

# Smart Systems and Flexibility Plan 2021

A joint BEIS and Ofgem publication

# Energy Digitalisation Strategy

A joint BEIS, Ofgem and InnovateUK publication

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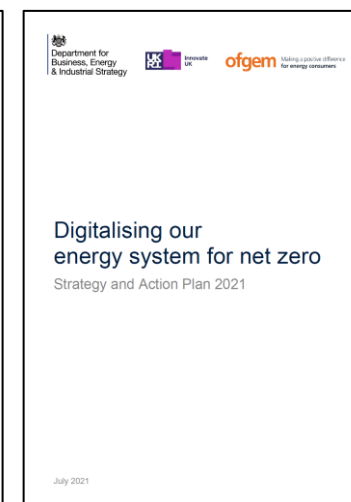
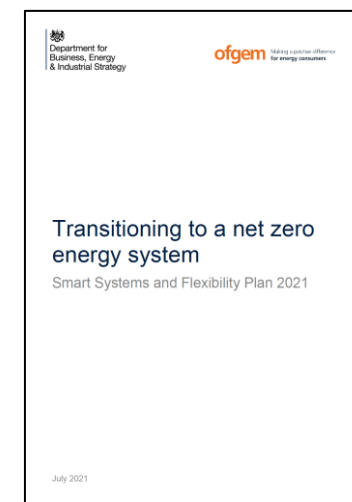
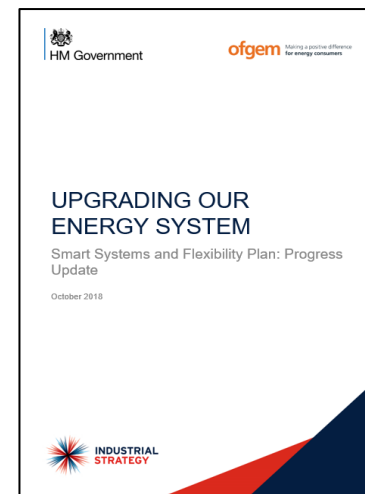
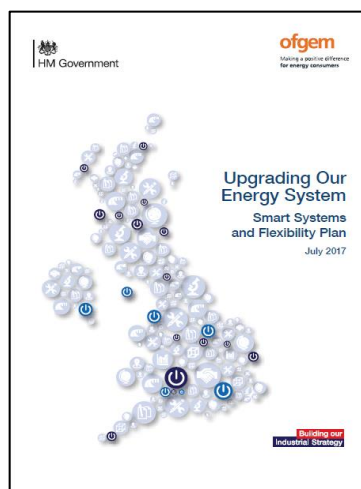
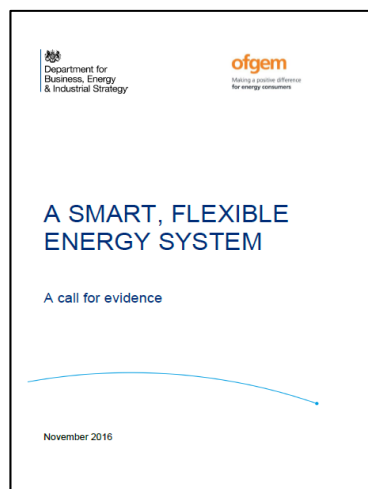
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Making a positive difference  
for energy consumers



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# The transition to a smarter more flexible system...



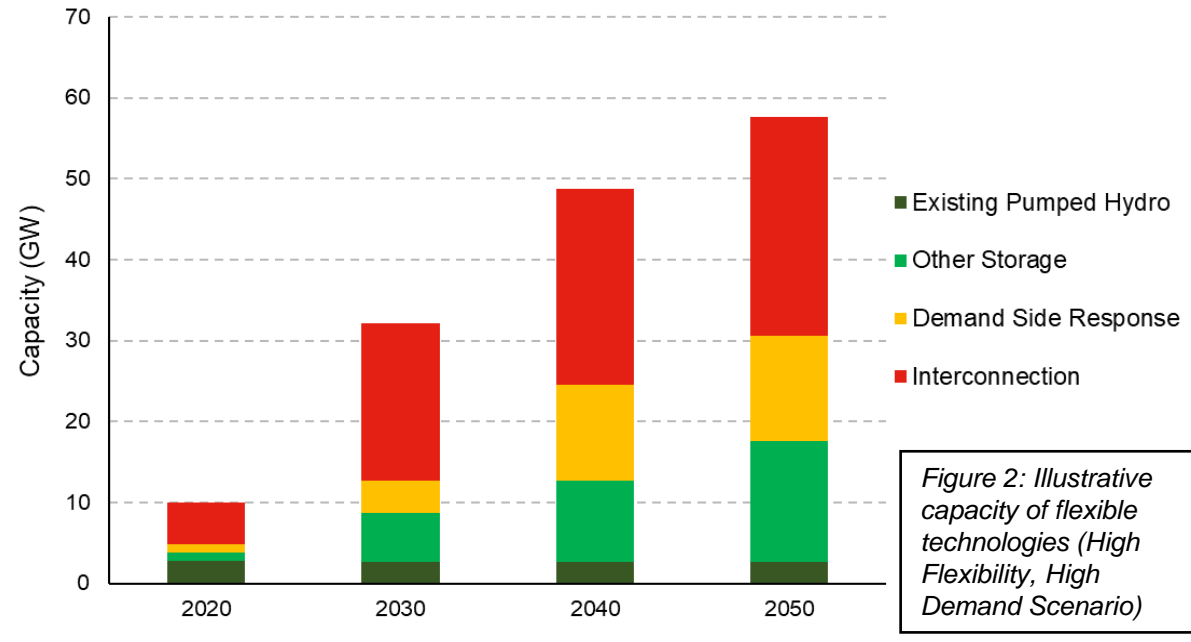
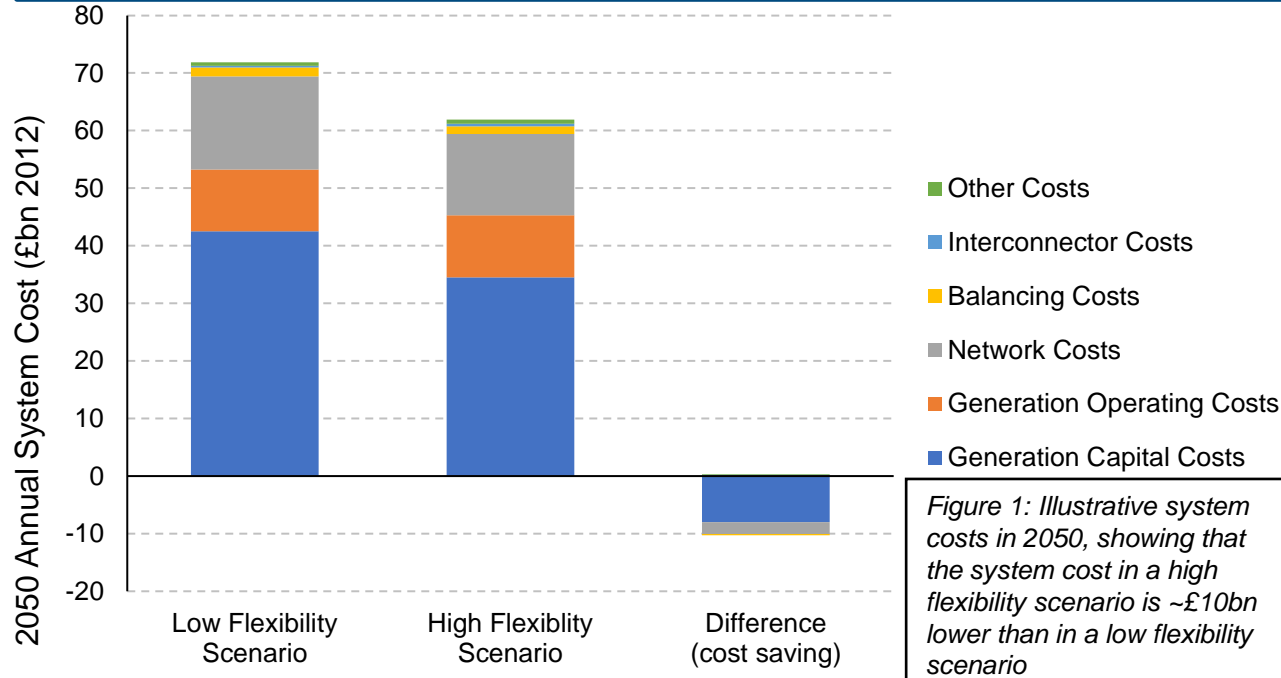
# Analysis: Low carbon flexibility is essential to meet net zero

We estimate that we will need around **30GW** of low carbon flexible assets by 2030, which represents a three-fold increase on today's levels.

By 2050, in our modelled scenarios, around **30GW** of combined short-term storage and flexible demand (DSR), and **27GW** of interconnection could:

- save up to **£10 billion per year by 2050** at 5g/kWh (high demand, no hydrogen scenario) by reducing the amount of generation and network needed to decarbonise
- reduce system costs between **£30-70bn from 2020 to 2050**
- create up to **24,000 jobs**.

We assume around 15GW of storage (60GWh of storage capacity) and 15GW of DSR (but these are largely substitutable). We have **not explicitly modelled longer-duration storage**, or the role that flexibility could play in managing local network constraints. If these aspects were considered, it is likely that **additional flexibility** could lead to lower system costs.



# Our plan focusses on five key areas to support the uptake of flexibility:

## Facilitating flexibility from consumers

Framework for driving participation and protecting consumers, through perspective of domestic, fuel poor, SME, I&C, local and public consumers. Support the deployment and uptake of smart, digital technologies. Regulatory approach to ensure cyber security and interoperability for smart appliances and flexibility providers. Includes enabling smart buildings and smart electric vehicles.

## Removing barriers to flexibility on the grid

Identification and removal of specific regulatory barriers to smart technologies, including large-scale long-duration storage, domestic and small-scale storage. Includes interconnection policy to increase interconnector capacity, to enhance the role of interconnection as a flexibility asset internationally, and to ensure a consistent and scalable approach to interconnector operability.

## Reforming markets to reward flexibility

Improving market design and coordination so that flexibility providers can secure revenues across multiple markets. Ensure flexibility is fairly rewarded, improve co-ordination and address carbon intensity of flexibility markets.

## Digitalising the system

Set out joint strategic approach to digitalisation and opening up data across energy sector, to provide leadership and coordination, incentivise change, and develop innovative system-wide digital solutions and architecture.

## Innovation, skills and monitoring

Set out how we will monitor how much flexibility is coming forward, assess whether this is in line with estimated system needs, and propose the indicators we'll use to know whether/how to adapt our approach.

Set out approach to innovation for both technologies and business models across each of the above smart systems themes

# Annex

# Removing barriers to flexibility on the grid- storage and interconnectors: Actions

## National and local flex markets

- We need to reform markets so that flexibility is rewarded for the value it provides to the system. Actions on ESO and DNOs to make markets work for flexibility and improve coordination.

## Governance

- The government and Ofgem will ensure that institutional arrangements governing the energy system are fit for purpose for the long term to deliver coordinated and effective flexibility markets.

## CFD and capacity market

- The government is building on the call for evidence on the future of renewable support schemes and gathering views on the longer-term future of the CM in the context of net-zero.

## Carbon

- Initial steps to address the carbon intensity of flexibility markets including the development of a carbon monitoring framework

## Price signals

- Looking at how policy and network costs are recovered which influences the signals that consumers and other users of the electricity system receive to behave flexibly