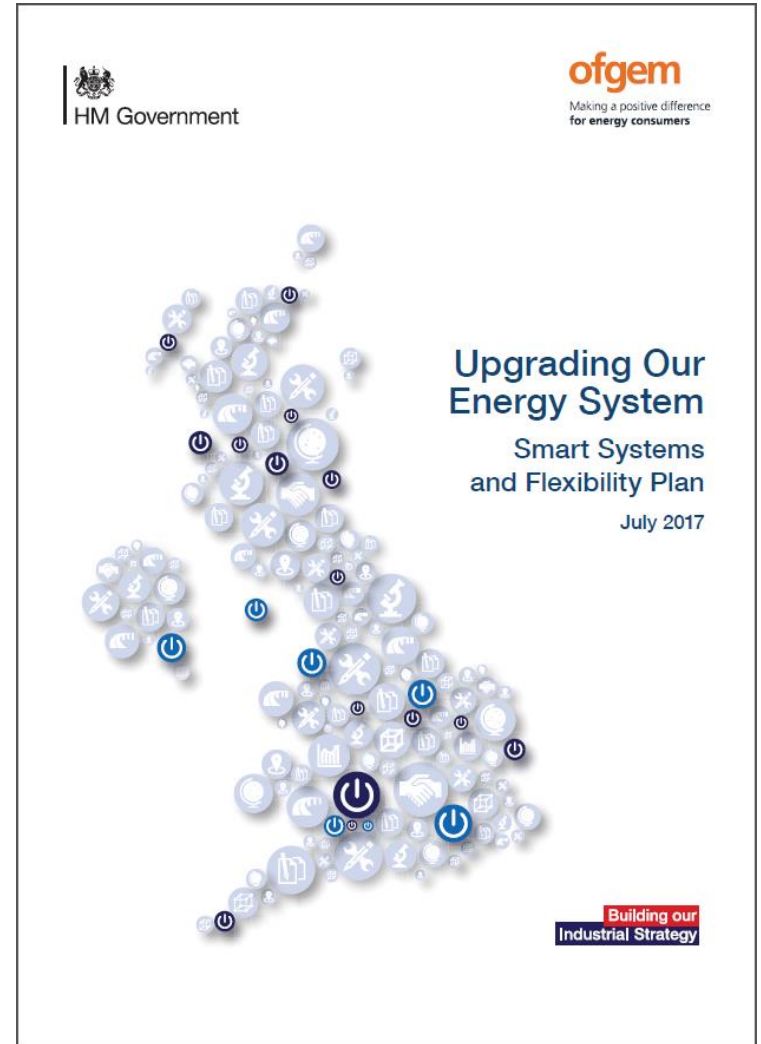


Smart Grids – Policy landscape

Alice Fourrier
Head of Data
Smart Energy team, BEIS

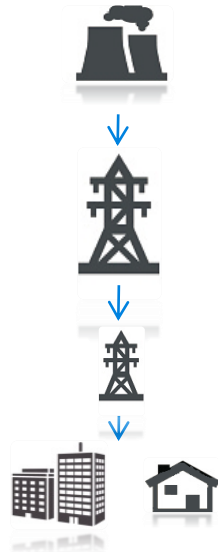


HM Government



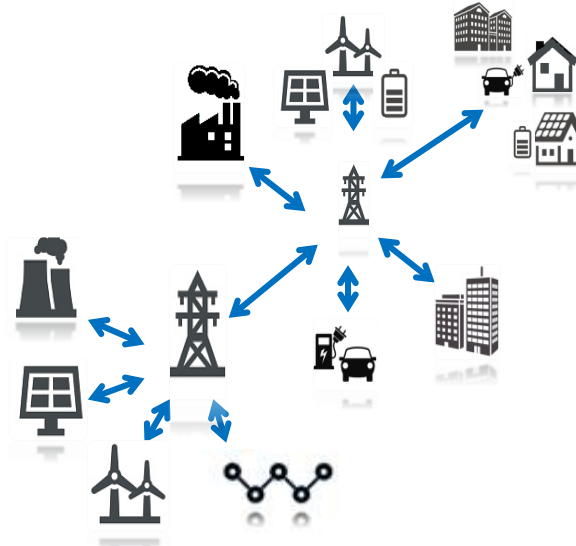
Our electricity system is undergoing fundamental change

Yesterday



- Carbon intensive
- Centralised generation
- Predictable supply to consumers

Emerging System – increased dynamism



- Distributed
- Low carbon
- Interconnectors
- Storage & DSR
- Electric vehicles/heat
- Smart grids, IoT

Research by the Carbon Trust & Imperial College estimates the benefits of a smart, flexible energy system at **£17-40bn** to 2050.

Our vision

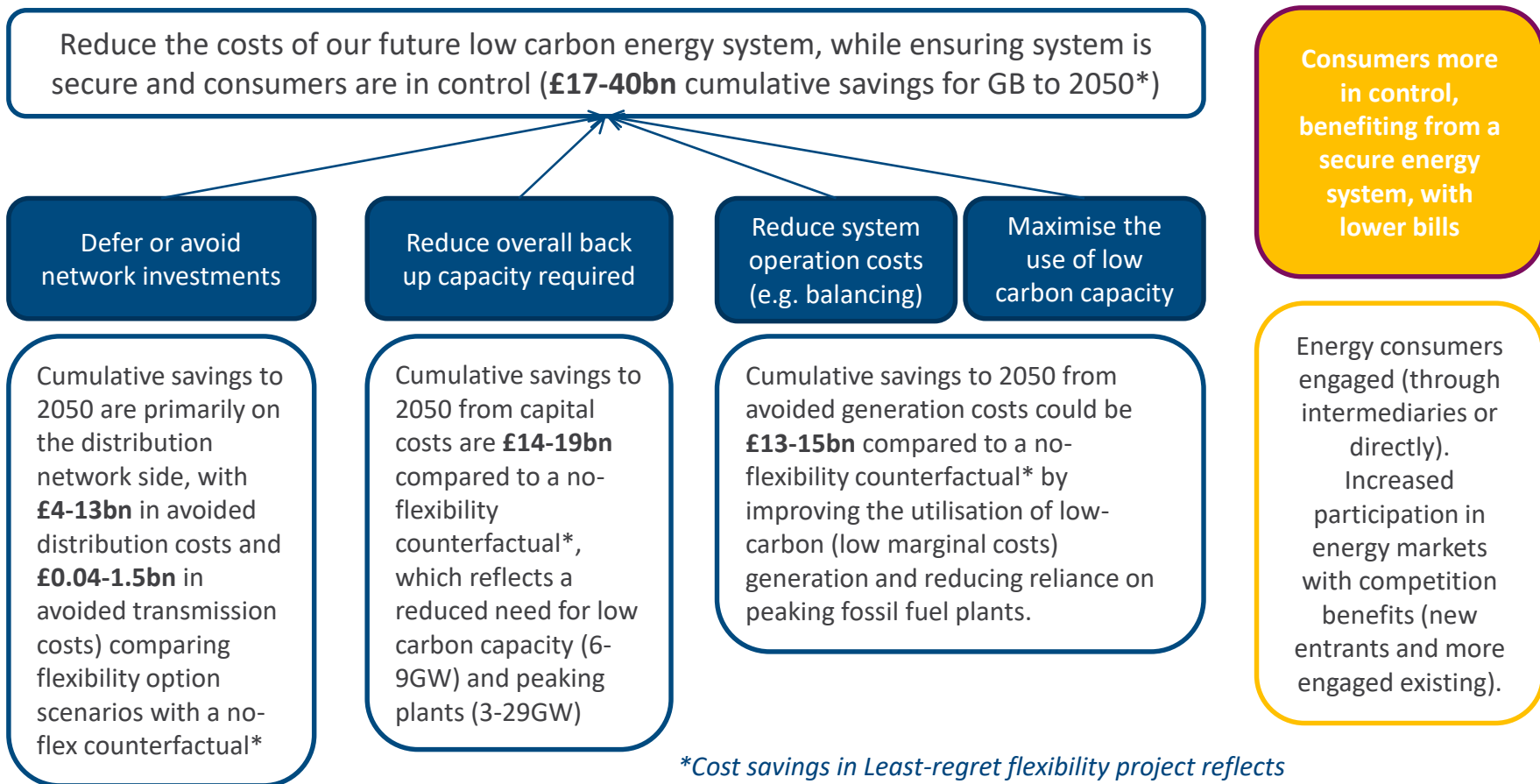
What is a smart, flexible energy system?

A smart energy system uses information technology to manage generation, storage and demand in a flexible, safe and coordinated way; making the system more secure, affordable and clean for consumers.

Our vision is that by 2025...

- All consumers benefit from participating in a smart energy system
- The value of flexibility is reflected within prices, markets and contracts
- New entrants, innovative technologies and disruptive business models can compete on a level playing field with incumbents
- Institutional and market frameworks deliver whole system benefits

Why is it of value to the GB energy system?



Source: Least regret flexibility project (2016)

**Cost savings in Least-regret flexibility project reflects the benefits of all flexibility options, i.e. not just storage and DSR but also interconnection and flexible CCGTs*

Rapid technology change, new business & consumer opportunities

Lithium-ion battery costs have fallen by more than 50% since 2012.



EV sector growing; charging hardware deploying, and can help manage grid demands with V2G

Smart meter roll out underway – more choice and control in the home



Aggregators working with market leaders to deliver / monetise demand response



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ofgem

Making a positive difference
for energy consumers



Upgrading Our Energy System

Smart Systems
and Flexibility Plan

July 2017

Building our
Industrial Strategy

Approach:

- Remove barriers and create a level playing field
- Ensure markets work for flexibility
- Support innovation

However:

- Cyber-security
- Consumer engagement and protection
- Changing relationship with technology



Removing
barriers to
smart
technologies



Smart
homes and
businesses



Markets that
work for
flexibility



*Deliver regulatory clarity
and ensure fair charges
to create a level playing
field*

- Define storage and ownership rules
- Deliver a storage licence
- Planning reform
- Recalibrate policy/network charges
- Enable co-location with renewables

*Enable greater demand
response participation
among domestic and non-
domestic consumers*

- Deliver smart meters
- Enable time of use pricing
- Appliance standards to enable automation & ensure cyber security

*Ensure markets allow the
best flexible solutions to
emerge and compete
fairly*

- Improve access to markets (e.g. Balancing Mechanism & Ancillary Services)
- Enable value stacking from different markets
- Create new local markets for flexibility

Funding Innovation

The Smart System and Flexibility Plan announced **up to £70 million of funding to support innovation** in smart technologies, up to 2021.

Since January 2017, we've launched several innovation competitions, including up to:

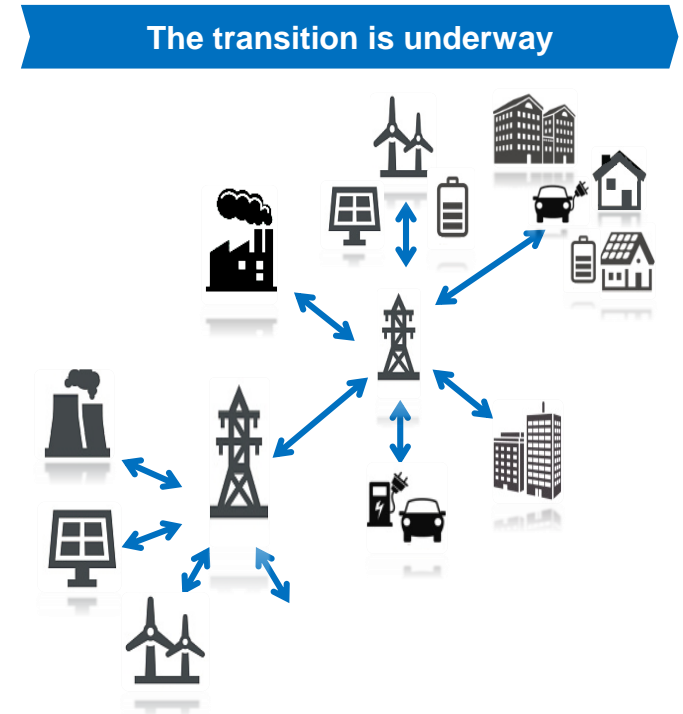
- £9m available for **cost reduction** of energy storage technologies;
- £600k for feasibility studies for a novel, **large scale storage demonstrator**;
- £7.6m for non-domestic demand side response;
- £7.75m for domestic demand side response

The Industrial Strategy Challenge Fund includes the new '**Faraday Challenge**' – an investment of £246m to ensure the UK becomes a world-leader in the development and manufacture of batteries for the electrification of vehicles.



Final remarks

- The plan is an important first step, and we know there will be more to be done. Technology and commercial models continue to evolve.
- We will implement the plan and continue our close engagement with industry to understand what more is needed.
- Let's now hear from some smart developers and innovators!



Questions and answers session

Upgrading our Energy System:
Smart Systems and Flexibility Plan



Department for
Business, Energy
& Industrial Strategy

Building our
Industrial Strategy