Department
of Energy &
Climate Change

Towards a Smart Energy System

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Executive Summary

1. DECC has a challenging and critical set of objectives: powering the economy by ensuring security of supply, keeping bills as low as possible for families and businesses, and decarbonising in the most cost-effective, affordable way.

2. There are significant challenges ahead in delivering these objectives if we are to ensure our energy system can respond to increases in peak demand over the longer term (driven largely by the extent to which heating and transport are electrified, especially from the 2030s), and make best use of more low carbon generation on the system. At the same time, new data and communication technologies create opportunities to do things differently, as do the falling costs of technologies like batteries.

3. A smart energy system, based around new forms of flexibility, could help the UK deliver our objectives more cost effectively. Over the period to 2050, this could help us build less power generation, turn off generation less when it exceeds demand, and avoid significantly reinforcing our energy networks. It could also reduce the cost of balancing our energy system in real time.

4. These smart solutions include demand side response (DSR)[1], storage and smart networks. Interconnection also plays an important role. Together, these solutions would help reduce overall system costs and move us towards a more flexible energy system. Under a smart, flexible system, external estimates suggest that overall system costs could be reduced in the order of tens of billions (£) in the period to 2050[2]. This publication focuses primarily on demand side response and storage.

5. The Government is committed to ensuring that every home and small business in the country is offered a smart meter by the end of 2020. Smart meters are a critical building block towards a smart energy system, creating new opportunities for demand side response and storage.

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[1] Demand Side Response is defined by Ofgem as 'actions taken by consumers to change the amount of electricity they take off the grid at particular times in response to a signal'. In practice DSR means the active reduction in the electricity a user is taking from the grid at a given moment in time. This term is typically used to describe two activities – a) reducing demand for a short period, for example by shifting a process to a different time of the day or turning fridges/air conditioners off for a brief period, or (more commonly) b) using on-site 'backup' generators to temporarily meet on-site requirements and/or export energy to the grid (the vast majority of DSR active in the UK currently).

[2] This estimate is based on a range of external sources. This focuses on the likely system cost savings associated with a smart energy system (e.g. building less power generation, avoiding significant network reinforcement).

6. Our energy system was designed and built in the 20th century to address a different set of challenges from the ones we face now. The design of that system comprised of a small number of large central generators remote from population centres that transferred their energy through networks to consumers to meet a predictable demand. Most trajectories for our future energy system anticipate new challenges, as peak demand increases and there is more low carbon generation on the system (particularly at a distribution level).

7. Whilst these play out over a longer timeframe, solutions will be needed sooner rather than later so we can meet these challenges and respond cost effectively. Decisions taken in this Parliament will influence the extent to which smart, flexible solutions become widespread in the 2020s. The growth in distributed generation and new market entrants is already changing the face of our energy system. New smart products and services are also giving consumers more control over their energy use and helping to lower their bills.

8. There have been some good initial steps towards a smart energy system, including network innovation through the Ofgem-run Low Carbon Network Fund, and wider work under the DECC/Ofgem-chaired Smart Grid Forum. However, further action is needed. Therefore, the National Infrastructure Commission will be looking at these issues further and has recently published a call for evidence[3]. They will be providing recommendations to Government on next steps by Budget 2016. Alongside this, we will be working closely with Ofgem over the coming year to:

    - Consider shorter term policy options to deliver a smart energy system, including a timetable for their implementation if appropriate. This includes:
        - Removing regulatory barriers to storage and demand side response,
        - Delivering clearer price signals to allow more flexibility from consumers, and
        - Catalysing innovation, so that new solutions can emerge and compete in the market.
    - Assess whether more fundamental changes are required to deliver a future smart system, including in the operation of the market and existing institutional arrangements.

[3] https://www.gov.uk/government/consultations/national-infrastructure-commission-call-for-evidence/national-infrastructure-commission-call-for-evidence

- Develop a better understanding of the potential costs and benefits associated with delivering a smart energy system.

9. We want to engage stakeholders broadly as part of this work, and plan to consult in spring 2016.

Outline of the Document

10. This document sets out:

    - Some of the key challenges our energy system faces as we seek to power our economy and decarbonise cost-effectively.
    - How a smart, flexible system would help us meet these challenges more cost-effectively.
    - The potential barriers and market failures that could stand in the way of smart energy.

11. The document then sets out several areas that DECC will look at further over the coming year, working together with Ofgem. This will build on Ofgem's recent flexibility publication[4] and the work of the Smart Grid Forum. It will also set out the key opportunities for engaging with the public and the wider energy sector.

Current System Challenges

12. Most trajectories of energy demand and supply to 2050 anticipate significant new system challenges as we incorporate more low carbon generation, and meet increases in peak demand (typically 4-8pm on winter weekdays), driven largely by the extent to which transport and heating become increasingly electrified.

13. Under a range of future scenarios, peak demand is forecast to increase. In some scenarios, these increases could be very significant. For example, National Grid's Gone Green scenario estimates demand of over 70 GW by 2035 (Figure 1), while another study (see Figure 2) concluded that peak electricity demand could nearly double to over

[4] https://www.ofgem.gov.uk/sites/default/files/docs/2015/09/flexibility_position_paper_final_0.pdf

100 GW by 2050[5]. In order to meet these increases in demand, we would also need a large increase in low carbon generation.

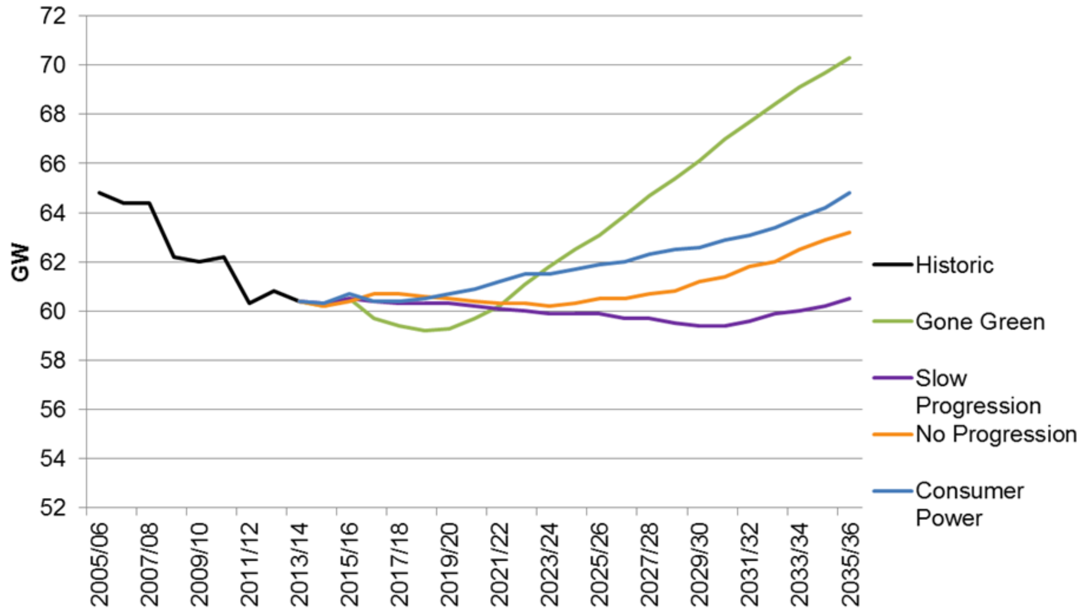

Figure 1: Power: average cold spell peak demand (including losses) (Source: National Grid Future Energy Scenarios, 2015)

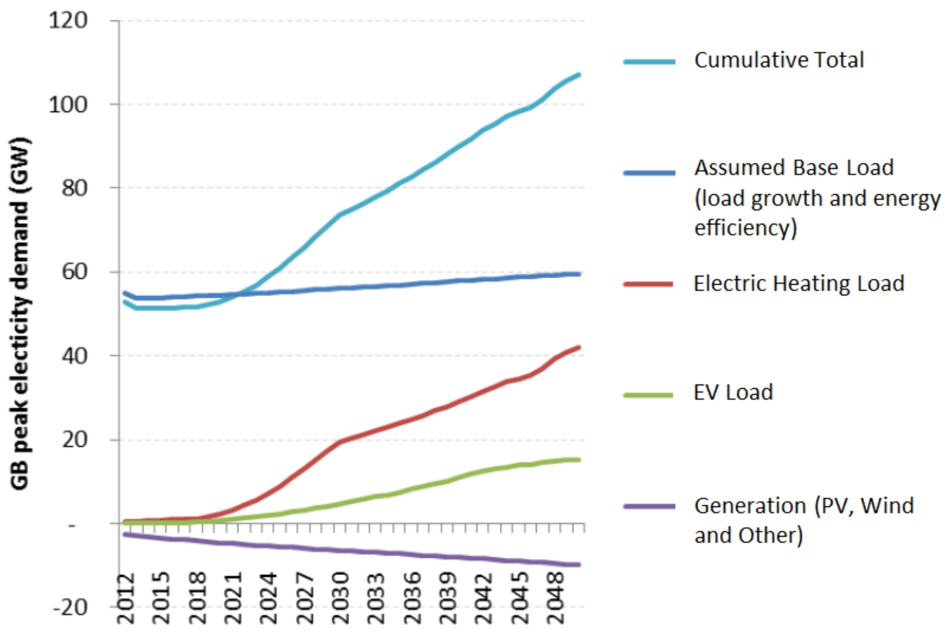

Figure 2: Peak electricity demand for Scenario 1 showing the contribution of electric vehicle and electrified heating, together with the demand reduction effects of solar photovoltaics (Source: EA Technology 2012 for Smart Grid Forum WS3)

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[5] This was based on medium DECC projections of electrification of transport and distributed generation and high DECC projections for heat electrification, using National Grid's gone green scenario for generation.

14. During periods of low summer demand, peak generation of solar could also pose new challenges for balancing our energy system. Under National Grid's Consumer Power scenario, by 2035, there could be 30 GW of solar connected to the distribution networks, either solar farms or rooftops. This could suppress demand significantly during the middle of the day as well as steepen ramp rates, making it more challenging to balance the system (see Figure 3).

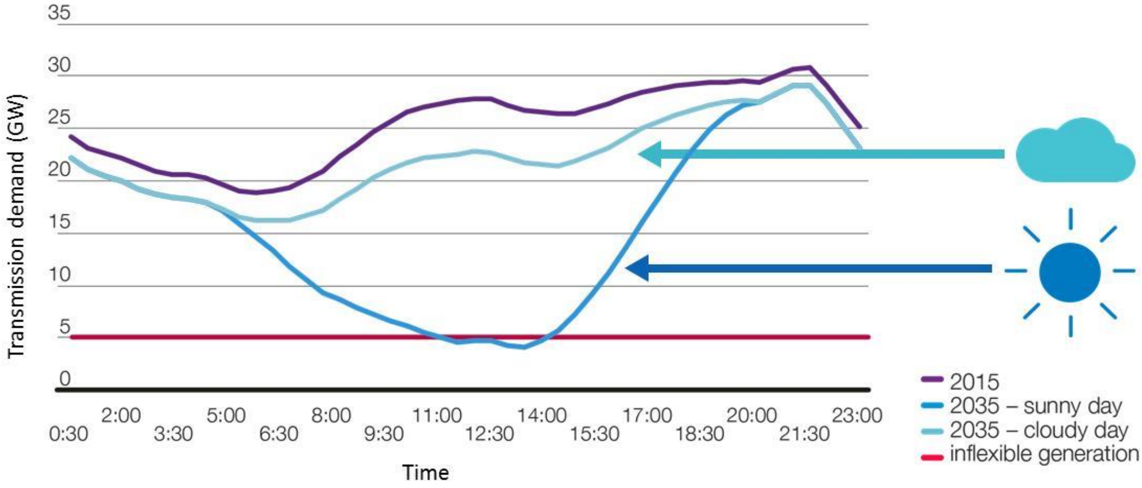

Figure 3: Summer minimum demand - consumer power scenario (Source: National Grid)

How a smart energy system would help

15. A smart, flexible energy system would involve incorporating new forms of flexibility in combination, including energy storage, demand side response (DSR), smart networks, as well as increasing interconnection. It could also involve energy efficiency improvements which target peak demand. Combining these solutions in a whole-system approach would help us achieve the following benefits:

   a. Defer or avoid investment in network reinforcement.
   b. Reduce the need for a significant increase in reserve generation capacity.
   c. Meet binding climate change targets with less low carbon generation.
   d. Make the best use of our low carbon generation.
   e. Optimise balancing of our energy system on a minute-by-minute basis.

16. Figure 4 sets out in more detail how smart solutions could help us to realise these benefits to 2050.

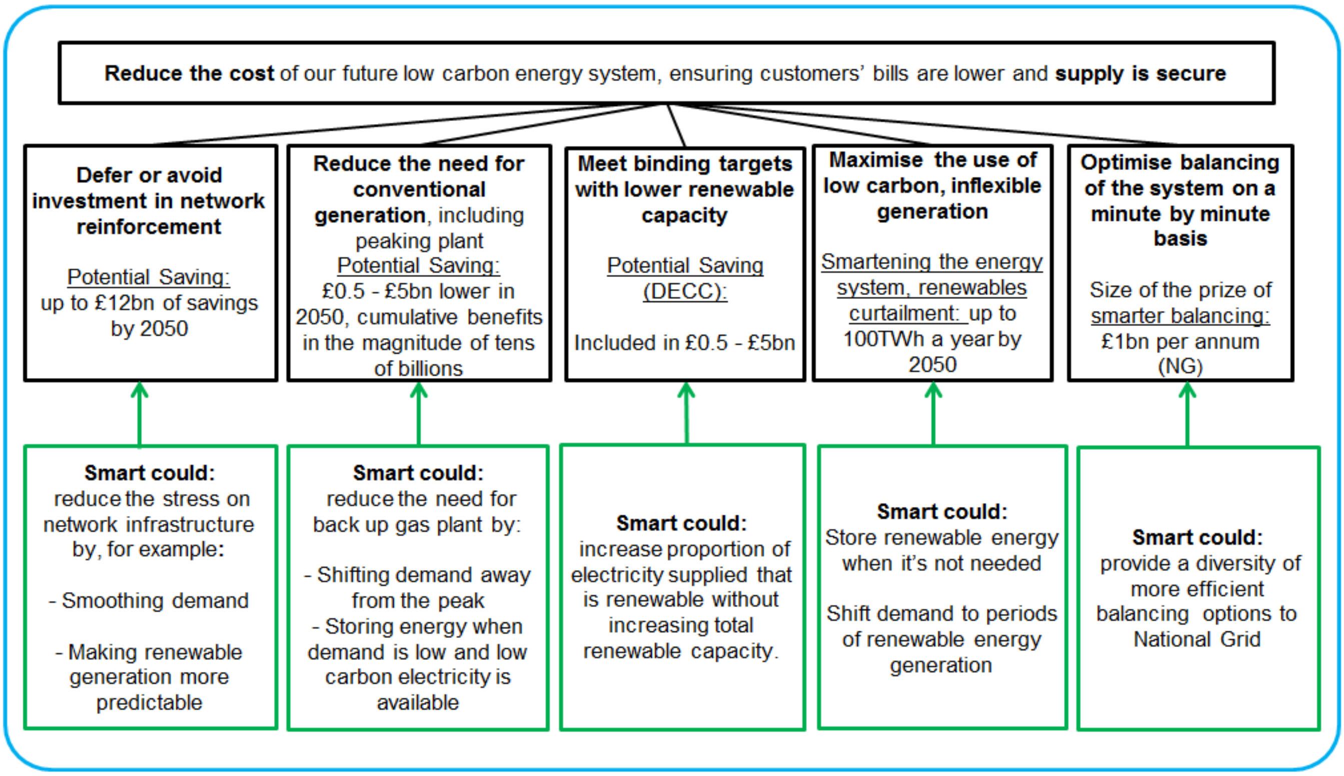

Figure 4: Benefits of more flexible solutions in a smart energy system[6,7]

Energy Storage

17. The UK already has 2.8 GW of pumped hydro storage. It is called on every day by National Grid to balance our energy system. This storage was built several decades ago under a very different system, and there has been very little additional energy storage built since then.

18. Energy storage covers a range of technologies with different technical characteristics which can be deployed at all levels of the system. New energy storage capacity could help us achieve the benefits outlined above, for example:

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[6] EA Technology et al. (2013) Assessing the impact of low carbon technologies on Great Britain's electricity distribution network

[7] Imperial College London / Nera (2012) Understanding the balancing challenge

Consumer and system benefits

Moixa have developed their 2-3kWh Maslow battery system which provides grid support services via an aggregator such as Kiwi Power to deliver cost savings for customers. They have deployed these systems to 250 homes as part of a DECC-funded demonstration project, but are aiming to reach 1 million homes.

Large scale heat storage

The Bunhill Heat Network currently includes a 115 m^3 thermal store which allows the scheme operators to flexibly operate a Combined Heat & Power (CHP) engine to obtain better electricity prices which typically occur during periods of high demand on the grid.

The operators are seeking to extend the scheme to include a further 70 m^3 of storage on the network, so that the combined store can charge from several low carbon sources on the heat network. For example, this will enable the thermal store to be charged by a new heat pump during periods of low electricity prices, providing both DSR services and heating. When electricity prices are high, CHP engines will be able to generate heat as well as export electricity to the grid.

The project may also include additional thermal storage retrofitted within buildings on the network to use the potential for direct electric heating at these locations in response to low electricity prices. This will also provide opportunities for shutting down heating plant and the heat network during periods of low heating demand to provide further energy and cost savings.

Network protection

UK Power Networks (UKPN), the distribution network operator for Greater London, has deployed a 10MWh battery at Leighton Buzzard to protect a substation, thanks in part to funding by Ofgem's Low Carbon Innovation Fund. UKPN have successfully demonstrated the use of the battery to reduce network stress events and are now investigating other uses for the battery, such as offering balancing services to National Grid.

The Secretary of State of DECC, Amber Rudd, visits UKPN's 'big battery'.

a. Consumers could store electricity in batteries for when it is more useful or when electricity from the grid is more expensive. Alternatively, they could convert electricity to heating or cooling for use later.

b. At the network level, storage (e.g. large batteries, thermal storage in heat networks) could be used to avoid local network constraints and defer costly reinforcement.

c. At a system level, large scale storage (e.g. pumped storage, compressed air storage) could be used to help meet peaks in demand.

d. Storage devices, whether single large installations or aggregated small installations, could provide valuable support services to the power system for voltage and frequency control.

e. Electricity could be converted into other energy vectors (e.g. thermal storage, hydrogen) to allow the intra-seasonal transfer of energy.

19. As outlined above, storage could offer a wide range of benefits across our energy system - from deferring network reinforcement through to helping our energy system stay in balance on a minute by minute basis. Under a range of scenarios, adding more storage to our energy system as we decarbonise could increase its overall efficiency and resilience[8]. It is also likely the UK could benefit from a mix of these storage technologies in different system locations.

Demand Side Response

20. Demand side response (DSR) refers to action(s) taken by consumers, in response to a signal, to change the amount of electricity they take off the grid at a particular time. Some DSR already exists in both the large industrial & commercial (I&C), and domestic sectors. Within the I&C sector, DSR is provided by a range of companies, voluntarily and on a commercial basis. It is used by the system operator to help balance the system, or by I&C companies themselves to minimise network charges during periods of peak demand. As much as 2 GW[9] of demand side response already operates within the energy market. Within the domestic sector, c.3.5 million households are estimated to be on Economy 7 tariffs[10], where the cost of their electricity is significantly lower overnight

UK's first residential dynamic time of use tariff

Under Ofgem's Low Carbon Network Fund, UK Power Networks, EDF Energy and partners led a large scale pilot of a dynamic Time of Use tariff with residential customers. The aim was to investigate the potential value of residential demand response to both the Supplier, to contribute to system balancing, and the DNO, to help manage local network constraints. Over 1,100 households were sent variable price signals in response to different events (e.g. a distribution network constraint or a windy day) at different times and durations. Households reduced their demand in response to network constraint events by approximately 10% as well as increasing their demand during supply demand balancing events. This involved people responding manually to price signals and consuming electricity at different times of day by manual changes. With automated smart appliances, the potential for savings is likely to increase significantly.

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[8] Strbac et al. (June 2012) Strategic Assessment of the Role and Value of Energy Storage Systems in the UK Low Carbon Energy Future – Report for the Carbon Trust, Imperial College London

[9] This refers to the amount of non-BM STOR which includes small distributed generation. The amount of load reduction DSR in this figure is closer to 237MW: http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=37710

[10] Sustainability First (2012): GB Electricity Demand: Realising the resource. Paper 3: "What demand side services could household customers offer?"

compared to during the day. This encourages consumers to shift their demand from the day to the night by using cheaper electricity at off-peak times, particularly for night storage heaters.

21. Much like storage, DSR can also help us realise the benefits of a smart energy system in a number of ways. For example, consumers could chose to:

    a. Reduce their demand in response to higher prices during peak periods for generation or local networks constraints.
    b. Increase their demand in response to lower prices during periods of excess generation to avoid energy being wasted.
    c. Reduce their energy bills by allowing other parties (e.g. suppliers, Distribution Network Operators (DNOs), aggregators) to manage some of their demand (e.g. electric vehicles, heat pumps, air conditioning). This DSR could also be used to balance the system.
    d. Take advantage of automated controls, in conjunction with their smart meters, to make these new approaches easy and effective.

22. A number of studies suggest that consumers of all sizes could offer a significant amount of DSR. This potential could grow further with the electrification of heating and transport. While there are limitations around these studies, they provide an indication of this potential across sectors:

    - One study looks at the overall potential of DSR from non-domestic buildings (excluding industry) to contribute to peak energy demands. This estimates that there could be between 1.2 – 4.4 GW (winter week day, Great Britain), under a range of scenarios[11].

Controlling electric vehicle charging

Electric Avenue aims to simulate a 2030 electricity network in order to provide essential learning about managing the strain on the electricity distribution network from the anticipated increased uptake of electric vehicles. The project is funded by Ofgem's Low Carbon Network Fund and involves EA Technology and Scottish and Southern Energy Power Distribution (SSEPD) together with other partners. As part of the project, EA Technology is developing an EV charge control system to balance out the charging cycles of EVs at times of network stress. This will deliver a cost-effective solution to DNOs that reduce the need for costly and disruptive electricity network reinforcement and allows a faster uptake of electric vehicles (EVs).

[11] Element Energy / De Montfont University (Jul 2012) Demand Side Response in the non-domestic sector – Final report for Ofgem

- Another study considers the potential for peak reduction within the domestic and SME sectors. It concludes that the potential for peak reduction in 2030 could be up to 2.5 GW in the domestic sector and up to 2 GW for SMEs[12].

23. Smart meters are a key building block to enable DSR: they can record how much electricity has been consumed in each half-hour period and allow two-way communications facilitating the move to half-hourly settlement. They can also be used to support smart tariffs. They will therefore enable various aspects of demand side management in the home. For example, in the future, consumers could chose to set up smart appliances (e.g. heat pumps, dishwashers and washing machines) to respond automatically to price signals from smart meters and use energy when it is cheapest. This could allow consumers to play a much more active role in the energy system, benefiting through lower energy bills for their flexibility (see Fig 5).

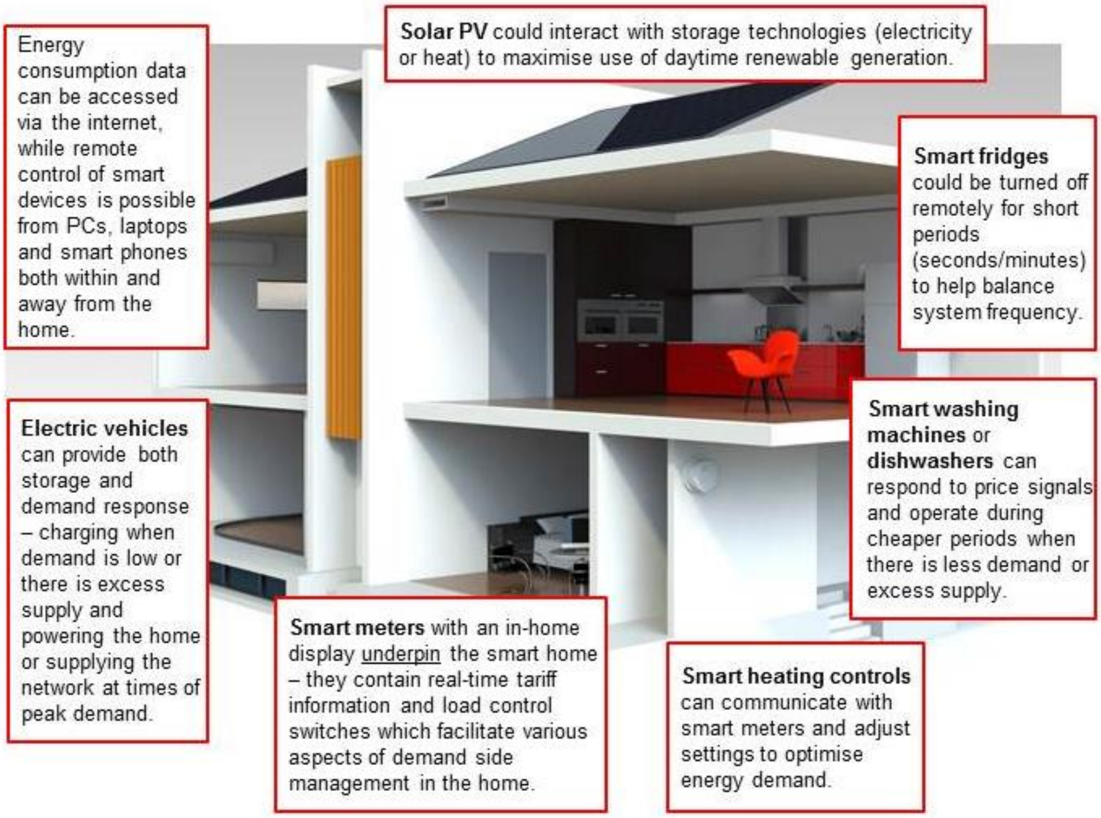

Figure 5: How could this look to a consumer?

[12] Baringa Redpoint / Element Energy (Aug 2012) Electricity System Analysis – future system benefits from selected DSR scenarios – Final report pack

24. The roll out of smart appliances would also increase consumers' flexibility. A review of previous demand side response trials with a range of different tariffs (e.g. Time of Use, Critical Peak Pricing) found that peak energy demand reductions are 60-200% greater with automation and / or control by other parties (e.g. suppliers, Distribution Network Operators) than without[13].

25. However, a more connected home and a smart, more automated grid would also introduce new risks to our energy system. For example, without appropriate security protections being designed in, more connected homes could be vulnerable to the risk of a coordinated cyber-attack; or the risk that smart appliances destabilise our energy system by turning on at the same time during low price periods. We and others such as the Energy Networks Association are already looking at how to mitigate these risks. Security lies at the heart of the smart metering system, which is backed by regulatory and technical requirements on users, drawing on international standards and common industry good practices, that ensure there are no single points of failure within the system.

Complementary Options

26. In addition to increasing DSR and storage in our system, there are a number of other things that can help us realise some of the same benefits as outlined above (e.g. avoid or defer network reinforcement, optimise balancing of our energy system):

    - A smart network will form the backbone of a smart energy system. It will support the incorporation of more DSR and storage, and sometimes be an alternative solution. Smarter network technologies, such as active network

Customer Load Active Systems Services (CLASS)

Under Ofgem's Low Carbon Network Fund, Electricity North West (ENW) trialled the CLASS project: to adjust voltage, they installed smart voltage control in major substations linked to their control centre, which automatically stabilises the network and keeps voltages at safe levels. This allowed ENW to decrease voltage to manage electricity consumption at peak times. This could allow ENW to offer balancing services (e.g. fast frequency response) to the System Operator. Customers reported no noticeable effects on their supply during these trials.

[13] Frontier Economics & Sustainability First (2012) Demand Side Response in the domestic sector- a literature review of major trials – final report

management, dynamic line rating[14] and automated voltage control through the use of power electronics, can play a key role in increasing flexibility of our existing network infrastructure cost-effectively. In order to make their projects viable, flexibility providers may need to generate revenue by providing services to different users of flexibility (e.g. the System Operator, DNOs, generators, suppliers). There are already examples of DNOs (such as SSE's Constraint Managed Zones) using flexibility providers' ability to generate revenue from multiple sources to make energy storage and demand side response an economic alternative to traditional network reinforcement.

- DECC is working to ensure that there is sufficient generation capacity to maintain very high levels of security of supply and system resilience. This capacity needs to be properly rewarded for its availability, flexibility and the services it provides to the system. The market framework needs to provide these incentives. In this respect, Ofgem has reformed the 'cash out' arrangements in order to better reward flexibility.

- Greater electricity interconnection can support greater flexibility by exporting excess generation to other countries, or importing power to help meet peaks in our demand. The value of this is enhanced with greater variability in generation and demand across the interconnected area. Considerable progress has been made towards greater interconnection, including the introduction of a regulatory regime to bring forward investment in the consumer's interest. There is now a strong pipeline of projects aiming to more than double our 4 GW of interconnection by the early 2020s. This will bring additional security of supply and improve cost effectiveness for British consumers.

- Energy efficiency measures that target energy use at periods of peak demand (e.g. electric heating (including heat pumps) and cooling, pumps and motors, and lighting) could also play an important, though more passive, role.

- DECC's research[15] suggests many people find their heating controls confusing or difficult to use. Energy can be wasted through programming schedules that leave

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[14] The rating of an overhead line is determined by its ability to dissipate heat into the environment. This is dependent on environmental conditions such as ambient temperature, humidity and wind speed. Dynamic Line Rating increases the thermal rating of overhead transmission lines by using sensors to measure ambient conditions and calculating the thermal rating in real time.

[15] See https://www.gov.uk/government/publications/2010-to-2015-government-policy-household-energy/2010-to-2015-government-policy-household-energy#appendix-2-smarter-heating-controls-research-programme

heating on when no-one is home or by heating rooms above temperatures that are needed. Smart heating controls have the potential to overcome many of these problems. A range of products are now available that offer various innovative functions to better align the timing and temperature of heating with when it is needed. In the US, smart heating controls have been taken one step further and are providing consumers with comfortable homes, without any need to change their behaviour, while the system also benefits from automated DSR services.

Barriers

27. We have identified some potential barriers that mean new forms of flexibility such as DSR and storage may not develop in a timely or adequate way. This includes market and regulatory barriers, where we need to take a whole system perspective in some of our policies and regulatory arrangement in the future. Existing business models may also mean incumbents have incentives to stick with the status quo. Cultural inertia and skills gaps within existing energy companies may also be a factor in slowing the uptake of these technologies. The presence of these barriers shows that further action is likely to be needed if we want to realise the full potential of smarter energy system.

28. Table 1 below sets out our initial assessment of the potential market failures preventing new forms of flexibility from reaching their full potential:

Barrier	Relevance to Smart solutions
Policy and Regulation	Historically, energy policy and regulation have been designed around a traditional power generation system, and have not **always provided an appropriate framework for innovative, flexible solutions** (e.g. the licensing and charging framework for storage). A number of important steps have already been taken to address this, in network regulation for instance. Ofgem have implemented their new regulatory arrangements for network operators (i.e. RIIO[16] framework), designed to reward companies that innovate and manage their networks better. **However, more needs to be done to address policy and regulatory barriers that work against the integration of new forms of flexibility.**

[16] "Revenues= incentives innovation and output" or RIIO introduced new incentives on innovation as part of the Ofgem regulated price control of transmission and distribution

Misaligned Incentives	Incentives for market players are not always well aligned to ensure that the most efficient, flexible solution is chosen. For example, incentives for networks are not necessarily aligned with whole system impacts, meaning players may choose a solution in one part of the network over one elsewhere in the system, even where this is sub-optimal from a whole system perspective.
Missing Markets	New forms of flexibility offer benefits to many actors in the energy system, but these benefits are not all monetised. This means **providers of flexibility do not realise their full value, undermining their investment business case**. In addition, there can also be challenges in capturing the value of flexibility in existing markets.
Technology Risk	**New forms of flexibility are sometimes unproven with a lack of common technical standards**. A proportion of the benefits of smart will spill over across the energy sector and not be completely captured by the company that invests in it, and they may not be incentivised to invest in the first place.
Cost Reflectivity	**Consumers / generators are not always exposed to the true whole system costs of energy generation, transport and consumption** which may weaken the case for them adopting more flexible solutions or realising their existing flexibility.
Market Power	Existing energy market players have significant influence through existing policy and regulatory processes which may make **introducing new business models and ways of doing things more challenging.** For example, the CMA's ongoing energy market investigation has published evidence on the difficulty of changing codes, especially where a proposed change has significant and unevenly distributed impacts on market participants[17].
Information Asymmetry	**Flexible solution providers may also face information asymmetry,** where one party has more or better information than another, when considering where to provide their flexibility so that it provides the most value to the system. For example, flexibility providers may be able to help address local network constraints where these are publicised transparently.

Table 1: Market failures to smart solutions

[17] https://assets.digital.cabinet-office.gov.uk/media/559fb725e5274a155c000054/Appendix_11.2_Codes_and_regulatory_governance.pdf

29. In recognition of these barriers, the Government and others are already taking action to support flexible solutions such as DSR and storage, for example, through the new regulatory arrangements for network operators (i.e. RIIO framework), and through targeted innovation funding for demonstration projects. The Smart Grid Forum has also been important in supporting greater collaboration and knowledge sharing, as well as making recommendations for further action in this area.

Next Steps

30. As set out above, smart energy solutions could offer significant potential to keep bills as low as possible for families and businesses, power the economy by ensuring security of supply, and decarbonise in the most cost-effective, affordable way. Delaying action means it is more likely we will get locked into a more expensive, less resilient energy system. There are also significant risks that smart happens in an uncoordinated and fragmented way, and does not deliver the same level of system benefits.

31. There also appears to be some material barriers to their deployment, and Ofgem and Smart Grid Forum have both identified specific areas for further work. As a result over the coming year, we will work closely with Ofgem on how to manage the transition to a smarter energy system in Great Britain.

32. Our work will focus in particular on the following areas:

Testing and developing shorter term policy options

- Removing regulatory barriers to smart solutions. For example, we will look in detail with Ofgem at policy and regulatory barriers to storage and what we can do to address these (e.g. the licensing and charging framework for storage). Ofgem will also look at aggregators[18], in particular their role in the market and relationship with other industry participants.
- Delivering clearer price signals to allow more flexibility from consumers. For example, we will look at ways in which we can allow consumers to offer their flexibility, such as through half hourly settlement for domestic and smaller non-

[18] An aggregator is a company that brings together (aggregates) smaller and often disparate electricity users (companies and/or domestic consumers) that are able to provide demand response. These companies aggregate this demand response potential into a larger product which it can then sell into the wider market, typically to National Grid as a balancing service

domestic customers: in the short term we will work with Ofgem and Elexon to identify and remove barriers under the current system so that suppliers can take steps to enable half hourly settlement; in the medium term we will work alongside Ofgem to consider when and how to move to mandatory half hourly settlement. We will also consider how EU standards for smart appliances can help increase consumer flexibility. This work will consider the potential distributional impacts of cost reflective pricing on consumers, and how to mitigate negative impacts.

- Catalysing further innovation, so that new solutions can emerge and compete in the market. For example, we will ensure that DECC innovation funding supports those areas critical to the development of a smarter energy system. We will also look at how innovation in this area can be supported best by the public sector more broadly.

Assessing the case for more fundamental changes

- Examining the need for more fundamental changes, including considering what system functions may be required in a future smart energy system to maximise benefits while managing the risks; and how roles and responsibilities may need to change in light of these. This will draw on the work of the Energy Systems Catapult on future system functions[19], and the wider work we are taking forward with Ofgem on system governance and the role of the system operator.

Understanding the costs and benefits better

- Developing a better understanding of the potential costs and benefits associated with a smart energy system, including considering how much flexibility might be beneficial and identifying evidence gaps more broadly in this new and evolving area. There is a large range of uncertainty in the costs and benefits of different pathways of deployment of flexible technologies and to strengthen our understanding we are commissioning new analysis to look at the full range of cost and benefits in a range of flexible deployment scenarios. This will provide us with a robust evidence base for identifying and recommending any new policy options.

[19] This follows proposals by the Institution of Engineering and Technology (IET), who are leading the Energy System Catapult work, on electricity system architecture. See the IET paper *Britain's power system (the case for a system architect)* at http://www.theiet.org/factfiles/energy/brit-power-page.cfm

Milestones

33. The areas set out above will be the basis for taking this work forward over the next year. We will do this together with Ofgem, and by engaging a broad range of stakeholders. Our work will also inform discussions at a European level around the EU's Market Design initiative, and the broader EU Energy Union agenda.

34. In the spring next year, we will be consulting stakeholders to build the evidence base and test options for moving to a smarter energy system. This consultation will be followed by a Government response in autumn 2016, which will outline the future direction of the work.

35. If you have any comments in reference to the above please direct them to our mailbox: smartenergy@decc.gsi.gov.uk.

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