



Making a positive difference
for energy consumers

Making Britain's energy networks better

Our gas and electricity networks need to become more flexible and efficient. Ofgem runs innovation competitions to fund projects that encourage new approaches that will help make the system smarter and save consumers' money. The Network Innovation Competitions (NICs) for electricity and gas help develop crucial knowledge and expertise to share across the industry. This year we will provide up to £57.7 million of funding for seven projects which, when combined with the companies' contributions and external funding, will see up to £68.7 million being invested in innovation.



2017 NIC projects

2017 is the fifth year we have run the NICs.

This year's projects cover an exciting range of areas across the distribution of gas and electricity. Each project tackles problems facing the networks now or in the future.

This year, some of the **projects explore issues such as:**

Investigating potential market models for the coordinated trading of energy resources on the electricity distribution networks.



Testing new technology to control the flow of electricity across the distribution networks.



Developing advanced robotics to automate gas network excavations, for example to repair or replace gas mains.



What is the NIC?

The NIC is open to applications from GB distribution and transmission networks. Network companies submit and deliver projects in partnership with the wider energy industry, such as energy suppliers, universities or technology providers.

How we've judged each project

Each successful project must meet specific criteria to ensure it benefits network consumers. Two expert panels (one for electricity and one for gas) advise us for each of the competitions. They help us decide which projects should be funded.

Our criteria are that a project must:

- Generate new knowledge that can be shared among all network operators.
- Be cost-effective and provide value for money to network customers.
- Accelerate the move to a low carbon energy sector and/or deliver environmental benefits, and potentially bring net financial benefits to network customers now and in the future.

Each submission must also demonstrate that the project:

- Is innovative.
- Is robust and ready to implement.
- Involves appropriate partners and external funding.
- Is relevant and timely.

Stimulating innovation

The NICs are designed to stimulate innovation by network operators. This means the industry can better meet network consumers' changing needs and **move to a low carbon economy** by:

- Connecting new low carbon sources of gas or electricity.
- Meeting the needs of small-scale and intermittent generation and new sources of gas.
- Using new sources of data and trialling new practices to improve network performance.
- Helping consumers reduce their carbon footprint and cut bills by lowering their energy consumption.
- Addressing an increase in novel vehicle technologies, heat pumps, smart domestic appliances and other low carbon technologies.
- Sharing learning from the projects through the Energy Network Association's [Smarter Networks Portal](#).
- Ensuring that network customers can benefit from each project.

Read on for details of this year's projects.



Electricity NIC project

Project:
Active Response

Company name:
UK Power Networks (UKPN)

The concept:
To develop two new types of network equipment to direct power flows across the distribution network.

NIC funding awarded:
£13.8 million

**Additional company contribution/
external funding:**
£3.1 million from UKPN with additional funding of £1.3 million from project partners.

Period of project:
4 years



The project will aim to:

- Increase the capacity of local distribution networks.
- Automatically redistribute power on the network to resolve constraints.
- Release capacity for low carbon technologies to connect to the network.

Electricity NIC project

Project:
LV Engine

Company name:
Scottish Power Energy Networks (SPEN)

The concept:
To test a new type of solid-state transformer on the GB network.

NIC funding awarded:
£7.3 million

**Additional company contribution/
external funding:**
£0.8 million from SPEN with additional funding of 0.05m from project partners.

Period of project:
5 years



The project will aim to:

- Demonstrate the use of a new type of transformer on the distribution network.
- Deliver significant financial savings if deployed across the GB network.
- Demonstrate a new type of network connection for Low Carbon Technologies.

Electricity NIC project

Project:
Transition

Company name:
SSE Networks (SSEN)

The concept:
To test technical and commercial solution to resolve constraints on the distribution network.

NIC funding awarded:
£13.1 million*

Additional company contribution/
external funding:
£1.5 million from SSEN.

Period of project:
5 years



The project will aim to:

- Test market models for the trading of flexible network services.
- Create the IT interface to facilitate the markets.
- Release additional network capacity for low carbon technology connections.

Electricity NIC project

Project:
Fusion

Company name:
SP Energy Networks (SPEN)

The concept:
To test a technical and commercial solution developed in Europe to resolve constraints on the distribution network.

NIC funding awarded:
£5.3 million*

Additional company contribution/
external funding:
£0.6 million from SPEN

Period of project:
5 years



The project will aim to:

- Test a European market model for the trading of flexible network services.
- Create the IT infrastructure to facilitate the market.
- Release additional network capacity for low carbon technology connections.

*Fusion, Transition and EFFFs have been awarded funding on the condition that the project teams work together over the next six months to review the projects' costs and remove areas of unnecessary duplication. We will make a decision on the final project costs following this review.

Electricity NIC project

Project: EFFF

Company name:
Western Power Distribution (WPD)

The concept:
To develop an IT platform to forecast network capacity and identify opportunities to trade flexible network services.

NIC funding awarded:
£3.0 million*

Additional company contribution/
external funding:
£0.4 million from WPD with additional funding
of £1.0m from project partners.

Period of project:
2.5 years



The project will aim to:

- Design and test a new software interface to predict network capacity.
- Demonstrate the commercial models needed to trade these services.
- Cut connection times for renewable generation.

Gas NIC project

Project:
Robotic Roadworks and Excavation System
(RRES)

Company name:
SGN

The concept:
To develop advanced robotics to automate
and improve the utility excavation process.

NIC funding awarded:
£6.3 million

Additional company contribution/
external funding:
£0.7 million from SGN with additional funding
of £0.2m from project partners.

Period of project:
3 years



The project will aim to:

- Create a prototype robotic system for gas network excavations.
- Lower the cost and improve efficiency, safety and environmental impact of excavations.
- Use sensors, computer vision and “soft-touch” tools so it doesn't damage underground assets.

*Fusion, Transition and EFFF have been awarded funding on the condition that the project teams work together over the next six months to review the projects' costs and remove areas of unnecessary duplication. We will make a decision on the final project costs following this review.

Gas NIC project

Project: H21

Company name:

Northern Gas Networks (NGN), in collaboration with SGN, Cadent and Wales & West Utilities.

The concept:

To provide safety evidence on whether the GB gas distribution networks are suitable to transport 100% hydrogen.

NIC funding awarded:

£8.9 million*

Additional company contribution/ external funding:

£1 million from all four Gas Distribution Networks with additional £0.3m from project partners.

Period of project:

3 years



The project will aim to:

- Provide safety evidence to show whether 100% hydrogen can be transported in the GB gas distribution network.
- Inform future thinking on the potential use of 100% hydrogen in GB to decarbonise heat.

The Electricity NIC Expert Panel

- Jo Armstrong (Chair)
- Alan Bryce
- Prof. Nicholas Jenkins
- Jiggy Lloyd
- Jeff Halliwell

The Gas NIC Expert Panel

- Miriam Greenwood OBE DL (Chair)
- Ron Chapman
- Trisha McAuley OBE
- Prof. David Newbery
- Sean Sutcliffe

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*This project has been awarded partial NIC funding of £8.9m instead of a requested £13.3m. NGN may choose not to progress this project on these terms and the period of the project may change. We are working with them and a decision is expected by the end of 2017.

