SIEMENS

Consultation reference: 64/13

Creating the right environment for demand-side response (Ref 64/13)

Response from Siemens

June 2013

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Statement of interest / Executive Summary

Siemens, serves all segments of the energy market from domestic consumers through SMEs and commercial customers up to major energy users, Generators, Transmission and Distribution Network Operators, Aggregators, energy suppliers and the Settlements System.

Through its Infrastructure & Cities sector Siemens provides smart grid, metering and data management services, distribution, and connection applications, solutions and services as well as building technologies for the residential market through to the commercial and industrial market. Its Energy and Industry Sectors also support the market through products, applications and solutions for generation, transmission and Industrial Processes. Siemens is also active in these segments throughout Europe and much of the rest of the world.

As an established market participant in energy management Siemens is actively engaging with UK customers and market participants including DNOs, National Grid, energy Suppliers, Aggregators and potential participants such as communities and our responses to this consultation reflect our views how the market may/should develop where we serve these areas.

In general we are very supportive of the Government's position to address both the Energy Demand Reduction and Demand Side Response areas and we welcome Ofgem's consultation to create the right environment for Demand Response. Our primary recommendation is that Ofgem documents the UK Roadmap for energy demand and generation mix for 2016-2030 based on government policy and market incentives and creates a model that reveals the value of DSR both in the transition to the future sustainable environment and in a more steady state post 2022.

Questions and Answers

Siemens answers are in black type.

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.

Ofgem has set out most of the challenges associated with revealing the value of demand side services. We agree that imbalance costs are not a particularly good indicator of the value of demand side services, as the System Operator will need to call upon a range of differently priced services to balance the network and maintain frequency. Furthermore, energy suppliers are typically incentivised to go long with their energy purchasing, which currently lowers the value of demand side services. However, the introduction of DSR should create alternative risk management options for suppliers.

For energy consumers to participate in demand side management they will need some certainty over the long term value of such participation. This will require the setting up

of long term contracts with the System Operator that not only reward utilisation, but also availability of service.

Whilst National Grid, as System Operator, has worked to provide increased visibility of its balancing activities through greater reporting, there is further scope to provide more granular data and thus give full visibility to third parties that might be looking at opportunities to aggregate load. In a similar way, Distribution Network Operators should also be incentivised to provide greater visibility of network margins across their patches and the potential re-enforcement costs of maintaining healthy operating margins.

Siemens believe that the following areas should also be considered by Ofgem:

1a) Understand the impact of future energy efficiencies arising from:

- i) Technologies and Regulations, including those applying to electrical equipment and appliances, e.g. the proposal by the European Network of Transmission System Operators for Electricity (ENTSO-E) requiring new appliances fridge/freezers to have an inbuilt frequency response device.
- ii) Changes to residential customer behaviours driven by Time of Use energy pricing driven by DNOs and/or Energy Suppliers which could be introduced with limited changes to settlements e.g. additional profiles.
- iii) Changes of behavior by more I&C customers – particularly in commercial buildings in avoiding TRIAD charges by the automation of BMS to respond to TRIAD warnings.
- iv) Greater transparency of energy data consumption to customers.
- v) Lack of domestic and small business Half-hourly data being made available to energy suppliers and policy makers in order to target energy efficiency and time shifting measures.

1b) To support this area we believe it is necessary for DECC/Ofgem to set out a road map for the energy demand (and the prospects of CHP and micro-generation) and generation mix (including renewables and nuclear) for the UK that will be influenced by Government policy and the desired levels of EVs that the Government wishes to see introduced over the next decade and beyond.

1c) In this exercise we believe it is important to also understand the value to generation in terms of less firm connection arrangements.

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?

Siemens believe that additional measures will be required in a number of areas.

Distribution Network Operators (DNOs) are well positioned to consider demand side participation as an alternative to network re-enforcement, particularly given the huge sums often involved in such activities. However, they do not have a relationship with these customers, nor do they have the billing and metering systems to reward customers for DSR. DNOs issues, such as time of day network constraints, need to be transparent to provide external parties with the opportunities to provide innovative solutions in local generation and demand side management. The advent of the DCC will provide the access to residential data but solutions will need to be built by which DNOs can reward customers.

Energy suppliers have little incentive to encourage demand side participation through greater time of use tariffs. As long as the industry works to only generic load profiles, it will be difficult to monitor and reward domestic and profile class customers for reducing demand at peak times. This is a critical enabler to tariff innovation and domestic participation.

Siemens propose that Ofgem consider the regulatory and commercial arrangements for the following:

2a) Ofgem recognise that HH settlement may be needed to support measurement of DSR. Currently the use of profiles in settlement does not give transparency to identify opportunities or for monitoring and verification of DSR. We believe further high priority work is needed to explore how all actors in DSR and flexible Generation can be adequately rewarded and incentivised through electricity settlement. This work should also consider the impact of shorter settlement periods, perhaps for DSR customers only, flexible generation parties, shorter gate close periods and the infrastructure requirements to support additional Half-Hourly meters or indeed all smart meters being fed into HH settlement or specialist dynamic customer settlement profiles. The work should lead to a full business case for changes to settlement to deliver energy demand transparency for all parties, improve energy demand forecasting and innovation in the market. Transparency will provide the backbone of the market development which can address energy efficiency and reward those who reduce overall energy consumption and contribute to specific reductions at critical periods.

2b) One effective technology method that could be used is Dynamic Voltage Control on the low voltage network. Since the overall benefit would be shared between a number of parties i.e. DNOs, Consumers, Generators and the System Operator the incentive for DNOs to deploy such technologies may have to be via an additional licence condition. Ofgem should consider how this method may be incentivised via regulation.

2c) We mention the issue of frequency response devices in our response to Q1 above and if these devices are to be a future requirement in appliances, including retail fridges and freezers, then the benefits need to be provided to the customers who have invested in these new appliances. We understand that the costs of these devices is very low (at volume) but others have suggested an additional increase in price for an appliance to be £5-10. Any future regulation for white goods needs to address this issue or be mirrored by another mechanism to compensate customers for additional purchase costs.

2d) Concerns have been raised over data privacy and we believe that this issue needs further consultation as we believe the value to customers of DSR cannot be fully identified without access to profile data and a knowledge of customer occupancy and DSR capabilities. The customer opting-in solution, which has been agreed, will mean that many customers who are not interested in energy saving or have been made nervous by media hype on data privacy may never get to understand the benefits of changing to Time of Use or DSR tariffs. Therefore it may be helpful for Ofgem to explore options for more widespread access to consumer data on a non-assignable basis to understand what opportunities could be possible for customers.

2e) Currently DNOs publish tariffs that are not geographically based i.e. there is no bias towards any customers by geography but for Demand Response this principle needs to re-visited as there will be network constraints in certain geographic areas and DSR may be one way of overcoming these constraints or delaying network reinforcement. In these cases customers may benefit but it would introduce a Postcode lottery to possible DSR benefits which, we believe may need consultation with consumer representative bodies.

2f) As mentioned in our response to Q1 we would also suggest that DNOs should be required to be transparent in publicising their constraint areas so that customers and communities may take these factors into account when considering Energy issues.

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?

Siemens believes that clarity on interactions needs to be addressed once there is full transparency on the value of DSR across the full value chain in a future 2018-2030 model where all known influencers on demand are factored in. Once these values are fully understood and documented in a model that reflects roadmap we suggested in our answer to Q1, the commercial issues can be worked through, as to which actors (including potentially new players in the residential space) are best placed to realise these values and how subsequent impacts (positive and negative) should be dealt with.

With this transparency a commercial framework can be proposed and the interactions can be examined and an operational framework designed.

We recognise that this model creation is complex but should be the highest priority in order to build a DSR framework.

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.

We note the following additional challenges and points;

4a) As a System Operator looking for simplicity and certainty there are challenges associated with delivering dispatch signals to high volumes of energy consumers. In this case, the System Operator would need to have robust commercial and technical interfaces with an aggregator to deliver a notice or an automated response.

4b) Energy Suppliers looking to offer an increased range of time of use tariffs would also need to make changes to their billing systems. This would create additional costs and might also prove challenging to replicate for other suppliers should the consumer wish to switch their energy provider. Hence innovation could deliver barriers to switching in the market.

4c) Currently domestic customers and non half-hourly customers are not directly exposed to the true costs of generating and distributing energy and the move by Ofgem and Government to reduce the number of tariffs gives little ability for cost reflective charging of Network costs to customers. We would advocate that there should be greater transparency to network delivery costs if cost reflective changes are agreed to accommodate DSR. These charges would then allow energy suppliers to create energy tariffs that reflect the cost of energy to the customers demand profile, with suitable incentives for DSR whilst passing through Time of Use (TOU) network charges.

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?

5a) We wholeheartedly agree that signals need to improve, in particular, that energy suppliers should introduce tariffs that are more reflective of true wholesale costs and DNOs should introduce tariffs that are reflective of network demand costs to non Half-Hourly customers. However, these can only be introduced in conjunction with an overhaul of settlements to ensure that consumers are rewarded for their participation. This means being charged on what and when they consume, rather than what they are perceived to consume.

5b) Currently the market does not provide customer signalling, apart from the SO Balancing market via a few direct customers and aggregators, and the dynamic E7/E10 Radio Teleswitch DNO mechanism (which is more of an opaque demand side management process).

5c) We notice that there is little mention of the current price physical signalling mechanism via Radio Teleswitch to customers of the E7 and E10 tariffs. This mechanism uses a broadcast mode i.e. all customers can receive a signal at virtually the same time with a known back up switching time programmed into the meter. The Radio Teleswitch mechanism allows dynamic load control (currently benefitting DNOs) primarily for space and water heating and would be an ideal mechanism to broadcast tariff price signals/controls but we understand it is due to be withdrawn in the near future yet we see no discussion of a similar functionality of "one to many" being included in the Smart Meter Implementation Programme. The current functionality and access rights of the DCC does not, we believe address the possible requirements DSR actors being able to send price signals/controls to customers other than for Registered Suppliers. We believe that Ofgem should signal a possible requirement and prioritise work in this area to ensure that the DCC can deliver this channel of communication and the broadcast mode for future DSR actors.

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

6a) As things stand currently, with non half-hourly profiling, demand side activity can benefit or negatively impact all suppliers within a Grid Supply Point Group rather than those whose customers may participate in DSR. With half hourly settlement of domestic customers, these impacts are more likely to be assigned to the relevant parties, which should encourage greater interest in demand side management.

6b) With significant take up of DSR via aggregators, the Suppliers' balancing position will be affected. We therefore see that there is a need to address this issue with more sustainable solutions, which if addressed alongside settlement may create more opportunities for suppliers to develop tariffs taking into account Demand Management in their supply chain.

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.

7a) A major challenge remains in minimising the costs of infrastructure and commercial solutions to deliver aggregated Demand Reduction where the value per residential or SME customer remains low.

7b) The priority therefore in Ofgem's work is to create a model reflecting the implementation of government policies and other market forces of the energy market, its sources and the elasticity of demand in order to reveal the true value of DSR to customers. Customer awareness can then be focussed into DSR once the values of such response and the costs of supporting infrastructure is fully understood in a future market place.

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?

We note Ofgem's generalisation of the use of electricity in domestic homes and whilst this may apply to a large percentage we believe there are significant numbers of homes that could be suitable to DSR, particularly those which are occupied through the day (the retired and young families) and which have good levels of insulation. We therefore suggest Ofgem engages with consumer bodies, such as Consumer Futures and Which?, also with Local Authorities and Registered Social Landlords (as they have a large housing stock with occupants on benefits that could be at home all day) and possible commercial organisations such as Saga.

At the start of the competitive market the "retired" sector was addressed by one Supplier with a specific tariff and we see no reason why similar markets could not be developed, particularly with a degree of automation to home energy sytems. Similarly with the SME market there are opportunities using mini BMS and other automation solutions to develop new tariffs and DSR aggregation. The Capacity market supported by smart meters can provide the market mechanism which, we believe, will open up new opportunities for trusted retail brands to enter the energy market acting as either a supplier or some form of aggregator. We therefore would encourage Ofgem to consider the role of new entrants and market makers in its engagement and encouragement of TPIs.

Since the market is somewhat uncertain technology providers may be reluctant to invest in the market. We suggest that Ofgem, together with DECC, investigate whether initial development funding could be made available via the Capacity Market mechanism.

Conclusion

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.

Whilst half hourly metering will provide greater visibility of demand side management delivery, it may be that minute by minute readings are necessary to verify fast response services, which are more likely to attract higher benefits. Given the low value assigned to individual domestic participation, this is likely to prove to be an important pre-requisite to encouraging greater take-up.

As highlighted in the paper, consumers with electric heating and electric vehicles are likely to be stronger candidates for demand side participation. OFGEM may wish to consider bringing together cross-industry participants to consider how demand side activities might be best enabled with these technologies.

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

We generally agree with the priorities Ofgem has set out but believe two of the areas we have discussed above need addressing with a high priority and need an early output to enable all parties to set out their positions and engage in market development, namely:

1) The creation of the UK Roadmap for energy demand and generation mix for 2016-2030 based on government policy and market incentives.
2) The review of settlements to include smart meter data.