

The ofgem logo is an orange rounded rectangle containing the word 'ofgem' in white lowercase letters.

Promoting choice and value
for all gas and electricity customers



Creating Britain's low carbon future. Today.

The £500 million Low Carbon Networks Fund kick-starts the radical change that the electricity networks need to make the low-carbon energy sector a reality.

Carefully designed trials and projects will ensure that the knowledge gained today can be applied at a larger scale tomorrow, keeping costs as low as possible for consumers across Britain.

See inside for details of the four winning projects for the first £62 million awarded.





The Low Carbon Networks Fund (LCN Fund) was set up by Ofgem to run from 2010 to 2015.

It encourages electricity network companies to test and anticipate how the networks will need to change now, so we're ready for the challenges of a low-carbon future.

Starting in 2010, and over the next five years, the LCN Fund will partly finance a portfolio of projects that will provide valuable learning. These will help the industry understand how to meet the changing needs of generators and consumers. It will also make sure the networks are prepared for, and facilitate, the transition to a low-carbon economy.

The fund will help networks meet the challenges of a low-carbon world:

- Efficiently connecting renewable generation.
- Meeting the needs of small-scale and intermittent generation.
- Addressing an increase in the use of electric vehicles, heat pumps, smart domestic appliances and other low-carbon technologies.
- Using smart meter data to improve network performance and reduce costs.
- Incentivising customers to reduce their carbon footprint and cut bills, by managing their energy demand.

How much is it worth?

£500 million in total, over the five year period.

The First Tier, up to £16 million a year, is spread across all distribution network operators (DNOs) to spend against set criteria.

The Second Tier, up to £64 million a year, is provided to projects that win an annual competition.

A discretionary reward totalling up to £100 million over the five year period, can be awarded by Ofgem for successful project completion and exceptional projects.

2010 Second Tier funds: Eleven bids, four winners

An independent panel of experts (see back page) advised Ofgem, with a view to funding a balanced portfolio of projects. All bids were evaluated against the following criteria:

The degree to which the solution being trialled:

- accelerates the development of a low carbon energy sector
- has a direct impact on the operation of the distribution network
- has potential to deliver net benefits to existing and/or future customers
- generates new knowledge that can be shared amongst all network operators.

The degree to which the project:

- demonstrates a robust methodology and readiness
- involves other partners and external funding
- is relevant and timely.

Ofgem and the independent panel members were impressed by the quality and ambition of the projects submitted this year.

The projects submitted took the spirit of the competition to heart. They all involved the network companies forming new partnerships, including with local councils, universities, technology providers and other players in the energy sector.

All projects aimed to:

- provide answers to specific important questions
- share information and knowledge with all interested parties and other network companies
- find solutions today so that investment can be saved in the future.

Submissions looked to explore:

- how climate change initiatives and energy efficiency measures will impact the networks
- ways to increase capacity, to connect more renewables to the network
- how to make the best use of the flexible demand arising from smart meters and intelligent white goods
- how customers respond to time of use tariffs
- ways in which electric cars can be charged without overloading the network.

Regulating low-carbon networks

Ofgem has identified that Britain's energy sector needs to spend up to £200 billion in order to ensure security of supply, while meeting challenging environmental targets over the next decade. Up to £32 billion of this investment is on the networks alone.

The results and information collected from all the trials funded through the LCN Fund will give network companies a better understanding of the investment required in the future. But importantly, it also explores alternatives to avoid costly investments wherever possible.

Ofgem has created a new way to regulate networks in this changing environment. The new price control model, RIIO (Revenue=Incentives+Innovation+Outputs), gives network companies strong incentives to focus on the environmental challenges and to ensure that network services are delivered at best possible value for consumers.

The LCN Fund only applies to electricity distribution companies. But the new RIIO model will extend a similar innovation stimulus to the gas distribution, and electricity and gas transmission sectors.



The Winning Projects

The project: Customer-led Network Revolution



The company: CE Electric UK

The key concept: Making customers and networks work better together – a smarter grid

The area: North-East England

Amount awarded: £26.8 million (£53.6 million total project)

Period of project: December 2010 – December 2013

Other key partners: British Gas; Durham Energy Institute (Durham University); EA Technology; National Energy Action; Sustainability First; Community Energy Solutions; Sunderland City Council; Gentoo; Kirklees Council; Future Transport Systems / One North East; North East Chamber of Commerce

The project:

- Explores how new tariffs can encourage customers to be more flexible in their use of electricity. For example, changing the times at which they charge up their electric vehicles, to fit periods of lower demand.
- Explores how networks can respond more flexibly to customers' needs by using more advanced voltage control devices, real time thermal rating and energy storage. The trials will take place in Denwick, Northumberland and Rise Carr, Teeside.
- Uses the data collected to consider how new technology and changes in customer behaviour could help optimise value across the energy supply chain.
- Finds ways for smart meters and network operators to talk to each other.
- Monitors 600 intelligent white goods such as fridges.
- Monitors 14,000 customers with smart meters, working on the back of British Gas' early roll out of smart meters in the area; as well as 2,250 small commercial customers; 14,000 industrial/commercial customers; 250 merchant generators.

Low Carbon London – a learning journey



The company: UK Power Networks *

The key concept: A network to serve a low-carbon city

The area: London

Amount awarded: £24.3 million (£36.1 million total project)

Period of project: January 2011 – June 2014

Other key partners: Sainsbury's; Siemens; Imperial College; EDF Energy Customers Plc ; Logica; Smarter Grid Solutions; Greater London Authority; London Development Agency; EnerNOC; Flexitricity; Transport for London; National Grid; Lower Lea Valley Smart Buildings Project; Logica; RWE npower; Institute for Sustainability

The project:

- Implements new tariffs, in conjunction with energy retailers, for electric vehicle charging points for people who want to charge their cars away from home. Works on the back of Transport for London's Plugged in Places scheme, which will roll out 25,000 electric vehicle charging points by 2015, supporting 100,000 electric vehicles.
- Emulates a 2020 energy scenario, using the Learning Laboratory, Imperial College, to test how low-carbon technologies on a large scale impact the networks.
- Installs at least 5,000 smart meters and monitors the information from them across 10 boroughs.
- Sainsbury's will provide information from its fleet of electric delivery vehicles and from its charging points for customers' own electric cars.
- London has the highest concentration of electricity demand and carbon emissions in Great Britain. And the most demanding carbon reduction targets (60 per cent reduction on 1990 levels by 2025).
- Focuses on the 10 London Low Carbon Zones; the London Development Agency's Green Enterprise District; Central London; and the Olympic Park and Village.

* Formerly EDF Energy Networks

Low Carbon Hub



The company: Central Networks

The key concept: New ways to connect renewable generation to distribution networks

The area: East Lincolnshire

Amount awarded: £2.8 million (£3.5 million total project)

Period of project: December 2010 – February 2015

Other key partners: East Lindsey District Council; East Midlands Development Agency

The project:

- Based around the existing 33,000 volt, overhead lines, which supply electricity to the naturally windy Skegness, Alford, Mablethorpe, Ingoldmells and Chapel St Leonards areas.
- Explores solutions to maximise the capacity of renewable generation that can be economically connected in this area.
- Trials new ways of dynamically controlling voltage on the network, to increase utilisation while keeping within statutory voltage limits.
- Will connect up to 110 MW of additional distributed generation.
- Tests new techniques to calculate network capacity and operating limits using real time asset data.
- Provides new knowledge about the connection and operation of distributed generation that can be applied across the networks.

Low voltage network templates for a low-carbon future



The company: Western Power Distribution

The key concept: Understanding the impact of low-carbon technologies on the electricity network

The area: South Wales

Amount awarded: £7.8 million
(£9.0 million total project)

Period of project: December 2010 – July 2013

Other key partners: University of Bath; RWE npower; Welsh Assembly Government; Bristol University

The project:

- Works on the back of existing initiatives, including the Welsh Assembly Government's £30 million ARBED scheme. (Arbed translates as 'save' in Welsh).
- Installs monitoring equipment at over 1,000 distribution substations, from high density urban areas to rural hamlets.
- Evaluates the 'headroom' available in low voltage networks to accommodate the connection of low carbon technologies while maintaining voltage compliance.
- Involves over 100,000 customers – around 10 per cent of the South Wales population. Some will have a voltage monitor fitted in their home.
- Observes in real time what happens to the networks when microgeneration, such as PV solar panels, comes online.
- Will create a set of 'reusable network templates' available to other network companies' to assist them in planning their networks.

The Expert Panel

- Dr Robin Bidwell (Chair)
- Professor Nick Jenkins
- Sean Sutcliffe
- Sharon Darcy
- Professor David Newbery

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