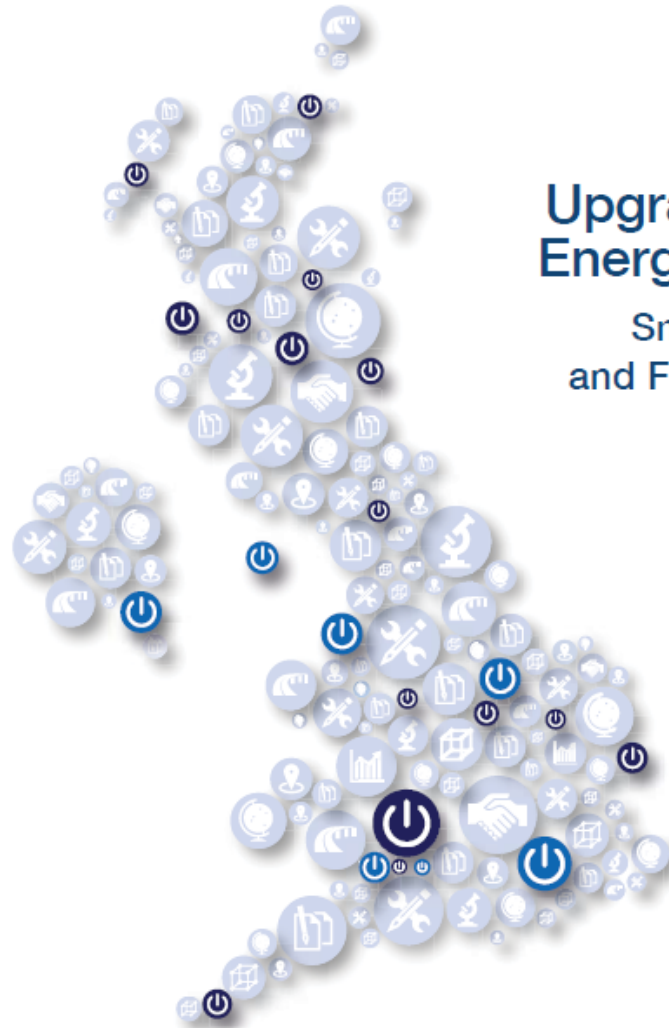




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Upgrading Our Energy System

Smart Systems
and Flexibility Plan

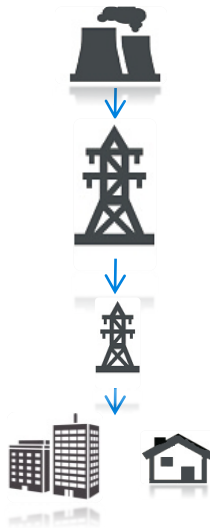
Edward Nelson
Senior Policy Advisor, Smart Energy Team
September 2017

Building our
Industrial Strategy



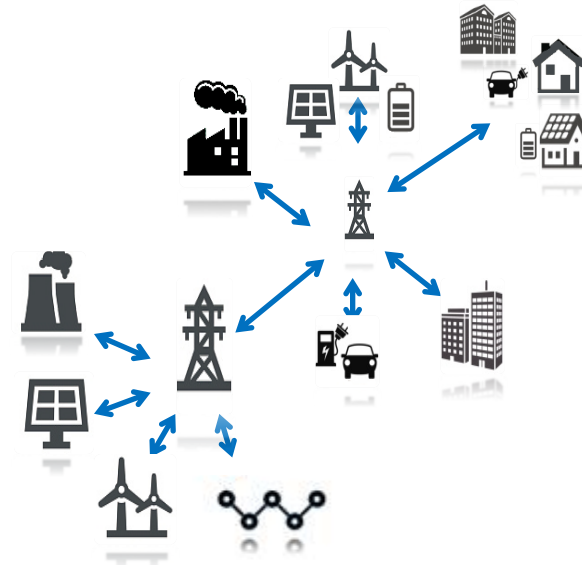
Our electricity system is undergoing fundamental change

Yesterday



- Carbon intensive
- Centralised generation
- Predictable supplies

Emerging System – increased interactions



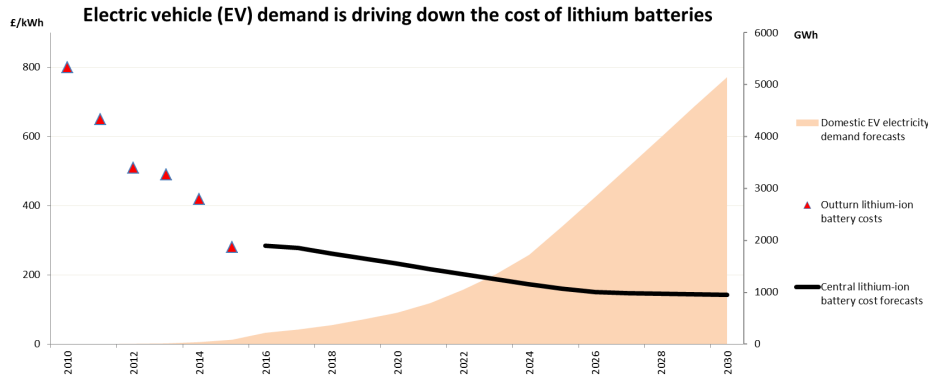
- Low carbon
- Interconnectors
- More distributed
- Storage
- Demand-side response
- Electric vehicles/heat
- Smart grids
- A smart system



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New exciting business opportunities, underpinned by rapid technology change



Battery cost data sourced from Aurora (unpublished), includes observed outturn BNEF (unpublished) data
Domestic EV electricity demand based on 2016 EEP returns
It should be noted both battery cost and EV electricity demand forecasts are uncertain

Lithium-ion battery costs plummeting – costs have fallen by more than 50% since 2010. We're driving further improvements with the £246m Faraday challenge



EVs have strong brand recognition; large-scale rollout & charging infrastructure are under development, and can help manage increased demands on the grid



Smart meter roll out is underway – leading to more consumer choice and control about energy in the home

open energi
Sainsbury's

Aggregators are working with market leaders to deliver and monetise demand side response, helping businesses to reduce their energy bills

The Smart Systems and Flexibility Plan sets out a comprehensive set of actions to support smart energy

- Call for Evidence on smart energy was launched by SoS in Nov 2016.
- Following close collaboration with industry, the Plan is a joint project with Ofgem, published on 24 July and widely welcomed by stakeholders.
- 29 actions for Government, Ofgem and industry to deliver in three key areas, aligned with Industrial Strategy.

Removing barriers to smart technologies



Smart homes and businesses



Markets that work for flexibility



Demand side response (DSR)

- DSR from I&C occurs at scale
 - Increase participation
 - How flexibility can be more effectively provided into markets
 - Monitor consumer protection
 - Support related policy areas
- Low amounts of DSR from SME or domestic
 - Uncertainty regarding future role
 - But challenge of evening demand peak is clear
 - Enabling and unlocking
 - Smart meters
 - HHS and ToU pricing
 - Smart appliances and EV



Innovation funding

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

In January 2017, we launched two energy storage competitions:

- up to £9m available to **cost reduction** of energy storage technologies; and
- a further £600k for feasibility studies for a first-of-a-kind, **large scale future storage demonstrator**.

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.

BEIS has also launched a **non-domestic DSR competition** in early 2017 with a budget of £7.6m: the competition closed on 30 May. A **domestic DSR competition is planned** for launch in Autumn 2017.



Next Steps

- We think this is an important first step. We know there's more to be done
- Plus, technology and commercial models will continue to evolve
- Therefore, we will
 - Implement the plan
 - Meanwhile, continue extensive engagement with industry to understand what more is needed

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