

CUSTOMER-LED DISTRIBUTION SYSTEM



FACTS

RESEARCH AREA	Network Management & Flexibility and Demand-Side Response
START DATE - END DATE	Nov 2017 - Apr 2021
FUNDING MECHANISM	Network Innovation Allowance
ESTIMATED EXPENDITURE	£1,900,000
PROJECTS PARTNERS	University of Bath, University of Newcastle
MORE ON	http://www.smarternetworks.org/project/nia_npg_019

CONTEXT

The transition from distribution network operator (DNO) to distribution system operator (DSO) is a complex issue with many possible options for restructuring the sector. Identifying the most appropriate industrial structure that can achieve the best whole system outcome requires advanced understanding of interplays between the operation of markets for energy and for network services, network operation, infrastructure development and the growth of distributed energy resources (DERs).

EXPECTED OUTCOMES

We will identify and demonstrate the most appropriate market design and industry structure to enable the optimisation of network and DER resources; enable 3rd party providers to realise maximum value of DERs through market-enabled energy and network products; enable the uncertainty and complexity of the supply system to be substantially reduced by distributed and coordinated market and network solutions.

APPROACH

This project will use desktop studies and laboratory demonstration to:

- Consider customised products for both energy and network services in designing markets for the distribution sector and the implications for industry structure; explore DSO functions at a sufficiently detailed level to model and understand flows of energy, payments, and information; develop strategies that DSOs could use to coordinate network operations and market operations
- Determine the overall system efficiency gain from an agile distribution market design that suits local needs and is able to deliver customised energy products and services; explore any trade-offs between network efficiency (e.g. losses) and overall energy system efficiency
- Demonstrate the impact of market operations on network operations and on the scale and type of DERs; explore pathways from the current state of DNO to a future state of DSO which includes co-evolution of markets, infrastructure and DERs
- Quantify the value to stakeholders from introducing energy markets to the distribution sector

LONG TERM PRIORITIES



Network Environmental Footprint



Network Reliability & Availability



Network Management & Flexibility



Demand-side Response



Network Planning & Design



Communication & Engagement



IT-enabled Process Improvements



Social Responsibility