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Creating the right environment for demand-side response: next steps

Response

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Overview:

Demand-side response – customers responding to a signal to change the amount of energy they consume from the grid at a particular time – has the potential to reduce customer bills, enhance security of supply and contribute to sustainable development. To help realise these benefits, our longer-term objective is to have regulatory and commercial arrangements that create an environment that supports efficient system-wide use of demand-side response.

This document summarises stakeholders' views on the key challenges that prevent the efficient system-wide use of demand-side response. We also outline the work we are doing in each area, and point out what is still to be done. We conclude by outlining the next phase of work which aims to deliver a framework for demand-side response that accommodates cross-party effects to improve practices and decision-making across the value chain.

Context

Major influences on the energy sector include the need to attract significant investment in energy infrastructure and the transition to a low-carbon economy. Our programme of projects for 2013-14 recognises and responds to these in an appropriate and timely way while delivering against our principal objective - to protect the interests of both existing and future energy consumers. Our programme has four themes:

- promoting value for money
- promoting security of supply
- promoting sustainability
- ensuring efficient delivery of government consumer and environmental programmes.

Demand-side response (DSR) is important to the first three of these themes, so it is a priority area for reform. The work introduced in our April 2013 consultation and in this document looks across the whole supply chain to consider how current market arrangements might constrain the system-wide development of DSR. This work is part of our smarter markets programme where we identified DSR as a key reform area to help deliver "smarter markets" that are more efficient, dynamic and competitive, delivering better outcomes for consumers.

Associated documents

All documents are available at www.ofgem.gov.uk:

Creating the right environment for demand-side response, April 2013

Factsheet: How managing your energy use could help you, April 2013

Consumer Empowerment and Protection in Smarter Markets, Dec 2013

Promoting smarter energy markets: a work programme, July 2012, Ref: 110/12
Electricity Balancing Significant Code Review – Draft Policy Decision, July 2013

The Retail Market Review – Final non-domestic proposals, March 2013, Ref: 38/13

Implementation of the Retail Market Review non-domestic proposals – decision to make licence modifications (June 2013)

The Retail Market Review - Final domestic proposals, March 2013, Ref: 40/13

The Retail Market Review - RMR domestic proposals: consultation and decision, June 2013

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Executive summary

The electricity sector is undergoing significant change as part of the transition to a low-carbon economy. Efficient energy use will play a key role in this transition. Ofgem is committed to encouraging all consumers to consume energy more efficiently, both in terms of how much they consume and when. Demand-side response (DSR) – customers responding to a signal to change the amount of energy they consume from the grid at a particular time - could play an increasingly important role in supporting this aim. It has the potential to reduce bills for consumers, enhance security of supply and contribute to sustainable development.

Providing opportunities to use DSR is an important part of our vision for "smarter markets" that are more efficient, dynamic and competitive, delivering better outcomes for consumers. Our Smarter Markets Strategy, published in July 2012, highlighted DSR as a key work area under the Smarter Markets Work Programme. In this strategy we set out our objective to create a market environment that supports the efficient, system-wide use of DSR.

In April this year we published our consultation on DSR. The premise of this consultation was that appropriate regulatory and commercial arrangements need to be in place to allow DSR to play a greater role in the energy system. We noted three preconditions that would need to be met to realise our long-term objective for DSR. We also provided our view on the key issues and challenges that currently prevent these preconditions from being satisfied. The preconditions were:

i. Industry parties need to be confident that there is value for them in demand-side response which justifies the investment
ii. The value of demand-side response services needs to be effectively signalled to consumers
iii. Consumers need to be aware of the opportunities to provide demand-side response, able readily to access information on options and able to act.

The aim of the consultation was to gain stakeholders' views on whether we had successfully identified the main challenges to creating the right environment for DSR. We received 47 responses to our consultation. They came from a wide range of parties including large and small suppliers, network companies, central bodies, consumer representatives, industry and independent parties. This document summarises those responses.

Our key conclusion from our research and stakeholder responses to the April consultation is two-fold:

- **a new market model specifically for DSR may be needed in the future but that it is not required at this stage**
- **More urgent is the need for a DSR framework that clearly formalises the interactions between different parties within the existing market model.**

We propose to start a project to create this framework to improve DSR rules and practices across the value chain. This project will start in early 2014 and will build on important work undertaken by the Work Stream 6 (WS6) of the Smart Grid Forum (SGF).

This work will primarily address issues raised under the first precondition on enabling industry parties to realise the value from DSR. Respondents provided valuable feedback on issues relating to the other two preconditions, which focus more on engaging and empowering consumers to take up DSR opportunities. The table below summarises work underway to address these issues.

Table 1: Issues identified by stakeholders and our conclusions

Issue	Our conclusion
Precondition 1: Industry parties need to be confident that there is value for them in demand-side response to justify the investment	
Pricing signals do not provide clear enough long-term incentives for industry parties to contract for DSR	A wide-range of work is underway across Ofgem and government to help reveal the true value of DSR in the system (eg electricity balancing significant code review and the capacity market under the government's Electricity Market Reform).
Settlement reform is required to fully realise the potential of DSR	As part of the Smarter Markets Programme, we are progressing work on longer-term reform of the electricity settlement process.
Little understanding of the environmental impacts of DSR	Work is underway in industry to further understand these impacts, including work by the National Physical Laboratory.
Lack of a clear DSR framework that formalises interactions between different parties	As stated above, we propose to **start a project to create this framework to improve DSR rules and practices across the value chain**.
Precondition 2: The value of DSR services needs to be effectively signalled to consumers	
Distribution-charging provides poor signals to smaller customers	Longer-term reform for distribution charging is being considered as part of WS6 as part of the SGF.
DSR pricing across the supply chain needs to encourage consumers to invest	Ongoing work across Ofgem and government, such as the EBSCR and the capacity market under EMR, will help ensure that the value of DSR is correctly signalled. Then industry will need to design DSR products and contracts that provide a sufficient return on investment to consumers.
Greater clarity is needed on how DSR tariffs can be developed under Ofgem's Retail Market Review (RMR)	RMR is in part about making tariff choices simpler. This simplicity must be balanced against the need for new, more sophisticated tariffs enabled by the rollout of smart meters. The RMR tariff rules allow extensively for time-of-use tariffs and we will review the rules ahead of significant take-up of DSR.
Precondition 3: Consumers need to be aware of the opportunities to provide demand-side response, able to readily to access information on options and able to act.	
Consumers' understanding of DSR and trust in the energy market is crucial	RMR will help to build greater trust and confidence in the market and the Smart Meter Central Delivery Body will be instrumental in building consumer awareness of smart meters. Industry will also have an important role to help build consumers' awareness and appetite for DSR.
Work is needed on how DSR will affect the future retail market	Work is already underway that will address some of these issues, such as our work within the RMR that is examining the role of third party intermediaries. We will keep this issue under review.
Protection will be needed for the use of consumers' data and automation	The Smarter Markets Consumer Empowerment and Protection work will be considering the implications for both the use of consumer's data and automation, in the medium and longer-term respectively.

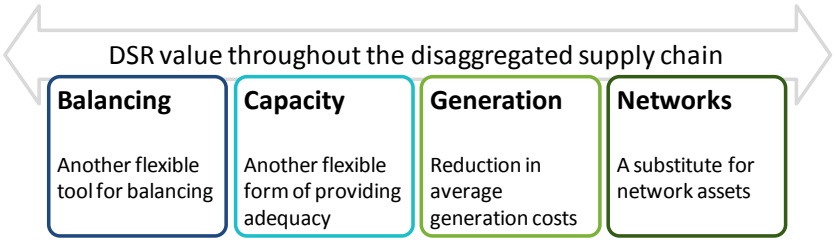
1. Introduction

What is demand-side response?

1.1. For the purposes of this document, we define demand-side response (DSR) as actions by consumers to change the amount of electricity they take off the grid at particular times in response to a signal. This is the same definition we used in our April 2013 consultation on DSR ('the April consultation').[1]

1.2. In reality DSR encompasses many types of change in energy consumption. These changes can lower electricity costs in many ways, so the value they can provide is divided between various uses for different parties in the disaggregated supply chain (Figure 1).

Figure 1: Use of DSR across the electricity system



1.3. DSR has an important role to play in addressing the challenges faced by the electricity market in terms of rising energy bills, security of supply and as part of the transition to a low-carbon economy. For the end-consumer, DSR provides a route to empowerment and therefore a way that they can be more engaged in the energy market.

1.4. Some consumers are already providing DSR. These are mainly large non-domestic consumers who are more likely to be metered half hourly, which can lower investments required to monitor and verify a response.[2] Those domestic households that participate in DSR tend to do so through time-of-use (ToU) tariffs, such as Economy 7 tariffs.[3] These tariffs charge less during off-peak periods, encouraging consumers to shift consumption away from peak periods.

1.5. For further information on our definition of DSR, refer to Chapter two of the April consultation.

[1] *Creating the right environment for demand-side response*, Ofgem, April 2013
[2] *Demand side response in the non-domestic sector*, Element Energy for Ofgem, July 2012
[3] Some customers also have dynamic teleswitching arrangements with their supplier or distribution company which is a form of demand-side response. There are also some more innovative tariffs being developed however these are currently restricted to trials only. Please see the April document for more information.

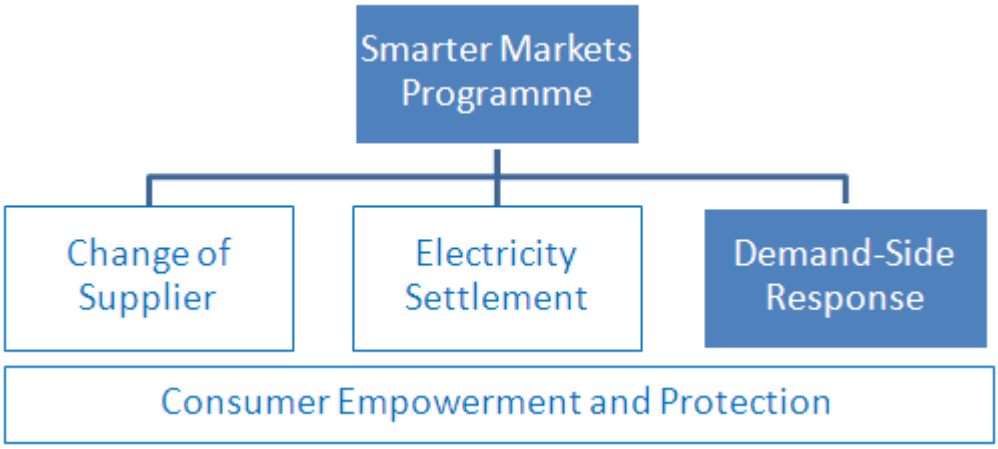
Ofgem's Smarter Markets Programme

Overview of programme

1.6. The roll-out of smart metering is an opportunity to make retail energy markets work better for consumers. To maximise these benefits, complementary changes will be required to the arrangements that govern how industry participants interact with each other and with consumers.

1.7. In 2012, Ofgem launched its Smarter Markets Programme. The purpose of the programme was to proactively identify, and see implemented, changes to market arrangements to enable the development of smarter markets. Following stakeholder consultation, four key projects were identified: Change of Supplier, Electricity Settlement, Demand-Side Response, and Consumer Empowerment and Protection.[4]

Figure 2: Projects within Ofgem's Smarter Markets Programme



1.8. We recognise that the right environment for DSR is an important part of our vision for "smarter markets" that are more efficient, dynamic and competitive, delivering better outcomes for consumers. Our longer-term objective for electricity DSR is the following:[5]

> *'...to create a market environment that supports the efficient system-wide use of demand-side response, which has the potential to reduce bills for consumers, enhance security of supply and contribute to sustainable development.'*

1.9. Ofgem has a clear role in delivering this objective, not least because the regulatory framework influences how DSR is used, when and by whom. For example,

[4] *Promoting smarter energy markets: a work programme*, Ofgem, July 2012
[5] We are constraining the scope of this work to electricity demand-side response only. We are aware of the potential for gas demand-side response, however given the complexity of assessing the whole supply chain we have chosen to focus on electricity only.

Ofgem oversees settlement arrangements[6] and imbalance pricing,[7] which both affect suppliers' incentives to use DSR.

April consultation

1.10. In April we published our consultation on DSR. The starting point for that consultation was the premise that, for DSR to play an increasingly full role in the energy system, this needs to be facilitated by appropriate regulatory and commercial arrangements.

1.11. We then set out in the April document our view of the preconditions that would need to be met to realise our long-term objective for DSR. Those preconditions were:

i. **Industry parties** need to be **confident** that there is value for them in demand-side response to justify the investment

ii. The **value** of demand-side response services needs to be effectively **signalled** to consumers

iii. **Consumers** need to be **aware** of the opportunities to provide demand-side response, able to readily **access** information on options and able to **act**.

1.12. We then assessed how far today's regulatory and commercial arrangements meet these preconditions. Where we identified that changes were needed, we considered whether these could be delivered through an evolution of current arrangements or would require more fundamental reform.

1.13. Finally, we sought views on whether we had identified all the relevant issues across the different parts of the value chain and the priorities for any future Ofgem action.

Response to consultation

1.14. We received 47 responses to our consultation. They came from a wide range of parties including large and small suppliers, network companies, central bodies, consumer representatives, and industry and independent parties. See Appendix 1 for a full list of respondents.

1.15. The strength and prevalence of stakeholders' views on the range of issues identified have helped us to identify not only where challenges exist, but crucially where additional work needs to be focussed in order to create an environment in

[6] The settlement process charges each supplier for any difference between the volume of energy that they buy and the volume that their customers' consume. This process is set out in the Balancing and Settlement Code (BSC).

[7] Under the current electricity market arrangements in Great Britain, if a market participant generates or consumes more or less electricity than they have contracted for, they are exposed to the imbalance price, or 'cash-out', for the difference.

which DSR can flourish. We have used these responses to help determine the next stage of our work on DSR as part of the Smarter Markets Programme.

Links to wider work

1.16. Responses to the consultation have also informed wider-work across Ofgem. For example, messages on specific policy areas have been shared across teams to inform our Electricity Balancing Significant Code Review (EBSCR), Future Trading Arrangements (FTA) and Retail Market Review (RMR) work.

1.17. This work has also been instrumental in influencing our work at a European Level. We are actively involved in the various initiatives related to DSR and smart grids in Europe. We participate in a range of Expert Groups under the EU Commission's Smart Grids Task Force as well as a number of the groups organised by the Council of European Energy Regulators (CEER), including those looking at the regulatory and market aspects of demand-side flexibility[8], consumer issues, smart grids as well as a new group looking at the role of the Distribution System Operators (DSOs).

Purpose of this document

1.18. Reflecting our research and the views of respondents and, the purpose of this document is four-fold:

1. to summarise the key issues which are constraining the development of DSR
2. to identify where and how effectively challenges are being addressed
3. to identify gaps in current work and therefore any outstanding challenges for the development of DSR
4. to launch work to address any gaps.

Structure of the document

1.19. The document is structured as follows:

- Chapter 2 highlights the two key conclusions from the April consultation and introduces the next phase of work in response to these conclusions.
- Chapter 3 provides a summary of the key issues raised by stakeholders in response to the preconditions introduced in the April consultation.
- Chapters 4-6 outline the most important issues that were raised by stakeholders for why each precondition may not be currently met, states

[8] *Regulatory and Market Aspects of Demand-side flexibility*, Council European Energy Regulators, November 2013

the level of importance for each issue and signposts the reader to relevant work.

1.20. Appendix 1 provides a list of our stakeholders that responded to the April consultation. Appendix 2 provides a glossary.

2. The need for a DSR Framework

Chapter Summary

This chapter introduces the two key conclusions from the April consultation:

- a new market model specifically for demand-side response (DSR) is not needed yet
- more urgent is the **need for a DSR framework** that clearly formalises the interactions between different parties in relation to DSR.

The chapter concludes by outlining how we propose to address this gap through our next stage of work.

Is a new market model needed?

Proposal in April consultation

2.1. We sought views on whether either incremental change or more significant market reforms were required to create the right environment for DSR to realise its potential. We outlined two possible future models:

- direct consumer-industry party arrangements
- a platform providing a single counterparty for consumer transactions around DSR.[9]

2.2. There are of course a range of other models and variations to be considered, including for different consumer segments. We included these illustrations to stimulate debate and better inform how work on future arrangements should be taken forward.

Respondents' views

2.3. Overall there was no consensus among respondents that a new market model is needed to realise the potential of DSR.

2.4. Around 15 per cent of respondents said that incremental adjustments to the current market arrangements would not be sufficient. They said that more significant reforms to market arrangements would be needed to maximise the system-wide benefits of DSR. These respondents included a range of energy service companies, a small number of industry associations, one network company and one small supplier.

[9] Please see chapter 4 of creating the right environment for demand-side response, Ofgem, April 2013

2.5. Another 15 per cent of respondents stated that they did not believe a new market model was required and that incremental changes should be made to current arrangements. A range of respondents shared this view including some consumers, an industry association, a large supplier and a small number of consultancies. A common concern among these respondents was that a new set of market arrangements would create delay and uncertainty. The consumer respondents said attention should be focused on ensuring that signals are passed on to consumers via suppliers.

2.6. Over a quarter of respondents provided a mixed response. This view was held by a broad range of respondents including some large and small suppliers, a number of central bodies, a small number of network companies, an industry association, energy services companies and a consumer body. The most common view held by this group of respondents was that, given the amount of industry change already underway, it may be not be a good time to create a new market model. However, some respondents added that more substantial reform may be necessary in the future. A small number of respondents mentioned that further consideration needs to be given to the impact of DSR on all industry parties, including energy service companies, before it is clear which market model would be most appropriate.

2.7. One network company made the distinction between the domestic and non-domestic market. On the one hand, they stated that incremental arrangements may be appropriate for non-domestic consumers. However, they said that a step change in market arrangements is required for domestic consumers to move from smoothed prices to prices which are cost reflective and more likely to encourage DSR.

2.8. One large supplier stated that the evolution of the 'supplier-hub' model, whereby most consumers (except some larger consumers) deal only with their supplier, is preferable rather than a revolution of market arrangements. However, the same respondent conceded that all market models should be considered.

2.9. Linked to this question, a range of respondents, including consumers, large suppliers, industry associations, network companies and energy services companies, commented that the role of distribution network companies or distribution system operators was unclear. Around half of the respondents that commented on this suggested that suppliers should remain the sole consumer-facing party and should pass through any DSR signals from network companies or other parties.

2.10. The other half of respondents who commented on this point stated that network companies are best placed to contract directly with consumers to realise the highly locational value of DSR at the distribution level. Some network companies mentioned that many of the relevant Low Carbon Network (LCN) Fund projects are exploring the practicalities of direct network company-consumer relationships.[10]

[10] As part of the electricity distribution price control arrangements that run from 1 April 2010 to 31 March 2015, Ofgem established the Low Carbon Networks Fund. The Fund allows up to £500m support to projects sponsored by the DNOs to try out new technology, operating and commercial arrangements. The

Our conclusion

2.11. In the light of the responses to the consultation, we do not believe that launching a significant market reform package to improve the allocation of DSR across the system should be a priority for Ofgem at this stage. There is already a lot of industry change underway at present and the introduction of another substantial change to the market could lead to a greater level of uncertainty across industry. Instead, as discussed below, we will be taking forward work to support DSR through changes to the existing market framework.

The need for a DSR Framework

Proposal in April consultation

2.12. Within precondition one of the April consultation, we identified the challenge of cross-party impacts when industry parties use DSR. It is evident that when one party uses a consumer's DSR it can impact other parties in the supply chain. Cross-party impacts can be complex and their scale and impact depends crucially on system conditions at the time.[11] Industry parties need to have clarity around their rights, to help reduce the risk associated both with using DSR themselves, or other industry parties using DSR.

2.13. In some cases the effect can be positive, but they may harm those other parties especially if they are unsighted on the actions in advance. There are potentially significant implications, in particular:[12]

- the actions that parties may take after gate closure may impact the ability of the System Operator to balance the system
- suppliers may be forced out of balance and exposed to imbalance charges by parties calling DSR actions from their half-hourly metered consumers
- if consumers' peak consumption changes as a result of providing DSR then it may affect the ability of DNOs' to undertake network planning

2.14. These cross-party impacts largely seem to arise from a lack of information sharing among industry parties. This suggests that there is little or no visibility of DSR actions taken across the system. This creates operational and financial risks for individual parties and restricts the ability of consumers to get the full value of their response from all parties in the value chain.

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objective of the projects is to help all DNOs understand what they need to do to provide security of supply at value for money as Great Britain moves to a low-carbon economy.

[11] For example, where a DNO uses demand-side response to manage flows on their network following a fault; potentially affecting the demand-side response available for the SO to call on, affecting the overall balance of the electricity system.

[12] See table 3 of the April consultation

Respondents' views

2.15. In contrast to the lack of consensus over whether a new market model for DSR is needed, respondents strongly agreed that the implications of cross-party impacts are a major challenge. Indeed, it was by far the most common point raised across the 47 responses.

2.16. Just under half of all respondents agreed that there is a lack of a clear DSR framework in place that sets out clear arrangements within the current market model. Most of these respondents thought a clear framework would better co-ordinate and hence realise the value available from DSR resources. This view was shared by a broad range of respondents including large suppliers, network companies, energy service companies, consumer bodies, consultants and a central body.

2.17. Among these respondents, a common assertion was that such a framework should be underpinned by clear understanding of how, when and why different parties use DSR. One network company mentioned that once all parties understand this it could be possible to arrange contracts so multiple parties can share a DSR asset.

2.18. The consumer bodies who responded stressed that the design of the framework should focus on the needs of consumers. Where respondents mentioned who should be responsible for designing this framework the most common response was that Ofgem should lead this work with close links with the Department of Energy and Climate Change (DECC). Some respondents mentioned that designing an industry-wide framework should build on the Smart Grid Forum (SGF) work already underway.

2.19. As a first step in developing a DSR framework, around a third of all respondents noted that a greater understanding was required of the system, operational and financial cross-party impacts of DSR. In other words, if one party calls for a DSR action, what are the consequences (positive or negative) on other industry parties? For example, there may be the risk that the dispatch of DSR to one party might reduce the capacity of DSR to another. Or it might put that party's key operations at risk, such as a supplier being able to maintain their balancing position.

2.20. Support for further work on this area was shared by most large suppliers, one small supplier, and various network companies, energy services companies and industry associations. Some respondents recognised that DSR cross-party interactions were being considered by the SGF work stream six (WS6) but that the scope of this work should be widened to consider all industry parties including aggregators and energy service companies. Two respondents went on to say that in the long-run these interactions should be reflected in pricing signals for DSR. This would ensure that DSR is used optimally across the system.

2.21. Linked to the question of cross-party interactions, around a quarter of respondents mentioned industry parties need to share more information on their use of DSR. The respondents to this issue included most large suppliers, and some network companies, industry associations and energy services companies.

2.22. Most respondents on this point thought that it is vital that communication arrangements are established given the potential for cross-party impacts of DSR actions. Information could then be shared in advance, enabling parties to take appropriate mitigating actions if necessary.

2.23. Some respondents raised more specific points. One of these was that suppliers will have an important role to play in developing communication arrangements to ensure that the consumer-facing aspect is fully considered. A small number of respondents mentioned that advanced technology, predictive load forecasting and notification of demand positions could afford transparency to all parties, much in the same way as the current operation of the balancing mechanism.

2.24. A few respondents also noted that a DSR framework should include common standards for base lining, measuring and verifying DSR.

2.25. Finally, several respondents – including an industry association and an energy services company – saw a further barrier for the industry. This is that there is a lack of clarity on who has the responsibility to issue a dispatch signal and who should own and operate DSR automation equipment. This issue links with the cross-party interactions mentioned above, as agreement will be needed on roles and responsibilities for dispatching signals if a consumer's DSR is valuable to more than one party.

Our conclusions

2.26. We recognise that **there is an urgent need to develop a DSR framework that clearly formalises the interactions between different parties who use DSR**. It is clear from stakeholder feedback that the lack of a framework setting out roles and responsibilities for industry parties is a significant barrier to efficient system-wide use of DSR. This will also help determine whether, in the future, more fundamental changes are needed.

2.27. Industry is already carrying out work on these questions. WS6 of the SGF is currently examining how DNO-implemented smart grid solutions could affect industry roles and responsibilities. The group submitted a report to the Smart Grid Forum in August 2012 which included consideration of DSR.[13] Having delivered its report, the work stream is now taking forward the next steps i.e. to propose options for removing barriers to the efficient deployment of smart grid solutions.

2.28. In other work across industry, National Grid is working with DNOs though the Electricity Networks Association (ENA) Electricity Demand Side Response Shared Services Group. It is exploring the conflicts and synergies across the networks in a future where DSR resources are being sought by many parties. As an example, as part of this group, National Grid has shared their experience of monitoring and verification and contractual arrangements for balancing services. Finally, LCN fund projects looking at DSR are also beginning to provide helpful learning in this area.

[13] *Work Stream Six report*, Ofgem on behalf of SGF, August 2012

2.29. However, the work outlined above has had a network-focused approach. It is becoming increasingly apparent that ensuring a smooth integration of DSR into different parties' day-to-day operations cannot be addressed in isolation. Instead, a market-wide approach is needed. This conclusion has not only been identified by respondents to our April consultation but is also reported as a gap by the majority of WS6 members.

2.30. In response to this gap, we propose a new project which will build on WS6's work and create a DSR framework to formalise how different parties interact within the existing market model, to improve practices and decision-making across the value chain.

Scope of project to develop a DSR framework

2.31. The new project will build on existing work in WS6 and broaden it out to include all parties in the value chain. To develop the DSR framework we will take the following steps:

1. **Detailed assessment of parties' requirements.** WS6 are in the process of developing a high-level set of requirements from a DSR perspective. We will build on this work to include all parties in the value chain.

2. **Gap analysis.** We will then undertake a gap analysis of the current market framework to see if it meets parties' requirements. This assessment will look not only at the current position, including a review against current policy, but also potential future developments.

3. **Option development and appraisal.** We will then develop a number of options for market and other commercial arrangements to close any gaps to better support the requirements of each party.

4. **Implementation decision and process.** The next step will be to propose to publish recommendations for future policy development for consultation. Following consultation we will issue a policy decision on the changes that need to be made to current arrangements and a plan and timeline for implementing these. This will include consideration of how and who is best placed to implement the required changes.[14]

2.32. While this project is largely industry-focusing we recognise DSR benefits will only be realised if consumers engage with DSR offers and ultimately change the way they use energy. With this in mind, we will ensure that the implications for consumers are considered throughout all stages of the project. Consumer issues and views on DSR are largely reflected in the other two preconditions set out in April.

[14] I.e. will the changes require industry to lead implementation through the industry code modification process or will Ofgem need to make licence changes and or use the Significant Code Review (SCR) process.

Chapter 5 and 6 of the document have further details on how we believe these issues should be tackled.

2.33. Many of these aspects of this project align with the work programme for WS6 which our smarter grids and governance division is taking forward. To ensure that we can leverage this work effectively, we are creating a joint project team consisting of the distribution policy team leading on WS6 and the smarter markets team.

2.34. This will help WS6 tackle the wider commercial issues associated with developing a smart grid that can serve all parties in the value chain and subsequently maximise its value for consumers. While the project will build on the work being undertaken in WS6, it will produce separate stand alone documents including consultations and decisions.

2.35. This project will be an integral part of the package of work already underway across Ofgem which has implications for DSR. The project will not run in isolation and learning and outputs from this project will inform other work where relevant. See chapters 4 to 6 for the range of work already underway within Ofgem and elsewhere to address the other issues raised by stakeholders in response to the April consultation.

Why Ofgem?

2.36. We consider that it is important that Ofgem has a key role at this stage in taking forward this project. There are two key reasons:

(1) Individually, reflecting their own roles and responsibilities, industry parties are unlikely to have the same priorities for the future development of a DSR framework. Ofgem is best placed to take an industry-wide perspective with a view to developing rules that maximise system-wide value.

(2) There are a number of areas of policy work that Ofgem is currently leading that either impact on or are likely to be impacted by the arrangements that are put in place for DSR. Key interactions are:

- **Longer-term settlement reform.** As part of the Smarter Markets Programme we are taking forward work to put in place settlement arrangements that use smart metering data to allocate energy in an accurate, timely and cost-effective way. Improved settlement arrangements will be important for the long-term development of DSR.

- **EBSCR**. This Significant Code Review aims to incentivise an efficient level of security of supply and address our longstanding concerns with short-term price signals identified in Project Discovery.[15] The outcomes from this work could include making prices more reflective of scarcity

[15] *Project Discovery - Options for delivering secure and sustainable energy supplies*, Ofgem, February 2010

conditions. This could incentivise greater use of flexibility within the market, which includes DSR.

Next steps and stakeholder engagement

2.37. We propose to initiate the project early next year. We consider this is important to help maximise the potential of DSR from the rollout of smart meters at the earliest possible stage.

2.38. We plan to use WS6 as the key vehicle for stakeholder engagement for this project. However, as our work moves forward we are committed to continuing and extending our engagements with stakeholders through other forums and bilateral meetings. Please contact us on smartermarkets@ofgem.gov.uk for more information on how to contribute to this work.

2.39. We are committed to keeping stakeholders up-to-date on the progress of this project through our biannual newsletter on the Smarter Markets Programme. The next issue is due in February 2014 and will be available from the Smarter Markets page on our website.[16] This will include more details for the DSR framework project.

[16] https://www.ofgem.gov.uk/electricity/retail-market/market-review-and-reform/smarter-markets-programme/working-our-stakeholders

3. Stakeholder responses to the DSR preconditions

Chapter Summary

This chapter summarises the points raised by stakeholders and how they correspond with the preconditions and challenges that we identified in the April consultation.

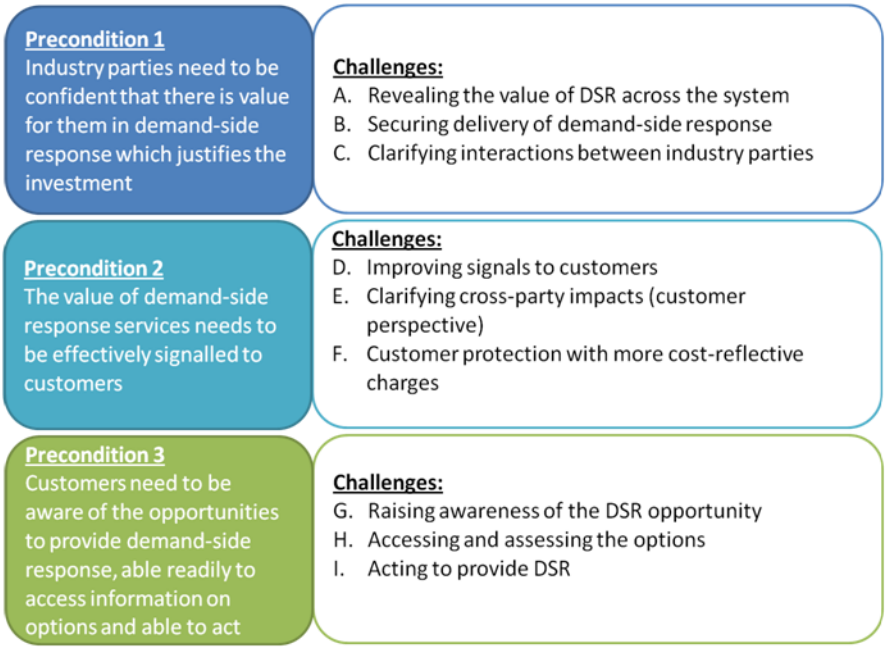
We also highlight where relevant work is underway across Ofgem and elsewhere to address the issues raised by stakeholders. For more detail on the individual issues and our conclusions identified by respondents please see chapters 4 to 6.

3.1. The April consultation identified the following three essential preconditions for the longer-term development of demand-side response (DSR):

- Industry parties need to be confident that there is value for them in demand-side response which justifies the investment
- The value of offering different demand-side response services needs to be signalled effectively to consumers
- Consumers need to be aware of the opportunities to provide demand-side response, able readily to access information on options and able to act

3.2. We identified a number of challenges under each precondition that we thought prevented each precondition from currently being satisfied. Figure 3 summarises this information.

Figure 3: Challenges identified under each precondition



3.3. Overall, in response to the consultation, stakeholders agreed with the challenges we identified in the April consultation. However, respondents raised more specific challenges and in some cases identified entirely new challenges that we had not previously identified.

3.4. The following table:

1. summarises the key challenges raised by stakeholders in the consultation against each precondition
2. indicates how they correspond with the challenges we identified in our April document by referring to the challenges set out in Figure 3
3. summarises our conclusion by highlighting relevant work underway across Ofgem and elsewhere to address each issue raised by stakeholders.

Table 2: Issues identified by stakeholders under our preconditions

Precondition 1: Industry parties need to be confident that there is value for them in demand-side response to justify the investment		
Issue raised by Stakeholder	**Existing or new challenge?**	**Conclusion/ relevant work**
Pricing signals do not provide clear enough long-term incentives for industry parties to contract for DSR	Challenge A	A wide-range of work is underway across Ofgem and government to help reveal the true value of DSR in the system (eg Electricity Balancing Significant Code Review (EBSCR) and the capacity market under the government's Electricity Market Reform (EMR)).
Settlement reform is required to fully realise the potential of DSR	Challenge A	As part of the smarter markets programme, we are progressing work on longer-term reform of the electricity settlement process.
Little understanding of the environmental impacts of DSR	New challenge	Work is underway in industry to further understand these impacts, including work by the National Physical Laboratory.
Lack of a clear DSR framework that formalises interactions between different parties	Challenge C	There is an obvious gap in work across industry to address this issue on a market-wide scale. We propose to **start a project to create this framework to improve DSR rules and practices across the value chain** (see chapter 2).

Precondition 2: The value of DSR services needs to be effectively signalled to consumers		
Issue raised by Stakeholder	**Existing or new challenge?**	**Conclusion/ relevant work**
Distribution-charging provides poor signals to smaller consumers	Challenge D	Longer-term reform for distribution charging is being considered as part of Work Stream Six of the Smart Grid Forum.
DSR pricing across the supply chain needs to encourage consumers to invest	New challenge	Ongoing work across Ofgem and government, such as the EBSCR and the capacity market under EMR, will help ensure that the value of DSR is correctly signalled. Then industry will need to design DSR products and contracts that provide a sufficient return on investment to consumers.
Greater clarity is needed on how DSR tariffs can be developed under Ofgem's Retail Market Review (RMR)	New challenge	RMR is in part about making tariff choices simpler. This simplicity must be balanced against the need for new, more sophisticated tariffs enabled by the rollout of smart meters. The RMR tariff rules allow extensively for time-of-use tariffs and we will review the rules ahead of significant take-up of DSR.
Precondition 3: Consumers need to be aware of the opportunities to provide demand-side response, able to readily to access information on options and able to act.		
Issue raised by Stakeholder	**Existing or new challenge?**	**Conclusion/ relevant work**
Consumers' understanding of DSR and trust in the energy market is crucial.	Challenge G	RMR will help to build greater trust and confidence in the market and the Smart Meter Central Delivery Body will be instrumental in building consumer awareness of smart meters. Industry will also have an important role to help build consumers' awareness and appetite for DSR.
Work is needed on how DSR will affect the future retail market.	Challenge H	Work is already underway that will address some of these issues, such as our work within the RMR that is examining the role of third party intermediaries. We will keep this issue under review.
Protection will be needed for the use of consumers' data and automation	Challenge I	The Smarter Markets Consumer Empowerment and protection work will be considering the implications for both the use of consumer's data and automation, in the medium and longer-term respectively.

4. Precondition one: Industry parties need to be confident that there is value for them in DSR to justify the investment

4.0. As stated in the April consultation, it is our view that the first precondition that needs to be met to realise our long-term objective for demand-side response (DSR) is the following:

'Industry parties need to be confident that there is value for them in demand-side response to justify the investment'

4.1. There is value to be delivered in terms of DSR across the supply chain. Therefore regulatory and commercial arrangements need to enable industry parties to see and capture that value.

4.2. In the April consultation we outlined what we thought the main barriers were that are preventing this precondition from being satisfied. The following subsections outline the most important issues that were raised by stakeholders on why this precondition is not currently met. We also provide our conclusions against each issue which point to relevant work underway within Ofgem and elsewhere.

Pricing signals do not provide clear long-term incentives for industry parties to contract for DSR

Proposal in April consultation

4.3. While there is value to be delivered in terms of DSR across the supply chain, regulatory and commercial arrangements need to enable industry parties to see and capture that value. We outlined in the April consultation the specific areas where it is already recognised that work needs to be done to provide stronger incentives on industry parties to develop DSR offers.[17]

Respondents' views

4.4. Around a fifth of respondents mentioned that one of the more significant barriers to a more effective demand-side is the weak price signals that currently exist. Some of these respondents suggested that our Electricity Balancing Significant Code Review (EBSCR) will be instrumental in facilitating the sharper price signals that are needed to better reflect the value of flexibility, including DSR, in the wholesale market.

[17] See table 2 of the April consultation.

4.5. Some respondents discussed the role of the capacity market as part of the government's Electricity Market Reform (EMR) initiative. A common view among these respondents was that the inclusion of DSR in the capacity market was crucial for revealing the true value of DSR and ultimately enabling the development of a mass-scale DSR market.

Our conclusions

4.6. As mentioned in the April consultation, a wide-ranging body of work is underway to help reveal the true value of DSR in the system. As respondents to the consultation have highlighted, our EBSCR will have important implications for ensuring that the value of flexibility, including DSR, is correctly signalled in the market. In July this year we published a consultation outlining our draft policy decision.[18] Responses to this consultation will inform our final policy decision on the EBSCR, which is planned to be published in spring 2014.

4.7. Our work on Future Trading Arrangements (FTA) will also have implications for revealing the value of DSR. FTA aims to test whether Great Britain's wholesale electricity trading arrangements are robust against future challenges.[19] This will include considering how DSR is treated within trading arrangements.

4.8. Government policy on the capacity market will be an important enabler for DSR participation. Department of Energy and Climate Change (DECC) is currently consulting on proposals for the implementation of EMR. The consultation asked for stakeholders' views on their proposals for how DSR, including embedded generation and smaller storage capacity, can participate in the capacity market.[20] Ofgem still has an important role in considering and providing views on the design of the capacity market, especially given the integral link between government policy and Ofgem work streams mentioned in this document.

4.9. Finally, specifically relating to distribution networks, the strategy decision for the next electricity distribution price control (RIIO-ED1) places greater emphasis on incentives to drive the innovation needed to deliver a sustainable energy network that provides value for money to existing and future consumers. This includes consideration of DSR, where it is more efficient than other methods, to resolve network constraints and defer investment.[21]

[18] *Electricity Balancing Significant Code Review – Draft Policy Decision*, Ofgem, July 2013
[19] *Open letter requesting comments on review of future trading arrangements*, Ofgem, 18 February 2013
[20] *Electricity Market Reform: Consultation on Proposals for Implementation*, Department of Energy and Climate Change, October 2013
[21] See here for the latest on RIIO-ED1.

Settlement reform is required to fully realise the potential of demand-side response

Proposals in April consultation

4.10. In the April document, we recognised that settlement reform will help to provide stronger incentives on industry parties to use DSR. We covered this within the challenge 'revealing the value in the system'.

Respondents' views

4.11. Approximately a third of all respondents agreed that settlement reform is required to fully realise the potential of DSR in the market. This included some larger suppliers, a range of energy services companies, two central bodies, two network companies and a range of other respondents including industry associations and not-for-profit organisations.

4.12. A small number of respondents mentioned that there are several ways that suppliers can use existing arrangements to deliver some of the savings from DSR. For example, suppliers are able to realise some savings from offering static ToU tariffs to customers settled using profiles.[22] Furthermore, a central body noted that suppliers can currently elect to settle any customer with appropriate metering equipment using half-hourly consumption data.

4.13. However, one supplier mentioned that settling customers on a half-hourly basis under current arrangements incurs additional costs, for example costs around agent re-qualification and adherence to a stricter set of performance measures. They stated that settlement arrangements need to allow for any customer to be settled half-hourly without incurring these additional costs compared to being settled non half-hourly.

Our conclusions

4.14. We consider that reforms to electricity settlement arrangements will be necessary to encourage suppliers to offer DSR products to their customers.

4.15. As part of the Smarter Markets Programme, we are progressing work on longer-term reform of the electricity settlement process. Our focus is on the arrangements for determining how much each supplier's customers use in each half hour of the day. Our objective is to put in place arrangements that can use the data from smart metering to allocate energy in an accurate, timely and cost-effective way. At present, we are undertaking scoping work to identify the most effective

[22] Static ToU tariffs have unit rates that vary across fixed, pre-defined times when the energy is consumed, for example through different unit rates for energy consumed during the day and during the night.

approach for progressing reform and hence realising our longer-term objective. We plan to conclude our scoping work in Q1 2014.

4.16. Outside of the Smarter Markets Programme, a smaller supplier has raised a modification to the BSC ('P272') that would mandate that larger non-domestic customers are settled on actual half-hourly meter readings from 1 April 2014. These customers should have meters that are capable of recording half-hourly consumption from 6 April 2014 in line with obligations in the electricity supply licence. Ofgem is responsible for deciding whether this modification to the BSC is approved. We published recently for consultation our draft impact assessment on P272.[23] This document also explained that we are minded-to approve the modification.

Environmental impacts of DSR

Proposal in April consultation

4.17. Our April consultation focused on understanding how DSR can compete with other ways of providing flexibility or adequacy, regardless of how consumers provide and deliver it. We did not therefore include the challenge of assessing environmental impacts of DSR as a key issue.

Respondents' views

4.18. While recognising the need to focus this work, some respondents to the consultation suggested that the carbon benefits of certain types of DSR should be explored as a matter of priority.

4.19. Over 10 per cent of respondents stated that work is needed to further understand the impact of different types of DSR on carbon emissions. These respondents include two large suppliers, two industry associations, two energy services companies and one not-for-profit organisation.

4.20. Most respondents who commented on this issue suggested that the environmental value of DSR needs to be recognised, as well its economic value. One energy services company and one large supplier said 'clean' DSR should be given a higher position in the dispatch merit stack compared to back-up generation, and that incentives in the market should reflect this higher value.

Our conclusions

4.21. Ofgem's principal objective is to protect the interests of existing and future consumers. This includes their interest in the reduction of electricity-supply emissions of targeted greenhouse gases. We therefore recognise the importance of further understanding the carbon impact of different types of DSR.

[23] *BSC Modification Proposal 272 – draft impact assessment*, Ofgem, October 2013

4.22. These impacts could be positive or negative impacts. For example, DSR could lead to carbon savings through reducing the need to run less efficient part-loaded generators. On the other hand, DSR might lead to increases in emissions through increasing grid average emissions at the time of the catch-up consumption.

4.23. We are interested in further understanding the carbon impact of smart approaches to managing electricity demand, including DSR and we are keen to draw on work already underway elsewhere. The National Physical Laboratory (NPL) is developing a model and metrological standard to independently quantify the carbon implications of smart approaches, including DSR.[24] We are collaborating with NPL on this.

4.24. Finally, in other relevant work, the Department for Environment, Food and Rural Affairs (DEFRA) is currently updating its carbon reporting guidelines. This will include a section on the possibility of businesses claiming carbon savings for providing DSR if the methodology for calculating the savings has been assessed by independent experts.

The lack of a clear DSR framework

Please see chapter 2 for this issue.

[24] Please see pg 102 of this link for more information: http://www.bis.gov.uk/assets/nmo/docs/nms/ird-programme-document-public-release-april-2012.pdf. Interested stakeholders should get in contact with Tricia Wilson at NPL (tricia.wilson@npl.co.uk).

5. Precondition two: Value of DSR needs to be effectively signalled to consumers

5.1. As stated in the April consultation, it is our view that the second precondition that needs to be met to realise our long-term objective for demand-side response (DSR) is the following:

'The value of demand-side response services needs to be effectively signalled to consumers'

5.2. Effective markets rely on consumers exerting competitive pressure on their suppliers by making well-informed decisions about how much and when to consume based on accurate cost information. For the value of DSR to be fully realised, the electricity price that consumers face would need to signal the overall cost of generating and delivering the electricity they consume at that time and specific location.

5.3. In the April consultation we outlined what we thought the main barriers were that are preventing this precondition from being satisfied. The following subsections outline the most important issues that were raised by stakeholders on why this precondition is not currently met. We also provide our conclusions against each issue which point to relevant work underway within Ofgem and elsewhere.

Distribution charging incentives

Proposal in April consultation

5.4. We recognised in the April consultation that some DSR routes to market are more effective at signalling value to consumers than others. In particular, we mentioned that the methodology used to calculate distribution charges for smaller consumers could better signal the value of DSR to consumers.

5.5. The Common Distribution Charging Methodology (CDCM) applies to most customers that are connected to the high voltage tier and to all that are connected to the low voltage tier.[25] Under the CDCM, commercial customers with half-hourly metering do receive time-of-use signals through their distribution charges, but these do not fully reflect the dynamic and locational value of DSR at specific points on the network.[26] Furthermore, customers who aren't metered half-hourly are generally not exposed at all to the time-of-use element of distribution charges that are included in

[25] The equivalent methodology for large industrial and commercial customers is known as the EHV Distribution Charging Methodology (EDCM)

[26] CDCM charges are based on the average costs imposed by each generic type of customer, rather than being site-specific.

their energy supply bill.[27] As a result, current arrangements do not effectively target response from all customers at times when the value of DSR to the DNO is highest. Ultimately, this leads to sub-optimal use of DSR within the electricity distribution networks.

Respondents' views

5.6. Around a third of respondents suggested that current distribution charging methodologies for smaller customers do not adequately signal the correct value of DSR on behalf of the Distribution Network Operator (DNO). Respondents on this issue included a large supplier, a network company, some energy services companies and a consumer body.

5.7. A small number of respondents noted that changes could be made to increase the cost-reflectivity of distribution charges across all customers through greater alignment of the EDCM and CDCM charging methodologies. However, they noted two challenges with this for suppliers passing-through the distribution time–of-use charges to the end-user:

- First, the signals to shift demand received by the end user could be weakened or even negated if the time-of-use signals for the wholesale cost of energy and transportation costs were not consistent across time-bands.
- Second, the tension between the need for greater cost-reflectivity in distribution charges and the aspiration in the supply market to reduce complexity for consumers to support Ofgem's Retail Market Review (RMR) objectives.[28]

Our conclusions

5.8. We recognise that distribution charging is an important route to market for DSR and Ofgem has a range of initiatives underway to look at solutions for this issue.

5.9. Longer-term reform for distribution charging is being considered as part of Work Stream Six (WS6) of the Smart Grid Forum (SGF). The workgroup is looking to understand how incentives for domestic and small business customers can be introduced, once smart metering data is available, to help encourage them to manage their demand and help to avoid network reinforcement.[29] This helps define the form a future smart grid should take and how it needs to interact with consumers.

[27] Non-half-hourly metered customers do not typically have time bands, although some customers may be placed on an Economy 7 tariff where they can be rewarded for shifting demand off-peak.
[28] Please see paragraph 5.17 onwards for more on this issue.
[29] This is explained in more detail in the Strategy Decision for the RIIO-ED1 electricity distribution price control, Outputs, Incentives and Innovation document, chapter 3: https://www.ofgem.gov.uk/sites/default/files/docs/2013/02/riioed1decoutputsincentives_0.pdf

Pricing across the supply chain needs to encourage investment

Proposal in April consultation

5.10. Our April consultation showed how some routes to market are currently more effective at signalling the value of DSR to consumers than others. However, we did not explicitly mention other pricing considerations that are important to consumers such as the longevity, predictability and consistency of pricing.

Respondents' views

5.11. A significant number of respondents recognise that the government's capacity market and Ofgem's Electricity Balancing Significant Code Review (EBSCR) and work on Future Trading Arrangements (FTA) will play an important role in increasing the cost-reflectivity of price signals for DSR.

5.12. However, around a fifth of all respondents suggested that longevity and predictability of prices are also key considerations for consumers wishing to invest in the necessary capex and opex required to deliver DSR. These respondents included consumers, consumer bodies, industry associations and energy service companies.

5.13. Respondents who mentioned the issue of longevity suggested that price signals should be fixed for longer periods of time to allow consumers to investigate, invest in and benefit from DSR. One industry association explained that there is no realistic price at which demand response will be delivered by consumers in response to short-lived signals, because the opportunity cost and risk concerns will always be too high. The same respondent suggested that industry party incentive schemes and regulatory frameworks must therefore ensure that the value of DSR can be realised over the long term (which they defined as at least five years in most cases).

Our conclusions

5.14. We recognise that absolute prices and the dynamic structure of prices are key to determining whether DSR is a justifiable revenue stream for consumers. Providing DSR to the market is not the core business for the vast majority of non-domestic consumers. So, without a sufficient degree of certainty of returns from entering into DSR commercial agreements, it is not worth the initial investment. This is a barrier to realising the potential of DSR in the market.

5.15. As mentioned under precondition one, Ofgem and government are undertaking projects to ensure that the value of flexibility, including DSR, is correctly signalled in the market. This includes our EBSCR, work on FTA and the government's capacity market as part of Electricity Market Reform (EMR). Improving the incentives throughout the supply chain will encourage industry parties to call on DSR as a viable alternative to generation. Then it will be up to industry parties to design DSR products and contracts that give sufficient certainty to consumers that providing DSR will provide a good return on their investment. This includes consideration of how predictable prices will be, and the longevity of contracts.

Demand-side response tariffs and the RMR

Proposal in April consultation

5.16. In the April consultation, we recognised that DSR tariffs will be the main tool that suppliers' can use to target the use of DSR when it is of most value. The rules within our Retail Market Review (RMR) allow for the development of DSR tariffs therefore we did not identify this as a barrier to DSR in the April consultation.

5.17. To signal the value of DSR to consumers effectively, tariffs must demonstrate value in a way that consumers understand and engage with. RMR is intended to make the energy market simpler, clearer and fairer so that they have the confidence and ability to engage and are better able to choose the deal that suits them.[30] It will help empower consumers by 'resetting the energy market'.

Respondents' views

5.18. Over a fifth of respondents gave some view on the need to plot a path for DSR tariffs under RMR conditions. They discussed the potential impacts of the RMR tariff limit on DSR offerings. One small supplier felt that sufficient access to DSR tariffs during the smart meter rollout would be important as part of a drive to help people see the benefits of enabling these kinds of tariffs. A large supplier suggested that a trial and derogation approach for DSR tariffs would offer the right balance of consumer benefit and risk in the context of the tariff limit.

5.19. Respondents who discussed tariffs in the context of RMR talked about the importance of having sufficiently simple tariff structures that consumers could easily compare. Respondents acknowledged that this would be challenging for DSR. This is because of the more complex pricing, the need for consumers to easily understand the suitability of a DSR tariff for their circumstances, and the need to understand the terms of an offer around things like automated response and over-ride facilities. Nevertheless, this simplicity is considered critical to the success of DSR, particularly in the early stages while consumers are unfamiliar with the concepts.

5.20. One consumer group argued that the appropriate simplicity could best be achieved by abolishing standing charges and offering tariffs on a unit rate basis across the market, banded in the case of time-of-use (ToU) tariffs. A number of respondents (including two energy services companies, a consultant, and a central body) felt that this simplicity could best be balanced against the need for granular pricing signals, by offering DSR optimised tariffs (sometimes called 'dynamic switching').[31] The suggestion was that load limiting or direct control could be deployed according to a framework agreed with the customer (e.g. a certain number

[30] Please see our website for the latest on the RMR: https://www.ofgem.gov.uk/retail-market-review
[31] Unlike ToU tariffs, a DSR optimised tariffs would not require a conscious response from customers to shift load at a certain time. Here a specific tariff arrangement could include load limiting or direct control in conjunction with smart appliances that could be deployed (with customer consent) without the need for customers to fully understand the pricing/ signal components.

of events for an agreed capacity). An industry central body felt that these arrangements should be developed as a matter of priority for the smart meter environment.

Our conclusions

5.21. RMR's priority is to rebuild trust and confidence in the energy market. Part of this is about making tariff choices simpler. This simplicity must be balanced against the need to retain the scope and incentives for new, more sophisticated tariffs enabled by the rollout of smart meters.

5.22. In this context, RMR allows for ToU Tariffs. The RMR tariff rules are based around five categories, defined by the number of rates and the number of periods included in the tariff. Suppliers must ensure that no more than four core tariffs are available to a consumer for each of the following categories:[32]

a) Category A – Tariffs with a single unit rate, single period of time.
b) Category B – Other time ToU tariffs (not captured in the other categories).
c) Category C – Tariffs with two unit rates, two periods of time.[33]
d) Category D – Tariffs with two or three unit rates, up to three periods of time.
e) Category E – Dynamic teleswitching tariffs.

5.23. As such, four of the five categories are forms of DSR tariff. In order to manage and support the development of these tariffs, the Consumer Empowerment and Protection (CEP) project, part of the Smarter Markets Programme, is planning to explore key consumer protection issues around ToU tariffs. The CEP project is currently consulting on the full range of focus areas for a proposed work programme, including prioritisation and phasing.[34]

5.24. The uniform format for tariffs proposed by RMR will support consumers in comparing tariffs, as will the Tariff Comparison Rate (TCR). However, the TCR currently only applies to standard non-ToU tariffs. In early 2014 the CEP project is planning to consider how to determine an appropriate methodology for comparing TOU tariffs and reflecting this in the TCR. This is an important piece of work as it will ensure that the RMR works in its entirety for TOU tariffs.

5.25. It is notable that the dominant focus for early work is ToU tariffs. ToU tariffs will be the most familiar form of DSR for domestic consumers, and these types of tariffs are also the most well developed to date in the domestic market. As the most common DSR opportunities are likely to be on offer to domestic consumers first, we believe that they are an appropriate area for early focus. However, we agree that more complex and innovative tariff types offer a significant opportunity for the market and could play an important role in the future.

[32] We are also making clearer what the effects of the terms "available" and "use" are in this context.
[33] This includes traditional E7 (two periods, one of 7 hours and the other of 17 hours) and E7 variant tariffs.
[34] *Consumer Empowerment and Protection in Smarter Markets*, Ofgem, Dec 2013

5.26. RMR rules allow for innovations in these sorts of tariffs without compromising the simplicity that is necessary to reset trust and confidence in the market. Pilot schemes for innovative products linked to smart metering are considered under the RMR derogation guidance as an example where derogation requests may be considered.[35] The CEP project will be developing thinking on consumer protection and empowerment opportunities for these more complex and innovative tariff types as smart meter volumes increase (please see paragraph 6.35 for further discussion). This is in addition to the important role the project has in ensuring that appropriate consumer protections are in place to support the early uptake of simpler ToU tariffs and acting as a facilitator for this uptake.

5.27. Finally, we have also committed to a full review of the RMR rules by 2017. This is likely to be ahead of any mass take-up of DSR given that many key enablers will still be underway such as the rollout of smart meters and settlement reform.

[35] *Guidance for derogation requests from domestic Retail Market Review (RMR) licence conditions*, Ofgem, September 2013

6. Precondition three: Consumers need to be able to provide a response

6.1. As stated in the April consultation, it is our view that the third precondition that needs to be met to realise our long-term objective for demand-side response (DSR) is the following:

'Consumers need to be aware of the opportunities to provide demand-side response, able to readily access information on options and able to act'

6.2. Even if preconditions one and two are satisfied, the system-wide value of DSR will not be realised unless consumers are aware and able to access opportunities to provide DSR. Only with an effective demand-side that provides the necessary competitive pressure within the market will we create the right environment for DSR to thrive.

6.3. In the April consultation we outlined what we thought the main barriers were that are preventing this precondition from being satisfied. The following subsections outline the most important issues that were raised by stakeholders on why this precondition is not currently met. We also provide our conclusions against each issue which point to relevant work underway within Ofgem and elsewhere.

Consumer understanding and trust of the energy market

Proposal in April consultation

6.4. Our view in the April consultation was that improving energy literacy and trust among consumers is necessary to lay the groundwork for companies looking to bring forward DSR propositions. Only then will consumers be fully aware of the implications of the choices they make in how they use energy, and as such understand the benefits that DSR may deliver.

Respondents' views

6.5. Around half of respondents agreed that improving consumers' awareness and understanding of DSR and the benefits it can deliver is crucial to helping increase consumer participation. Respondents included the majority of the large suppliers, one small supplier, a range of network companies, a number of energy service companies, two consumer bodies, two consumers and two industry associations.

6.6. A common view among respondents was that the current level of understanding and engagement with electricity usage in the home is not a good starting point for the effective signalling of DSR offers. Respondents highlighted the importance of helping consumers gain a greater understanding of their usage

(patterns over the day and use of different appliances), which would help them to understand how shifting their usage on different tariffs could deliver benefits.

6.7. A number of respondents suggested that current market arrangements for DSR do not give a clear, consistent view of the market to consumers. This can further dampen levels of awareness of what DSR is and the benefits it can bring. As one industry association noted, the market is already confusing, even to more sophisticated consumers given the number of industry parties and different roles and responsibilities across the market.

6.8. A small number of respondents suggested that the government's consumer engagement programme that supports the smart metering rollout has a key role to play. They believed that it provides an important opportunity to educate and engage consumers on the broader future benefits of smart meters including being able to provide DSR.

6.9. While raising awareness of demand-side opportunities was still seen as important, around a fifth of respondents mentioned that it will not be effective unless consumers' level of trust in the energy industry improves. These respondents included some large suppliers, one small supplier, two consumer bodies, and a range of energy services companies.

Our conclusions

6.10. We recognise that addressing the low levels of consumer trust in the energy market is an important priority and is a clear prerequisite for improving levels of consumer awareness of DSR opportunities. The steps being taken through RMR and our transparency work are important in starting to build greater trust and confidence in the market.

6.11. As levels of consumer trust in the energy market start to improve it will then be important for consumers to understand their current consumption in sufficient detail to help them decide whether entering a DSR arrangement (such as a particular ToU tariff) would be appropriate for them. The ability to collect more accurate and granular consumption data is one of the primary reasons for rolling out smart meters. The availability of and access to this data, directly or through third parties, should allow consumers to better understand and manage their energy use. There will be a number of ways to access this granular data, for instance through suppliers, third parties, or through a consumer access device. It may be that in the future there is scope for improvement in how this data is made readily accessible to consumers, and this is something that could be picked up in the Consumer Empowerment and Protection (CEP) project if market developments suggest that further work is needed.

6.12. Ofgem has already helped raise awareness among consumers of the benefits of DSR with our recent factsheet. This gives a simple overview of what DSR is and

how it can help consumers save money.[36] The new phase of work outlined in Chapter 2 will help improve our understanding of the implications of cross-party interactions when using DSR. In turn this will help us present a clearer picture of the system-wide DSR opportunities open to consumers in the future.

6.13. Work is also underway across industry to improve consumer awareness. The Smart Meter Central Delivery Body has recently published its first annual consumer engagement plan which sets out the range of activities to be undertaken in 2014 to improve consumer engagement with smart meters.[37]

6.14. We see that it is industry's role to help build consumers' awareness and appetite for DSR through the design, trial and rollout of the right products designed with their interests in mind to maximise DSR participation. Moreover, they will need to present the options in ways that are straightforward for consumers to understand, access and participate in DSR.

Demand-side response and the future retail market

Proposal in April consultation

6.15. As stated in the April consultation, it is inevitable that DSR products will be more sophisticated than standard energy supply contract. A key issue that we identified was the need to ensure that consumers can access and assess the various options for providing DSR. This brings its own set of challenges around how developments will affect the future retail market. In particular, we recognised that:

- Clarity is required on the role of third party intermediaries (TPIs)
- Common communication standards and product definitions will be needed across different DSR offers to reduce complexity for consumers.

Respondents' views

<u>TPIs</u>

6.16. In our April consultation we explicitly asked what additional work is required on the role of third parties in helping consumers to access and assess DSR. Nearly 60 percent of respondents answered this question. This included nearly all the large suppliers, two small suppliers, a number of network companies, two consumer bodies and a range of consultancies, energy service companies and industry associations.

[36] *How managing your energy use could help you*, Ofgem, April 2013
[37] Larger suppliers are required by Licence Conditions to fund and set up the CDB. The consumer engagement plan is available at http://www.smart-meter.org.uk/

6.17. The majority of respondents who mentioned TPIs recognised the important role that TPIs will have in facilitating greater DSR participation. A small number of respondents noted that it will be important to consider the role of non-conventional TPIs in helping raise awareness of DSR. For domestic consumers, those organisations best placed to engage with consumers on energy issues may include housing associations, local authorities, community groups, and care services. For non-domestic consumers, appropriate intermediaries may include local chambers of commerce or industry associations.

6.18. A small number of respondents raised the fact that in order to help consumers both access and assess DSR offerings, third parties will need to gain permission from consumers to access their smart meter data.[38] Respondents recognised that this is of course an important consumer protection measure but one network company mentioned that this may create a barrier to entry for TPIs and also may result in added complexity for consumers.

6.19. Half the large suppliers and both consumer bodies (among other respondents) raised concerns that the TPI market, including aggregators, should be carefully monitored. This would ensure that consumers using them (to either search for the best deals or facilitate DSR) are not negatively impacted. Specific examples mentioned by respondents included ensuring that TPIs avoid adding complexity to the market for consumers and that they are subjected to the same regulatory scrutiny rules as suppliers, particularly around marketing practices.

Common communication standards and product definitions

6.20. Over a third of respondents shared the view that common communication standards and/or product definitions will be needed in order realise the system-wide benefits of DSR and encourage competition in this market. They noted that this point is particularly pertinent for consumers signing up to DSR contracts that involve the use of automated technology, which may require financial investment from consumers.

6.21. Some respondents said that, in addition to predictable prices[39], common communication and product standards will make consumers feel confident that they will see a return on their investment. This is because consumers may want to switch to another procurer of DSR, where a better return may be possible, without having to incur another upfront cost if different communication equipment is needed. This will maximise the competitive pressure of switching in the demand response market and wider retail market if and when DSR arrangements are linked to supply contracts.

[38] If TPIs sign up to the Smart Energy Code (SEC) then they will be able to access a customer's smart metering data subject to gaining consent from the consumer before taking data from the meter. Please see DECC's website for more information on the development of the SEC.

[39] Please see paragraph 5.10 onwards above

6.22. As one energy services company stated, if a consumer made the investment in technology to provide DSR with one industry party and then wanted to switch to another procurer, they would risk having stranded assets if the technologies were not interoperable. As an example of best practice elsewhere, one energy services company mentioned the Open Automated Demand Response (ADR) alliance that has been developed in the US. The purpose of this alliance within industry is to promote agreed standards of ADR to ensure that a lack of interoperability between DSR equipment is not a barrier to the use of DSR in the market.

Our conclusions

6.23. We recognise the need to anticipate how a significant uptake in DSR will affect retail market functioning. However, we believe that there are other issues that require more urgent attention. These include ensuring that the right incentives are in place for industry parties to offer DSR products and services to consumers in the first place. As such we are not proposing a designated project to further understand these issues yet.

6.24. This is not to say that we will not do so in the future. Furthermore, there is a range of ongoing work in Ofgem that will directly address some of the issues in this section. For example, as part of RMR, we committed to examine the role of TPIs more generally and to give consideration to the regulatory arrangements that support their operation. In keeping with this commitment we launched the TPI programme earlier this year with the objective of developing appropriate regulatory framework for key TPI activities in the retail markets.

6.25. In June this year we consulted on our understanding of key issues and potential regulatory options for TPIs in the domestic and non-domestic retail energy markets.[40] In the next few months we will consider the outputs from our research, consultation and stakeholder engagement to help inform our development of a strategy for the enduring regulatory framework for TPIs.[41] As part of the programme we plan to consult in early 2014 on a draft code of practice for TPIs operating in the non-domestic market. This draft code was developed by Ofgem through a series of workshops with industry and sets out standards for improving business consumers' experience of engaging with TPIs. On the domestic side we plan to consult on proposals for regulation of collective switching providers in December 2013. Collective switching is a key initiative for consumer engagement especially for the vulnerable and disengaged consumers and Ofgem is committed to ensuring that we provide the necessary safeguards for industry and for consumers.

[40] *Third Party Intermediaries: exploration of Issues and Options*, Ofgem, June 2013.
[41] *Open letter on Third Party Intermediaries (TPI) Programme*, Ofgem, October 2013

Demand-side response and consumer protection (domestic and small non-domestic consumers)

Proposal in April consultation

6.26. In our April consultation we raised the issue that any move to more variable tariffs or any form of interruptible supply could increase the volatility of domestic consumers' bills and could create winners and losers, according to the profile of consumers' consumption. We recognised that as more DSR products come on to the market we will need to assess what level of consumer protection is needed, in particular for vulnerable consumers.

Respondents' views

6.27. Respondents tended to share our view that consumer protection is an important consideration as new DSR products come on to the market. Nearly a quarter of respondents explicitly mentioned the issue of consumer protection in creating the right environment for DSR. These respondents included the majority of large suppliers, one small supplier, two consumer bodies, an industry association and two consultancies. The majority of respondents who raised this point agreed that the impact of variable tariffs or interruptible supply raises questions around the appropriate level of consumer protection, particularly for small non-domestic and domestic consumers.

6.28. A not-for-profit organisation emphasised that it would be important to address the gaps in the current safeguards. Given that smart meters are being rolled out now and smart tariffs are likely to grow, the organisation considered it important that this review not be held off until 2017 (the latest possible date for the RMR review) and suggested it cover things like price comparisons, bundled services and distributional impacts. They also felt that some of the issues to consider may span regulators.

6.29. Some respondents said that impacts on vulnerable consumers need to be well understood before making changes to consumer protection. Some called for greater understanding of how small non-domestic and domestic consumers would be penalised for non-delivery if they were on a call-based DSR contract rather than an automated response arrangement or through a DSR tariff.

6.30. Other respondents said that consumer protection will in fact be an important facilitator for the uptake of ToU tariffs by domestic consumers. As one respondent stated, consumers are likely to feel the need for some protection before embarking on such a tariff at least until such time that they have gained sufficient experience to feel confident that they can manage their consumption effectively and hence benefit financially.

6.31. Furthermore, some respondents raised other specific consumer protection concerns around DSR including:

- **Data privacy.** Over 10 per cent of respondents mentioned that rules on data privacy need to strike the right balance between protecting consumers and allowing for innovation in new products that may rely on a data-enabled response. A small number of respondents called for greater access to consumer data on an anonymous basis to allow industry to scope out what opportunities there are for consumers.

- **Automation.** A small number of respondents specifically mentioned the need for consumer protection measures with the use of automation technology. Respondents who raised this point recognised the important role that automation will play in the future. But they said that regulation should be in place to ensure that consumers still ultimately had the choice to over-ride automated response where necessary. One consumer body called for protection for consumers who take up home automation products and a review of current protection measures to ensure that they enable, rather than inhibit, consumer choice and market growth.

Our conclusions

6.32. Ofgem has a duty to protect all consumers, and any concerns raised by our stakeholders about consumer protection and DSR are taken very seriously.

6.33. We have chosen to prioritise DSR consumer protection issues according to which types of opportunities are likely to be on offer to consumers first. For small non-domestic and domestic consumers, time-of-use tariffs are likely to be the first forms of products on offer to consumers on a mass-market scale.

6.34. As mentioned in paragraph 5.24, we propose to explore key consumer protection issues around time-of-use tariffs in the CEP project of the Smarter Markets Programme.[42]

6.35. The RMR framework does allow for time-of-use tariffs but we are keen to ensure that the market has time to adjust and that confidence is rebuilt before more complex and innovative tariff types become mainstream. As part of ongoing work within the CEP project we will explore the consumer protection issue and empowerment opportunities for more complex and innovative tariff types, building on learning from trials and the roll-out of smart meters. This will ensure that we are sufficiently prepared to effectively regulate these sorts of products and services in time to allow us to carry out a full review of RMR by 2017 when a greater number of smart meters have been rolled out.

6.36. In the medium term, the CEP project will also consider how to strike a balance between protecting consumers' data and ensuring that a data-enabled response is still possible for industry parties. This is best addressed in the medium term because the market needs time to develop. Over time, we will start to understand how

[42] *Consumer Empowerment and Protection in Smarter Markets*, Ofgem, Dec 2013

consumption data is provided to consumers, and the extent to which this creates more energy-efficient behaviour.

6.37. There is also a range of work across government that will address this issue. For example, the Department of Energy and Climate Change (DECC) is scheduled to review the data privacy and access rules in 2016.[43] Furthermore, the midata programme may have moved from its current, limited scope towards incorporating smart metering data points.[44] It is conceivable that future regulatory arrangements may incorporate midata standards and requirements.

6.38. Finally, for the domestic and small non-domestic market we believe that it is a fair assumption that advanced products and services (including automated products and services) will be reliant on large volumes of smart meters being rolled out. So in the longer term, the CEP project will consider the appropriate protection for automation for small non-domestic and domestic consumers. We will bring forward our response in the event of any currently unanticipated market developments.

[43] *Smart Metering Implementation Programme Data Access and privacy: Government response to consultation*, DECC, December 2012

[44] Please see here for more information: https://www.gov.uk/government/news/the-midata-vision-of-consumer-empowerment

Appendices

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1	List of respondents
2	Glossary
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Appendix 1 – List of respondents

Our April consultation sought the views of interested parties on the key challenges associated with delivering our longer-term objective for DSR. This appendix lists all those who responded. Please visit our website to see the individual responses.[45] Please note that some responses have not been published where the respondent has requested that the response remain confidential.

List of respondents

	Name
1	Alectrona Grid Services
2	BEAMA
3	British Gas
4	Brookfield Utilities UK
5	Calor Gas
6	Chemical Industries
7	Citywest homes
8	Combined Heat and Power Association
9	Community Energy Scotland
10	Consumer Futures
11	EA Technology
12	EDF
13	Electricity Northwest
14	ELEXON
15	Energy Services and Technology Association
16	Energy UK
17	EON*
18	FPAG
19	Frazer-Nash Consultancy
20	Good Energy
21	Honeywell
22	Meckler Consulting
23	Micro CHP stakeholders (mCHP)*
24	Micropower
25	National Grid

[45] https://www.ofgem.gov.uk/publications-and-updates/creating-right-environment-demand-side-response

26	Negawatt
27	Northern Powergrid
28	Npower
29	Passiv Systems
30	RenewableUK and Scottish Renewables
31	Scottish power
32	Scottish water
33	Sentec
34	Siemens
35	Silver Spring Networks*
36	Smart Grid Consultancy
37	Smartest Energy
38	SmartGrid GB
39	SP Energy Networks
40	SSE
41	Sustainability First
42	The Institution of Engineering and Technology
43	UK Power Network
44	UKDRA
45	University of Reading and University of Oxford
46	Western Power Distribution
47	Which

*Confidential response submitted

Appendix 2 – Glossary

A

Aggregator

A third party intermediary specialising in coordinating or aggregating demand response from individual consumers to better meet industry parties' technical requirements for specific routes to market.

B

Balancing Services

The SO supplements the Balancing Mechanism with forward contracts for a range of Balancing Services. The SO will enter into these agreements where it believes that it cannot source the service through the Balancing Mechanism, or it wished to reduce the costs of Balancing Mechanism actions by guaranteeing the available of certain units.

C

Capacity Market

A mechanism to provide security of electricity supply by incentivising sufficient capacity to be delivered when needed.

D

Demand-side response (DSR)

Actions by consumers to change the amount of electricity they take off the grid at particular times in response to a signal.

Distribution Network Operator (DNO)

A DNO is a company which operates the electricity distribution network which includes all parts of the network from 132kV down to 230V in England and Wales. In Scotland 132kV is considered to be a part of transmission rather than distribution so their operation is not included in the DNOs' activities.

Distribution charging or Distribution Use of System (DUoS) Charging

The charges paid by electricity suppliers to network operators for the use of the electricity system. These charges are either socialised across consumers or passed through directly to the consumer depending on their size.

E

Electricity Market Reform (EMR)

The government-led Electricity Market Reform Project aims to develop and deliver a new market framework that will ensure secure, low carbon and affordable electricity supplies.

Energy Imbalance

Energy imbalances are differences between the total level of demand and the total level of generation on the system within the half hour balancing period. The cash-out price aims to reflect the price of actions taken to solve energy imbalances, rather than those taken to solve system imbalances.

Energy Imbalance prices (or cash-out prices)

Energy imbalance prices are applied to parties for their imbalances in each half-hour period. System Buy Price (SBP) is charged for short contracted positions. System Sell Price (SSP) is paid for long contracted positions.

G

Gate closure

The point in time by which all Contract Notifications and Final Physical Notifications must be submitted for each settlement period. Parties should not change their positions other than through instruction by the SO after gate closure. It is currently set at one before the start of the relevant settlement period.

L

Low Carbon Network (LCN) Fund

As part of the electricity distribution price control arrangements that run from 1 April 2010 to 31 March 2015, Ofgem established the Low Carbon Networks Fund. The Fund allows up to £500m support to projects sponsored by the DNOs to try out new technology, operating and commercial arrangements. The objective of the projects is to help all DNOs understand what they need to do to provide security of supply at value for money as Great Britain moves to a low-carbon economy.

R

Retail Market Review (RMR)

The main driver of the Retail Market Review (RMR) is to improve Britain's energy market for the benefit of consumers. On 21 June 2013, after two years extensive research, we published detailed rule changes that will deliver a simpler, clearer and fairer energy market. The reforms will tackle problems of widespread consumer confusion over energy tariffs, poor supplier behaviour and lack of transparency which is stifling competition. This will give consumers the choice they want and simplicity to

compare energy tariffs, making it much easier to access the information they need to find the best deal on the market.

RIIO-ED1

The next electricity distribution price control which will set the outputs that the 14 electricity DNOs need to deliver for their consumers and the associated revenues they are allowed to collect for the eight-year period from 1 April 2015 to 31 March 2023.

S

Smart Grid Forum

DECC/ Ofgem coordinated group which looks at the services and functionalities that networks will be required to offer as we move towards a low carbon energy sector. Work stream 6 of the Smart Grid Forum brings together stakeholders to investigate the commercial and regulatory challenges of implementing the smart grid solutions.

System Operator (SO)

The entity charged with operating the GB high voltage electricity transmission system, currently National Grid Electricity Transmission (NGET).

T

Time-of-use (ToU) tariffs

A tariff where the charges vary by the time when the energy is consumed, for example through different unit rates for energy consumed during the day and during the night.

Appendix 3 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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