# Key Message 2
# Consumer and Digitalisation
# 13:30 20/07/22

July 2022

# Future Energy Scenarios

nationalgridESO

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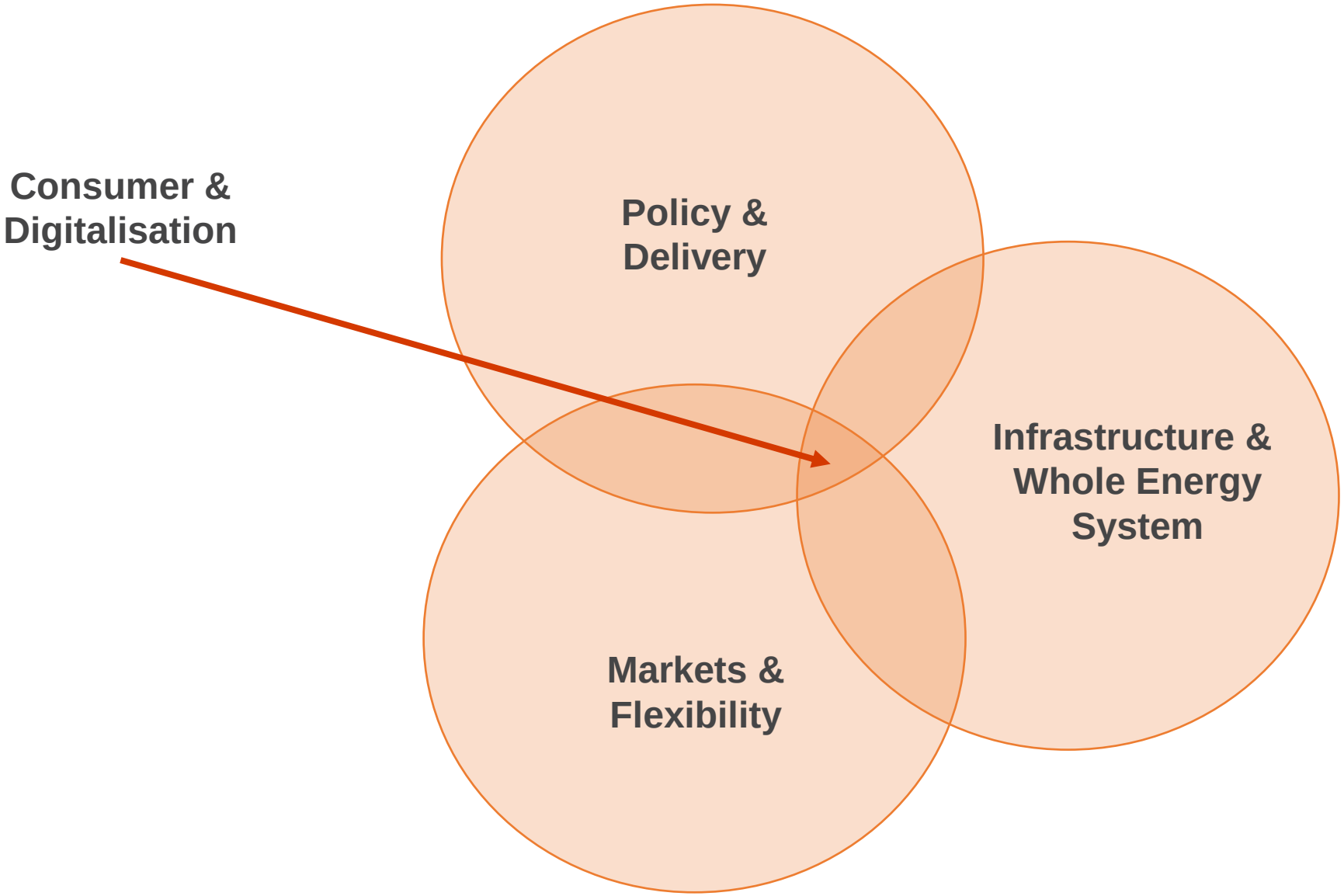
# The FES 2022 key messages are all connected



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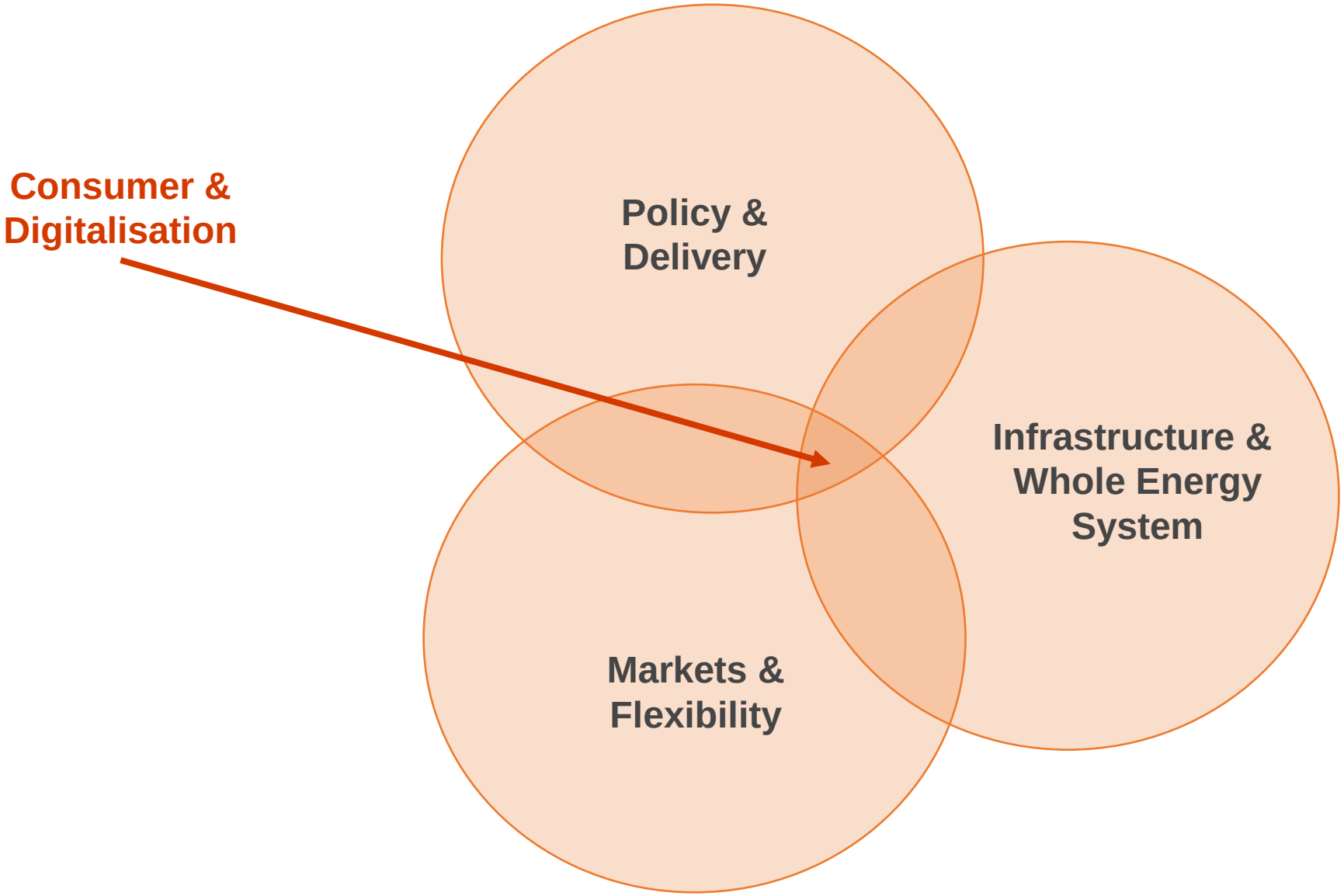

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## 2 Key Message
# Consumer and digitalisation

**Consumer behaviour is pivotal to decarbonisation – how we all react to market and policy changes, and embrace smart technology, will be vital to meeting Net Zero.**

BEIS Public Attitudes Tracker, Spring 2022, UK

84% of people said that they were concerned about climate change, with 41% saying they were "very concerned"

82% of people said they had given either a lot, or a fair amount, of thought to saving energy in the home

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As at the end of March 2022, only 45% of installed energy meters were smart and operating in smart mode

## Key recommendations

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### Digitalisation and innovation

Even the most engaged consumers won't manually adjust their demand in line with prices and so smart digital solutions will be required to do this for them automatically and seamlessly.

To facilitate developments in smart technology and better understanding of regional trends, data must be made available to innovators while ensuring that appropriate consumer protection is maintained.

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Consumers are willing to make changes to meet Net Zero but need to be reliably informed about both how they can help as well as the affordability benefits of low carbon solutions.

Targeted campaigns, led by trusted bodies, are required to provide consumers with the information they need to decarbonise and embrace new technology.

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Call to action

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# Introduction

**Consumer behaviour is pivotal to decarbonisation – how we all react to market and policy changes, and embrace smart technology, will be vital to meeting Net Zero**

This is not as simple as whether we meet Net Zero or not …
… it's more about optimising the **'trilemma'** of energy security, cost and decarbonisation.

It is essential that the energy transition is delivered in a way that puts consumers at its heart.

**Consumer Information**
and
**Digitalisation & Innovation**
… are required to **Drive Change**

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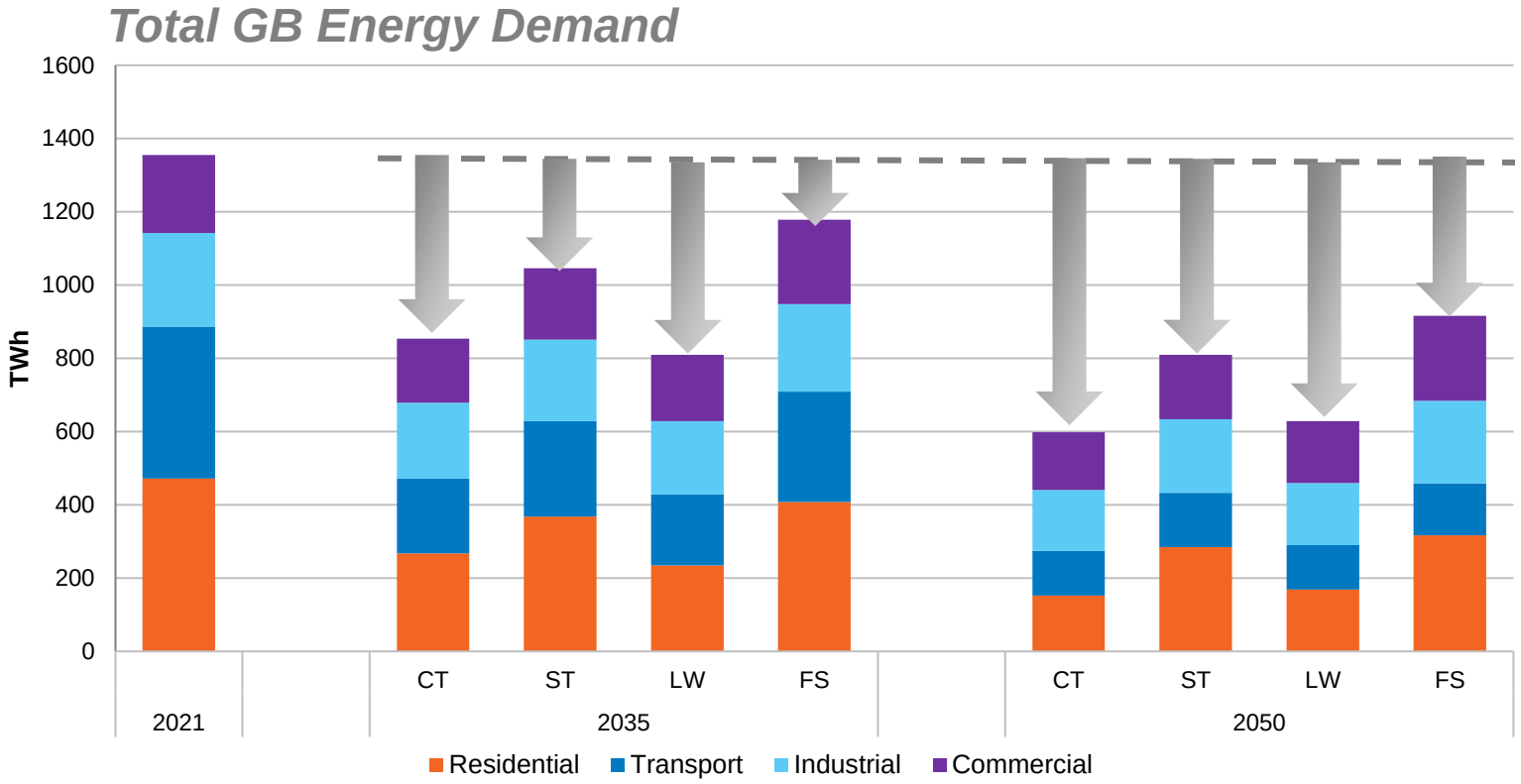
# In all scenarios total end consumer energy use reduces significantly as we decarbonise between today and 2050




**Demand reductions are driven by:**

- Energy efficiency improvements
- Electrification of heat
- Electrification of transport
- Process efficiency improvements

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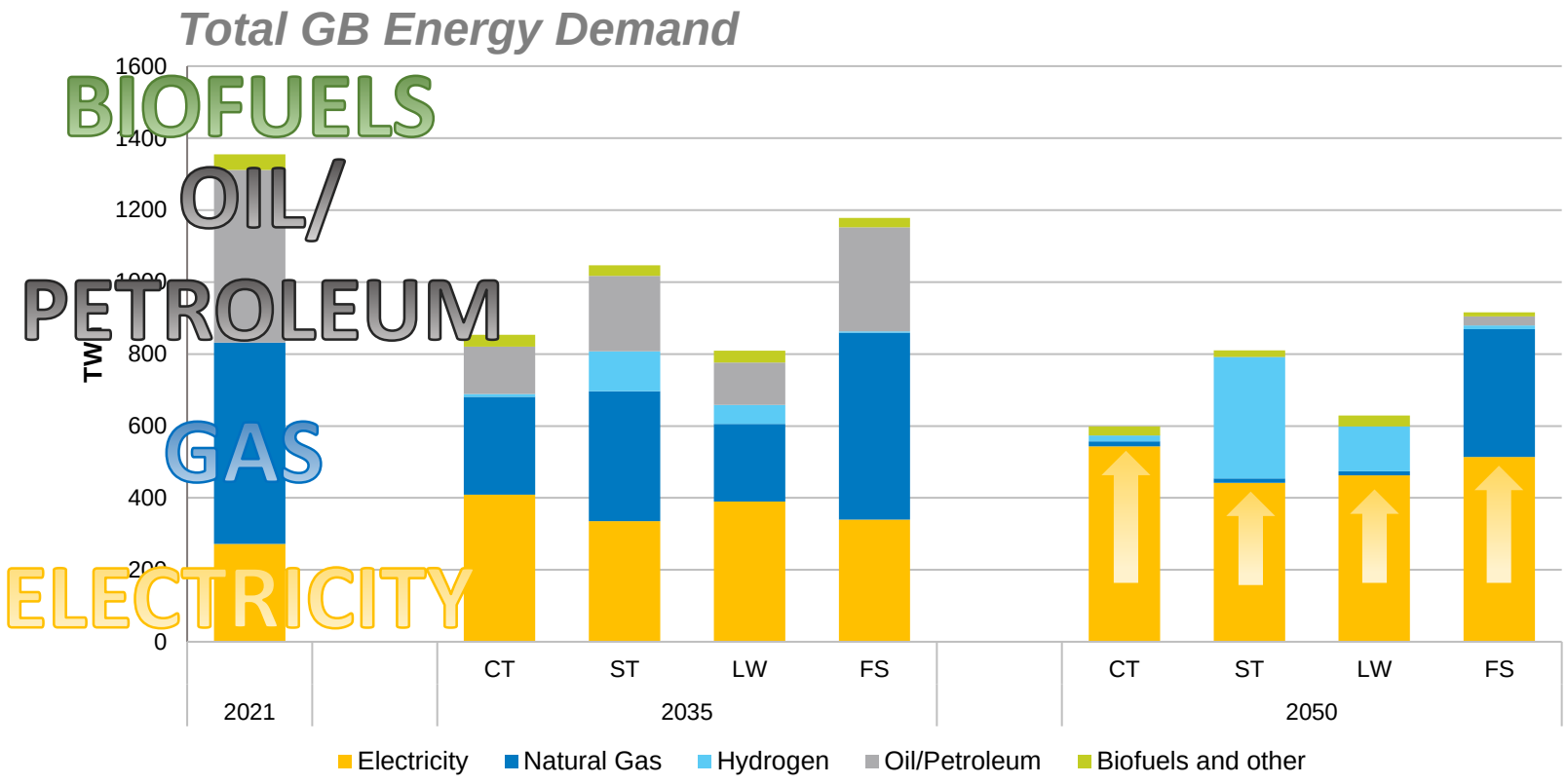
# The fuels used by consumers will change significantly – *electrification improves efficiency*




**Total demand falls:**

- End consumer fossil fuel use almost eliminated in the net zero scenarios
- But, electricity demand increases in all scenarios
- And hydrogen demand grows

The shift to net zero is driven by both **policy** choices and **consumer** choices

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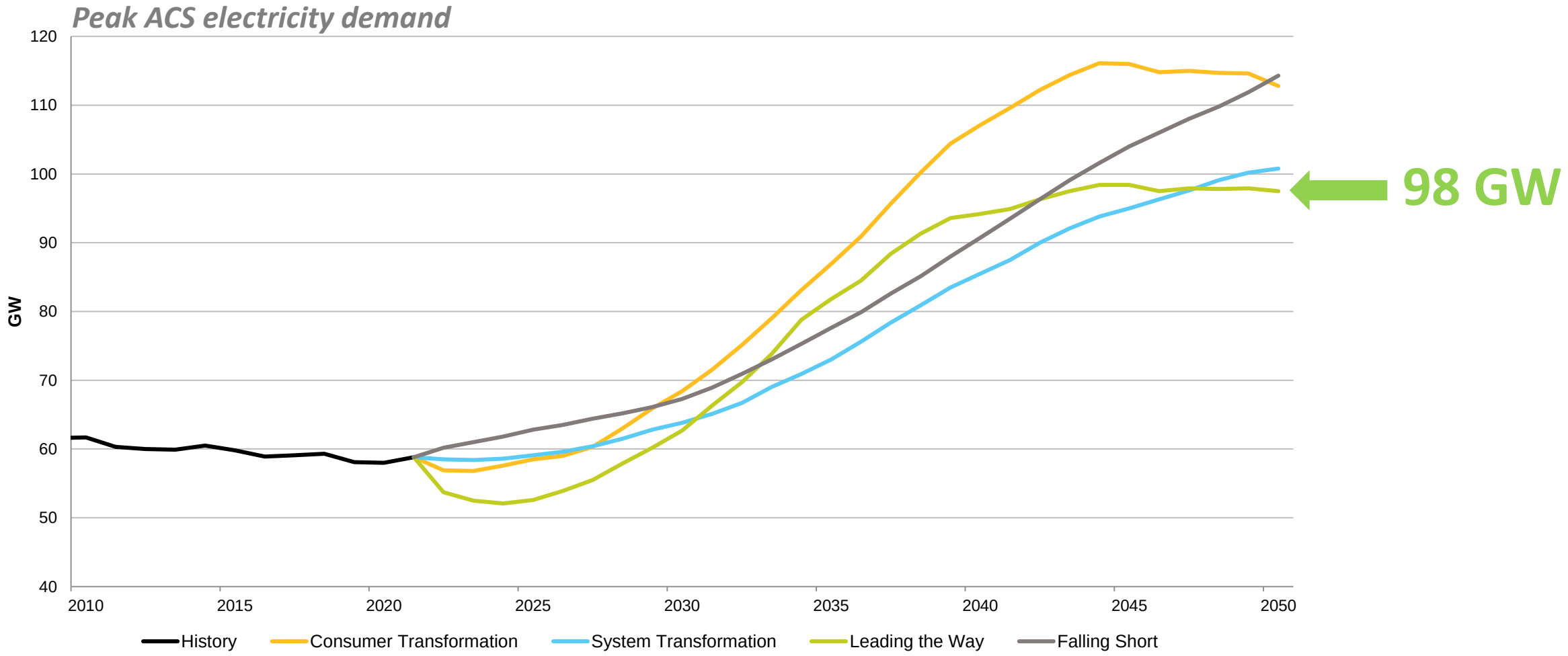
# As more of the economy is electrified, peak demands climb steeply, posing opportunities and challenges



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# Flexible peak electricity demands bring opportunities

## Shift demand to times of high renewable output

Reduce demands at traditional peak

Reduce constraint costs

Maximise use of renewable generation

## Reduce need for network reinforcement and new generation build

Higher peak demands need increased network asset build and generation capacity

Increased flexibility maximises the use of existing assets

## Improve system resilience

Help ensure security of supply can be met at least cost

Reward consumers for participating in the energy system

Active consumer flexibility complements high electricity demands

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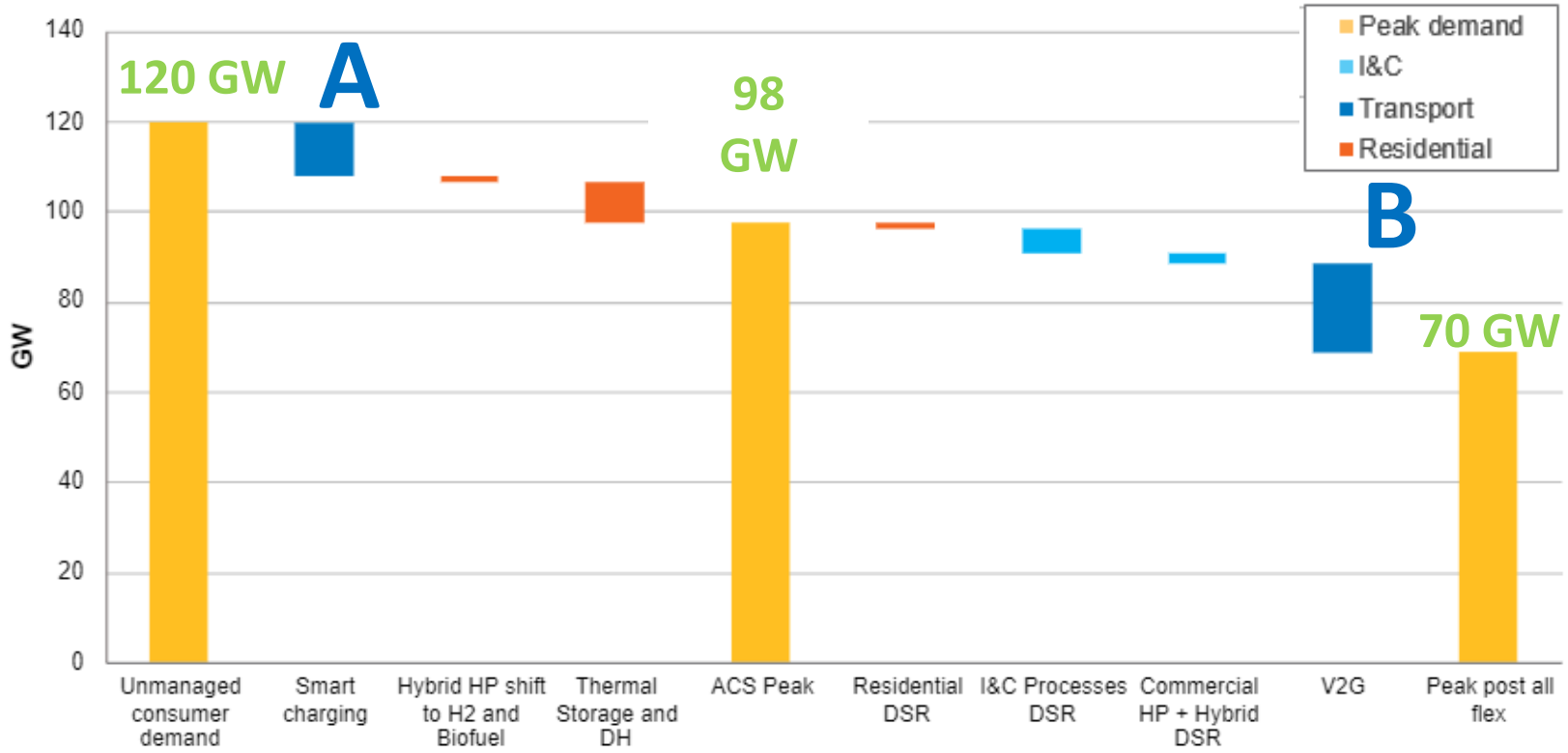
# Enabling consumer flexibility will be essential to managing peak demands on the electricity system

*Peak ACS electricity demand in 2050 – Leading the Way*




- Electrification leads to peak demands growing sharply
- LW has highly engaged consumers who engage with flexibility
- Peak demands managed with demand side flexibility could be kept at similar levels to today

A cost effective Net Zero energy system depends on enabling consumer engagement

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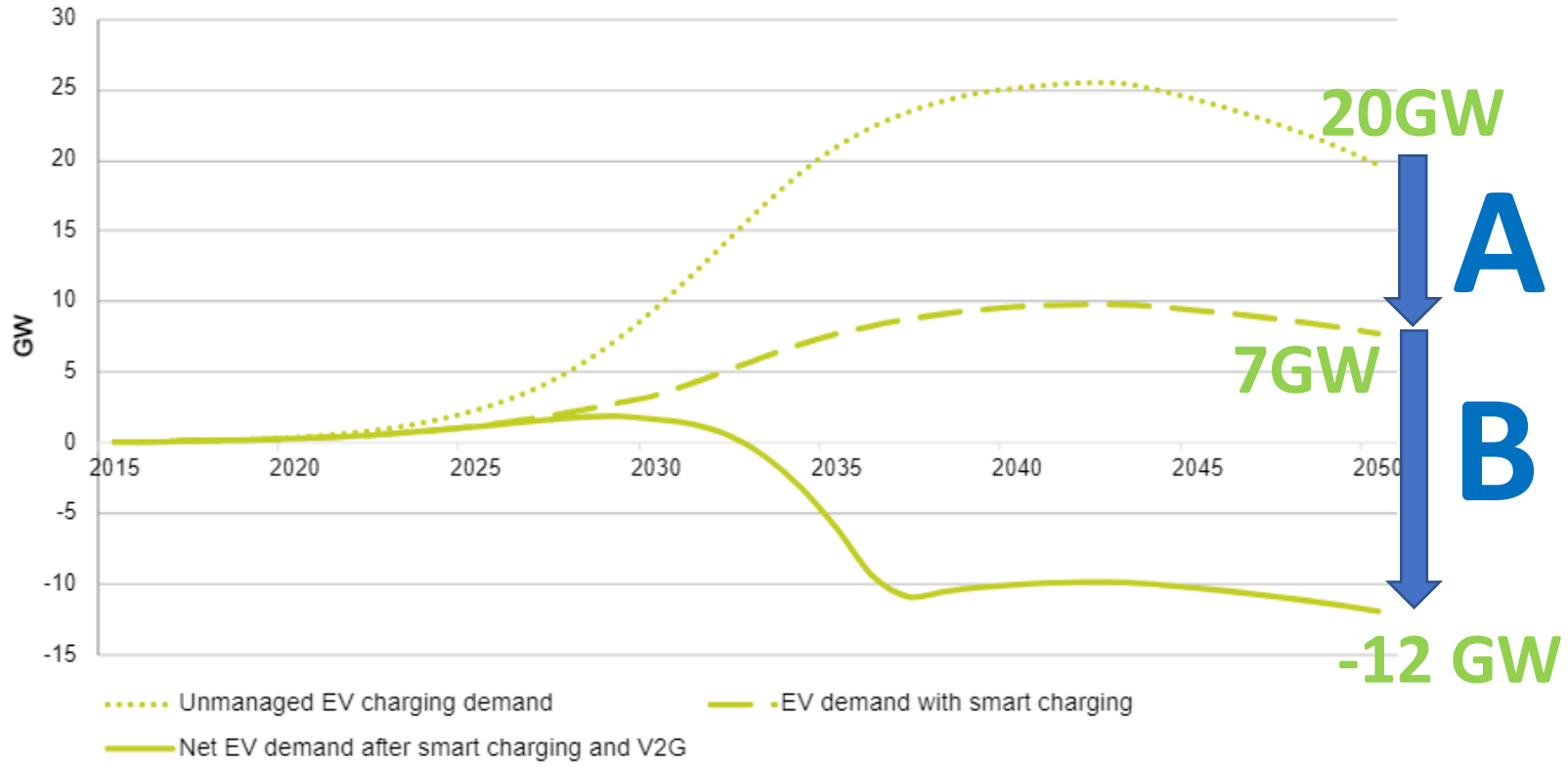
# One of the biggest opportunities for consumer flexibility is from Electric Vehicles

*Peak EV charging demand – Leading the Way*




- Electric vehicle charging could add significantly to peak demand if unmanaged
- Smart charging and vehicle to grid can change the profile of EV demand significantly
- This principle also applies to other sectors such as heat

Consumer engagement - turning a challenge into an opportunity

# We cannot deliver all the benefits of consumer flexibility without world-class digitalisation and innovation

Create choice and enable consumers to automatically schedule consumer appliances, heating and EV charging

Industrial and commercial consumers rewarded for ancillary services

Hybrid heat pumps switch fuels for lowest cost

Consumers need to be enabled to engage in the energy system by **digitalisation** and **innovation**

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# To unlock this flexibility, consumers need to be given the right tools in a digitalised system

## Smart Meters

Half hourly metering and settlement

More granular demand data

45%

## Time of Use Tariffs

Consumers rewarded for shifting demand

Allowing consumer choices to use clean power

## Smart Energy Demand Automation

Enable consumers to automate appliances, heating and EV charging

I&C consumers rewarded for ancillary services

Hybrid heat pumps switch fuels for lowest cost

Consumers need to be offered the right value proposition and the technology to take advantage of it

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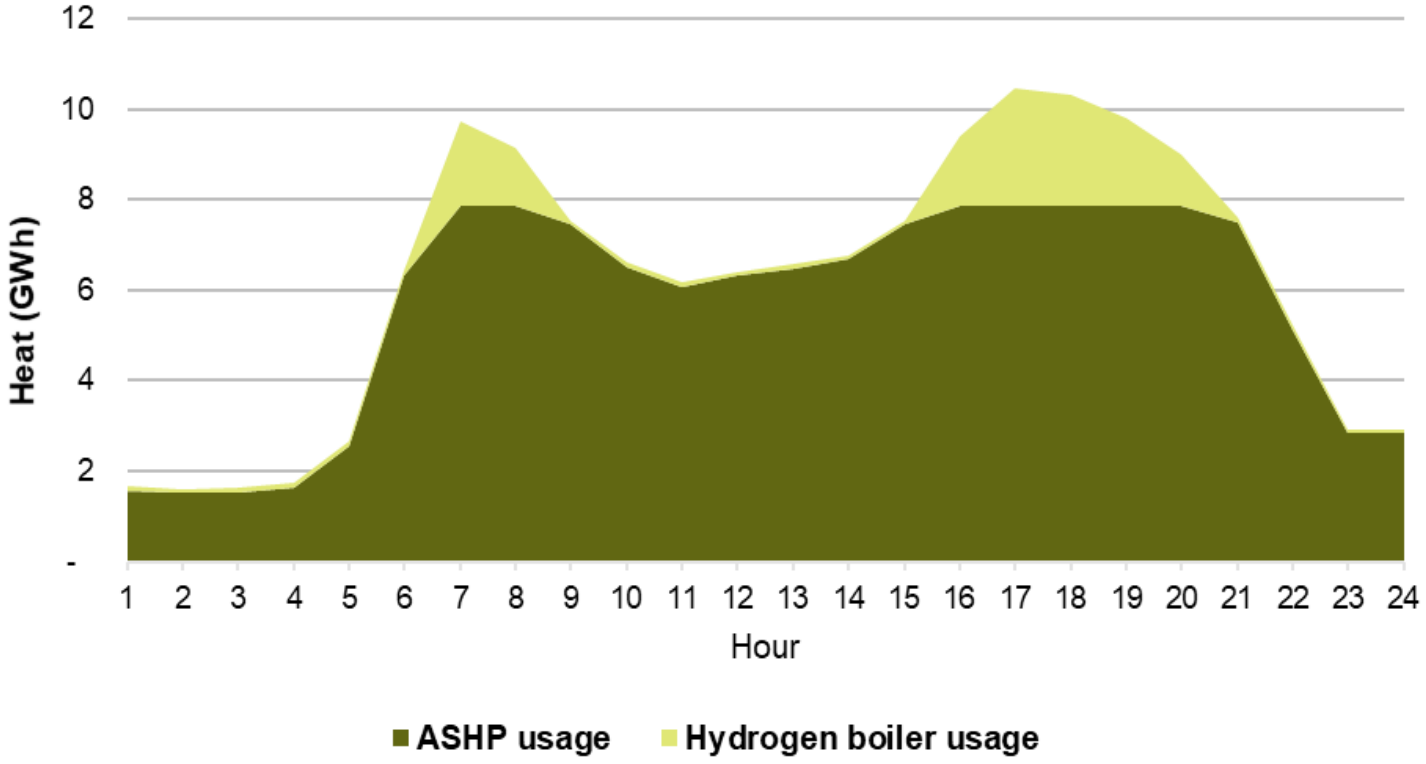
# How could flexibility from consumers enabled by digitalisation affect the whole energy system?

***Hourly dispatch profile for hybrid ASHP and hydrogen boiler - Leading the Way 2050***




- Demand can be moved between the electricity and hydrogen systems
- Optimising this shift for the system and consumers requires innovative approaches and sophisticated use of data while protecting privacy

We've seen the impact consumers can make – how can they be supported and enabled?

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# Consumers are concerned about climate change and want to take action

**84% of people said that they were concerned about climate change, with 41% saying they were "very concerned"**

*BEIS Public attitudes tracker Spring 2022*

**82% of people said they had given either a lot, or a fair amount, of thought to saving energy in the home**

*BEIS Public attitudes tracker Spring 2022*

**74% of people agreed that they would make more environmentally friendly changes if they were cheaper.**
**47% said they would ff less disruptive.**

*Empowering Climate Action research conducted by National Grid ESO with Public First (2021)*

Consumers need to be supported to take the actions that enable the transition to Net Zero

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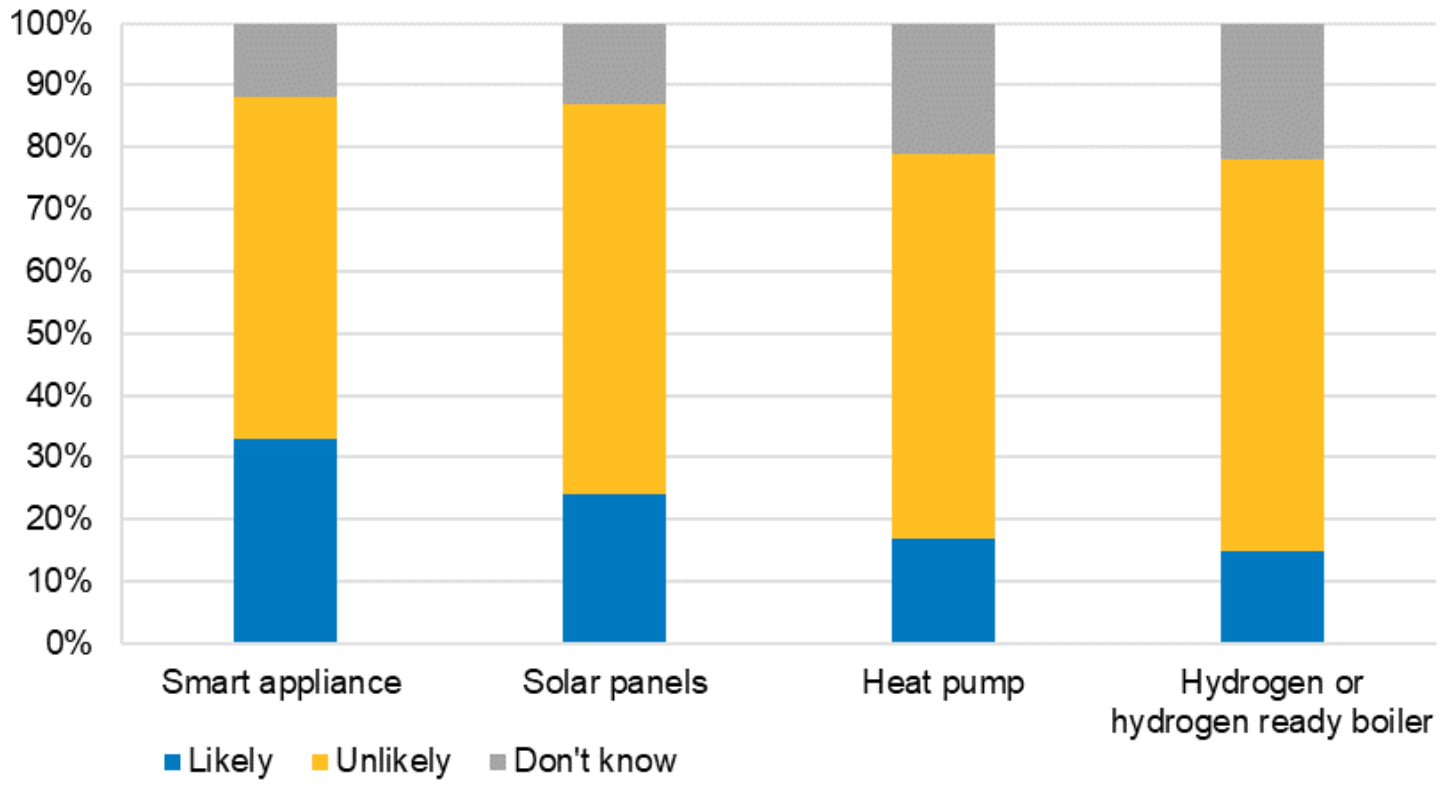
# But current take-up of low carbon technologies is low

***How likely are consumers to purchase these technologies in the next five years?***




*Data from Empowering Climate Action research conducted by National Grid ESO with Public First (2021)*

How can barriers to adoption be reduced?

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# Information - barriers to consumer flexibility and options to overcome them

## Improve awareness of options

There are key decision points where consumers need support.

Emphasise cost savings from low carbon technologies, EVs and heat pumps.

## Make it affordable for consumers

Continue driving capital costs down.

Enable consumers to spread the cost of new technology.

New consumers value propositions such as Heat as a Service.

## Use technology to enable participation

Smart meters and ToUTs can enable more cost effective heat pump operation.

Smart home automation can make consumer demand side flexibility simple for the consumer.

Targeted campaigns, led by trusted bodies, are required to provide consumers with the information they need

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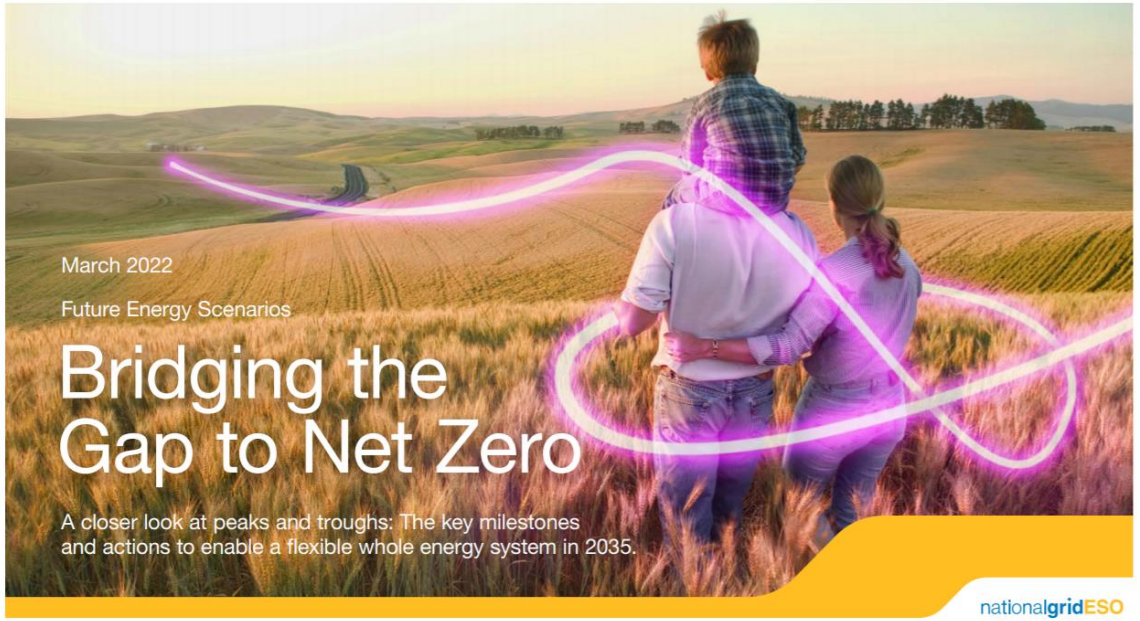
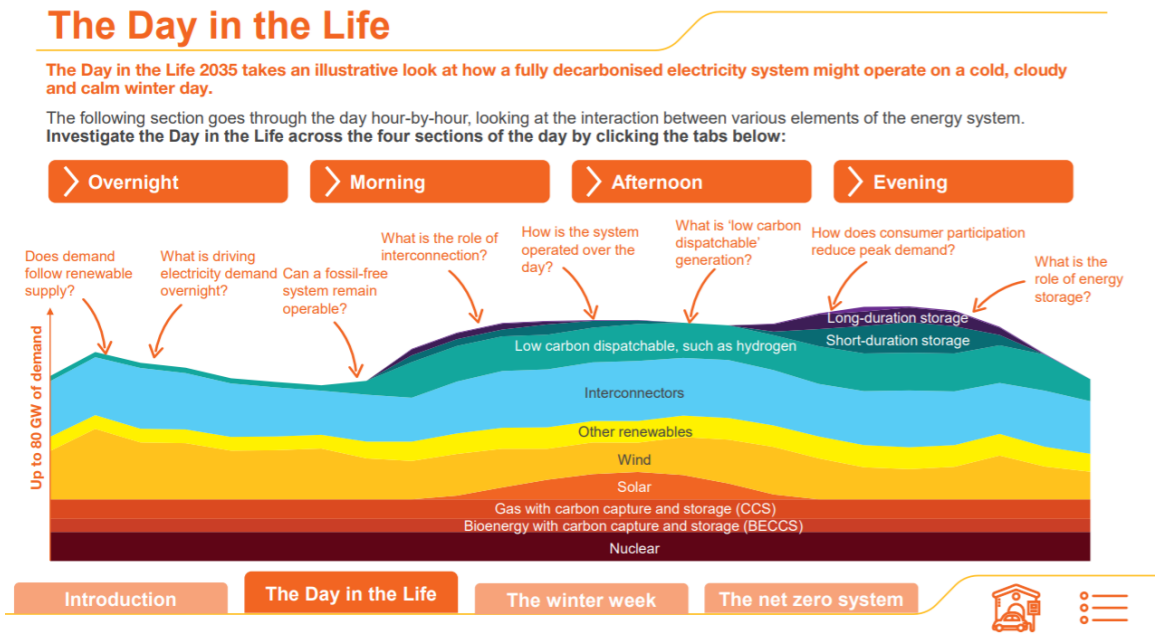
# FES Bridging the Gap update



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