UK Demand Response Association

Date: 28 June 2013

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RE: UKDRA comments in response to consultation on creating the right environment for demand side response (Reference 64/13, dated April 30 2013)

Dear Mr. Smithers:

The UKDRA is pleased to provide the below comments and responses to the Ofgem Consultation on "Creating the right environment for demand side response" ("consultation"). The UKDRA is appreciative of the opportunity presented by the consultation to provide perspectives that we hope will inform and guide Ofgem as part of the "Smarter Markets" programme.

The consultation was informative in its descriptions of the key industry players, and a good "primer" for the reader; relatively easy to read and understand. The consultation appropriately lays the groundwork for assessing "how current market arrangements might constrain the system-wide development of demand-side response", and we believe the consultation provides a balanced, though incomplete view of those constraints.

Below we make some general comments to the consultation, followed by our responses to the specific questions raised by Ofgem.

UKDRA's general comments:

We agree that the three pre-conditions identified in the consultation are essential to the wide-spread development and deployment of demand response, but while essential, they are not sufficient as currently described, for reasons we describe below.

First, the consultation differentiates between industry parties, and the customers that provide demand response, and as a result does not correctly position the latter. For example, the first pre-condition is about industry parties needing confidence to justify investment, whereas it is the UKDRA's perspective that customers also need to have confidence that their investment will be rewarded if there is to be meaningful demand-side response. There seems to be an implicit assumption in the consultation that there is no investment by the customer, and that mere access to information and access to revenue via an improved market and regulatory design will result in increased demand response. But in

fact, customers do make an investment in delivering demand response, both in terms of capital to improve asset flexibility and meet industry requirements (e.g. connection upgrades), and in terms of operational expenses, and especially manpower resource allocations. Thus, it is imperative that the customer also has confidence that their investments will be rewarded, exactly as is the case for the industry parties.

Further, the confidence of the customer, as well the industry parties, in rewarding their investment is predicated not just on price, but on expected longevity, continuity and consistency of any programme or incentive; i.e., how long that price will last, and will the risks vs. rewards tradeoff remain relatively favourable. It is not enough that the aggregator has confidence, but that his customers need to believe that there is an enduring programme, offering sufficient reward, and that the risks of non-performance and non-participation are manageable. Customers are not willing to make the investment – which includes some disruption of their normal business operations – without this confidence. The decision to provide demand response by a customer is not made annually; it is a decision based on a long-term commitment with expected net revenues over that term. Failure to recognize the importance of this customer pre-condition will likely lead to incomplete policies and a lower customer participation.

A prime example of this exists today, in that the only enduring opportunities for demand response at present are triad avoidance and STOR, and at present only triad avoidance has the above characteristics. The SO's process for selecting and utilising recent tenders have undermined the potential for demand-side participation in STOR, effectively encouraging generation assets to undercut existing contracts with demand-side sources, resulting from a short-term approach that does not assess the long-term consequences of the assessment process. The damage is not just to the aggregators, but has a negative impact and lasting impression on the customers as well.

As a second matter, the UKDRA recognizes Ofgem's intent that the consultation not focus on "how customers go about providing and delivering" demand response, and therefore the premise that the consultation does not "examine the effects of demand-side response beyond the electricity system (such as environmental impacts)". However, there are two concerns with that positioning.

One, the consultation appears to lump all demand response together, without recognizing the differences in the demand response products. This is a separate issue from how customers go about providing demand response. While appropriate to ensure that all customers that want to be able to offer demand-side response, commercial and industrial (C&I) customers will undoubtably be the primary sources of demand side response for the short-to-medium term, and these customers provide, or can provide, different demand response products. For example, the demand response that participates in STOR may be more suitable and be provided by different types of equipment or industry sectors than the demand response provided to a DNO for their network needs. The recognition of product differences is an important consideration in creating a favorable landscape for demand response. Specifically, policy developments need to recognize the different qualities of

different sources of demand-side response, such as the ability to be dispatched and controlled (by a third party, or by a supplier, DNO or SO, or by a combination of both), and that different qualities will have different values.

Two, we agree that demand response can generically be defined as "actions by customers to change the amount of electricity they take off the grid at particular times in response to a signal". We also agree with the distinction and focus on "transactable" as opposed to non-transactable demand-side response for purposes of this consultation. However, it is important to distinguish between two significantly different types of demand response regarding the manner in which it is delivered: either demand response is dispatchable by a 3rd party aggregator or by a utility/SO based on a bilateral agreement or tariff with the customer, respectively, OR demand response may be a direct, voluntary response by the customer to the increases in the price of electric energy. This latter, typically termed price-responsive demand, is not dispatchable.

The UKDRA believes that dispatchable demand response is the most valuable form of demand response because it is the only form that can be relied on by industry parties to offset other types of supply in, for example, a capacity market or balancing services. Forms of dispatchable demand response include automatic demand response (AutoDR) in which the load reduction is centrally controlled by either the utility or 3rd party provider[1], and non-Auto DR in which the customer responds to a dispatch signal. Non-Auto DR means that the customer is under a bilateral agreement with the aggregator, but does not relinquish control of his facility to the aggregator, either in terms of load reduction or his behind-the-meter generation. Instead, the customer is provided a signal (of some sort) by the aggregator, and responds by self-intervention to that signal by implementing previously determined and agreed upon on-site measures. Importantly, non-Auto DR is the most prevalent type of C&I demand response delivered by aggregators globally. We believe this consultation should recognise this distinction and appropriately address it.

This lack of clarity in the consultation results in an over-simplification of signaling value of demand response to customers. For example, the paper states:

> "The different uses and value of demand-side response then need to be signalled to customers. This could be done in a range of ways, from price signals that vary through time, to restrictions on consumption, to customers choosing to give another party control over particular loads at particular times."

None of the above signaling covers non-Auto DR. Consequently, this consultation can be read to focus primarily on the retail side of the market and regulatory design. More specifically, this consultation can be read to over-emphasize the importance of smart metering and/ or more variable tariffs or interruptible supply arrangements, all of which do little for promoting opportunities and delivery of C&I dispatchable demand response and

[1] Note that direct load control, where a signal is sent to a customer device (e.g., programmable controllable thermostats, water heaters, air conditioners, Electric Vehicle Supply Equipment (EVSE)) instructing that device to reduce electricity consumption is a form of AutoDR.

not what we are collectively seeking for demand response predicated on comparable market opportunities to conventional supply.

The other concern with the positioning of this consultation in not examining "the effects of demand-side response beyond the electricity system" is that the environmental value of demand-side response needs to be recognised as well as the economic. There can be no doubt that time-shifting of load can lead to more effective use of large fossil fuel stations, reducing system-wide carbon emissions. We believe that the consultation does not fully capture all the environmental considerations at play when comparing carbon emissions from diesel generators and from electricity generation, as the electricity emissions figure is an average system-wide figure, including the limited emissions from nuclear and renewable generation. The comparison should be against part-loaded, fossil fuel generation, against which demand-side response has been shown to produce fewer carbon emissions. Further, the participation of diesel generators can result in "keeping the lights on" during periods of supply scarcity and avoiding the wide-spread and uncontrolled use of emergency backup generators.

Providers of demand-side response are often penalised through the greenhouse gas reporting and carbon reduction commitment arrangements without receiving any credit for the system-wide benefits they create. Instead, providers are asked to be satisfied with an intangible reputational benefit. If not part of this consultation, then where and how will the environmental benefits of demand response be considered? This latter is a very important consideration for customers that provide demand response, and the lack of positioning is in itself a disincentive for expanded participation.

Lastly by way of general comment, the UKDRA believes that fundamentally, industry behaviour needs to be changed. Incentives for suppliers need to be created, in the same way that there are incentives on suppliers to source renewable generation and on DNOs to innovate. The alternative is to ensure that suppliers are not perversely incentivised to act as a barrier to deployment of demand response, especially demand response delivered by third party aggregators. Similarly, DNO's need to have assurance, by way of formal recognition, that procurement of demand response behind the system stressed point can serve as an alternative to upgrades and expansion of the distribution system, and that overly restrictive ENA quality standards do not inappropriately preclude that alternative. Our specific responses below provide additional clarity regarding needed industry behaviour changes.

UKDRA's responses to the 10 specific consultation questions:

Precondition 1

Question 1: Are there any additional key challenges associated with revealing the value of demand-side response across the system? If so, please identify and explain these challenges.

We believe that the value of demand-side response across the whole system is not well documented or well-defined at present. This is perhaps because the term demand-side response, while well-understood, could refer to a number of different activities that provide various benefits to the system as a whole. For example, DSR that is provided to the system operator as reserve may be vastly different to that which is provided to the system operator as frequency response. Both have significant value to the system and are well understood. However, there must be recognition that there are different types of DSR products that bring different value to the system, and the markets should be structured to allow resources offering the DSR products most suitable for their operating arrangements and price requirements. Understanding the different types of DSR products offered currently is an important first step in quantifying the value across the whole value chain.

The UKDRA notes that valuing DSR is a complex and challenging process, which is difficult to determine in the first instance, and is constantly changing due to market conditions. This may be more controlled and less volatile in a supplier-specified tariff arrangement rather than in a market situation, yet the true value tends to be better reflected through market mechanisms rather than tariffs.

For example, DNOs presently face difficulty in placing a value on DSR which is objective in terms of customers' money saved. Instead, they value it in the context of the specific existing services that it provides, such as deferment or avoidance of reinforcement costs, which has a direct and comparable network reinforcement cost. This is a mechanism devised before DSR was considered to be a means of distribution network management, such as Engineering Recommendation P2/6. The idea of DSR being operationally dispatchable by the DNO's control room in real time is difficult to value under current standards, leaving the DNOs facing a structural regulatory bias towards building network assets instead of managing them smartly.

To resolve this, it will be necessary for DNOs to develop and adopt standards which consider dispatchability and visibility to be attributes which, taken as a whole, add redundancy to a network node and can be considered in assessing its reliability. Contrary to popular belief, it is not necessary for an individual DSR asset to provide >99% reliability for it to have a meaningful and economic contribution to network security, if it is combined with other elements of redundancy at that location, potentially including more DSR.

Long term continuity in valuation is another challenge. For example, in recent years, National Grid has taken a very short term view of the cost savings it can achieve through

DSR due to its short-run incentive scheme for balancing services. This has caused it to take decisions which undermine DSR, almost certainly to National Grid's detriment in the medium term. In particular, undercutting of flexible STOR contracts has had a very damaging impact on the DSR industry. It is vital that OFGEM ensures that any future incentive scheme takes account of medium and long term value to consumers and ensures fair treatment of all providers of balancing services.

Another challenge is educating and leveraging the secondary benefits from customers' participation in Demand Response. Many customers who currently take part in Demand Response schemes through aggregators were probably unfamiliar with services like STOR or Triads before the aggregator introduced the customer to this opportunity. This education on the need and value of DSR makes customers more aware of their electricity use and the complex way in which our electricity industry functions. When customers take part in provision of Balancing Services to the National Grid through an aggregator, many aggregators also provide those customers with 1-minute real time data. Simply accessing this data and reporting on energy use makes end users more aware of their energy use and encourages them to take actions resulting in more efficient energy use. This added value to customers can and should be leveraged if the full value of demand response is to be realized across the system.

Notable and specific challenges:
1) Section 3 lists a number of balancing services that are currently open to DSR. However, there are other balancing services, such as Fast Reserve, that are currently not open to DSR participation.
2) Other markets reward DSR participation for avoided transmission and distribution losses. However, there are no markets currently open to DSR in the UK which recognise and value this contribution.

Question 2: Can current regulatory and commercial arrangements provide the means to secure demand-side response being delivered? If not, what will regulatory and commercial arrangements need to deliver in future?

In North America, where Demand Response participates in a significant way in the markets, this is largely done through aggregators, and mainly via capacity mechanisms. The UK has a number of existing market-based programs open to DSR, however in reality there is only short term operating reserves (STOR) that can be viewed as suitable for a great number of participants. However, the STOR programme was not designed for DSR in mind, but does allow DSR to take part. While this may seem like a fine distinction, there are a number of operational parameters inherent in the program design that make it quite difficult for DSR to take part. For example, the requirement that the site be available from 7am in the morning until 10pm at night Monday through Saturday and some hours on Sunday in order to ensure a "committed" contract, the price of which cannot be undercut, is prohibitive for many sites. A site that may only be available to offer its DSR between the hours of 9am and

6pm therefore cannot monetise its DSR potential through the STOR market, or any other market (non-tariff) mechanism.

The capacity market may provide a great opportunity for DSR participation, particularly through the transitional arrangements proposed by DECC. These transitional arrangements have a number of elements that are conducive to encouraging DSR, such as limited liabilities, a 1-year lead time for procurement (as opposed to 4 year for the enduring mechanism), pre-defined windows (as opposed to a 24/7 requirement), dispatch mechanism and others. The enduring arrangements, however, still have a number of unresolved issues that would prevent DSR from participating fully. These issues come down to a risk-reward balance that is untenable for DSR in its current form. The design calls for no dispatch mechanism, no limit of possible event duration and a liability penalty of up to two times the expected annual earnings. If market participants are unable to manage their risk in such a way so as to justify participation in this market, only very limited DSR will come forward. While the right design for a capacity mechanism could bring forward GWs of DSR capacity making a significant contribution to security of supply at lower costs than traditional generation, the wrong design decisions would not only prevent DSR from taking part in the capacity market, but could effectively destroy any DSR already participating in markets such as STOR due to the knock-on pricing implications of this market intervention.

As regards the potential for demand response delivery at the retail level, behaviour change must be incentivised through the electricity supplier. While DSR remains significantly cheaper and quicker to source than new power generation capacity, the investment in time and money required to develop demand-side participation is not trivial. Electricity suppliers work to OpEx rather than CapEx, and continue to find it cheaper to deal with demand uncertainty using hedging. We note OFGEM's very important efforts to improve supplier balancing through cash-out reform, but question whether they will be sufficient to draw suppliers into active DSR involvement. There would appear to be two routes by which supplier engagement could be enhanced.

First, suppliers could be forced into a more competitive marketplace through liquidity reforms, in which new suppliers might emerge. To challenge their (probably, but not necessarily, larger) rivals, such suppliers would have to innovate. More liquid markets would enable them to do so using actively traded products. The larger suppliers would thus be forced to match or better these efforts in order to retain market share. Thus an effort to improve competition would create secondary improvements across the supply sector, and DSR would be one beneficiary of this.

Second, suppliers could be offered participation in an innovation incentive scheme in a manner analogous to the Low Carbon Networks Fund. While such a scheme would have to be designed differently to suit the suppliers' rather different regulatory framework, there would appear to be value in exploring this, given the impact that the LCNF has had on DNOs.

Question 3: Is current work on improving clarity around interactions between industry parties sufficient? If not, what further work is needed to provide this clarity?

We do not believe that the current work around improving clarity around interactions between industry parties is sufficient. For example, a key piece of work being undertaken through Workstream 6 in the Smart Grid Forum is assessing the ways in which DSR might be shared between the National Grid and the DNOs. Unfortunately, there is no representation of anyone offering DSR to the networks in this discussion, such as customers or aggregators. While representations have been made to allow wider stakeholder participation in this discussion, this continues to be a closed group at present. We fear that conclusions may be drawn in such forums that set unrealistic expectations of DSR, where industry parties lack sufficient understanding of barriers that customers face in taking part in DSR schemes.

In addition, some concerns have been expressed by Suppliers that DSR participation by third parties such as aggregators may adversely affect their market positions and cause them to incur imbalance charges. Though the UKDRA has never been approached by a Supplier to discuss this matter, we believe that it is an important topic that should be addressed. Just as aggregators may have to obtain customer permission to access customers' half hourly data from the Supplier, so too can the Supplier approach aggregators with customers' written permission to understand in which DSR programs or schemes the customer is enrolled. If the issues were clearly identified and discussed in an open forum, we believe that the solutions could be relatively straight forward.

Further with respect to suppliers, other than triad management, it is hard to identify any DSR which has come forward in recent years through the "supplier hub" model. Even in the case of triads, it is third parties which have developed this capacity, not the Suppliers. In fact, most of the DSR which has come forward in recent years has largely ignored the associated Suppliers. For half-hourly electricity customers, there seems to be little value in retaining the supplier hub model, as it merely adds to an already high level of confusion. For example, a customer with flexible load may not know to which substation the load is connected, nor the level of network stress on that substation, and therefore cannot appraise whether or not the load constitutes valuable DSR to a DNO. In this case, the supplier hub model will not reveal the information, but will merely slow down the process of discovery. If the supplier hub model is genuinely central, then the supplier must have the obligation to curate such information and respond to requests such as these in a timely manner. Given that this is hardly core business for a Supplier, there seems to be little value in involving them in it. If a hub is required for such customers, it should be both independent and empowered.

Precondition 2

Question 4: Are there any additional key challenges associated with effectively signalling the value of demand-side response to consumers? If so, please identify and explain these challenges.

The following additional challenges exist:

1. **Longevity**: there is no realistic price at which demand response will be delivered by electricity customers in response to short-lived price signals, because of opportunity cost (customers have limited resources for energy initiatives) and realism about delay risk (that is, the risk that the short-lived opportunity will have gone by the time the customer is ready to exploit it). SO and DNO incentive schemes and regulatory frameworks must therefore ensure that the value of DSR can be realised over the long term (at least five years in most cases).
2. **Environmental impact**: customers are routinely very concerned to understand the positive and negative aspects of DSR in relation to emissions. Their concerns include both internal (carbon accounting, CRC, ETS, etc) external views (the effect of DSR on total emissions of the electricity industry). The former is driven by prescriptive methods which do not take account of the latter, and there is an acute need for further scientific research on the latter to keep up to date with the changing generation mix. As this touches all other aspects of DSR and many other aspects of OFGEM's work, there is a strong case for OFGEM being involved in such research.

Although the consultation does not specifically request comments regarding the manner of signalling, the UKDRA believes a real time dispatch signal is by far the best way to get customers to alter their energy use in close to real time. This is because it sets a clear expectation of what they are to do, rather than leave it to customers to figure it out on their own. Signalling is extremely important for getting customers to respond in the desired way.

Question 5: Do you agree that signals to customers need to improve in order for customers to realise the full value of demand-side response? Does improving these signals require incremental adaptation of current arrangements, or a new set of arrangements?

Most DSR aggregators work exclusively with non-domestic customers, and do not expect to engage with domestic customers in anything other than a trial basis under current market arrangements. Having said that, OFGEM's work on balancing incentives, distribution price controls, innovation and liquidity all have the potential to substantially increase participation in the non-domestic sector, if pursued vigorously alongside DECC's Capacity Mechanism. A completely new set of arrangements would bring delay and uncertainty and would not be preferable to the evolutionary change model currently being pursued.

Question 6: To what extent can current or new arrangements better accommodate cross-party impacts resulting from the use of demand-side response?

The development of a shared model for DSR services between DNOs, the SO, and Suppliers, would be an important step forward, and we are encouraged that work is

ongoing. However, this is happening without involvement from the DSR industry. The same is true of a new review of embedded benefits, which are crucial to the existing cost/benefit model of DSR. There is now a sufficient volume of practical, commercial expertise in the DSR industry that there is no need for such work to take place in ignorance of "real life DSR". Demand response aggregators and participating customers must be invited to participate in such workgroups for them to have legitimacy.

As the UKDRA prepares to submit this response, we have been made aware of significant changes in the expected arrangements in the Capacity Market's Transitional Arrangements for DSR and Storage due to an OFGEM/ National Grid consultation on development of DSR-specific reserve products. While the UKDRA has many times raised the issue of having a market specifically-designed for DSR participation and we welcome OFGEM's desire to explore this further, we believe that this initiative has introduced increased uncertainty in the near-term development of markets for DSR. While we have stated that coordination across the industry on DSR arrangements would be valuable and positive, delaying or avoiding a product suitable for DSR participation in preference for a different product suitable for DSR participation sends the wrong signal to the market. Overlap is a designed-in feature of the Capacity Market, and we trust market forces to ensure that market participants are paid what they require for participation. Competing services are part of the industry as it is structured today and have been for years. Finally, a service which is brand new and has a short life is in no way guaranteed to deliver the desired DSR participation, as per the points on program longevity mentioned above. The UKDRA expects to provide a formal consultation response on this matter in due course.

Precondition 3

Question 7: Are there any additional key challenges associated with customer awareness and access to opportunities around demand-side response? If so please identify and explain these challenges.

As noted in the response to question 3, even relatively sophisticated customers are confused by the multiplicity of entities, roles, obligations and initiatives in the electricity industry. All customers, from domestic to large industrial, should be treated as lay persons in respect of industry structure and regulation. OFGEM's lead in establishing clearer standards of communication would be valuable in all new energy initiatives, including DSR.

The environmental benefits of DSR have not been properly understood, documented or presented to customers. Key initiatives like the CRCEE scheme, DEFRA's GHG reporting, BREEAM certification and CSR reporting to name a few make no mention of, or allowance for, DSR participation. This causes confusion with customers, who wonder: if DSR is indeed so beneficial then why are these environmental benefits not clearly communicated, and why is it that customers cannot publicise the environmental benefits of DSR-related actions that they are taking in any real and meaningful way? There is some precedent in other markets for such recognition. For example, in North America, the US Green Building Council developed the Leadership in Energy and Environmental Design (LEED) certification system, the equivalent of BREEAM in the UK. LEED currently offers a specific credit for Demand

Response participation, that LEED describes as follows: "This credit is intended to increase participation in demand response technologies and programs that make energy generation and distribution systems more efficient, increase grid reliability and reduce environmental impacts and greenhouse gas emissions."[2]

Some formal quantification of the environmental benefits of DSR would help customers understand the benefits of DSR to the entire system, if this was clearly calculated, articulated, published and widely accessible.

Question 8: Is any additional work needed to explore the role of third parties in helping customers to access and assess demand-side response offerings?

Virtually all recent DSR development has been achieved by DSR aggregators. This not only because of economies of scale; there are also matters of expertise, risk management, systems, bidding, contract management, 24-hour operations and so on which cannot be handled even by relatively large industrial customers. DSR aggregators are key to the sector's future success and they should be involved in regulation, policy and service development.

Question 9: Are there additional preconditions for delivering the right environment for demand-side response? If so, please explain what these are and why they are important, as well as attaching a priority relative to those challenges we have already identified.

We consider the issue of undercutting of flexible STOR contracts to be one of the most damaging challenges facing the DSR industry at present. We would attach a high priority to this.

Question 10: Do you agree with the priority and timing we have attached to addressing each of the key challenges identified above?

We are mindful of the several initiatives presently underway and mentioned above, and accept that it is unlikely to be practical to accelerate delivery of these given the complexity of the issues involved. However, we urge OFGEM to continue to press ahead with these projects and to continue to communicate to the market the strategic importance of and commitment to DSR.

[2] http://www.usgbc.org/leed/tools/pilot-credits/demand-response