baseline calculation was too simplistic, and would not provide an accurate representation of the actual quantity of demand reduction delivered. Numerous alternative methods have been suggested that would improve on our proposal, based on experience drawn from other demand-side initiatives. This concern has been reiterated in response to the latest consultation.
95. The main concern is that consumers who regularly reduce their demand at peak would have a lower baseline, and therefore could not participate in DSBR. The original proposal was also criticised because the baseline would not be known until the end of the winter.
96. We accept that the baseline formulation is simple – this was the intention to ensure that the scheme was accessible to a wide range of service providers. Complex baselining methods specific to individual consumers would be costly and complex to administer. However, we acknowledged that actual demand reduction delivered by individual consumers could be over or underestimated using our simple method, but this method represents a pragmatic approach in seeking to quickly recruit large quantities of new demand side providers.
97. In terms of resources who already reduce demand during peak times (i.e. triad avoiders) DSBR was not designed for these to participate. These resources already receive a commercial benefit from managing their demand downwards at peak. We expect this activity to continue, and do not wish to create incentives that would suppress it. We do not consider it to be in the interest of consumer to pay these resources to reduce demand under a DSBR contract when they already do so during winter weekday evenings when demand is high.
98. We have however, revised the calculation of the baselines to be the average demand across the days of peak demand on a rolling 12 month basis, such that DSBR providers can calculate their baseline at any point in time.

Setup Fee

99. In our Final Proposal Consultation we proposed that the optional setup fee should be at the top end of the range suggested in the initial proposals, i.e. £10/kW. To encourage uptake of the service one respondent to the consultation suggested that there should not be an upfront payment, as this would create an inequality of economics with existing balancing services,

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and that payments should be all on delivery. We received similar feedback at our workshop in October.

100. In contrast, the Demand Response Association (DRA) suggested that the product would only be viable if the upfront payment were in the range £20 - £25/kW per year, consistent with what is available for providing triad avoidance services, with a commitment to be used for no more than 4 hours per year. Resources interested in providing a demand response service would otherwise elect to provide triad avoidance rather than DSBR.
101. We have given careful consideration to the level of setup fee and accept that the higher this is the more interest it will create. We used the price of STOR as a benchmark, where typical availability prices have dropped below £5/kW for the winter season, albeit with the opportunity to earn around another £4/kW from utilisation. Therefore we cannot see how we could demonstrate a payment of £20-£25/kW as being economic and efficient and offering value to consumers. Furthermore, a larger setup fee would see a migration of demand side resources from STOR to DSBR and push up STOR prices for no overall benefit.
102. Our conclusion is not to increase the setup payment, and recognise that some potential providers may instead engage in triad avoidance which will support us in balancing the system at peak without it costing consumers.

Utilisation Prices

103. Respondents have consistently argued that we should include lower utilisation price bands. Our concern was that the low-cost approach to despatching DSBR might not be sufficiently robust to handle frequent despatch of lower priced resources. We raised the lower price threshold in the Final Proposals Consultation because we were concerned Offers over £500/MWh were often accepted in the BM, hence DSBR resources priced at this level would be frequently called, and the despatch arrangements were not designed around such frequent use. However, given that we have changed the proposals such that DSBR would only be used after the all feasible Offers and Bids in the BM have been accepted, reducing the likelihood of lower priced DSBR being frequently despatched, we have included two lower utilisation bands (£250/MWh and £500/MWh) in the DSBR design proposal.
104. Some respondents have previously raised concerns that the higher price bands, up to £15/kWh, are too high. However, putting this in context, if the average Value of Lost Load (VoLL) is £17/kWh, then there will be some consumers who will value their electricity supply higher than this. Also, generators are able to submit BM prices up to £99/kWh, and it follows that the demand side should have the same opportunity. However, given that DSBR will only be procured and used where the associated costs are less than VoLL, we have limited the highest price for DSBR to £15/kW.
105. In practice, given that DSBR at the lower price bands are more likely to be accepted and used, we would expect most DSBR providers to bid at the lower utilisation price bands.

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Lack of Penalties and Testing

106. Industry participants, particularly from the aggregator community have advocated the need for regular tests and penalties to ensure the reliability of DSBR. Their concern is that DSBR (without penalties and regular use) may come to be regarded as an unreliable resource and undermine the future of the DSR market.
107. We believe that high utilisation payments will provide a strong incentive to deliver. Our view remains that a complex verification and penalty mechanism could not be implemented quickly. Also, the prospect of penalties for not reducing demand when called would act as a disincentive to sign up and would not be in the spirit of the proposals – i.e. we are asking business customers to support us in balancing the system rather than forcing them to shut down. We have, however, included the provision to enable the recovery of DSBR setup payments where providers fail to establish the capability to reduce demand.
108. In terms of testing, we accept that this would help build confidence in the reliability of DSBR. However, testing (which would require potentially very high utilisation payments) would be expensive, and we do not propose to impose such costs unnecessarily on consumers. The reliability of DSBR could therefore only be determined if it is actually used for the purpose it is procured.

Requirement for robust control and monitoring systems

109. Comments from the DSR community have advocated the need to install monitoring and control systems in consumer premises to enable firm despatch of DSR resources and ensure reliability of the service.
110. However, we regard these types of arrangements more suited to operational reserves (such as STOR) which are used regularly. DSBR will only be used in exceptional circumstances, and therefore does not warrant the need to invest in such technology, both in consumer premises and the control centre. The costs of installing such equipment may create a barrier to the large scale participation of smaller non-domestic consumers. Also, installing such equipment would take time, and this may not be practical in the time available.

Complex Sites

111. Issues were raised around the need for half-hourly settlement metering, and that some sites have complex metering arrangements, including real-time meters or half hourly meters that don't directly feed into settlement, or where some processes might be suitable for DSBR and others not. DSBR was designed to be simple and accessible to the majority of large consumers, all of which have half hourly settlement metering. Creating bespoke arrangements to suit individual consumer sites would not be practical if large numbers of consumers are to be recruited. However, given this feedback, we suggest that it may be feasible to establish bespoke metering/baselining arrangements at some very large, complex sites if there is an economic case to do so.

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Imbalance Prices

112. As with SBR, respondents generally shared our view that the Electricity Balancing SCR proposals should address how DSBR should feed into the calculation of imbalance prices.
113. However, a number of respondents have expressed concerns that the EBSCR proposals might not be established until 2015, and therefore any DSBR used in 2014/15 would not be reflected in prices. If these proposals are approved, we therefore propose to work with Ofgem's Electricity Balancing SCR team and the industry to consider how best to price DSBR into imbalance prices ahead of any enduring EBSCR changes being implemented. This may require an interim measure to be established, potentially via a BSC modification proposal.

Supplier Interaction

114. A number of respondents have expressed concerns about the interaction between DSBR and Supplier trading positions, and that consumers may pay twice for the same service. If DSBR is called, the Suppliers associated with the consumers who reduce demand may be long as a result, and be paid at System Sell Price for their surplus energy, or less short than they would otherwise have been, therefore reducing their exposure to System Sell Price. Either way, Suppliers may obtain a marginal benefit from DSBR instructions being issued to their customers.
115. We are not proposing to adjust Supplier positions to account for this issue – the complexity of doing this is not justified against the likely quantities and frequency of DSBR usage. However, this is a general issue for all demand reduction initiatives that will need to be addressed as the demand side participation grows, and in particular with the combination of DSR in the capacity market and the potential introduction of single, more marginal cash-out prices under the EBSCR
116. Energy UK suggested that there are existing solutions to address this issue, and cited APX as having such a solution. If these proposals are approved, we propose to follow this up with APX to determine whether any such solution could be adopted as part of the implementation of DSBR.

Other issues raised

117. The setup payment would be the same regardless of whether demand reduction can be sustained for two hours or four. This has been highlighted in a few responses during the consultation process with the suggestion that those who can respond for four hours should receive a higher payment. We have taken the view that the setup fee is there to establish the capability to reduce demand, whereas the utilisation payment is to reward delivery. Hence those who can sustain their demand reduction for a longer period will be rewarded accordingly.

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118. Another respondent has suggested that resources receiving the setup payment for DSBR would have an unfair advantage in bidding for other balancing services outside the winter season. Their preference was to not have a setup fee thus avoiding this scenario, but if there was a setup fee, then DSBR resources should be prohibited from bidding for other balancing services for 24 months. We acknowledge the concern, but cannot hold resources out of the balancing services market as suggested. Our view is that resources securing a DSBR contract will receive a similar payments to STOR providers over a winter period (except in the unlikely event that the DSBR resource is despatched), and therefore not be in an advantageous position when bidding for services outside the winter season.

Section 5 - Conclusions

119. DSBR has been designed to stimulate demand-side participation in balancing the system, by offering non-domestic consumers payment to reduce their demand on occasional winter weekday evenings. It has been developed with extensive consultation with the industry.
120. DSBR would only be procured if we establish a requirement for additional reserves to support us in balancing the transmission system in the mid-decade period. We will establish this requirement by reference to the uncertain outlook of supply and demand, and the equivalent quantity of additional capacity that would be required in the market to achieve the Governments draft reliability standard. Our intention is that any procurement will be of the minimum quantity necessary to adequately support security of supply, thus minimising the cost of this service to consumers.
121. DSBR would be procured via an open and transparent tender process, similar to that for other Balancing Services. Any consumer with half-hourly settlement metering would be eligible to participate unless already engaged in providing demand reduction services, thus ensuring non-discriminatory procurement of the service from a wide spectrum of potential providers.
122. The competitive nature of the tender process would encourage participants to bid towards the lower end of utilisation payments and forgo the optional setup fee, thus encouraging the most efficient set of DSBR contracts to be established to meet our requirements. The tender assessment process will be transparent and objective, with valid tenders accepted in strict economic cost order until the reserve requirements are satisfied, and no contracts will be accepted where the cost is expected to exceed the Value of Lost Load (VoLL). As such, procurement would be in a manner that is economic and efficient in order to deliver value for money to consumers.
123. DSBR will only be used in exceptional circumstances where there is insufficient capacity available in the market and Balancing Mechanism, and we would otherwise have to resort to using Supplemental Balancing Reserve or Emergency instructions to secure the system. As such it will not distort the Balancing Mechanism, and by targeting consumers who would not otherwise reduce their demand at peak times, not distort the electricity market. DSBR would be used in order of ascending utilisation price in order to minimise costs to consumers for using the service.
124. We have carefully designed the DSBR product so as not to cause any unintended consequences. We have priced the product to avoid any distortion the markets for other Balancing Services market, such as STOR, and to ensure that current price signals to reduce demand (triad avoidance) would be unaffected.
125. We considered creating a demand side product similar to the transitional arrangements proposed for the capacity market. However, we concluded that this could only be done on a small scale and was more likely to provide additional funding to existing demand-side resources than stimulate new resources to come forward. We also concluded that this could distort existing balancing services markets, for example by being despatched ahead of generation in the Balancing Mechanism. Such a product would require complex

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qualification, verification, penalty and settlement arrangements to be established, which would take time to establish. In contrast, DSBR has been designed to be relatively straightforward, thus enabling new demand side resources to be recruited quickly.

126. DSBR has been designed to operate ahead of the proposed transitional arrangements for the Capacity Market. It will be reviewed in 2016, and withdrawn if there is no longer a need so as to avoid confusion and fragmentation of the demand side market in the wake of the DSR transitional arrangements coming in to effect. Rather than be a confusing additional to existing demand side products, DSBR is targeted at a different, largely untapped group of consumers to operate ahead of the Capacity Mechanism proposals coming in to effect.
127. DSBR will meet our needs for a 'last reserve' demand side reserve product in a manner that represents value to consumers. The challenge will be to stimulate interest in a product which is likely to have a limited life. The key to success will be effective marketing and support from intermediaries to help sell the product. DSBR represents an opportunity to tap into the huge potential for changing consumer behaviour and so support us in balancing the system in an economic manner using from new demand side resources.