

# Decision

## Decisions on the 2018 Gas and Electricity Network Innovation Competitions

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## Overview

Each year we run two Network Innovation Competitions (NICs), one for gas and one for electricity. The NICs are designed to stimulate innovation in the energy networks. Through the Gas and Electricity NICs, network companies can apply for funding to deliver innovative projects which have the potential to provide benefits to energy customers. This document explains which projects we have selected for funding this year.

This was the sixth year of the NICs and there were five applications for funding that progressed to the Full Submission stage across both Competitions. We have selected one gas project and three electricity projects for funding under the NIC. Our decision is informed by the recommendations of our independent Expert Panels. We propose to award £46.8 million to these projects. Licensees must make at least a ten per cent contribution to the costs of projects. This year licensees and their partners will provide £35.9 million.

The successful projects trial innovative practices and new technologies. They have been selected because they perform well against the NIC Evaluation Criteria<sup>1</sup> and are expected to help network licensees to better understand how to meet customers' changing requirements as Great Britain moves towards a low carbon economy.

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<sup>1</sup> The Evaluation Criteria are set out in the NIC Governance Documents.

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## Executive Summary

The NICs encourage network companies to innovate in the design, development and operation of their networks and, in doing so, to engage with one another and third parties. The Gas NIC provides up to £20 million of funding each year and the Electricity NIC provides up to £70 million of funding each year for a small number of large-scale innovation projects.

This document contains our decisions on which projects will receive funding in the sixth year of the NIC. We received one full submission to the Gas NIC and four full submissions to the Electricity NIC requesting a total of £57.9 million of the £90 million available. We have selected one gas project and three electricity projects for funding.

The table below gives a brief overview of the aims of the successful projects and the maximum amount of NIC funding available for each project.

2018 Gas NIC Projects	NIC Funding Awarded
<p><b>HyDeploy2</b> The proposed project aims to demonstrate the injection of hydrogen into the public gas network, building upon the learning of Cadent’s ongoing NIC project, HyDeploy, taking place at Keele University. This will include testing the safety case and trialling the injection of hydrogen into untested parts of network, as will be required for the GB-wide deployment of blended hydrogen. <i>Proposed by Cadent</i></p>	£13.28m
2018 Electricity NIC Projects	NIC Funding Awarded
<p><b>Black Start from Distributed Energy Resources (DER)</b> The proposed project will develop and demonstrate the technical, organisational and commercial arrangements necessary for the procurement of black start services from distributed energy resources (DER). The project will complete a minimum of two live trials in SP Energy Network’s distribution area, which will involve a number of different types of DER, including some low carbon generators. <i>Proposed by National Grid Electricity Transmission System Operator (ESO)</i></p>	£10.27m
<p><b>Charge</b> The proposed project will combine transport planning and network mapping, in order to allow developers to determine where it is most beneficial to locate electric vehicle (EV) charge points, and to allow network companies to anticipate demand as EV uptake accelerates. The project will also carry out trials of residential on-street charging to identify trends and the potential for flexible connections as EV ownership increases. <i>Proposed by SP Manweb (SPM)</i></p>	£6.85m
<p><b>Optimise Prime</b> The proposed project will carry out a number of trials and gather data on the impact and potential mitigations of commercial EV fleet charging, including examining en-route charging patterns, behind-the-meter optimisation of depot charging, and commercial charging on domestic connections. <i>Proposed by London Power Networks (LPN)</i></p>	£16.40m

We assessed each of the project proposals against the Evaluation Criteria set out in the NIC Governance Documents. In reaching the decision whether to fund projects, we were advised by two independent Expert Panels.

In December 2018, we will issue successful licensees with a Project Direction. These explain the terms they will have to comply with as a condition of each project receiving NIC funding. The licensees will have to comply with this Direction when implementing projects.

## 1. Introduction

### Context and related publications

1.1. Network companies have a fundamental role in supporting the delivery of a low carbon economy, and innovation is crucial to increasing the pace of change.

1.2. Network companies will need to innovate in the way they design, plan, and operate their networks, while delivering the services that customers want. The NICs are designed to help stimulate this innovation. They provide up to £90 million of funding each year to encourage network licensees to run trials of new technology and different commercial and network operating arrangements. All network customers fund NIC projects. Therefore, a key feature of the NIC is the requirement that project learning is disseminated, in order for customers to gain a significant return on their funding through the broad rollout of successful projects, and the subsequent delivery of network savings and/or carbon and environmental benefits. Even where projects are implemented and deemed unsuccessful, network licensees will gain valuable knowledge that could result in future network savings.

1.3 NIC Governance Documents: <https://www.ofgem.gov.uk/publications-and-updates/version-30-network-innovation-competition-governance-documents>

### Purpose of this document

1.1. This document explains our decisions on the applications we received in the sixth year of the NICs.

1.2. We have published other documents to accompany this decision. These are:

- the full submissions for each project, produced by the network companies, and with commercially sensitive information redacted or removed
- the Expert Panels' recommendation reports on which projects to fund, and
- the network companies' answers to questions raised during the evaluation process by Ofgem, the independent technical consultants (who evaluated parts of the projects) and the Expert Panels.

### How the NICs work

1.3. The NICs encourage network companies to innovate in the way they design, develop and operate their networks. They provide funding for a small number of large-scale innovation projects. We run two annual Competitions which provide up to £20 million of funding for gas projects and up to £70 million of funding for electricity projects.

1.4. The NIC Governance Documents set out the scheme's governance and administration.

### Initial Screening Process

1.5. The annual Competitions start when network companies submit project proposals to the Initial Screening Process (ISP). The Gas NIC is open to applications from gas distribution networks (GDNs), the gas transmission licensee – National Grid Gas Plc (National Transmission System) (NGG NTS), and independent gas transporters. The Electricity NIC is open to applications from the fourteen electricity distribution licensees (DNOs), the onshore electricity transmission licensees (TOs/SO), the offshore transmission owners (OFTOs), and independent distribution network operators (iDNOs).

1.6. During the ISP, we consider whether proposals are eligible to be considered for funding based on the eligibility requirements set out in the NIC Governance Documents. Only eligible projects may progress to the Full Submission stage.

### Full Submission stage

1.7. At the Full Submission stage, we appoint an independent Expert Panel to each Competition, to advise us on whether to provide NIC funding. The Panels consist of persons with specific expertise in the energy networks, environmental policy, technical and engineering issues, economics and finance, and consumer issues<sup>2</sup>. The Panels assess each project against the Evaluation Criteria set out in the NIC Governance Documents. Each Panel bases its recommendation on the extent to which a project:

- delivers environmental and financial benefits
- provides value for money to customers
- generates knowledge that can be shared among all network licensees
- is innovative
- involves other partners and external funding
- is relevant and timely, and
- demonstrates a robust methodology and readiness of the project.

1.8. After it has completed its evaluation, each Panel produces a report (published alongside this decision) on which projects it thinks should be awarded funding. These reports inform our considerations but the final decisions on which projects to fund are our own and, where appropriate, may differ from each Panels' recommendations.

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<sup>2</sup> Gas NIC Expert Panel: <https://www.ofgem.gov.uk/network-regulation-riio-model/network-innovation/gas-network-innovation-competition/gas-nic-expert-panel>  
Electricity NIC Expert Panel: <https://www.ofgem.gov.uk/network-regulation-riio-model/current-network-price-controls-riio-1/network-innovation/electricity-network-innovation-competition/electricity-nic-expert-panel>

## The 2018 competitions

1.9. This year’s Competitions began with the ISP in April 2018. We received seven submissions across both Competitions. We rejected two submissions to the Electricity NIC at the ISP stage: Southern Electric Power Distribution’s project Connection<sup>3</sup>, and Scottish Power Distribution’s Project Vision<sup>4</sup>.

1.10. At the Full Submission stage, the Expert Panels had two meetings with each project team. Where aspects of the submissions required clarification, the network companies had an opportunity to provide such clarification. The Panels made their recommendations based on the final submissions, taking into account any clarifications provided, and submitted their recommendations to us in late October 2018.

1.11. We appointed AECOM as the technical consultant for this year’s Electricity Competition. We used Ofgem’s own Engineering Hub to support the Gas Expert Panel. The role of the technical consultant is to support the Panel. The Panel directed the consultants to advise it on technical issues, and challenge the companies on specific technical aspects of each project. We also asked questions of the companies throughout the process.

1.12. We assessed the projects, taking into account the NIC Evaluation Criteria and the Expert Panels’ recommendations, to decide which projects should receive funding. Our decision on which projects to fund through the Gas NIC is contained in Chapter 2. Our decision on the Electricity NIC is contained in Chapter 3.

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<sup>3</sup> <https://www.ofgem.gov.uk/publications-and-updates/decision-connection-scottish-and-southern-electricity-networks-isp-submission-2018>

<sup>4</sup> <https://www.ofgem.gov.uk/publications-and-updates/decision-project-vision-scottish-power-energy-networks-isp-submission-2018>



## 2. Decision on the Gas Network Innovation Competition

### Section summary

We are approving £13.28 million of funding for Cadent's project, HyDeploy2, subject to a number of conditions. We received no other submissions for this year's Gas NIC.

### Projects selected for funding

#### ***HyDeploy2 – Cadent: NIC funding awarded £13.28 million, compulsory contribution 1.5m***

##### *Overview*

2.1. HyDeploy2 aims to build upon Cadent's 2016 NIC project, HyDeploy, which intends to demonstrate that hydrogen can be safely blended into natural gas at a level beyond that currently permitted in the Gas Safety (Management) Regulations (GS(M)R)<sup>5</sup> and effectively distributed to consumers. HyDeploy carried out its trials on a private network. HyDeploy2 will be the first GB deployment of blended hydrogen with natural gas into a licenced gas distribution network (we recognise that town gas had a higher concentration of hydrogen in it than natural gas from the North Sea, which has been the predominant source of gas in recent decades). There will be two trials; one in Cadent's North West region and the other in the North East by Northern Gas Networks (NGN).

2.2. The aim of this project is to demonstrate that the gas distribution network can safely transport natural gas blended with hydrogen.

##### *Summary of Expert Panel's recommendation*

2.3. The Expert Panel believe the project is timely, well thought through, and represents a significant step towards decarbonising heat within the GB network.

2.4. The Panel recommends that we provide the full amount of funding requested for this project. The Panel recommends providing access to funding, subject to the project passing two stage gates. These stage gates will focus on the Health and Safety Executive (HSE) exemptions to the GS(M)R that are required in order for the two trials to begin (one exemption is required for each trial area).

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<sup>5</sup> <http://www.legislation.gov.uk/ukxi/1996/551/contents/made>

*Ofgem's assessment and decision*

2.5. We agree with the Expert Panel's recommendation and consider that HyDeploy2 performs well across all of the Evaluation Criteria.

2.6. The project performs well under the environmental and financial benefits criterion. Cadent estimates that, if rolled out across the whole of GB, the adoption of blended hydrogen and natural gas could save an estimated 120 million tonnes of CO<sub>2</sub> by 2050. If successful, the project could provide a clear alternative to the installation and use of heat pumps. It is estimated that this could lead to a saving for consumers of £8 billion cumulatively to 2050, when compared to the installation and network reinforcement required to move forward with heat pump solutions. There is also a clear benefit in utilising the existing network and appliances currently on the network as opposed to reinforcement assets that could potentially be stranded.

2.7. There are concerns regarding the overall cost of producing hydrogen which may impact on the potential for rollout.

2.8. Based on the potential benefits described above, we consider that this project is both relevant and timely and can play a key role in the UK's commitment to reducing its carbon output by 80% by 2050. The project will provide a knowledge base for a decarbonisation option that will utilise an existing asset and if successful, will have minimal effects on consumers. It represents good value for money for consumers.

2.9. Knowledge sharing is a key component of this project. In its submission, Cadent has demonstrated its plans for disseminating the knowledge gained from this project. The project will provide data for all gas distribution networks (GDNs). In addition, stakeholders involved in the production, delivery and utilisation of hydrogen will benefit. We believe HyDeploy2 will generate the knowledge necessary in order to support GDNs in transporting hydrogen blended with natural gas within the existing network infrastructure.

2.10. The HyDeploy2 project is innovative. It aims to provide the evidence required to support the injection of a significant quantity of hydrogen on to the gas network for the first time. It will require exemptions from GS(M)R to be granted before it can proceed. Accordingly, we are satisfied that the project would not be carried out as part of business as usual.

2.11. Cadent has decided to utilise the project team currently delivering the HyDeploy project at Keele. This is a logical step, ensuring that learning from HyDeploy is captured and brought into HyDeploy2. We believe Cadent's choice of Project Partners is sensible and brings a clear benefit to the project as a whole.

2.12. The Panel has recommended that Cadent should be able to access funding in tranches. We will allow Cadent to access the funding required to secure the exemption necessary to implement the first field trial in the Wirral. Cadent will then be able to access the funding required to develop the safety case to secure the second exemption for the field trial in Gateshead. Following receipt of the second exemption, full project funding will be made available. We will work with Cadent to understand precisely what funds need to be made available prior to each stage gate before issuing a project direction.

## **Feedback from this year's Gas NIC**

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2.13. The Panel can see clear evidence that the network licensees are learning from the feedback provided on previous bids and believe they are developing a more innovative culture.

2.14. The Panel were encouraged by the network licensees increased willingness to draw on third parties, including suppliers and academics for fresh ideas. It felt that this bid demonstrated the role that the gas network can play in a low carbon economy.

2.15. We agree with the views of the Panel, and would encourage the network companies to continue to engage with the NIC process. We would like to see an increase in the number of bids in next year's Competition to encourage competition and to continue to innovate and improve the gas network.

### 3. Decision on the Electricity Network Innovation Competition

#### Section summary

We have decided to fund three of the four projects for which we received Full Submissions. The funded projects are: Black Start from Distributed Energy Resources (DER), submitted by National Grid Electricity Transmission, the Electricity System Operator, (the ESO, awarded £10.27m); Charge, submitted by SP Manweb (SPM, awarded £6.85m); and Optimise Prime, submitted by London Power Networks (LPN, awarded £16.4m). We have decided to attach conditions to the funding of Charge and Optimise Prime. In total, we are approving £33.5 million of funding.

3.1. We received four Full Submissions to this year's Electricity NIC requesting a total of £44.62 million of NIC funding:

- National Grid Electricity System Operator (the ESO) requested £10.27 million to develop and trial black start services from DER (Black Start from DER);
- SP Manweb (SPM) requested £6.85 million to develop and demonstrate mitigating solutions to the impact of electric vehicle (EV) charging on the network (Charge);
- London Power Networks (LPN) requested £16.4 million to carry out trials and data gathering activities around the impact management of commercial EV fleets (Optimise Prime);
- Western Power Distribution (WPD) West Midlands requested £11.1 million to develop and demonstrate cost-effective flexible connections and a network reconfiguration tool that would automatically determine optimal operational arrangements (Revise).

#### Our decision

3.2. Based on the evidence provided by the network companies and the Expert Panel's recommendations, we have decided:

- **to provide full funding for one project (Black Start from DER), as submitted**
- **to provide full funding for two projects (Charge and Optimise Prime), subject to conditions**
- **not to fund one project (Revise)**

3.3. The reasons underpinning our decisions are summarised below alongside, where applicable, relevant conditions for funding of approved projects.

## Projects selected for funding

***Black Start from Distributed Energy Resources (DER) – National Grid Electricity System Operator (the ESO): NIC funding awarded £10.27 million, compulsory contribution £1.2 million, other funding £0.12 million***

### *Overview*

3.4. Black start is the restoration of power in the event of a total or partial shutdown of the electricity system. The project, Black Start from DER, aims to develop and demonstrate the ability of DER to restore an electricity system following blackout. It seeks to develop and demonstrate technical, coordination and control solutions, including restoration times, as well as the procurement and regulatory frameworks required to deliver black start from DER. If successful, this project will prove the black start capability of some types of distributed generation, and establish the necessary requirements for the delivery of black start services from DER as a business as usual activity.

### *Summary of Expert Panel's recommendation*

3.5. The Panel considers this an innovative, first of its kind project that will facilitate the transition to a low carbon economy, delivering financial and wider benefits to network customers. It is the Panel's view that the project is necessary to initiate the transition to cost-effective black start services from generators that will be available in the future. It will support the move away from the current reliance on aging assets that must be kept on standby, which are becoming increasingly expensive to maintain.

3.6. The Panel is confident that the project will represent carbon benefits regardless of the type of DER successfully proven to provide black start capability (i.e. whether low-carbon or not). That is because of the significant carbon reductions to be derived from moving away from reliance on large fossil-fuelled power generators.

3.7. The Panel believe that the project scope, focussing primarily on synchronous DER, is achievable and will provide the necessary learnings to progress black start from DER.

### *Ofgem's assessment and decision*

3.8. Overall, the project performs well under each of the Evaluation Criteria and, where clarification was required, the ESO was forthcoming with information to give us greater assurance in the project's outcomes for network customers.

3.9. We share the Panel's confidence in the carbon benefits potential of this project, as detailed above. The coordinated approach proposed by the ESO also has the potential to accelerate the realisation of the financial and environmental benefits of black start from DER.

3.10. We believe that the project represents value for money to network customers. The concept was proposed by TNEI through a competitive call for ideas issued by the ESO, and was selected by reference to a set of evaluation criteria, including a cost benefit analysis. All Project Partners are contributing 10% of project costs. The ESO has committed to a minimum of two live trials of black start from DER on part of SP Distribution's (SPD's) network.

3.11. The project will generate new knowledge, as this will be the first trial of procuring black start services from DER. There is also the potential for the establishment of a market for procuring black start services from DER, which would be of benefit to DER owners who may be able to bid into such a market.

3.12. We are satisfied that the project is innovative as it is the first of its kind. We recognise that the number of participants involved in black start from DER entails greater complexity of communications and multilateral arrangements than those in place for existing black start arrangements.

3.13. The Project Partners are appropriate for the achievement of the proposed project outcomes. TNEI's involvement brings expertise in generator technology, modelling and analysis. The inclusion of SPEN as a Project Partner gives us confidence in the rollout of the project outputs to business as usual because of its participation in the technical trials, which are to take place on SPD's network, as well as its facilitation of engagement with its customers, the DER participants.

3.14. We agree with the Panel that the project is relevant and timely due to the increased availability of DER and the increasing cost of maintaining large fossil-fuelled generation capable of providing black start services.

3.15. We are satisfied that the ESO will consider all options of DER before NIC funds are committed to live trials. The ESO revised their early stage work packages, to avoid unnecessary expenditure on the project before the results of a complementary NIA feasibility study are available. This NIA study may allow further types of DER to be included in the live trials.

***Charge – SP Manweb (SPM): NIC funding awarded £6.85 million, compulsory contribution £0.77 million, other funding £0.82 million***

*Overview*

3.16. If implemented, Charge will consider how greater geographic visibility of the LV network and an understanding of electric vehicle (EV) drivers' charging behaviour can be combined to facilitate a more rapid and efficient deployment of EV charging infrastructure.

3.17. This visibility will be achieved by overlaying transport planning and electricity network mapping, as well as carrying out residential on-street and destination charging trials. The objective is to identify relevant trends and the potential for flexible connections as EV ownership increases. The on-street and destination charging trials and accompanying data gathering activities will also demonstrate the effectiveness of price and charging speed signals upon developers and EV owners. The project will share its findings via the main project output, the ConnectMore interactive mapping tool, which will be freely available to interested parties following project completion.

3.18. If successful, the project will accelerate the efficient connection of charging infrastructure.

*Summary of Expert Panel's recommendation*

3.19. The Panel believes the project has taken on board lessons learned from the rapid (and uncoordinated) installation of distributed renewable generation. While the Panel doubts that the ConnectMore tool will have as great an influence upon EV charge point locations as suggested by SPEN (because of other contributing factors), the Panel is confident that the project has the potential to provide a model from which to derive GB-wide EV charging locations.

3.20. The Panel did note that another distribution network operator (DNO) as a Project Partner would have increased its confidence in project outputs being adopted across the GB network by ensuring the replicability of the transport planning and network mapping. However, SPM's commitment to collaboration with UKPN on its complementary EV NIC project (Optimise Prime) has alleviated this concern.

*Ofgem's assessment and decision*

3.21. To an extent, the project outputs will depend upon the on-street and destination charging trials being completed, which in turn rely upon EVs making use of trial charge points to provide sufficient data. SPM has committed to funding a car club to address this need, and has provided evidence of its engagement with diverse interested participants. We recognise that the scale of the estimated benefits of the project is subject to the uncertainties associated with the uptake of EVs. We believe that the project has the potential to contribute to carbon savings, because EV uptake will be encouraged by the project's facilitation of charging infrastructure and because the project will contribute towards meeting the UK's EV adoption targets.

3.22. We shared the Panel's concerns about the recruitment and cost of transport planning Partner, PTV Group. SPM has assured us that PTV's prominent position in the market and the competitive process by which it recruited all other Project Partners represents overall value for money. SPM has committed to funding a car club in order to ensure that the charge point data gathered is realistic and statistically relevant and has confirmed that any charging infrastructure, such as street furniture, will not be procured with NIC funds. Further, UKPN and SPM have confirmed that they have and will continue to collaborate with one another on their complementary EV NIC projects in order to share learning and avoid duplication. This collaboration has already resulted in a reduction in project costs. Charge will comply with the default Intellectual Property Rights (IPR) arrangements for the NIC, which will ensure that all foreground IPR, including the ConnectMore tool and the means to replicate it, will be freely available to all GB licensees and stakeholders.

3.23. The Panel expects that SPM would consult closely with all DNOs to ensure the project learning has wide applicability across Great Britain prior to trial site selection. We will incorporate this expectation as a condition of funding, in order to ensure value for money of project outputs.

3.24. The project generates new knowledge by providing a detailed, geographic understanding of network capacity, which allows for the anticipation of charging requirements. Both the Panel and Ofgem were encouraged by the project's focus on solutions for on-street residential parking, which SPM cites as affecting one third of households and which has not, to our knowledge, been addressed by other projects. The trial of residential and destination charging solutions will demonstrate the effectiveness of price and charging speed signals upon developers and EV owners. The data shared via the ConnectMore tool will be open to external parties and offers granular detail that has historically not been available from the LV network.

3.25. We agree with the Panel that the project is innovative. It entails a novel application of established transport planning tools in electricity network mapping. The project's on-street and destination charging trials aims to incentivise developers to consider network constraints, understand customer responses to charge speeds, as well as to examine how other flexible demand resources may be integrated with charge points. The ConnectMore tool will allow infrastructure providers, land planners and developers to consider network constraints and capacity in order to facilitate the cost effectiveness and efficiency of EV charge point connections. SPM has assured us that it has and will continue to consider other learning from related innovation projects, including UKPN's Optimise Prime.

3.26. The Project Partners (EA Technology, Smarter Grid Solutions and PTV Group) deliver the technical elements of the project. They are each making a contribution to the project costs. We note the Panel's concerns about the absence of another DNO as Project Partner, however we are satisfied with the commitments made by SPM and UKPN to collaborate on their complementary EV projects.

3.27. The anticipated uptake in EVs requires preparation on the part of network operators in order to deliver the most efficient and coordinated solution, while avoiding network constraints. The project also supports the government's Road to Zero Strategy<sup>6</sup>. We are therefore confident that the project is relevant and timely.

***Optimise Prime – London Power Networks (LPN); NIC funding awarded £16.4 million, compulsory contribution £1.8 million, other funding £16.24 million***

*Overview*

3.28. Optimise Prime will gather data from two trials, and one other commercial fleet:

- Its Royal Mail trial will use vehicle mileage and data to determine total daily charging requirements at an electric vehicle (EV) fleet depot, and define an EV fleet depot's optimal daily demand profile to be managed behind the meter.
- Its Centrica trial will develop and demonstrate flexibility services to distribution network operators (DNOs) from commercial vans charging on domestic connections.
- Uber will also provide data from its EV fleet.

3.29. LPN identifies commercial vehicles as making up 58% of new vehicles registered. The project's findings could therefore be significant as the percentage of EVs and their corresponding impact on the network increases. If successful, it will enable licensees to anticipate and accommodate related capacity requirements and to facilitate the adoption of EVs by commercial network customers across Great Britain (GB).

*Summary of Expert Panel's recommendation*

3.30. The Panel identified two key areas of valuable innovation in the project: its work on commercial vehicles charging on domestic connections, which will provide new learning on

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<sup>6</sup>[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/739460/road-to-zero.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf)



commercial EVs' impact on residential networks and inform developers of energy management tools for this new market; and the development of a behind the meter optimisation tool for depot charging. The depot optimisation tool could avoid the current over-specification by new connecting customers that can result in stranded assets, and allow DNOs and fleet owners to assess and test the potential of flexibility services derived from behind the meter solutions.

3.31. The Panel is confident in the project's potential to deliver carbon and network capacity benefits, while recognising that (as in the case of this year's other EV bid) the scale and timing of the estimated benefits of the project is subject to the uncertainties associated with the uptake of EVs.

3.32. The Panel was initially concerned by the level of benefit accruing to Project Partner Hitachi; they were however reassured during the competition process that Hitachi's wide-ranging role represents value for money to network customers, including by achieving economies of scale.

3.33. While the data gathered from Royal Mail, Centrica and Uber will not be wholly representative of GB commercial fleets, the Panel is confident that the scale of the trials and variety of participating businesses are sufficient to generate knowledge of value to all GB licensees and commercial network customers.

#### *Ofgem's assessment and decision*

3.34. The merit of Optimise Prime lies in the diversity of participating fleets and the scale of the trials that LPN has committed to in its project proposal, the data from which will be the main output of the project. In addition to a requirement that contracts be concluded prior to NIC funds being accessed by Project Partners, we will include a condition in the Project Direction to ensure that a minimum of 1,000 vehicles per trial is confirmed prior to the investment of funds in the trials.

3.35. The scale of the estimated benefits for the project is subject to the uncertainties associated with EV uptake. However, we agree with the Panel's observation that, even in the low uptake scenario proposed by LPN, the project has the potential to deliver considerable financial benefits.

3.36. It is appropriate that Royal Mail, Centrica and Uber are funding and providing their own fleet vehicles in the trials. The project was proposed by Hitachi through a competitive call for ideas. LPN and SP Energy Networks (SPEN) have confirmed that they have and will continue to collaborate with one another on their complementary EV NIC bids, in order to share learning and avoid duplication.

3.37. The project will provide new learning about the management of commercial EV fleet charging and its ability to avoid costly network reinforcement. The findings and outputs of the project, namely the internet of things (IoT) platform and data, will be freely available. This exceeds the NIC's default IPR arrangements.

3.38. We agree with the Panel that the project is innovative in its work to determine an EV depot's optimal daily demand profile, and in its trials of solutions for commercial charging on domestic connections. We regard these project elements as indicative of a move towards distribution system operator (DSO) thinking, where factors beyond the network are taken into consideration, as opposed to the fit-and-forget approach historically taken by DNOs.

3.39. LPN has included six Project Partners in its proposal, who together are contributing 47% of the total project cost. The involvement of Scottish and Southern Electricity Networks (SSEN) gives us greater confidence that the project learning will be taken on board by other DNOs. It is also of value that LPN has committed to continued engagement with SPEN on its complementary EV NIC project, Charge.

3.40. We consider the project to be relevant and timely in its direct relation to GB's carbon reduction targets and the government's Road to Zero Strategy. LPN expects the project to break even by 2025, and to realise considerable benefits by 2030, which will accommodate the acceleration of EV uptake that is forecast over the course of the 2020s.

3.41. The datasets and algorithms will be made openly available on Hitachi's IoT platform for other DNOs to apply to their own network areas, as well as the platform being made available in its existing format for the benefit of third parties. We are confident that the project methodology has the potential to deliver the proposed benefits.

## Projects not selected for funding

3.42. We have decided not to fund one project. The Panel and Ofgem agree that the project did not perform sufficiently against the Evaluation Criteria set out in the NIC Governance Document. We are not able to resolve our concerns about project performance against the Evaluation Criteria by imposing conditions on funding. We describe the project and our reasons for deciding not to award funding below.

### ***Revise – Western Power Distribution (WPD) West Midlands: NIC funding requested £11.1 million, compulsory contribution £1.26 million.***

#### *Overview*

3.43. Revise proposed to develop three project elements:

- a flexible connection (Advanced Connection Solution, or ACS) that could be a cost-effective alternative to the current lowest cost connection to new connecting customers
- an intelligent network reconfiguration (Intelligent Network Reconfiguration, or INR) system that could be capable of freeing up network capacity in real time, and
- an automated protection system (Dynamic Protection Solution, or DPS) that could adjust its protection settings, as an enabler to the other project outputs.

3.44. WPD submitted that the main benefits of the project would be the increased availability of distributed generation (DG) through cost-effective flexible connections, and the release of latent capacity on the network through active network management and optimisation.

#### *Summary of Expert Panel's recommendation*

3.45. It is the Panel's view that the project does not represent sufficient innovation or value for money to warrant funding through the NIC, and that the project would deliver only marginal benefit when compared to its true counterfactual. While the proposed

benefits of the INR are demonstrably valuable, the needs case and benefits arising from the ACS or DPS do not convince the Panel, and appear to serve only as facilitators for the INR. WPD did not address concerns raised throughout the process regarding the absence of any Project Partners. This gave the Panel little confidence in the ability of the project to achieve any of the benefits proposed in WPD's submission, given their reliance on the adoption and rollout of project outputs by other licensees.

3.46. The Panel are unconvinced by WPD's benefits calculations, which propose that, of the three project elements, the INR alone would deliver benefits into 2030 and 2050. Further, WPD propose that deployment of the project outputs across Great Britain (GB) would match or exceed deployment on 36% of its own networks. While this is an ambitious claim in isolation, the absence of any Project Partners make it extremely unlikely that the project would be capable of achieving anywhere near this level of penetration.

3.47. Further observations by the Panel have been included in the following section where relevant to the explanation of our decision making process.

#### *Ofgem's assessment and decision*

3.48. The carbon benefits calculations of 0.8mT CO<sub>2</sub>e by 2050 would be a result of reducing the length and frequency of periods when low-carbon distributed generation is curtailed; even if the proposed level of uptake across the network were to be achieved, the forecast carbon reductions provided by WPD would still be marginal.

3.49. We are unconvinced of the environmental and visual amenity benefits of the ACS, which fulfils the same functions of pre-existing, affordable and readily available technologies in a smaller footprint.

3.50. We give WPD credit for its intention to apply competitive tendering arrangements to the purchase of the technology required for its trials; however the Panel could not assess whether the original equipment manufacturer (OEM) market could deliver the specifications required for the project, because WPD have not yet explored this. We agree with the Panel's view that the ACS and DPS are enablers for the development of the INR, and that spending 62% of the project's £12.6m budget on enablers does not represent value for money to network customers.

3.51. We agree with the Panel that the INR is innovative, and that it could be valuable in the avoidance of costly network reinforcement. While it is true that the DPS has not previously been demonstrated, we believe the reason for this to be that there is not a strong needs case for it, and cannot see the value of its application beyond the facilitation of the INR. Lastly, we are not convinced that the ACS generates new knowledge as, in our view, its rearrangement of existing technologies leads to the same application, and therefore represents no additional value to network customers. We conclude that, though elements of the project are innovative, the project as a whole is not, and does not therefore perform sufficiently against the innovation criterion.

3.52. WPD has not incorporated preceding innovation work in this area, despite concerns expressed during the competition process as to the transferability of the project outputs. WPD's development of the project in isolation from the existing innovation portfolio gives us little confidence that the project outcomes represent benefits beyond those that licensees can already achieve.

3.53. The project has no Project Partners or external funding. Though WPD identifies DNOs as possible Project Partners in its submission, the evidence, including submissions by WPD to the Panel, does not suggest that this line of collaboration has been sufficiently pursued. The Panel noted that the absence of a generator Partner, representing the main beneficiaries of the ACS, was another omission in the project that may have strengthened its case. We would emphasise the Panel's comment to WPD that the NIC is a competition of ideas, rather than being designed to set network companies against one another. We would strongly advise that WPD bear this in mind in future innovation activities and consider the role of collaboration in the realisation of enduring project benefits.

3.54. On a positive note, the project's focus on keeping DG connection costs down on an increasingly complex distribution network is very relevant. We agree with the Panel's view that the project's intended solutions for maximising capacity through the INR would address a pertinent issue.

3.55. We have taken on board the Panel's concerns regarding the project trials, which appear underdeveloped, and without a fully considered risk mitigation plan. The Panel's concerns centred upon critical communications and cyber security requirements. In addition, we have noted the Panel's observation that WPD would be unlikely to stay within the budget proposed for the ACS. This overspend would lead to project changes that would be deemed unacceptable under the NIC Governance.

## **Feedback from this year's Electricity NIC**

3.56. We would encourage future applicants to consider the SQ logs published alongside this decision, and to anticipate the information required by the Panel and Ofgem in its composition of the project submission.

3.57. We encourage licensees to continue to build upon the innovative work taking place across the GB network and beyond, to work with third parties in identifying innovative new solutions to key network challenges, and to increase the delivery of benefits to network customers through innovation in business as usual.

## 4. Next steps

### Funding of selected projects

4.1. Before funding a project, we issue a Project Direction explaining the terms that the funded network company has to comply with as a condition of receiving NIC funding. If the network company agrees to comply with its Project Direction, we will issue a Funding Direction to specify the amount of money to be recovered from network customers next year, through their network charges, to fund the successful NIC Projects.

4.2. We will issue the Project Direction, and the resulting Funding Direction, by the end of December 2018. We expect the funded Projects to start as soon as possible, each according to the terms in its Project Direction and the applicable NIC Governance Document. Projects will be able to access funding from April 2019.

### Monitoring of projects and dissemination of learning

4.3. We will monitor each project to ensure it is implemented in line with its Project Direction. Each project will have to provide regular progress reports, in line with the requirements of the NIC Governance Document. These reports will be published on the companies' websites to make project learning available to all interested parties. Learning from the projects should also be made readily available and shared according to the projects' plans.

4.4. The Energy Networks Association (ENA) has a portal which holds information and learning from innovation projects, including those funded under the Low Carbon Networks Fund (LCNF) and the Gas and Electricity NICs. We expect learning from this year's projects to be made available through this portal.

4.5. Network companies have an obligation to hold an annual conference, open to all, where they present what they have learned from their projects (including previously funded NIC Projects). The conference is called the Low Carbon Networks & Innovation Conference. Further information can be found on its website<sup>7</sup>.

### The 2019 NIC

4.6. We will publish dates for next year's NIC competition in early 2019.

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<sup>7</sup> <http://www.lcniconference.org/>