hies
Home Insulation & Energy Systems
Quality Assured Contractors Scheme

tsi
APPROVED CODE
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Dear Electricity Systems Team,

Plan for a Smart, Flexible Energy System – A call for evidence

Thank you for providing us with an opportunity to comment on your call for evidence for a Smart, Flexible Energy System. Please find below our responses to the consultation questions.

This response is not considered to be confidential and we intend to publish our response on our website www.hiesscheme.org.uk, so we would not consider this restricted under the Freedom of Information Act 2000. In addition, we would ask that any quotes taken from our response are used in the context in which they are intended and we would be happy to advise if the context is not clear.

About Us

The Home Insulation and Energy Systems Quality Assured Contractors Scheme (HIES) is the most comprehensive consumer protection organisation in the industry. We are totally dedicated to ensuring consumers are protected and have peace of mind. HIES ensures the best consumer protection comes as standard and all our services, including our Ombudsman Scheme, are completely free of charge to consumers.

We operate a comprehensive consumer code of practice that has recently received endorsement from the Chartered Trading Standards Institute Consumer Codes Approval Scheme (see www.tradingstandards.uk/consumercodes).

Nick Ross, former BBC Watchdog & Crimewatch Presenter and our ambassador said:

> *"With HIES you get accredited installers, independently backed guarantees even if the firm refuses to help you or goes out of business, free access to industry inspectors, professional mediators and – if you're still unsatisfied – a highly regarded Ombudsman who can settle your dispute with the power of the law behind him."*

Our trade members represent around one quarter of the renewable energy market place (by volume of work) many of whom are recent entrants to the domestic energy storage market place. Our affiliate partner manufacturers are also leaders in the energy storage market and, as such, we are ideally placed to understand the key challenges that the future shape of regulation and systems will have on the industry.

Our responses to the questions

1. **Have we identified and correctly assessed the main policy and regulatory barriers to the development of storage? Are there any additional barriers faced by industry?**

   The Call for Evidence has focussed on Frequency Response and commercial energy storage solutions as part of the broader national infrastructure for energy supply. We agree that this is important, but equally, it is important to consider the policy and regulatory barriers for energy storage systems that are situated downstream of the customer's meter. The interconnectivity of such systems through the 'Internet of Things' has the capacity to open up dynamic response to energy needs by the aggregation of domestic and SME storage solutions.

   The government needs to consider the policy and regulatory constraints at that level as well as at a whole system level. These are in four key categories:

   (a) How can the framework support access to the energy wholesale trading market for the aggregators of sufficiently sized portfolios of domestic/SME storage solutions?
   (b) How can these storage systems be 'visible' to network operators and enabled to be available for dynamic response to peak demand?
   (c) How can the multiple manufacturers of these individual units be brought together to provide an interoperable solution?
   (d) How can we protect consumers/SMEs as 'hosts' of the storage equipment from being exploited, misled or confused by the benefits this brings in a field of operations that few will really understand?

   If these factors can be addressed and in the right way, we foresee a significant market opportunity for domestic/SME storage solutions in addition to grid level and distribution level storage solutions.

   EVIDENCE

   To aid our thinking on this, we have been working closely with some of our Affiliate Partner manufacturers (such as Solax Power Europe Ltd, Ideal Tech (Battery Lite), MATT:E), our partners in the finance and lending space (such as Ikano Home Finance, Laser UK), underwriters and insurers of energy systems (such as Safe World Insurance Group) and the Energy Managers Association. This has helped us to gather significant evidence to support how this market will operate.

   In addition, we have established, with these partners and others, an Energy Saving Consortium to start to draw together the policy and regulatory infrastructure for domestic/SME energy storage solutions. This is in the early stages, but we hope to be able to make a significant contribution to activity in this field.

An early stage has been to assess the need for an installation standard and certification process for domestic/SME energy storage equipment. We have enclosed a draft of the scheme (Annex 1), which is written according to ISO 17065 certification scheme standards. It is envisaged that this, or an evolution of it, could be utilised by government and the United Kingdom Accreditation Service (UKAS) as an applicable standard. It would need to be a regulatory requirement that any installed equipment connected to the grid (but downstream of the meter) would have to comply with the terms of this standard. This self-regulatory approach supports the government's Industry Strategy and provides an opportunity to secure answers to the four questions posed above without the need for significant regulatory intervention.

As explained further below, our proposals for standard certification of domestic/SME energy storage systems address the key fundamentals of enabling this system to work:

(a) By ensuring the highest levels of consumer protection underpinned by codes of practice approved by the Chartered Trading Standards Institute;
(b) By ensuring that the equipment is manufactured to 'Grid Code' specification (we need to do more work on this with the National Grid-led Grid Code Working Group, who we are in contact with);
(c) By ensuring that the equipment is safe, will last and do its job well, such as by ensuring depth of depletion (DoD) of at least 95%, a lifespan of at least 7,360 cycles (two cycles/day over 10 years) and operability between -15^{o}C and +50^{o}C;
(d) By ensuring the interoperability of software to meet international standards and enable aggregators to actually make dynamic response work in practice, whilst ensuring a multiplicity of manufacturers and suppliers in a vibrant market place;
(e) By ensuring that the environmental impact of the equipment is minimised, promoting recycling and ensuring compliance with the Waste Batteries and Accumulators Regulations 2009;
(f) By ensuring the competence of installers through adequate training and installation monitoring;
(g) By meeting international certification scheme standards.

We intend to expand upon our proposals in more detail whilst answering further questions in your call for evidence.

2. Have we identified and correctly assessed the issues regarding network connections for storage? Have we identified the correct areas where more progress is required?

Yes, we believe you have. Our proposals for domestic/SME storage solutions do not require the same level of grid reinforcement as they are downstream of the meter. The principal behind them is the ability to take load off the grid at a substation level rather than to add load to the grid from a stored capacity. Whilst we think both are important and necessary, our response focusses on taking load off the grid particularly at peak periods.

It is critical to success, however, that the 'connection' of domestic/SME energy storage solutions to the local DNO and thus to the grid be regulated by an appropriate certification scheme and standards.

In addition, if aggregators are to have any hope of success in managing a portfolio of sufficient size/quantity/load of domestic/SME energy storage solutions, the software that they use must be interoperable.

3. **Have we identified and correctly assessed the issues regarding storage and network charging? Do you agree that flexible connection agreements could help to address issues regarding storage and network charging?**

   No, we think you have missed a significant opportunity here to develop pricing and charging mechanisms at a domestic/SME level or an aggregated control of domestic/SME energy storage systems. The call for evidence presumes that equipment will be at grid level or through the DSR process, but not at a downstream of meter level.

   One of the main benefits of domestic/SME energy storage will be the ability to draw power at low demand periods and use it at peak periods. If enabled through fluid pricing mechanisms (smart tariffs), this ought to reduce energy bills, but in turn has a knock on effect to yields for the energy industry and will thus have an impact upon the costs associated with DUoS, TNUoS and in the future ToU. Once at scale, this will need to be factored in to energy pricing mechanisms. We anticipate increasing availability of fluid pricing as metering potentially moves to half-hourly. Of course, this fluid pricing is going to be tempered by public relations and reality as, if left to pure market dynamics, the price for 7.30pm to 8.00pm could be very high – leading to accusations that it will start to cost £££'s to boil a kettle for a cup of tea in Coronation Street.

4. **Do you agree with our assessment that network operators could use storage to support their networks? Are there sufficient existing safeguards to enable the development of a competitive market for storage? Are there any circumstances in which network companies should own storage?**

   We would have no objection to network operators being able to develop storage facilities. However, at least for domestic/SME consumers, we would want to see a level playing field on pricing, meaning that network operators ought not be able to cross-subsidise energy storage systems through billing for energy consumption to their own commercial advantage at the expense of third party providers. That may well require some amendment to the licensing conditions for network operators.

5. **Do you agree with our assessment of the regulatory approaches available to provide greater clarity for storage?**

   We do not believe that planning constraints are relevant to storage equipment installed in domestic/SME premises downstream of the meter. The individual units are unlikely to exceed 5MW, so would be exempt.

6. **Do you agree with any of the proposed definitions of storage? If applicable, how would you amend any of these definitions?**

   We believe that the proposed definitions are appropriate.

7. **What are the impacts of the perceived barriers for aggregators and other market participants? Please provide your views on:**
   - **balancing services;**
   - **extracting value from the balancing mechanism and wholesale market;**
   - **other market barriers; and consumer protection.**

   Do you have evidence of the benefits that could accrue to consumers from removing or reducing them?

Aggregators are critical for success for domestic/SME dynamic response systems. Each individual premises/householder/SME would be too small in consumption terms to make an appreciable difference to the grid load. However, aggregated over 100's or 1,000's of properties, there is real potential to secure load shifting and reduce peak load demand. The interesting aspect of this is the ability to do so down to individual distribution sub-station levels. This can also provide resilience against short-term power outages.

EVIDENCE

To work though, we see a critical role for government and regulators to ensure that the appropriate technical specifications and standards are in place. We see it as essential that government establish the interoperability standards for the various software operating systems. Thankfully, the US Department of Energy is particularly advanced in this field of work and has an internationally available open source software interoperability standard. This standard has been adopted by Japan, Australia, Canada and many other countries.

The US Department of Energy Open Automated Dynamic Response Communications Specification is supported by detailed evidential analysis carried out by the California Energy Commission and available at (link).

The development of the Open Automated Dynamic Response Communications Specification, also known as OpenADR or Open Auto-DR, began in 2002 following an electricity crisis in the State of California. This 'real world' challenge has pushed the US to advance technologies on dynamic response and, in this particular case, regarding the use of aggregators. They are now 15 years into this work, whereas in the UK (as a result of lack of significant electricity crises) are somewhat just getting started by comparison. There is a great deal that we can learn from the work already done.

The specification describes an open standards-based communications data model designed to promote common information exchange between the Network Operator and customers/SMEs using dynamic response price and reliability signals. OpenADR is one element of the Smart Grid information and communications technologies that are being developed to improve optimisation between electric supply and demand. The intention of the open automated dynamic response communications data model is to provide interoperable signals to building and industrial control systems that are pre-programmed to take action based on a dynamic response signal, enabling a dynamic response event to be fully automated, with no manual intervention.

The concept of an open specification is intended to allow anyone to implement the signaling systems, the automation server, or the automation clients. In our view, having a government

backed communication specification is an essential enabling technology for the UK's future electrical grid. The use of an existing international open standard, broadens market appeal as manufacturers, programmers and developers can use the OpenADR to secure markets wider than just the UK.

OpenADR Communications have the following defining features:

- Continuous, Secure, and Reliable - Provides continuous, secure, and reliable two-way communication infrastructures where the clients at the end-use site receive and acknowledge to the dynamic response automation server upon receiving the dynamic response event signals.
- Translation - Translates dynamic response event information to continuous Internet signals to facilitate dynamic response automation. These signals are designed to interoperate with Energy Management and Control Systems, lighting, or other end-use controls.
- Automation - Receipt of the external signal is designed to initiate automation through the use of pre-programmed dynamic response strategies determined and controlled by the end-use participant.
- Opt-Out - Provides opt-out or override function to participants for a dynamic response event if the event comes at a time when reduction in end-use services is not desirable by participants.
- Complete Data Model - Describes a rich data model and architecture to communicate price, reliability, and other dynamic response activation signals.
- Scalable Architecture - Provides scalable communications architecture to different forms of dynamic response programs, end-use buildings, and dynamic pricing.
- Open Standards - Open standards-based technology such as Simple Object Access Protocol (SOAP) and Web services form the basis of the communications model.

We acknowledge that any use of an overseas standard and open source interoperability solution will need to be assessed by the UK Cyber Security Assessment Centre and National Security Secretariat, but subject to meeting adequate security clearance, it is our view that the OpenADR standard would be appropriate to adopt in the UK.

8. What are your views on these different approaches to dealing with the barriers set out above?

It is our view that an industry-led, government facilitated code of practice for domestic/SME dynamic response system would be the most desirable approach to regulation. This should be led through a mandatory code of practice and, it is our view, that 'mandatory' status can be achieved by making it a requirement for compliance for any equipment connected to the National Grid – via DNOs. This could be set up to something similar like the British Approvals Board for Telecommunications (BABT) standards for telephone equipment, which is run for the UK telephone operators by TÜV SÜD Group.

We would be interested in working with government and industry, particularly in partnership with the Energy Managers Association, to develop this industry-led, government facilitated code of practice and industry standards. We believe that we are 90% of the way there to having what is needed.

We believe that this would need to be separate to the industry voluntary code of practice being developed by ADE, as that is principally for upstream energy storage solutions. However, we do think that domestic/SME energy storage solutions downstream of the meter are still capable (if aggregated at scale) of making a measurable difference to the amount of grid load and demand reduction at peak. As such, they are capable of participating in the Balancing and Settlement Code (BSC) if appropriate gateways can be established. They would also fit within the Trans-European Replacement Reserves Exchange Project (TERRE) – again the role of the aggregator is critical to securing success and a measurable impact.

9. What are your views on the pros and cons of the options outlined in Table 5?

We believe that Table 5 does give a fair reflection of the options for regulation available. As a Chartered Trading Standards Institute (CTSI) approved consumer code sponsor, you would perhaps expect us to say that the way forward is with facilitated self-regulation. However, we strongly hold the view that self-regulation, with levers applied by government, is the most cost-effective, dynamic and consumer-friendly way to achieve the desired outcomes.

We do not see the governmental levers as substantial, they could just be enabling. So examples might include:

- Restricting access to the Balancing and Settlement Code (BSC) to those organisations that are members of a CTSI-approved code of practice;
- Restricting access to any government or public incentive to householders/SMEs that purchase equipment from/have it installed by a member of an approved code of practice (that is what happens, for instance, at the moment with the feed-in-tariff or renewable heat incentive schemes)
- Restricting the ability to 'plug in' any equipment to DNO's and thus be able to power from the grid (this could be difficult for premises with local energy generation equipment (such as Solar), but if they are entirely self-sufficient for energy needs they do not form part of the problem with grid loads, so perhaps it does not matter.

None of these require substantial regulations or legislation.

However, in our experience, a voluntary code of practice for domestic services does not work, it must be mandatory. By mandatory, that doesn't necessarily mean stipulated by legislation, but it could mean that the equipment could not be used in practice unless it is manufactured and installed in a compliant way – so therefore it could not be connected to the Grid.

We are not necessarily convinced that Aggregators need to be 'licensed' by OFGEM, but equally we feel that OFGEM do need to have those reserve powers to 'step in' and deal with persistently non-compliant behaviour. Again, this is similar to the situation with the domestic renewable heat incentive. We wonder if a 'light-touch' system of registration of aggregators with a power to de-register for OFGEM might be appropriate, with the burden of monitoring compliance, conduct and behaviour placed upon the code sponsor(s).

10. Do you agree with our assessment of the risks to system stability if aggregators' systems are not robust and secure? Do you have views on the tools outlined to mitigate this risk?

At a domestic/SME level of dynamic response (which are not exporting back to the grid), we do not believe that aggregators can have a direct impact upon system stability. However, if they are not supported by interoperable smart systems, they may fail to effectively respond to grid requirements meaning that an expected demand reduction at peak times does not materialise. This would have the effect of an un-planned outage and could place the grid under stress. This would really be dependent upon how measurable the reliance of dynamic response becomes. However, if (say) 10,000 households were due to be 'off-grid' between 7.30pm and 8pm on a particular day and this failed due to aggregator system faults, it is theoretically possible, that could take the grid by surprise and cause a loss of supply.

The answer to this, in our view, is to secure the aggregators systems through the application of appropriate standards, whilst recognising the limited impact they can have if dealing with domestic/SME energy storage systems that are downstream of the meter.

11. What types of enablers do you think could make accessing flexibility, and seeing a benefit from offering it, easier in future?

The critical advantage of dynamic response over upstream flexibility, is it places the control (opt-in or opt-out) with the energy user (i.e. the consumer/SME). If a consumer anticipates a period of enhanced usage, they can 'opt-out' of dynamic response for that period and utilise the grid as usual – obviously by doing so they will cease to realise the benefits. With smart systems and half-hourly metering, this could be done on a day-by-day, hour-by-hour basis. So, in practical terms, a consumer could agree not to use their householder tumble dryer between 6pm and 8pm, but if on a particular day they have additional needs to dry clothes, they could 'press a button' (more likely to be some kind of 'App') and remove themselves from dynamic response. Of course, with modern software, this is likely to be automated.

The economy of scale of having 1,000's of smart connected properties would mitigate the potential loss of optimum performance for dynamic response on the basis that only a small proportion of households would face that immediate additional need at any one time.

This is wholly scalable to even larger non-domestic premises and our discussions with the Energy Managers Association would indicate that this flexibility was critical to success of dynamic response. The ultimate 'power' resting in the user is, in our view, a key underlying benefit and sales tool for gaining buy-in to the dynamic response process.

12. If you are a potential or existing provider of flexibility could you provide evidence on the extent to which you are currently able to access and combine different revenue streams? Where do you see the most attractive opportunities for combining revenues and what do you see as the main barriers preventing you from doing so?

Domestic/SME Energy Storage Systems are still in their infancy. We provide cover for the UK's largest suppliers of the systems, but they are still largely associated with domestic energy generation equipment (such as solar PV) rather than being sold in an aggregated manner for load shifting on the grid. The main barrier to this happen is lack of access to fluid pricing (smart tariffs), lack of aggregation standards, lack of access to the energy wholesale market place and lack of payment structures within the balancing mechanism.

As an outline concept, the grid is currently 'buying' energy either from generators, interconnectors or grid-level (distribution-level) storage facilities like hydro-electricity. At peak times, the spot price for energy can be eye-wateringly high. It strikes us that there is a clear financial case to be made that instead of 'buying' energy from these sources at peak times, the grid has contracts with aggregators to 'buy' reduction in demand. That market needs to be established, but we believe it is economically viable.

13. **If you are a potential or existing provider of flexibility are there benefits of your technology which are not currently remunerated or are undervalued? What is preventing you from capturing the full value of these benefits?**

As above.

14. **Can you provide evidence to support any changes to market and regulatory arrangements that you consider necessary to allow the efficient use of flexibility. What might be the Government's, Ofgem's, and System Operator's roles in making these changes?**

In our view, fluid pricing (smart pricing) is the key enabling factor for dynamic response. Although theoretically the process works without fluid pricing, there is no consumer demand or economic incentive for investing in the £3.5 – 4K capital outlay for the domestic energy storage equipment. The fluid pricing (cheaper energy at 4am vs energy at 7pm) is what enables return on investment for consumers. The ability to aggregate that saving to a 100MW+ dynamic response and trade that on the energy wholesale market is what attracts investors to realise profit from that trading environment. We can easily foresee not only energy saving proposals for individual consumers ('reduce your bills' – type deals), but also profits from marginal trading on spot prices at a wholesale level (obviously riskier, but if you know what you are doing it is possible to make money out of that commodity trading).

15. **To what extent do you believe Government and Ofgem should play a role in promoting smart tariffs or enabling new business models in this area?**

The government and OFGEM have an enabling role to play, but the market will take care of promoting the benefits of dynamic response if they are enabled. Once the market framework is in place, we believe that the market will respond. However, the government and OFGEM will continue to have a role in promoting the consumer protection aspects (which we explain in more detail below) and reassuring consumers about the potential benefits that are available from smart tariffs and new business models.

Government has a tendency to support 'one-size-fits-all' solutions which almost invariably fail. A characteristic of markets is that they support multiplicity of solutions – those that work survive, those that don't fail. Provided consumers are appropriately protected against business failure (through insurance backed protection), that operation of the market place should be nurtured and encouraged. The diversity and innovation of markets will always outstrip 'one-size-fits-all' solutions.

16. **If deemed appropriate, when would it be most sensible for Government/Ofgem to take any further action to drive the market (i.e. what are the relevant trigger points for determining whether to take action)?**

We are not convinced that there is a need for public subsidy or other incentives for this market to work well for consumers/SMEs. The availability of sufficiently variable fluid pricing models should be enough to do that. As mentioned above, it would seem unlikely to us that pricing models will become truly reflective of energy costs at each half-hour interval in a 'live market' environment – there will always be some balancing and cross-subsidy at different times of day. Otherwise the cost of boiling a kettle could be anything between a few pence at 4am through to many pounds at 8pm.

Although fluid pricing could get very complex, even simple fixed rate deals are capable of working for consumers – 'half price energy midnight to 6am' would be enough to make domestic/SME energy storage solutions economically viable for most consumers over a 10-year period.

17. What relevant evidence is there from other countries that we should take into account when considering how to encourage the development of smart tariffs?

There are a broad range of examples of domestic/SME dynamic response from around the World.

We would point you in the direction of the following initiatives and would recommend that BEIS/OFGEM engage with the International Committee on Energy Research and Technology (CERT) and, in particular, the Expert Group on Research & Development (EGRD) established by CERT. In 2014, CERT drew together the evidence basis for the role of storage in energy storage flexibility. This highlighted progress at both a large non-domestic wholesale level and the aggregate domestic/SME level.

Some excellent examples of low-scale, but well documented and researched use of flexible smart energy solutions at a domestic/SME level – particularly utilising dynamic response include:

- The Kansai Science City (Keihanna) research project involving 600 households using dynamic response by installation of local batteries and an aggregated energy management system. This was carried out 2012 – 2014 by the New Energy and Industrial Technology Institute in Japan.
- The work by the Japan Smart Community Alliance (JSCA), which is largely set up with similar objectives to the Energy Saving Consortium that we have established in the UK.
- The work by the Australian Energy Storage Council, particularly exploring the use of battery hybrid storage/generation equipment at a domestic level.

All of these and other documented research projects, which we would be happy to provide examples of, demonstrate considerably more advanced thinking on the role of domestic/SME energy storage solutions to contribute to smarter, flexible energy needs than the UK, so far. There is some catching up to do.

18. Do you recognise the reasons we have identified for why suppliers may not offer or why larger non-domestic consumers may not take up, smart tariffs? If so, please provide details, especially if you have experienced them. Have we missed any?

We have no comment on this question.

19. **Are distribution charges currently acting as a barrier to the development of a more flexible system?**

We have no comment on this question.

20. **What are the incremental changes that could be made to distribution charges to overcome any barriers you have identified, and to better enable flexibility?**

We have no comment on this question.

21. **How problematic and urgent are any disparities between the treatment of different types of distribution connected users?**

In our view, a dynamic response solution for domestic/SME customers is not a financially viable option for anyone other than the most ardent environmentally conscious consumers. To reach mass market potential and secure solutions for the sector of users that account for 80% of energy consumption in the UK, smarter more flexible and dynamic solutions are required.

22. **Do you anticipate that underlying network cost drivers are likely to substantively change as the use of the distribution network changes? If so, in what way and how should DUoS charges change as a result?**

For dynamic response to work, the fluid pricing mechanism has to be reflected in the DUoS charges – if there is no incentive at a wholesale level, there is no incentive at a retail level.

23. **Network charges can send both short term signals to support efficient operation and flexibility needs in close to real time as well as longer term signals relating to new investments, and connections to, the distribution network. Can DUoS charges send both short term and long term signals at the same time effectively? Should they do so? And if so, how?**

We envisage that aggregators of domestic/SME energy storage systems will provide both short term and long term/planned response to signals. If the systems are set up properly, consumers would not notice that they are watching TV drawing power from a box under the stairs that is constantly evaluating whether to use stored power or draw from the grid. The role of aggregators in managing that process through their respective control rooms means that they may be able to offer that load reduction as a constant contractual obligation (for which the market could thus establish lower, but more predictable and thus secure, commodity prices) at peak time, with the capacity for spot reduction at particular peaks (for which the market would establish higher, more profitable but less secure, commodity prices). Therein lies a viable market place.

The ability to rapidly react and deploy an instant load reduction will be critically dependent on the interoperability standards employed by aggregators. If a smart system (with appropriate cyber security) can, at an instant, reduce load at a particular substation by 20MW – that has to be of significant value to the resilience and energy security needs of that particular locality, but by extension to the nation as a whole.

24. In the context of the DSO transition and the models set out in Chapter 5 we would be interested to understand your views of the interaction between potential distribution charges and this thinking.

We have no comment on this question.

25. Can you provide evidence to show how existing Government policies can help or hinder the transition to a smart energy future?

We are not convinced that the Government has a coherent policy on smart, flexible energy solutions. Certainly the gutting of renewable energy policies, such as the Feed-in-Tariff, Energy Companies Obligations and other schemes does not fill us with confidence and, by extension, does not fill the industry with confidence.

We think that the exclusive promotion of demand side response at a large non-domestic level is missing a huge opportunity to address 80% of the actual consumers of energy. The Government should switch its approach (whilst not missing out on the limited impact the large non-domestic can have) to a decentralised market based on actually shifting the load from peak to off-peak provision. Battery storage solutions can be incentivised through modification of market mechanisms, not through any tax-payer funded incentivising schemes.

26. What changes to CM application/verification processes could reduce barriers to flexibility in the near term, and what longer term evolutions within/alongside the CM might be needed to enable newer forms of flexibility (such as storage and DSR) to contribute in light of future smart system developments?

We have no comment on this question.

27. Do you have any evidence to support measures that would best incentivise renewable generation, but fully account for the costs and benefits of distributed generation on a smart system?

At present, battery storage is being sold ancillary to local renewable energy generation (solar pv, wind, etc). It actually has great market potential through dynamic response to be made available for simple grid-connected load shifting usage.

On our analysis, the fluid price differential would simply need to be at least 50% between peak/off peak to make the installation of battery storage a financial viable option for an individual household over a 10-year lifespan, even allowing for borrowing the capital outlay for the equipment at a 10% APR.

The introduction of aggregation and the ability to trade on the wholesale markets will provide added return on investment which has the capacity to lead to ‘free systems’ for individual consumers. Our analysis is that, at present, we are not quite there with a ‘free system’ and thus consumers would be required to make/borrow an initial capital outlay. However, we are not far off – possibly just a few hundred pounds – so greater volume of installations (bringing capital costs down) or greater margins through energy trading could be enough to address that disparity.

28. Do you agree with the 4 principles for smart appliances set out above (interoperability, data privacy, grid security, energy consumption)?

We partly agree with this, but we think there needs to be extension of thinking in this area.

We certainly agree that interoperability is critical. Our proposal to utilise the OpenADR interoperability standards (see Q.7) would underpin this. However, applying this to individual appliances rather than the general load applicable to a household, is fraught with some difficulty.

As a fundamental principle, we believe that the consumer should be the master of their own household and be able to determine when and how they use the equipment that they purchase. The benefit of dynamic response energy storage solutions is that the consumer will retain that power, retain the decision on what they use and all of their appliances will work as intended.

Driving behaviour by attempting to control individual appliances will lead to frustrations. What are the high-consumption appliances in a household – fridges, freezers, dryers, heating elements. The concept of smart control would mean that a consumer is delegating their choice over when that equipment will work – so a 'smart' heater would (on receipt of an internet enabled signal) switch off for a period of time before restarting. That would allow the room to cool perhaps more than the consumer intended. In addition, the cost of reheating that room to the consumer's desired temperature would be more expensive (for the consumer and in energy consumption terms) than maintaining it at the desired heat. We would also seriously question whether consumers actually want to hand over their heating controls to the internet (as opposed to being able to control them themselves using an internet enabled App).

However, with a load shifting basis for dynamic response, the consumer is still using their appliances in the normal way. The box under the stairs (which they have little or no interaction with) is deciding where is best to get the power from (be it the grid, storage or local generation). The consumer, through smart metering, may then start to make some smart decisions about (say) when the best time is to switch on the dryer which could have an incremental impact on consumer behaviours.

So, as a start, we would exclude (or at least separate) smart battery storage systems from smart appliances – they are of a different nature. Smart battery storage systems, a supported by dynamic response capabilities, can shift the load of a household/SME entirely. Smart appliances only apply to that appliance themselves.

We agree that Cyber security is important and, in particular, the potential for Smart appliances and the 'Internet of Things' to be used maliciously to disable networks. The ability for Distributed Denial of Service (DDoS) attacks to be promulgated through internet-connected devices is a proven methodology for those intent on such conduct. It is not within our expertise to comment on how to achieve cyber security, but we would agree that it is important.

29. What evidence do you have in favour of or against any of the options set out to incentivise/ensure that these principles are followed?

In relation to Battery Storage Systems, we are firmly of the view that they need to be established in accordance with a certification standard – a draft of which we have included as Annex A.

In relation to all other devices, it would be a substantial undertaking to start down a regulatory route of requiring all appliances to be smart/internet enabled devices. The UK broadband infrastructure is simply not sufficient to enable that to be a reality yet. It would also, in our view, face very significant scepticism and consumer resistance. Some consumers may well welcome the 'smart' home where everything is controlled through internet-enabled interoperable systems. That is by no means universal.

We would also be concerned that delegation of the decision about when a device is working is open to significant abuse. What, for instance, protection would be in place against an energy supplier in control of such devices increasing their energy usage at peak times to generate higher bills?

Labelling can be of assistance, but only to those consumers with a particular interest in smart appliances.

30. Do you have any evidence to support actions focused on any particular category of appliance?

We would concentrate on domestic/SME battery storage solutions.

31. Are there any other barriers or risks to the uptake of smart appliances in addition to those already identified?

A complete lack of understanding of how the energy systems work is the most dominant barrier to uptake after price. The complexities of 'keeping the lights on' are simply not visible to the vast majority of consumers. To a great extent, the National Grid and DNO's are victims of their own success by managing (through sheer luck at times) to be able to keep the lights on with deteriorating infrastructure, lack of investment and serious challenges. The fact that they have been able to means that any consumers aged about 50 or under have no real experience of significant or prolonged power outages. Only those old enough to remember the early 1970's or before that, the Second World War, have ever actually experienced it.

It is worthy of note that the places where the most progress has been made on dynamic response are places where there have been significant and serious energy supply problems (like California or Japan). That lack of 'need-it-now' buying pressure, that lack of securing self-resilience, that lack of understanding and, most notably, the £3.5 – 4K price tag are all disincentives for consumers to invest in smart technologies.

32. Are there any other options that we should be considering with regards to mitigating potential risks, in particular with relation to vulnerable consumers?

Installers of dynamic response systems must be required, probably by their consumer code of conduct, to attempt to identify any consumers with additional needs or who, by their circumstances, may be potentially vulnerable customers and deal with them sympathetically and appropriately. Consumers with additional needs may be those that need special help or assistance, such as those living with a disability, those who may need help understanding

complex products, or those who may need to rely on others. Vulnerable consumers are those whose circumstances put them at risk of making an incorrect or inappropriate decision.

Importantly, a person is not necessarily vulnerable nor may they have any particular additional needs merely because they are older, disabled or living with any particular condition. Vulnerability and additional needs are very much a matter of individual circumstances.

Vulnerable consumers include those:

a. with a disability that may put them at risk of making an incorrect or inappropriate decision
b. with poor literacy skills
c. with a lack of knowledge about a complex product or service
d. who are purchasing something at a time of particular stress or distress
e. whose first language is not English, and English is the only language in which material is available
f. whose age may put them at risk of making an incorrect or inappropriate decision

Under the Equality Act 2010 it is illegal to discriminate. It is important that the installers try to accommodate the needs of a vulnerable consumer and do not simply refuse to deal with them. This means that when a consumer has a disability or vulnerability they must make reasonable adjustments to accommodate them by proactively suggesting solutions that will help consumers make informed choices and taking steps to ensure they fully understand key documents including the quotation, contract and guarantee.

It is critically important to note that both vulnerable consumers and consumers with additional needs are equally entitled to enjoy the benefits of a smart, flexible energy market place. Creating disincentives for installers to deal appropriately with vulnerable consumers or consumers with additional needs place access to those benefits at risk, so controls have to be proportionate and targeted at avoiding disreputable conduct or exploitation.

33. How might Government and industry best engage electric vehicle users to promote smart charging for system benefits?

We have no comment on this question.

34. What barriers are there for vehicle and electricity system participants (e.g. vehicle manufacturers, aggregators, energy suppliers, network and system operators) to develop consumer propositions for the:

- **control or shift of electricity consumption during vehicle charging; or**
- **utilisation of an electric vehicle battery for putting electricity back into homes, businesses or the network?**

We have no comment on this question.

35. What barriers (regulatory or otherwise) are there to the use of hydrogen water electrolysis as a renewable energy storage medium?

We have no comment on this question.

36. Can you provide any evidence demonstrating how large non-domestic consumers currently find out about and provide DSR services?

We have no comment on this question.

37. Do you recognise the barriers we have identified to large non-domestic customers providing DSR? Can you provide evidence of additional barriers that we have not identified?

We have no comment on this question.

38. Do you think that existing initiatives are the best way to engage large non-domestic consumers with DSR? If not, what else do you think we should be doing?

We have no comment on this question.

39. When does engaging/informing domestic and smaller non-domestic consumers about the transition to a smarter energy system become a top priority and why (i.e. in terms of trigger points)?

There are certain enablers than need to be put into place first, but we see those as achievable within 12 months – most notably a functioning certification scheme and the reforms to the aggregator's access to energy markets. However, once in place, we see no impediment to roll out of broadly available domestic/SME energy storage solutions.

We believe that smart meters will greatly aid deployment, but they are not necessarily a pre-requisite depending upon the capabilities of the local energy management system installed in the property.

40. Please provide views on what interventions might be necessary to ensure consumer protection in the following areas:

- **Social impacts**
- **Data and privacy**
- **Informed consumers**
- **Preventing abuses**
- **Other**

We intend to focus on securing World Class Consumer Protection for consumers purchasing domestic/SME energy storage systems.

We are a part of the Integrity Foundation, established to lead consumer protection across the home improvement sector. We independently oversee our member companies to make sure they are thoroughly accredited, audited and reviewed. This guarantees that our complaints process is independent, honest and is based on strong moral principles, including free access to the Ombudsman Service, and that our schemes deliver world class consumer protection. Our schemes cover all types of work on the home, including double glazing, renewable energy, kitchens, bedrooms, bathrooms and conservatories – even specialist installations such as bathrooms which are accessible for people with disabilities. In all cases, consumers need the

reassurance and protection that comes with using a vetted and accredited member, who supplies high-quality products, and professional and reliable workmanship. We provide this, along with deposit protection, workmanship guarantees and insurance.

The key benefits for consumers of our schemes include:

- Our schemes are all endorsed by consumer champion Nick Ross (former BBC Watchdog and Crimewatch presenter).
- Our members are all installers and suppliers we have inspected and approved.
- Free consumer advice line (for each scheme)
- Free deposit protection (up to 25% of the contract value)
- Free insurance backed guarantee (for every consumer)
- Free mediation (to help fully settle any disputes that arise)
- Free independent inspections (to help with faulty installations or products)
- Free access to an independent ombudsman (to settle disputes without extra legal fees or costs)

We operate under ten key principles, supported by a detailed consumer code of practice, which we have included as Annex 2. The ten key principles are:

Scheme members will:

- act with professional integrity at all times;
- treat their customers fairly and with respect;
- be honest and truthful about the products and services they supply;
- respect each customer's home;
- provide clear and accessible information at all stages of the work they carry out;
- offer clear rights for customers to change their mind;
- professionally and competently deliver and install products;
- protect customers' deposits and guarantees;
- identify consumers with additional needs and provide appropriate support; and
- recognise the value of effective complaint-handling systems.

41. Can you provide evidence demonstrating how smart technologies (domestic or industrial/commercial) could compromise the energy system and how likely this is?

We have no comment on this question.

42. What risks would you highlight in the context of securing the energy system?

We have no comment on this question.

43. Do you agree with the emerging system requirements we have identified (set out in Figure 1)? Are any missing?

Yes, we agree with this at a high level.

44. Do you have any data which illustrates:

(a) the current scale and cost of the system impacts described in table 7, and how these might change in the future?

(b) the potential efficiency savings which could be achieved, now and in the future, through a more co-ordinated approach to managing these impacts?

We have no comment on this question.

45. With regard to the need for immediate action:

(a) Do you agree with the proposed roles of DSOs and the need for increased coordination between DSOs, the SO and TOs in delivering efficient network planning and local/system-wide use of resources?

Yes.

(b) How could industry best carry these activities forward? Do you agree the further progress we describe is both necessary and possible over the coming year?

We are very supportive of the need to establish a functioning certification scheme for domestic/SME energy storage solutions. You will see at Annex 1, that we have made a considerable start to this through our Energy Saving Consortium. We would be happy to continue this work through the Consortium or in a broader context through OFGEM/Government.

(c) Are there any legal or regulatory barriers (e.g. including appropriate incentives), to the immediate actions we identify as necessary? If so, please state and prioritise them.

The main legal barrier relates to the access aggregators have to the market place.

46. With regard to further future changes to arrangements:

(a) Do you consider that further changes to roles and arrangements are likely to be necessary? Please provide reasons. If so, when do you consider they would be needed? Why?

(b) What are your views on the different models, including:

i. whether the models presented illustrate the right range of potential arrangements to act as a basis for further thinking and analysis? Are there any other models/trials we should be aware of?

ii. ii. which other changes or arrangements might be needed to support the adoption of different models?

iii. iii. do you have any initial thoughts on the potential benefits, costs and risks of the models?

We are working on a series of model approaches, proof-of-concept and analysis. You will see from Annex 1 that we have made significant progress with a certification scheme. As one of the two active consumer codes of practice in the renewable energy sector we are ideally placed to support the development of regulatory infrastructure for the domestic/SME energy storage market.

47. Can you give specific examples of types of support that would be most effective in bringing forward innovation in these areas?

There are some enablers that would assist with the development and deployment of dynamic response capability. Largely this can be funded by industry, but there is a role for government in supporting innovation in the market infrastructure, in particular:

- The development of a certification scheme for domestic/SME energy storage systems;
- The development of model contracts/guidance notes for installers on consumer relationships – particularly securing a fair understanding of how dynamic response will work;
- Independent, government commissioned assessment of the financial benefits, likely return on investment and capital costs of dynamic response – this will assist in reducing opportunity for unsubstantiated claims;

48. Do you think these are the right areas for innovation funding support?

Yes, we believe a small amount of innovation funding could have a significant impact on kick-starting the dynamic response market place.

We thank you for giving us the opportunity to respond to your call for evidence.

Yours sincerely,

Tony Allen, CTSP
Director of Consumer Protection

Annex 1

The Certification Scheme for Energy Saving
Technologies and Installations

Installation Standard for Domestic Energy Storage Devices

ESCS 01 – [DATE] – [VERSION]

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1.0 Introduction

1.1 The purpose of this Installation Standard is to enable the effective operation of distributed dynamic response to energy shortages through the use of domestic energy storage devices.

1.2 The Installation Standard will enable the effective deployment of energy storage devices to domestic premises in a fair, safe and cost-effective manner. It will enable the realisation of energy efficiency and load reduction at peak periods (known as dynamic or demand response).

1.3 To work, individual energy storage devices, smart inverters, smart meters and communications equipment all has to work seamlessly with energy storage aggregators and the National Grid.

1.4 The benefits for consumers include:

(a) Access to lower cost energy through dynamic response tariffs
(b) Provision of local resilience to cope with energy shortages or blackouts
(c) High quality equipment that meets international standards
(d) Guarantees and consumer protection for the whole lifetime of the product
(e) Ability to participate in the energy market place, carbon trading and tariff trading
(f) Integration with Microgeneration Systems, Combined Heat and Power Systems and Hybrid Fuel Cell Systems

(g) Environmentally friendly and recyclable products and materials.

1.5 This Installation Standard is a standard or normative document for the purposes of BS EN ISO IEC 17065 on conformity assessment for bodies certifying products, processes and services.

1.6 The Energy Saving Certification Scheme provides an ongoing, independent, third party assessment of Certified Installers and technologies to ensure that the requirements of the appropriate standards are met and maintained.

2.0 Scope

2.1 The scope of this Installation Standard covers the requirements for companies undertaking the supply, design, installation, set to work, commissioning and handover of Energy Storage Devices installed in domestic properties.

3.0 Definitions

Consumer	means either: • The purchaser of the goods; • The subscriber to the energy supply at the household; or • The owner of the household If, and only if: • They are an individual acting in a private capacity; or • They are a micro-business employing less than 10 people and with a turnover less than £1 million.
Domestic Property	means any property that is used as a dwelling regardless of whether or not it is also used for any other purpose.

4.0 Consumer Protection

4.1 All installers shall operate in a manner that secures the highest standards of consumer protection and does not bring this Installations Standard into disrepute.

4.2 All installers must be a member of scheme that operates a consumer code of practice approved for that purpose by the Chartered Trading Standards Institute.

4.3 All installers must have in place a maintained documented quality management system in accordance with this table. The status of the documented system must be clear in terms of issue level and/or date.

4.4 All installations must be carried out under a contract between the installer and a consumer, the standard business terms of which have been approved by the consumer code of practice scheme provider.

4.5 The consumer code of practice scheme provider may extend the coverage of the code, so far as is relevant, to manufacturers, aggregators, financiers and investors, assessors or any other commercial party in the supply chain.

4.6 The consumer code must provide a means of alternative dispute resolution to resolve disputes.

5.0 Grid Code Compliance

5.1 All installations shall be carried out in accordance with the requirements of the Grid Code.

5.2 All Energy Storage Devices shall be manufactured in accordance with the requirements of the Grid Code.

6.0 International Electrotechnical Commission (IEC) Compliance

6.1 All installations shall be carried out in accordance with Part P of the Building Regulations.

6.2 All Energy Storage Devices installed shall comply with the requirements of BS EN 60335-1:2012+A11:2014, providing general safety requirements for electrical installations. No Energy Storage Devices shall be for use by or in play by children.

6.3 All Energy Storage Devices installed shall be electromagnetically compatible, insofar as that applies to:

(a) Emissions (EN 55014-1:2006/A2:2011)
(b) Immunity (EN 55014-2:1997/A2:2008)
(c) Limits for harmonic current emissions (BS EN 61000-3-2:2014)
(d) Limitation of voltage changes (BS EN 61000-3-3:2013)

6.4 All Energy Storage Devices shall adhere to the following minimum operating characteristics:

(a) A depth of depletion (DoD) of at least 95%
(b) A lifespan of at least 7,360 cycles (two cycles/day over 10 years)
(c) Operability between -15^{o}C and +50^{o}C

7.0 Software Interoperability

7.1 It is critical to success that the Energy Storage Devices installed under this standard are interoperable with centrally aggregated demand response protocols. This enables the overall grid management.

7.2 This standard utilises the interoperability standards established by the Demand Response Research Center at US Department of Energy.

7.3 The Energy Storage System shall meet or exceed the requirements established in Open Automated Demand Response Communications Specification (Version 1.0).

7.4 All Smart Inverters installed to support Energy Storage Devices shall comply with the requirements of BS EN/IEC 61850-90-7, IEEE 1547

8.0 Environmental Requirements

8.1 All Energy Storage Devices must be managed in accordance with the Waste Batteries and Accumulators Regulations 2009 and, for the purpose of those Regulations are to be treated as Industrial Batteries.

8.2 Manufacturers of Energy Storage Devices are responsible for minimising harmful effects of waste batteries on the environment, by improving the design of new batteries and paying for waste battery collection, treatment, recycling and disposal.

8.3 It is illegal to send waste Energy Storage Devices for incineration or to landfill.

8.4 Installers must not install any Energy Storage Device that has not been registered, by the manufacturer or producer, on the National Packaging Waste Database.

8.5 Installers are responsible, acting on behalf of the manufacturer, for recovering any installed Energy Storage Devices at the end of their operating life or if a replacement Energy Storage Device is installed. All recovered Energy Storage Devices must be returned to the manufacturer or to another Approved Battery Treatment Operator or Exporter.

9.0 Installer Competence

9.1 All staff employed in installation, set to work and/or commissioning activities must have received adequate training in each of the areas/operations in which they are involved.

9.2 The Installer must have a training record for each employee which details training received, and any qualifications or certificates held by the individual. The record should be signed or verified by the employee.

9.3 The Installer must have a record detailing the skills for which each individual is approved on the basis of their competence.

10.0 Installer Assessment

10.1 Any installer may apply to the Energy Saving Certification Scheme for assessment under this standard. The installer shall complete the appropriate application form and pay the applicable fees.

10.2 An Assessment is an objective examination of an Installer, including an assessment of their technical competence to carry out work in accordance with the applicable standards.

10.3 Assessments are conducted using elements of questioning and observation techniques. Assessments start with an opening meeting to explain the purpose of the

visit, the work that is to be assessed, the reporting method, the selection of the installation site(s) to be visited, and the approximate time, place and purpose of a closing meeting. The Installer must their relevant technical representatives are present or available throughout the assessment process.

10.4 At the end of assessment or surveillance visits a closing meeting is held to discuss any non-conformity or observation reports raised and the assessor's recommendation.

10.5 If the assessment demonstrates competence that is limited to a specific product type(s) the Assessor may recommend certification that is limited in its scope.

10.6 Where non-conformity reports are raised, they must be completed and returned to the Energy Saving Certification Scheme with completed corrective and preventative actions within 8 weeks of an assessment or surveillance visit.

10.7 Where certification cannot be recommended at an initial assessment visit, a full or partial re-assessment will be considered and may be required at additional cost.

10.8 The assessment is conducted in two parts.

Off Site Assessment

10.8.1 This is an assessment of the policies and procedures that the Installer has in place to meet the requirements of this Standard. The Assessor shall also check the following:

(a) That the details on the application form or certificate(s) are correct
(b) The status of the Installer's quality management system documents
(c) That corrective and preventive actions associated with any previous non-conformities have been taken and have been satisfactorily completed and implemented
(d) The records of internal reviews, corrective and preventive actions
(e) That no changes have occurred that should have been notified to the Certification Body
(f) The correct use of certification marks

10.8.2 This includes the contract review, design, installation, set to work, commissioning and handover of the appropriate Energy Storage Device system and technology.

10.8.3 Design is defined as the formulation of a written plan including a specific list of products and fixings to form a completed system for a defined Energy Storage technology. It includes extensions and alterations to existing Energy Storage systems.

10.8.4 All systems must be designed in accordance with the requirements set out in the appropriate Standards.

10.8.5 Where Companies do not engage in the design of Energy Storage systems, but work solely as an Installer for a client who has already formally agreed a system design; then the Installer must be competent to review and verify that the design would meet the design requirements set out in the appropriate Microgeneration Standards and this should be recorded.

10.8.6 On site assessment

10.8.7 This is an assessment of an installation to review the work that has been undertaken against the system design and the procedures for the installation, set to work, commissioning and handover of the system / technology.

10.8.8 Where requested, the Installer shall provide details of recent or current installations as required by the Energy Saving Certification Scheme. The Installer shall arrange access to installations selected by the Assessor.

10.8.9 The Energy Saving Certification Scheme may use an installation that is not fully within the scope of the Scheme for the on site assessment, if that installation provides objective assessment evidence against specific requirements of the relevant Installation Standard.

10.9 Certification is maintained through at least one annual visit, referred to as “a surveillance", which is similar in format to Assessment. Surveillance ensures that the Installer is continuing to comply with the requirements of the scheme and is working within the scope of its certification. If a surveillance programme is via the minimum annual visit, this should take place during a time period that is between 2 months prior to and 4 months beyond the anniversary of the certificate issue date.

10.10 If the Installer has not carried out installation work for a particular technology during the year, the surveillance may proceed on the basis of a desktop review of capability at the Installer’s office, subject to the Installer agreeing to inform the Energy Saving Certification Scheme the next time they accept a contract to carry out an installation of the type concerned. When such an installation goes ahead an additional site assessment shall be required.

10.11 Additional surveillance visit may be required;

(a) If substantiated complaints against the Installer are received; or
(b) As a result of a significant number of non-conformities being raised during a visit (in this circumstance an additional visit may be required within 12 weeks of the original visit date).

10.12 Where non-conformities cannot be resolved within 12 weeks of the original visit date the Installer is suspended or the certificate withdrawn.

10.13 The certificate holder may be expected to bear the costs of investigating complaints and additional surveillance visits.

11.0 Installer Certification

11.1 Certificates are awarded to Companies when all assessment activities have been satisfactorily completed, the Assessor has recommended that certification is granted, any non-conformities raised during assessment are cleared and the Energy Saving Certification Scheme has formally reached a certification decision in accordance with its procedures.

11.2 Certificates contain the name and address of the Installer, the Energy Storage technology(s) that have been assessed, any limitations on the scope of the certification, a unique certificate reference number and the issue number and date.

11.3 Certificates are maintained and held in force subject to satisfactory completion of the requirements for maintenance of certification, but remain the property of the Energy Saving Certification Scheme.

11.4 All Certified Installers are listed [on the Energy Saving Consortium Website]

11.5 An Installer shall be eligible to remain certificated provided it continues to be engaged in energy storage installation work for the scope indicated on the certificate and continues to comply with this standard. Certificates are valid from the date of issue and are maintained and held in force subject to satisfactory surveillance assessments but remain the property of the Energy Saving Certification Scheme.

12.0 Certification Mark

12.1 The Installer shall use the Certification Mark only in accordance with the terms of the licence issued by the Energy Saving Certification Scheme.

12.2 An example of the Certification Mark is as follows:

ENERGY SAVING
ACCREDITED INSTALLER

13.0 Installer Responsibilities

13.1 The Installer shall specify a named individual "Nominee", whose responsibility shall be the control and overall supervision of all activities, which fall within the scope of the Scheme. This Nominee shall be the senior contact between the Installer and the certification scheme. The Installer may name an administrative contact person for the Certification Scheme to communicate with who is not the Nominee and whose

responsibility would be coordination and communication. The Installer shall document who is responsible for each activity and their deputy or nominee.

14.0 Installation & Equipment Guarantees

14.1 Every installation shall be covered by a workmanship guarantee for a period of 10 years.

14.2 Every Energy Storage Device and Smart Inverter shall be covered by a product guarantee for a period of 10 years.

14.3 Every workmanship and product guarantee shall be underwritten by appropriate financial protection which shall be supported by a fund of a size commensurate with the risks and shall be available to the consumer regardless of whether or not the installer and/or manufacturer continue to trade.

15.0 Complaints

15.1 The Installer shall have a written procedure for managing complaints and shall keep a record of any complaints received (justified or otherwise) and the corrective and preventative actions taken to satisfy the complaint. All complaints must be dealt with in a timely and effective manner and, where required, be handled in accordance with the requirements of the consumer code.

16.0 Internal Review

16.1 The Nominee shall conduct regular (at least quarterly) reviews involving relevant staff members to review the effect of each of the procedures and deal with any problems in the system.

16.2 Records of these reviews and corrective/preventive actions shall be kept by the Installer. The reviews should consider, as appropriate:

(a) Feedback from members of staff, customers and suppliers
(b) Complaints
(c) Products
(d) External audits
(e) A review of controlled documents held (currency and availability)
(f) Performance of suppliers and subcontractors
(g) Changes to Installer documents
(h) Changes to Installer's structure or activity
(i) Issues arising from inspections
(j) Any other issues with an impact on the quality management system

17.0 Corrective/Preventative Action
18.0 Suppliers and Sub-Contractors
19.0 Documents, Document Control and Record Keeping
20.0 Changes to Installer Certification

21.0 Information Sharing

Annex 2

Shortened Code of Practice

Introduction to the Code of Practice

This is a summary of the Code of Practice for the Home Insulation & Energy Systems Quality Assured Contractors Scheme (HIES). The full version is available from www.hiesscheme.org.uk.

Upon joining a scheme, every member agrees to be bound by the terms of this code of practice, by signing their Membership Agreement.

The Code of Practice shall have effect throughout the member's period of membership.

The Code of Practice sets out the required standards of conduct by members. It focusses on the relationship between members and consumers (although it also applies to micro-businesses). The Membership Agreement (a separate contractual document) sets out the consequences of failure to comply with the Code of Practice, including disciplinary action, compliance default action and how compliance is monitored and audited.

A Scheme members must act with professional integrity at all times.

A1 Members shall not bring HIES or this Code of Practice into disrepute.

A2 Members shall make their true identity clear in all documentation provided to consumers and on any website that they operate.

A3 Members shall be clear about and shall not misrepresent the status, position and qualifications of its partners, directors, management, staff or contractors.

A4 Members must be adequately insured to cover their activities.

A5 Members must, where required due to their activities, obtain and maintain authorisation by the Financial Conduct Authority (FCA).

A6 Any membership, authorisation, award or recognition claimed by a member must be genuine and supported by evidence.

B Scheme members must treat consumers fairly and with respect.

B1 Members must act and behave fairly to consumers.

B2 Members must protect personal information about consumers and may only use information fairly, in accordance with data protection principles; within the reasonable expectations of the person that the information is about and in accordance with their notification to the Information Commissioner's Office.

B3 Members must disclose who they are in direct marketing calls, e-mails and campaigns and act responsibly.

B4 Members must not engage in high pressure selling techniques.

B5 Members must not discriminate or exclude consumers based on individual characteristics and circumstances, such as age; disability; caring or dependency responsibilities; gender or gender identity; marriage or civil partnership status; political opinion; pregnancy or maternity; race, colour, caste, nationality, ethnic or national origin; religion or belief; sexual orientation; or other distinctions.

C Scheme members must be honest and truthful about the products and services they supply.

C1 Members must describe, advertise and sell their products in a manner which is legal, decent, honest and truthful.

C2 Members must comply with any additional requirements related to specific products or services as set out in the Annexes to this Code of Practice.

C3 Members must comply with all statutory requirements in relation to sales including, but not limited to, the Consumer Protection from Unfair Trading Regulations 2008 and the FCA Consumer Credit Sourcebook.

D Scheme members must respect each consumer's home.

D1 Members must respect the sanctity of a consumer's home.

D2 Members must respect any expressed wish that consumers do not accept cold calling at their home and must not exploit consumers through cold calling.

D3 Members must take action to safeguard children when their staff are in a consumers' home.

D4 Members must take precautions to prevent damage to the consumers' home.

E Scheme members must provide clear and accessible information at all stages of the work they carry out.

E1 Members must provide clear and accessible pre-contractual information to enable the consumer to make an informed purchasing decision.

E2 Members supplying goods or services on credit agreements must comply with all documentary requirements of the FCA Sourcebook on Consumer Credit.

E3 Members must provide a clear installation plan, which should make allowance for the requirements and limitations of the consumer.

E4 Members should carefully record any necessary or requested variations to contracts and these must be agreed and signed by the consumer.

E5 Members must make a completion of works record, which must be agreed and signed by the consumer.

F Scheme members must offer clear rights for consumers to change their mind.

F1 Members must provide consumers with a right to change their mind and cancel their contract unless the installation is in response to an emergency situation.

F2 Members must be clear with consumers about the consequences of exercising a right to change their mind at different stages of the installation process.

F3 Where a consumer exercises their right to change their mind, members must remove their goods from the property and leave it secure, safe and watertight.

F4 The balance of any deposits or refunds due to the consumer will be provided within 14 days and any linked agreements, such as credit agreements, will be cancelled provided suitable means to meet any fees payable have been secured.

G Scheme members must professionally and competently deliver and install products.

G1 Members must exercise reasonable care and skill when installing products.

G2 Members must carry out works to a high standard ensuring that products are fit for purpose.

G3 Members must supply safe products and ensure that they are safely installed.

G4 Members using sub-contractors are directly responsible for the standard and quality of the sub-contractors work as though they were direct employees of the member.

G5 Members must ensure that any waste generated during the installation is stored safely and removed from the site in accordance with the terms of the contract.

H Scheme members must protect consumers' deposits and guarantees.

H1 Members must not take deposits or staged payments that exceed 25% of the total contract value without the prior written consent of the scheme administrator.

H2 Members must provide a Workmanship Guarantee, which must provide for a minimum of two years cover.

H3 Members must pass on any manufacturers guarantee applicable to the product and, where no such guarantee exists or is inadequate, must provide a Product Guarantee, which must provide for a minimum of two years cover.

I Scheme members must identify consumers with additional needs and provide appropriate support.

I1 Members must attempt to identify any consumers with additional needs or who, by their circumstances, may be potentially vulnerable customers and deal with them sympathetically and appropriately.

I2 Where a consumer is identified as vulnerable or with additional needs, members must make reasonable adjustments to their service offer to meet those additional needs or adequately address the vulnerability.

I3 Members must have an adequate policy to ensure that information can be provided in an alternative format for customers with additional needs where necessary, e.g. other languages, large font, brail, audio or to advise such customers to read through documents with a trusted friend or relative.

J Scheme members must recognise the value of effective complaint-handling systems.

J1 Members must make sure that consumers are provided with effective and appropriate customer service to include:

a. before a contract has been agreed
b. after placing an order
c. after booking
d. after paying
e. after the product has been installed

J2 Members must adequately train their staff to handle complaints and must nominate a person who is the designated complaints handler (or the leader of a team of complaints handlers if appropriate).

J3 All complaints must be dealt with professionally and courteously in strict compliance with the member's approved complaints procedure.

J4 If a customer or prospective customer wishes to make a formal complaint, the member shall ask for the details of the complaint to be set out in writing and addressed to the member's complaint handler in order to allow the scope of the complaint to be defined and to give the member the opportunity to respond and deal with specific issues.

Annex 1 Specific rules for installers of Home Insulation and Energy Systems.

X1.1 Members must not make misleading or unjustified energy performance claims connected with any home insulation, energy saving or energy generation installations.

X1.2 Members must not make misleading statements in connection with the provision of free, subsidised, rental or buy-back energy or heat generating equipment or energy saving equipment.