**ofgem** Promoting choice and value
for all gas and electricity customers

# Policies Right for Innovation
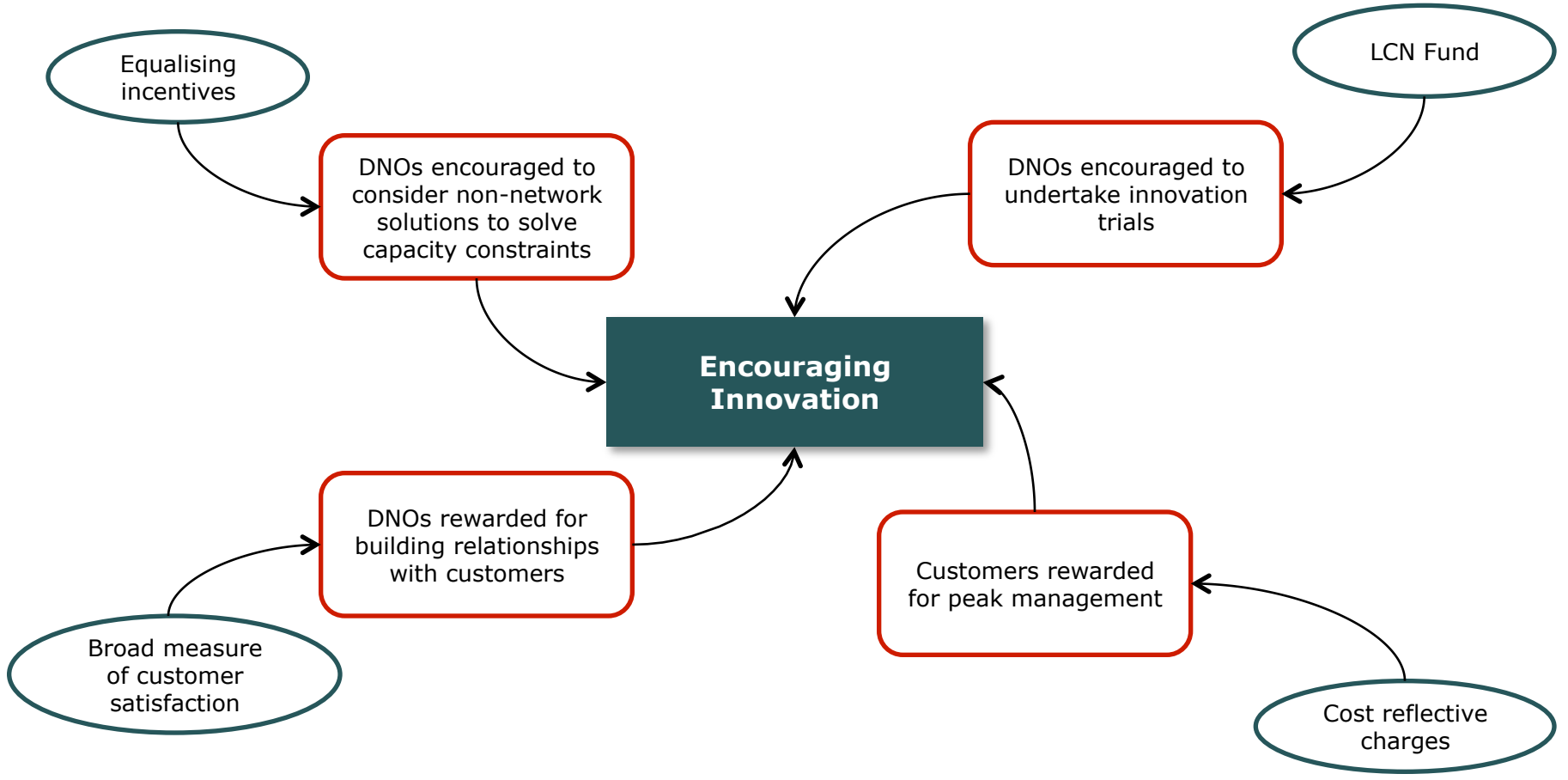
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4th Annual Smart Grids & Cleanpower 2012 Conference
14 June 2012 Cambridge
www.cir-strategy.com/events

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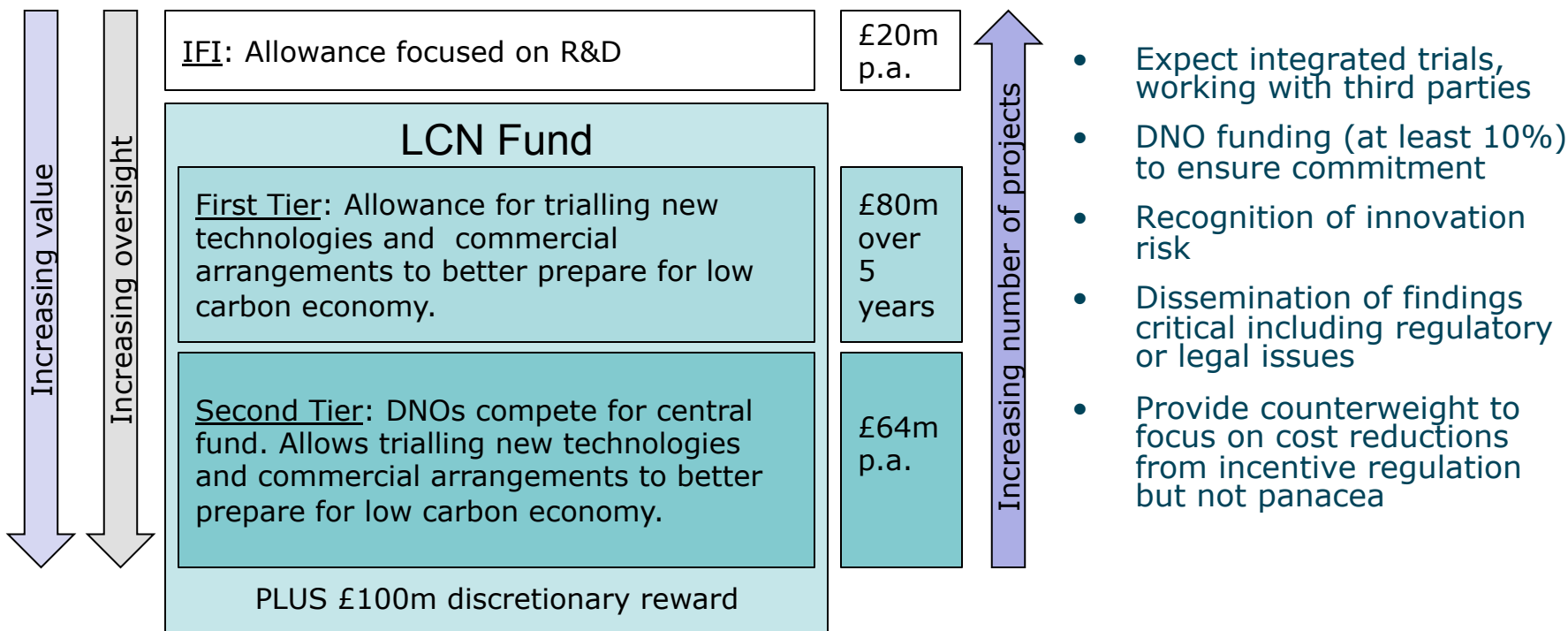
1. Innovation in Current Price Control – DPCR5
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3. Innovation Stimulus- taking innovation forward in other network sectors
4. Smart Grids Forum

**Current Price Control - DPCR5**

ofgem
Promoting choice and value
for all gas and electricity customers

Equalising incentives

LCN Fund

DNOs encouraged to consider non-network solutions to solve capacity constraints

DNOs encouraged to undertake innovation trials

**Encouraging Innovation**

DNOs rewarded for building relationships with customers

Customers rewarded for peak management

Broad measure of customer satisfaction

Cost reflective charges

# Innovation Funding Incentive (IFI) and the Low Carbon Networks (LCN) Fund

## The LCN Fund comprises £500m over the five year price control period

Increasing value → Increasing oversight →

| IFI: Allowance focused on R&D | £20m p.a. |
|---|---|

### LCN Fund

| First Tier: Allowance for trialling new technologies and commercial arrangements to better prepare for low carbon economy. | £80m over 5 years |
|---|---|

| Second Tier: DNOs compete for central fund. Allows trialling new technologies and commercial arrangements to better prepare for low carbon economy. | £64m p.a. |
|---|---|

PLUS £100m discretionary reward

↑ Increasing number of projects

- Expect integrated trials, working with third parties

- DNO funding (at least 10%) to ensure commitment

- Recognition of innovation risk

- Dissemination of findings critical including regulatory or legal issues

- Provide counterweight to focus on cost reductions from incentive regulation but not panacea

## LCN Fund will develop key learning to inform radical shift in network use.

# LCN Fund objective

**OBJECTIVE:**
**To encourage the DNOs to use the DPCR5 period to prepare for the role they will have to play as GB moves to a low carbon economy**

Respond:

Trial innovative commercial and technical <u>network</u> solutions to:

• Connect increasing renewables
• Manage network impact of increased renewables, demand side management, electric vehicles etc
• Explore active network management, smart grids and other commercial services

Facilitate:

Explore how climate change initiatives impact the networks and the role the DNOs can play, e.g. district heating, ground source heat pumps, energy efficiency measures etc.

DNOs <u>trial</u> being a partner and facilitator to energy schemes, providing information, or developing new commercial arrangements

**Trials will generate learning which will increase the speed and efficiency that DNOs respond to changes in network use**

**Provides a range of potential solutions to tomorrow's problems**

# LCN Fund progress

| Second Tier | |
|---|---|
| **2010 Competition** | **2011 Competition** |
| 11 bids worth over £150m | Further 6 bids worth nearly £60m |
| Leveraged external funding | Built on year 1 projects |
| Range of collaborators | Focussed learning outcomes |
| 4 successful projects worth £63m | All six projects successful |
| Generating significant interest | Every DNO undertaking a project |

| 2012 Competition |
|---|
| 7 bids submitted to ISP worth over £80m |
| Include cross sector benefits |
| Developing on existing projects |

**Over 20 First Tier projects registered worth £25m
Covering a variety of topics and informing Second tier bids**
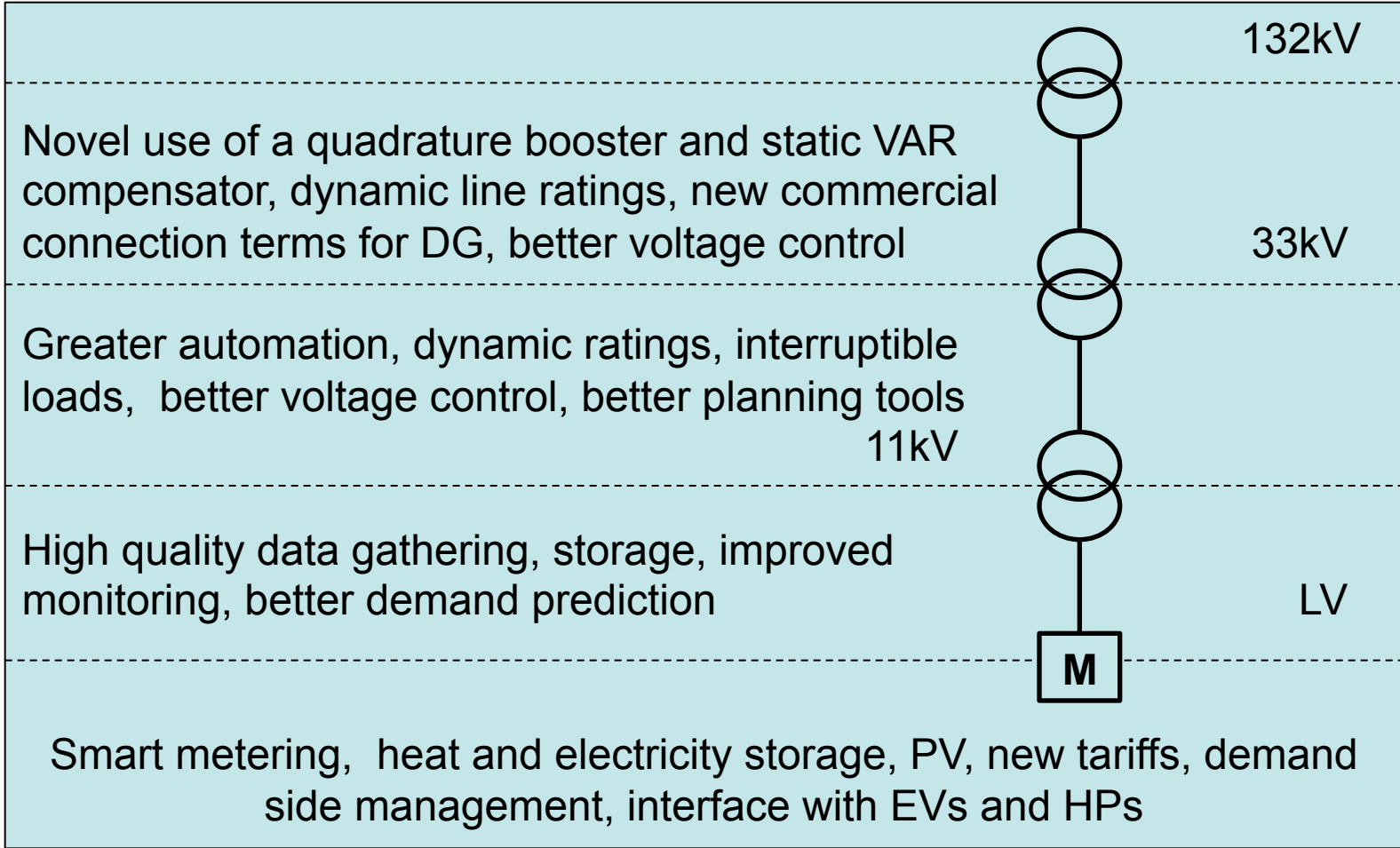
# 2010 Winning LCN Fund Projects

## Customer-led Network Revolution
(Northern Powergrid)

Trialling of smart meters and customer-side interactions with new network technologies.

## Low Carbon London – a learning journey (UKPN)

Innovation to facilitate low carbon technologies into urban and suburban networks. Leverages London's low carbon initiatives.

## Total Funding value = £63.6m

## Low Carbon Hub (WPD)

Investigating how new network technologies can increase the capacity of generation (mainly wind) that can be connected to a rural distribution network. Exploring new commercial arrangements.

## LV network templates for a low carbon future (WPD)

Assessing the impact of low carbon technologies connected to LV network to create generic network models to assist DNOs in efficiently planning and operating networks.

*LESSONS LEARNED TO BE SHARED ACROSS THE INDUSTRY*

**Learning starting to emerge – 2012 key year for trials**

# 2011 Winning LCN Fund Projects

## Capacity to Customers (ENWL)

Trialling new operational techniques to release latent capacity within the existing high voltage (HV) network. The project will utilise this capacity by combining network automation and "interruptible" contracts with large customers.

## Flexible Plug & Play (UKPN)

Trialling ways to improve the control of the extra high voltage network to connect increased volumes of wind generation. Using an open communications platform and develop an investment model.

## Flexible Networks (SPEN)

A project investigating how to obtain extra capacity from the existing HV network in three separate locations by co-ordinating innovative engineering practices. The project also looks to encourage large customers to improve their energy efficiency

## FALCON (WPD)

Deploying smart interventions on the HV network and novel commercial arrangements with customers. Data from these trials will be used to develop an investment tool to model where these techniques can be deployed efficiently across the whole HV network.

*LESSONS LEARNED TO BE SHARED ACROSS THE INDUSTRY*

# 2011 winning LCN Fund projects (2)

## New Thames Valley Vision (SEPD)

A large project which is primarily focussed on developing a tool to help forecast where low carbon technologies might connect to the network. The project also trials network monitoring, energy storage and novel commercial arrangements with large customers. .
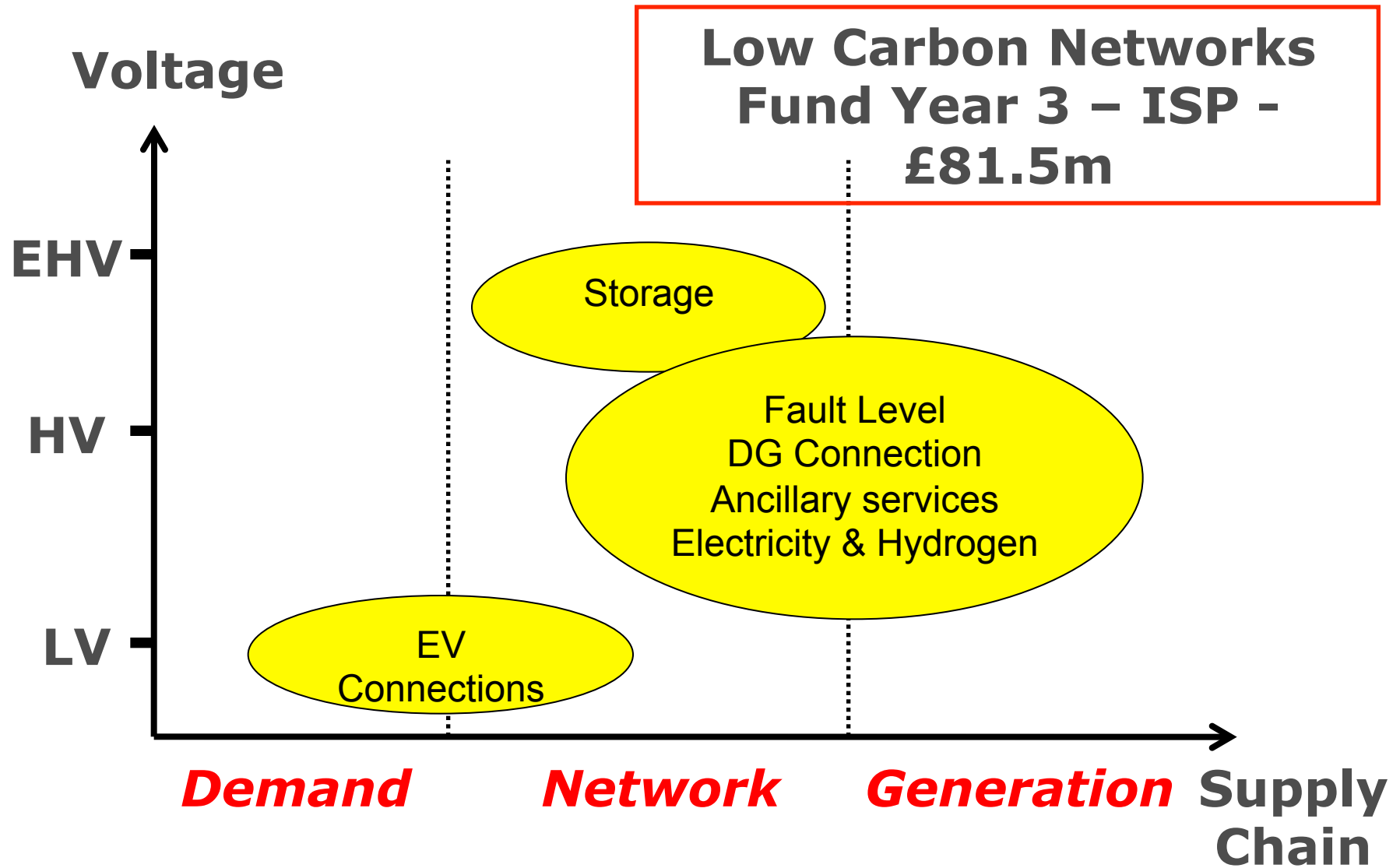


## BRISTOL (WPD)

A small project investigating the potential for battery storage in conjunction with PV solar generation to be used within homes, schools and an office to provide network and customer benefits.
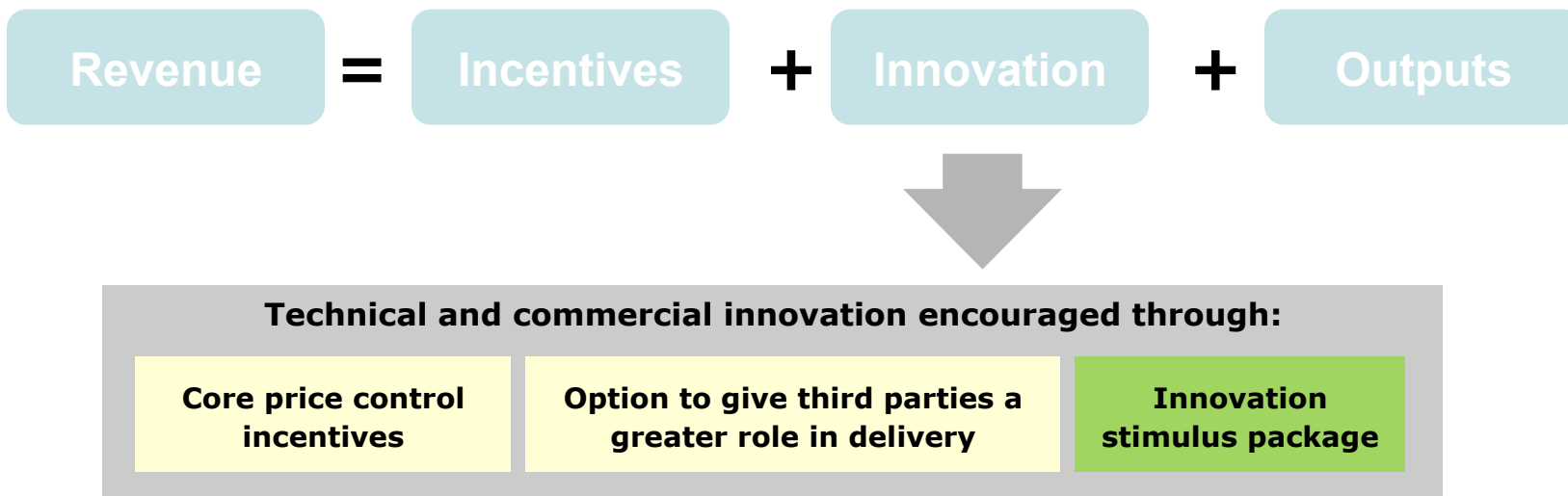


*LESSONS LEARNED TO BE SHARED ACROSS THE INDUSTRY*

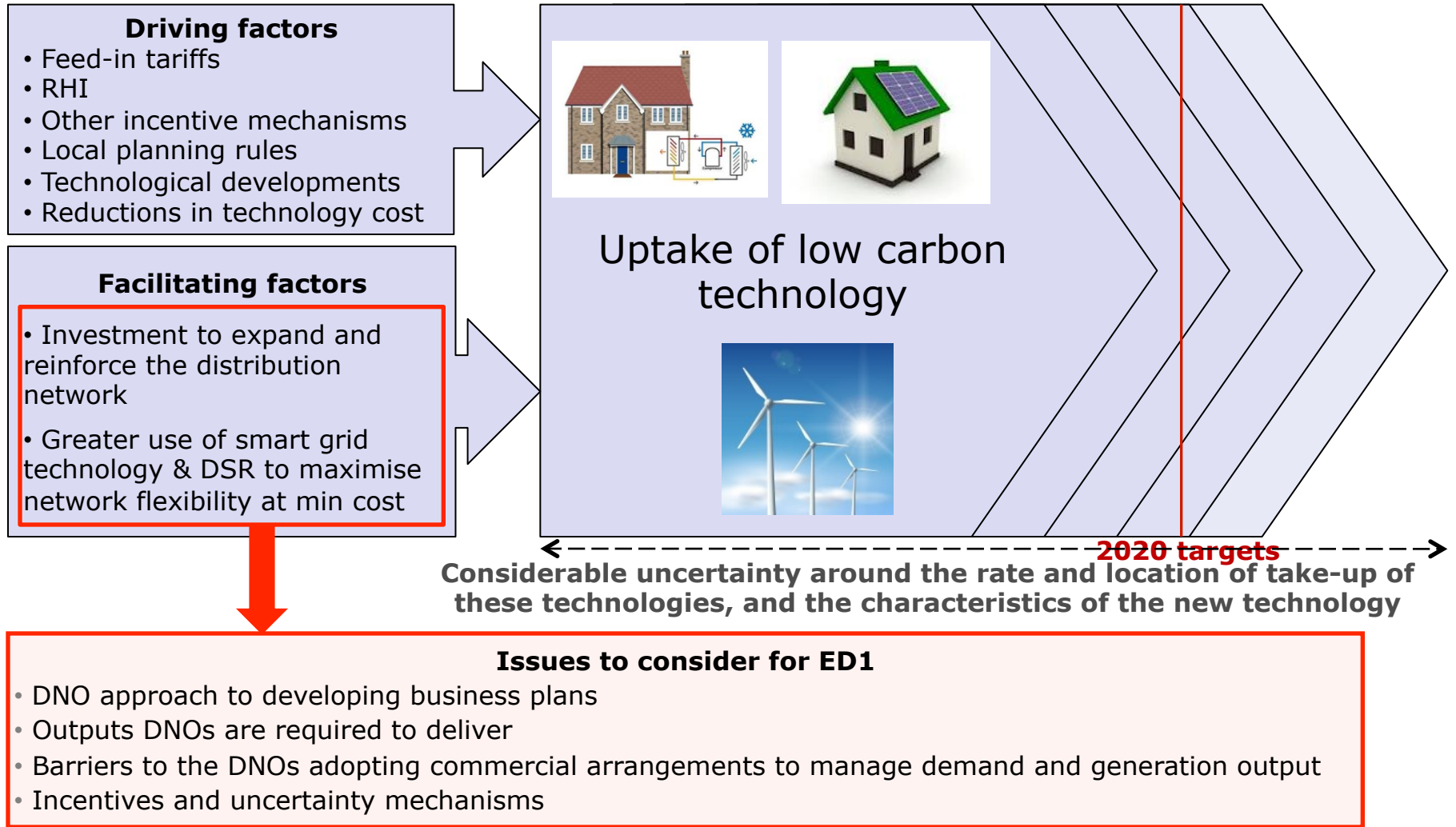Projects now signed contracts with key partners and scoping out trials

# Taking innovation forward: RIIO framework

| Revenue | = | Incentives | + | Innovation | + | Outputs |

Technical and commercial innovation encouraged through:

| Core price control incentives | Option to give third parties a greater role in delivery | Innovation stimulus package |

- Networks will need to be smarter, integrate intermittent sources and encourage customers to manage their demand.

- The shape of the low carbon future is not clear, therefore companies will need to innovate.
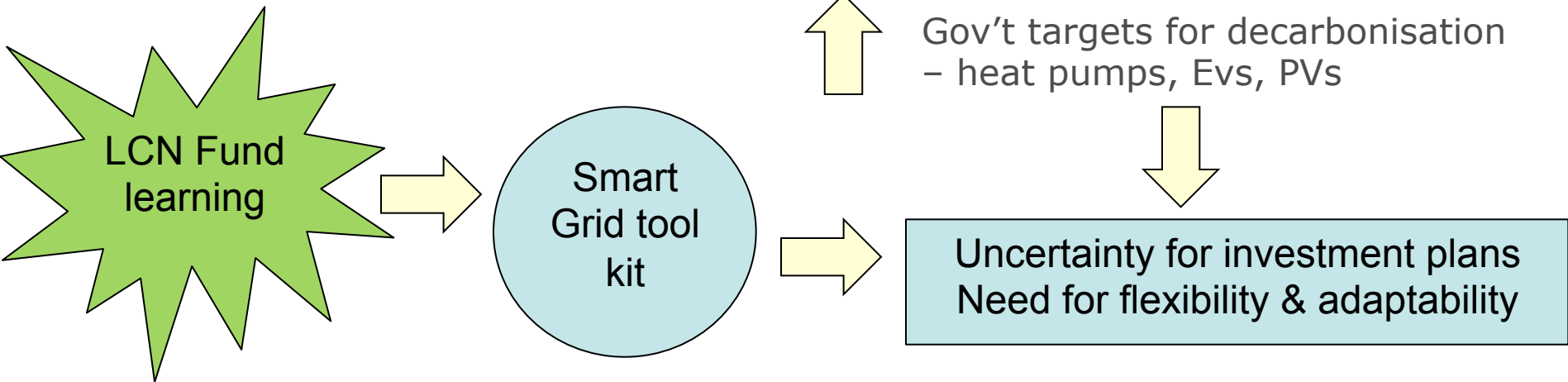
# RIIO-ED1 key issue: Connection of low carbon technologies

**Driving factors**
• Feed-in tariffs
• RHI
• Other incentive mechanisms
• Local planning rules
• Technological developments
• Reductions in technology cost

**Facilitating factors**

• Investment to expand and reinforce the distribution network

• Greater use of smart grid technology & DSR to maximise network flexibility at min cost

Uptake of low carbon technology



**2020 targets**

**Considerable uncertainty around the rate and location of take-up of these technologies, and the characteristics of the new technology**

**Issues to consider for ED1**
• DNO approach to developing business plans
• Outputs DNOs are required to deliver
• Barriers to the DNOs adopting commercial arrangements to manage demand and generation output
• Incentives and uncertainty mechanisms

# LCN Fund & RIIO ED1

RIIO ED1 timeline

| 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------|------|------|------|------|------|------|------|------|

Gov't targets for decarbonisation – heat pumps, Evs, PVs

**LCN Fund learning** → **Smart Grid tool kit** → **Uncertainty for investment plans Need for flexibility & adaptability**

RIIO ED1 Flexibility & Capacity working group looking at outputs and incentives to encourage flexibility

This should drive adoption of smart grid solutions where they provide benefits to customers – utilising LCN Fund learning

# Network Innovation Stimulus

| | NIC | NIA | IRM |
|---|---|---|---|
| Policy Aim | • Annual competition for funding<br>• Separate funding for elec and gas<br>• Large, complex projects<br>• Low carbon and environmental benefits | • Set allowance over the RIIO price control<br>• Smaller scale innovative projects<br>• All stages of innovation cycle | • Mechanism to facilitate roll out of successful projects that would otherwise have to wait until next price control |
| Predecessors | • LCNF Tier 2 | • LCNF Tier 1<br>• Innovation Funding Incentive | |
| Funding | •£240m for electricity transmission projects<br>•£160m for gas (Dx & Tx) projects<br>•Will review for electricity Dx | Between 0.5% and 1% of allowed revenue, dependant on quality of innovation strategy | |

# The Smart Grids Forum
# Key Aims

**Drive policy change:**

- Develop a common understanding of the value that smart grids
- Identify barriers to their deployment
- Put smart grids in the context of wider policy developments.

**Provide a common basis of understanding and disseminate learning:**

- The Forum will collect and disseminate information to ensure all stakeholders are informed of critical issues
- It will review the output of trials in GB, Europe and elsewhere
- It will review the international policy landscape
- It will, where beneficial, facilitate the exchange of information
- It will report at least once a year

# Smart Grids Forum

- Established April 2011
- 19 members (excluding Ofgem and DECC), all key stakeholder groups represented
- 5 initial work streams
  - WS1 - Scenarios & Assumptions
  - WS2 - Smart Grid Evaluation Framework
  - WS3 - Developing Networks for Low Carbon
  - WS4 - 'Closing Doors'
  - WS5 - Ways of Working
- All meeting minutes and reports published on the Ofgem website

# SGF – Year 2 Plans

- WS1 – Align the Forum with material changes in the assumptions and scenarios that could impact network investment decisions; ensure the overall coherence across the Forum's activities

- WS2 – Work completed

- WS3 – Agree a common methodology for the assessment of smart network development opportunities that can be used by all the DNOs and Ofgem in the price control process

- WS4 – Continue in its role to identify near-term issues that could affect longer-term ambitions

- WS5 – Work progressing to provide user-friendly web-based access to information on smart grid developments, including LCNF, industry and academia

- WS6 – New WS to consider the Regulatory & Commercial impacts of smart grid deployment underway

## Based on the initial assumptions made, smart strategies show material benefits for all scenarios



Net benefits by scenario, under default assumptions
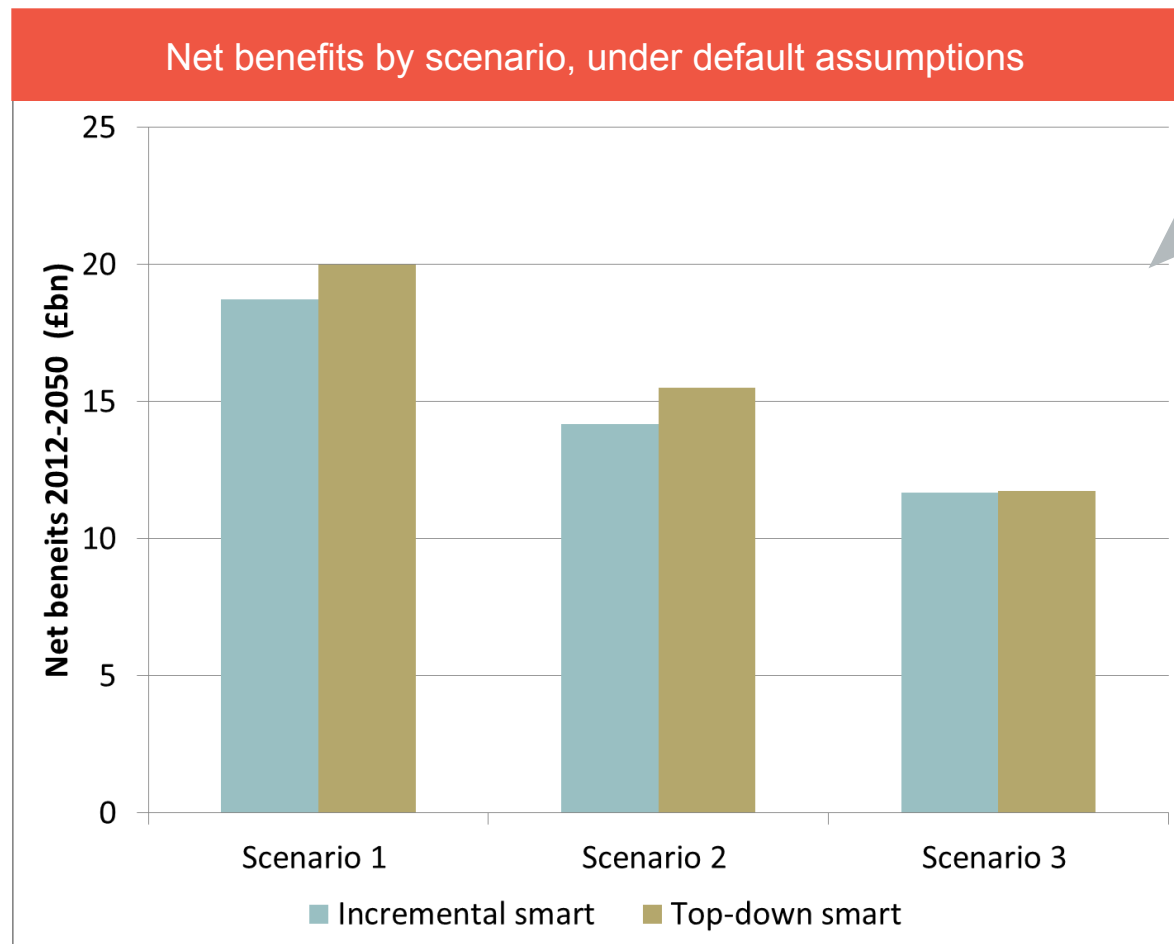
All net benefits are relative to undertaking the conventional strategy from 2012-2050

**Source: Frontier Economics**