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Low carbon network fund – example of smart regulation

LCN Fund
Low Carbon Networks

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Content

- Ofgem's revised approach to network regulation to meet new challenges – RIIO
- Low carbon network fund and incentivising innovation
- This year's competition
- Some examples of funded projects

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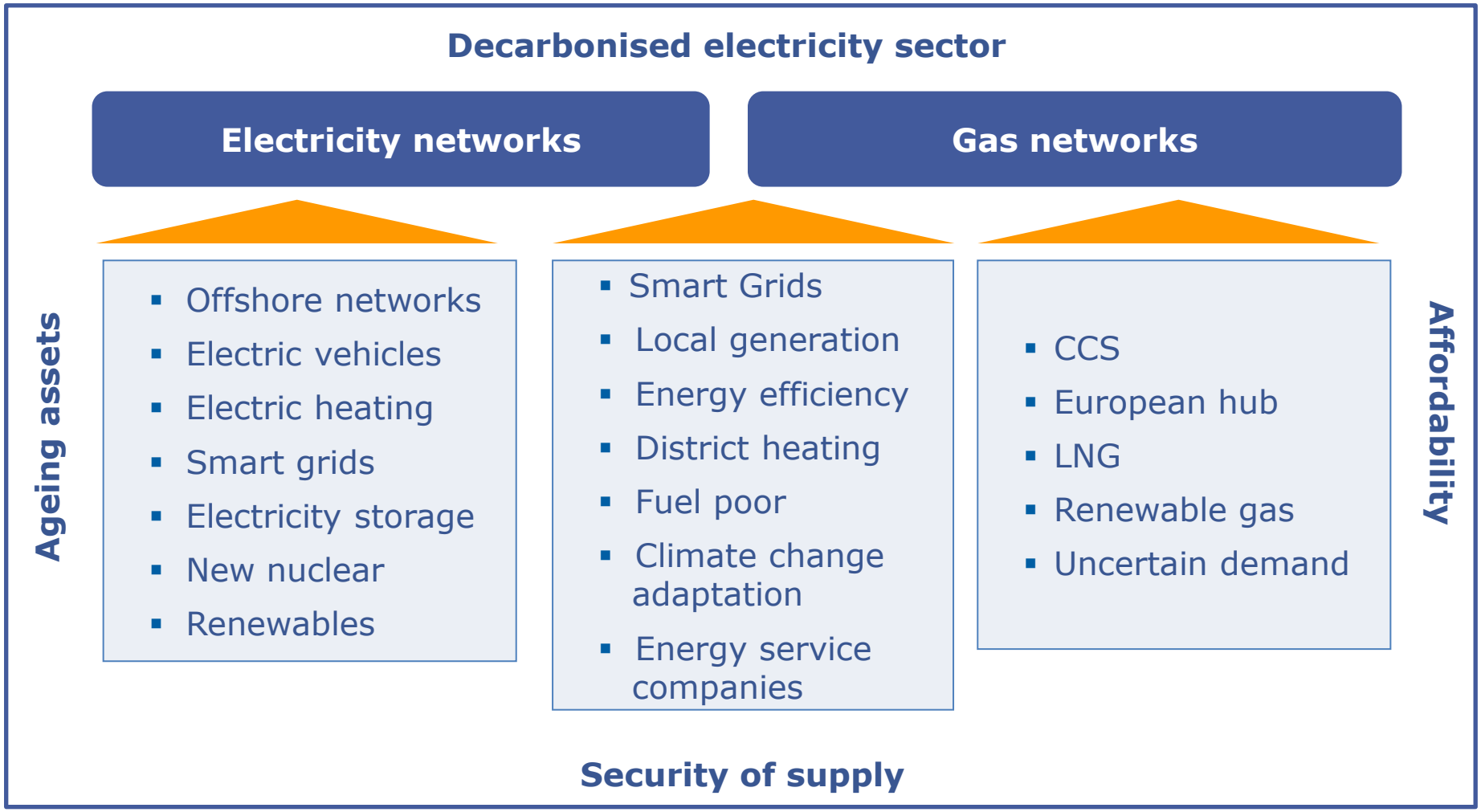
Networks face challenges and opportunities



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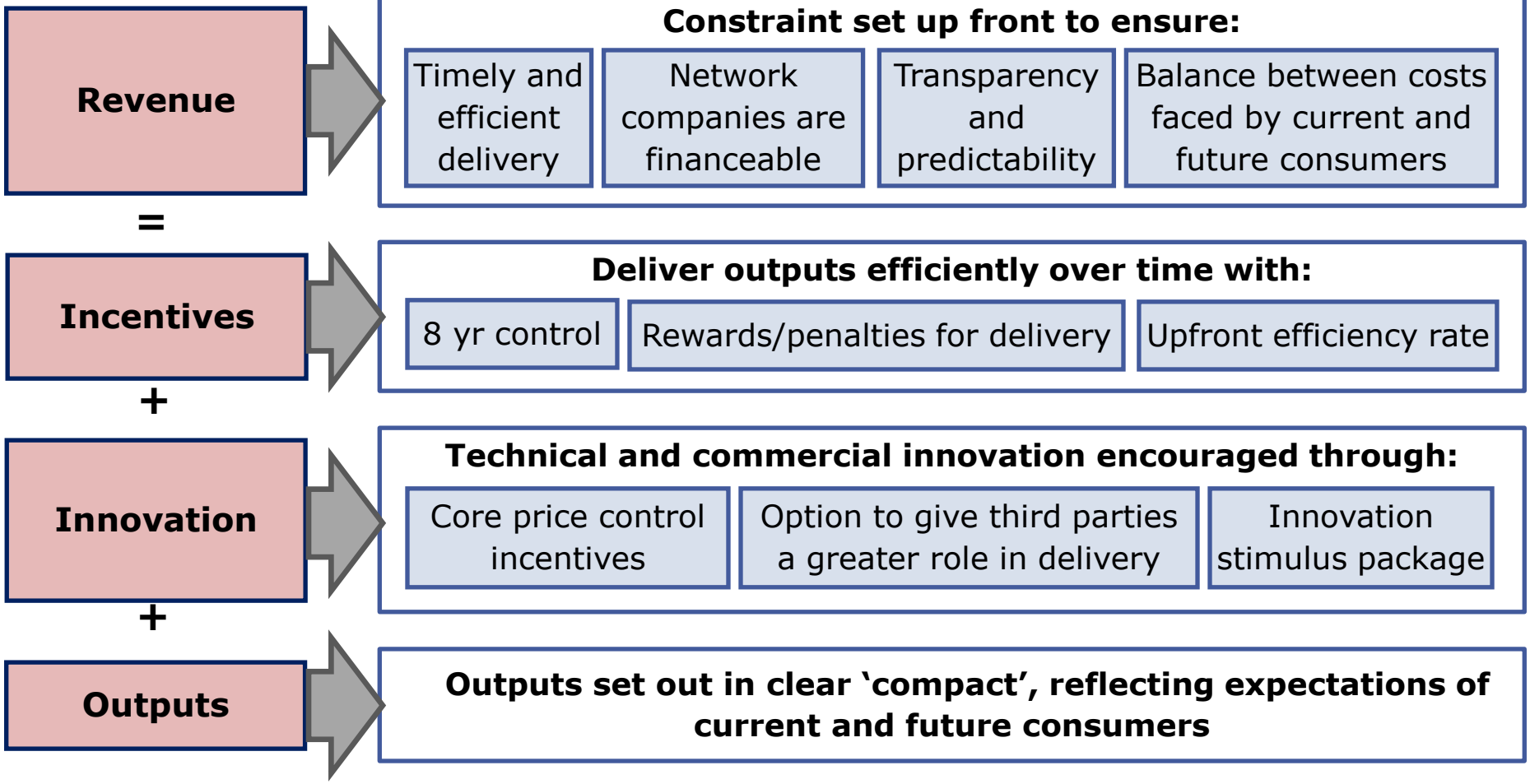
RIIO: A new approach to regulation



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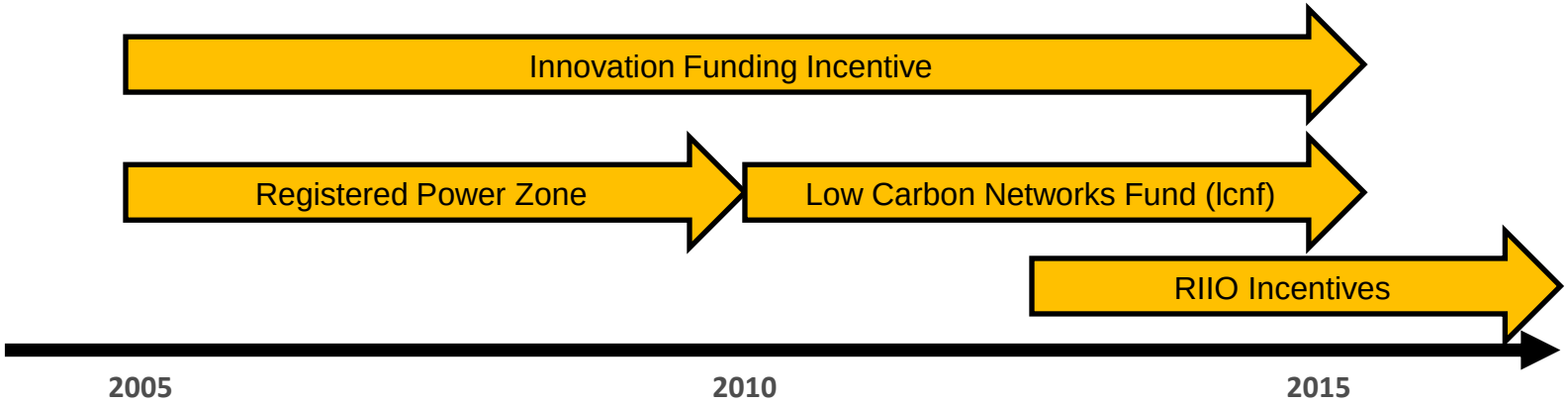
IFI & RPZ conceived before the term 'smart grids' was coined!

Innovation - Ofgem's Journey



IFI – a mechanism to encourage DNOs to invest in appropriate R&D activities that focus on the technical aspects of network design, operation and maintenance. The principal objective of the IFI is to deliver benefits to consumers by enhancing network efficiency in operating costs and capital expenditure.

RPZ – a mechanism to encourage DNOs to develop and demonstrate new, more cost effective ways of connecting and operating generation that will deliver specific benefits to new distributed generators and broader benefits to consumers generally.

LCNF – up to £500m over 5 years to encourage and enable the companies to trial new technology, operating and commercial arrangements

To aid the transition to a low carbon energy sector. £64m is available each year in the competitive element of the fund. Up to £80m is available directly to the companies over the five year period. Funds are recovered from the customers of the network companies

Low carbon network fund and network innovation competitions

- Each network company may submit up to two bids
- Partnerships encouraged – with academic institutions, private sector etc
- Projects must deliver value for money and benefit customers of networks and must not be “business as usual”
- It’s not “free money” – customers of network companies and ultimately consumers pay
- We recognise that some projects will not be successful
- Requirement that learning is shared
- Competing projects are assessed by independent expert panels which make recommendations to Ofgem

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2013 network innovation competitions

- Three competitions –
  - Low carbon network fund (£64m)
  - Electricity transmission (£27m)
  - Gas networks (£18m)
- 16 projects being scrutinised by expert panels
- Ofgem to make decisions on winners in November 2013

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The Low Carbon Networks Fund 2013 competing projects

- Seven projects submitted with a total value of c.£54m (£64m available) .

Project Name (DNO)	Description
ACE (NPG)	The project would investigate approaches to eliciting cost effective demand-side response from customers, without the use of tariffs. The goal is to use the DSR service to alleviate distribution network constraints. The learning would feed in to a network planning tool.
ACE (SPEN)	The project would investigate the use of independent community engagement partners, behavioural research and novel business models to establish an innovative commercial approach to mitigate the need for network reinforcement. This would partly be achieved by balancing local supply and demand.
Clean Energy Balance (WPD)	This project would trial a range of methods to maximise the use of the output of renewable generators. One method is the conversion of electrical energy into hydrogen gas. It would use electrolysis to absorb excess electrical energy beyond network capacity avoiding curtailment of generators. Joint Gas NIC bid (WWU).
Eta (ENWL)	The project would employ innovative voltage control on alternative network configurations on LV networks. This would allow quicker connection of LCTs and could reduce total consumption.
Flexible Urban Networks - LV (UKPN)	The project would aim to use power electronics to share capacity between substations. This would enable more flexible operation of urban LV networks allowing for increased connection of LCTs.
Solent Activating Energy Efficiency (SSEPD)	The project would appraise the use of energy efficiency measures as a tool to manage network constraints. The learning would feed in to a network planning tool.
Vulnerable Customers and Energy Efficiency (UKPN)	The project would investigate how DNOs can engage with fuel poor and vulnerable customers working in partnership with a supplier, charities and local community actors to trial technologies in order to facilitate energy efficiency and provide network services, such as DSR.

Summary

- Ofgem revised its approach to network regulation– focus on better long term planning and harnessing innovation
- Low carbon network fund has resulted in many interesting projects
- This year's competition results are out soon – watch this space – https://www.ofgem.gov.uk/network-regulation-%E2%80%93-riio-model/network-innovation

Annex – low carbon network fund projects

LCN Fund
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2010 Winning LCN Fund Projects

Academic input

Customer-led Network Revolution (Northern Powergrid)

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

Academic input

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.

Academic input

LESSONS LEARNED TO BE SHARED ACROSS THE INDUSTRY

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2011 Winning LCN Fund Projects

Academic input

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.

Academic input

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.

Academic input

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)

Academic input

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)

Academic input

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.

Academic input

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2012 winning projects

Accelerating Renewable Connections (Scottish Power)

Reducing the time taken and cost of connecting distributed generation.

Customer Load Active System Support (Electricity North West)

Exploring the relationship between voltage and demand - to use voltage control to manage network constraints.

Flexgrid (Western Power Distribution)

Developing new fault level assessment processes, real-time monitoring of fault levels and deployment of alternative mitigation solutions

Innovation squared (SSE)

investigating the use of a domestic “smart socket“ to manage network constraints caused by Electric Vehicles

Smarter Network Storage (UK Power Networks)

Investigate the financial benefits of using storage to defer or avoiding network reinforcement and selling flexibility services.

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We work effectively with, but independently of, government, the energy industry and other stakeholders. We do so within a legal framework determined by the UK government and the European Union.

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