Playbook for Network Innovation:

Building on patterns of success

Commissioned by

Innovate UK

Produced by

regen transforming energy

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ofgem

Foreword

The UK's energy system is the backbone of our society. It keeps the lights on, heats our homes and allows businesses to operate seamlessly. While from the outside this vast infrastructure might look to be the definition of inertia, it is in fact an intricate and dynamic ecosystem that relentlessly adapts, innovates and evolves. It's a story of iterative development, driven by the efforts and commitment of a wide range of people.

Navigating the energy networks, particularly within the context of their regulated frameworks, is no easy feat. The energy system is in a perpetual state of flux, driven by the dual pressures of evolving technology and the urgent imperative of sustainability. With these shifts come challenges – challenges that require an innovative spirit to overcome, but also structured guidance to navigate.

This Playbook brings together a multitude of voices, from industry veterans to pioneering innovators, each contributing valuable insights into what makes innovation successful in the complex realm of energy networks. Innovate UK commissioned Regen to develop the Playbook, a resource aimed at supporting innovators to negotiate the intricacies of energy network innovation. It's a starting point in chronicling these lessons learned from the front lines of network innovation, a foundational piece born out of these diverse yet converging perspectives. We expect it to grow and adapt, just as our energy networks do. Think of it like a map that reveals more detail with each iteration.

Whether you're new to the network innovation space or a seasoned innovator, learning from what has gone before will enhance your likelihood of success. As you delve in, remember this isn't just a static collection of past successes and lessons, it's an invitation: to contribute, to experiment and to be part of a dynamic, ongoing process of learning and adaptation. Your experiences, insights and feedback will help this document evolve, ensuring it remains a relevant and potent tool in our collective journey towards a more sustainable and resilient energy future.

Paul Padaruth
Head of Commercial - Ofgem Strategic Innovation Fund
Innovate UK

Who we are

Innovate UK, part of UK Research and Innovation, is the UK's innovation agency. It works to create a better future by inspiring, involving and investing in businesses developing life-changing innovations. Its mission is to help companies to grow through their development and commercialisation of new products, processes and services, supported by an outstanding innovation ecosystem that is agile, inclusive and easy to navigate.

Ofgem, as the regulator of energy markets, recognises the need to stimulate innovation, particularly in tightly regulated areas such as network monopolies. Ofgem aims to make the energy networks smarter, accelerate the development of low-carbon energy and deliver financial benefits to consumers. It does this by facilitating funding for innovative projects and creating a supportive regulatory environment.

Regen is a leading strategist providing independent, evidence-led expertise to transform the UK's energy system for a net zero future. Regen has been commissioned by Innovate UK to develop the Playbook for Network Innovation to explore the patterns of successful innovation projects, share learnings from previous innovators and support future innovators through their project journey.

Playbook for Network Innovation

This Playbook identifies and explores patterns of successful innovation. It is not a step-by-step guide to running an innovation project, but a 'book of previous plays' that will help you navigate some of the complexities of network innovation and give you pointers to increase your chances of success. It also signposts you to other initiatives and resources from across the network innovation sector.

Innovation plays a key role in the transformation of our energy networks and in meeting the evolving needs of consumers. Innovation funding has enabled improvements in how energy networks operate. However, building a net zero future requires a radical step change in the rollout of these solutions.

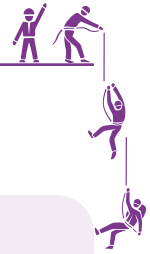
Since 2009, the energy networks have developed, trialled and tested more than 2,000 innovative ideas. Despite this, there is a lack of codified knowledge on the reasons for their success or failure. These projects range from desk-based studies to field trials of novel technologies and encompass everything from innovations of existing solutions to those fundamentally changing how the networks operate.

The Playbook for Network Innovation forms part of Innovate UK's commitment to support new and exciting innovations, which it is doing in partnership with Ofgem through the Strategic Innovation Fund (SIF). The SIF is a £450m programme of investment designed to find and fund ambitious projects which can help shape the future of the networks and accelerate the transition to net zero, at lowest cost to consumers. Innovate UK has collaborated with Regen to produce this Playbook to uncover key factors that lead to successful commercialisation and deployment. It draws together academic theory on innovation and experiential insights from more than a hundred innovators to develop this understanding.

However, this is not exhaustive and there are many factors not included in the Playbook that are influential in successful energy network innovation. More work is needed to explore their impact, learning from both previous and future innovation projects – including yours.

This Playbook marks the first step in what should become a regular process to gather and share insights on the factors influencing innovation success.

Understanding the innovation journey



The ultimate aim for innovators is to see their innovation implemented in practice and used widely across the network. However, innovation is a complex and non-linear process. Some innovations will never reach widespread rollout, but each project is an important stepping stone for future innovations.

The way in which innovations progress from early ideas to full-scale rollout will depend on the type of innovation being developed, and how well it aligns with existing technologies, processes, markets and regulations.

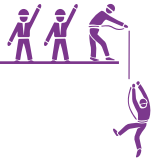
Innovations that strongly align with the existing technical and regulatory system are more likely to have a smoother journey. However, the transition to net zero, which shapes the focus of many projects, requires degrees of innovation and calls for more of that which is radical or even disruptive, marking a step change in the networks' way of doing things.

The energy networks operate a real-time system that delivers electricity and gas to the public 24 hours a day, seven days a week. Introducing new services, technologies or ways of working has to be done at lowest cost to the consumer, in a way that protects them.

Different projects have different goals, objectives and potential end users. However, regardless of the type of innovation, its aims, or where it sits on the innovation journey, there are some important patterns of behaviour that drive success. This Playbook codifies those patterns.

There are two main funding mechanisms available for network innovation projects – the Network Innovation Allowance (NIA) and the Strategic Innovation Fund (SIF). Energy networks also fund innovation as part of their business-as-usual (BAU) activities. Network innovation funding comes from customer bills and, therefore, comes with great responsibility to provide value back to consumers and wider society.

How the Playbook can help you



This resource centres around three dimensions of successful innovation:

- **Learning and knowledge**
- **People and processes**
- **Markets and application**

These dimensions, which are rooted in academic theory, form the foundations of successful innovation. Strengthening your project in these areas will maximise its chances of being rolled out within the energy networks.

Within each dimension, there are several factors influencing success. These factors are the result of a rigorous process to identify patterns of successful innovation and have been developed with the help of innovators.

Each factor has been shown to influence project outcomes. They explore how you can navigate the energy network landscape to develop your ideas into successful projects. Certain factors may be more or less important depending on the specifics of your project and may apply in different ways throughout your innovation journey.

This is not a solo journey, and you will need to work with the networks, Ofgem, ENA, Innovate UK and others from across the energy system to deliver your innovation project. The Playbook can help you identify where you need to work with these other organisations to forge your own pathway towards implementation.

The Playbook draws on other resources from across the network innovation sector – for example, the EIC's Ultimate Guide to Innovating with UK's Energy Networks and ENA's Energy Networks Innovation Process.

Ways to get involved

1 LEARN FROM OTHERS

One of the best ways to avoid pitfalls is to learn from those who have gone before you. The Playbook takes a practitioner's view, providing top tips and recommendations from experienced innovators that have conducted successful previous projects. The case studies focus on projects which have been rolled out in one or more of the energy networks.

2 IDENTIFY NEW FACTORS

We recognise that there is more to be learned from both previous and future innovation projects. Other factors cited as being influential to success include procurement, collaboration, objective setting, data sharing, supply chain readiness, consumer engagement and market creation. We invite you to share your experiences with other innovators.

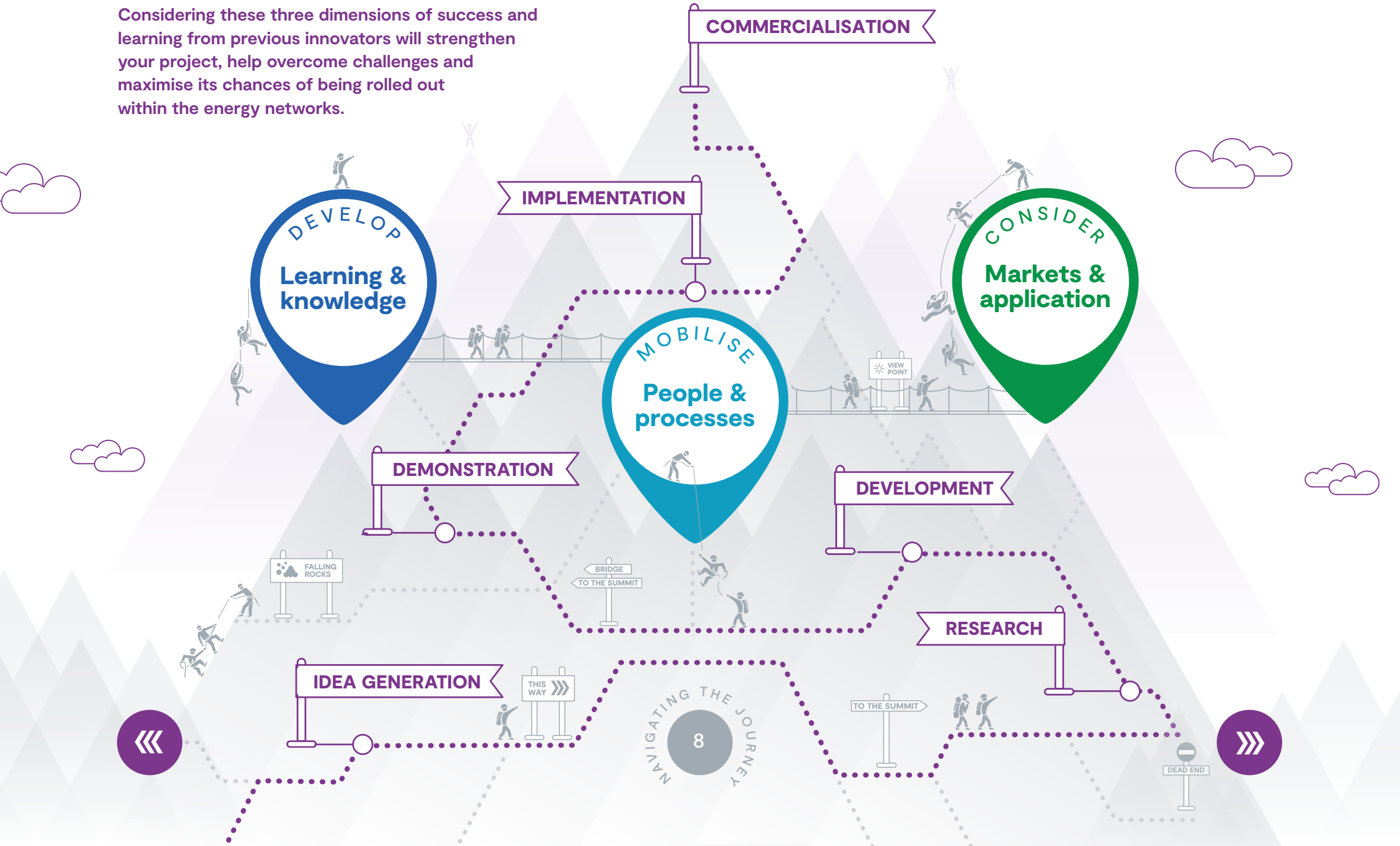
3 SHARE YOUR STORY

You can contribute to the Playbook by sharing your experiences from energy network innovation projects. What has helped you overcome some of the challenges you've encountered in your project? What advice would you give future innovators? Have you got any tips for how to successfully navigate the factors identified in the Playbook?

CONTRIBUTE TO THE PLAYBOOK ❯

Navigating the innovation journey

Considering these three dimensions of success and learning from previous innovators will strengthen your project, help overcome challenges and maximise its chances of being rolled out within the energy networks.



Learning & knowledge

Openly communicating the knowledge and learning gained throughout your project with relevant stakeholders can enable you to improve your innovation based on their feedback.

SUCCESS FACTORS

- UNDERSTAND AND BUILD ON PREVIOUS INNOVATION
- EXPLORE INTELLECTUAL PROPERTY ARRANGEMENTS
- SHARE KNOWLEDGE WIDELY
- ENGAGE WITH RELEVANT STAKEHOLDER GROUPS

People & processes

You will need to identify and recruit the requisite skills, draw on people's expertise and relationships and ensure appropriate governance and processes are in place to support innovation.

SUCCESS FACTORS

- FORGE RELATIONSHIPS WITH THE ENERGY NETWORKS
- BUILD A MULTI-SKILLED TEAM
- SECURE NETWORK BUY-IN AND SENIOR SPONSORSHIP
- CREATE A ROBUST GOVERNANCE FRAMEWORK

Markets & application

Understanding the value of, and making the case for, your innovation, as well as working to overcome challenges in how it will be used and how it fits within the wider energy system, are key elements in achieving rollout.

SUCCESS FACTORS

- ALIGN TO A WELL-DEFINED NETWORK NEED
- DEFINE A CLEAR END-USER PROPOSITION
- UNDERSTAND THE INTERACTION WITH POLICY AND REGULATION
- PLAN FOR SCALE-UP AND ROLLOUT

Learning & knowledge

Innovation projects form part of a dynamic ecosystem, with each one standing on the shoulders of others. However, much knowledge remains tacit, in the form of personal or institutional knowledge and skills, which can hamper innovation. Knowledge generation, learning and sharing thus form a key building block of successful innovation.

The creation and sharing of knowledge are powerful processes that help innovations progress from early ideas to initial development and demonstration, through to large-scale rollout and commercialisation across the networks. In the early stages of innovation, generating and documenting new knowledge can support development and growth, whereas learnings from producing and using your innovation become increasingly important later on.

Knowledge can be publicly available, embodied in hardware or entirely implicit through your innovation. Knowledge can also be lost – for example, in instances of high personnel turnover or technological obsolescence. This not only poses a risk to the organisation, but also reduces the impact of the innovation, as it fails to move knowledge forward.

Knowledge sharing can help overcome this and support wider understanding, engagement and buy-in. It can be formal – for example through a learnings report – or less formal, such as a workshop or face-to-face conversation. It is particularly important to share where the innovation has encountered challenges, and how they have been overcome.

The way in which knowledge is communicated can support the rollout of your innovation, both within the networks and by the end user. It can help reduce uncertainty, particularly when comparing it to an existing solution or process. Understanding the information that end users need and value, and the channels through which they access that information, are key to securing their support.

> **Dissemination of learnings is the single most important part of utility innovation. All interested parties must be able to understand, learn and contribute to project results.**
>
> NATIONAL GRID ENERGY DISTRIBUTION

Factors influencing success

UNDERSTAND AND BUILD ON PREVIOUS INNOVATION

Innovators need to build on previous and current projects to reduce the likelihood of duplication of work and increase the chances of breakthroughs. This extends beyond the energy sector, to learn from other industries and technology areas.

FIND OUT MORE ABOUT THIS FACTOR

EXPLORE INTELLECTUAL PROPERTY ARRANGEMENTS

While sharing knowledge is vital, it's also important to protect Intellectual Property (IP). Early conversations with your network partners and funders can remove IP challenges from the end procurement process if your innovation gets rolled out.

FIND OUT MORE ABOUT THIS FACTOR

SHARE KNOWLEDGE WIDELY

Within your project, sharing knowledge and learnings is critical for all parties to be able to understand, learn and contribute to project results. The more widely knowledge can be shared, the greater its impact.

FIND OUT MORE ABOUT THIS FACTOR

ENGAGE WITH RELEVANT STAKEHOLDER GROUPS

Communicating and engaging with different stakeholders can result in cross-pollination of ideas and innovations and provide an opportunity to strengthen your project through listening and adapting to feedback.

FIND OUT MORE ABOUT THIS FACTOR

Understand and build on previous innovation

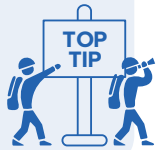
The journey from idea to commercialisation takes time and does not always occur within the space of one innovation project. While some projects – particularly those focused on clearly defined and tightly scoped incremental innovation – may quickly progress an idea, many go through iterations over decades before they reach network rollout.

Understanding and building on past innovations can help generate momentum, allowing innovations to reach a breakthrough. This is of particular importance for radical innovations that seek to fundamentally change how the energy system operates. ENA's Smarter Networks Portal can be used to gather valuable information about relevant projects and provide points of contact within network innovation teams to speak with to better understand opportunities for innovation.

Once you reach the pitching stage, you should be able to demonstrate your knowledge of the wider technical and regulatory system and where your innovation fits within it. Thus, it's important to spend time accumulating knowledge in the early stages of idea generation, through research and engaging with the networks. This is sometimes referred to as establishing the relevant State-of-the-Art.

There are also likely to be other key sources of information depending on the specific topic of your innovation. Academic research funded through UKRI research councils is required to ensure findings are publicly available rather than behind journal paywalls. In addition, many researchers will share insights through white papers or reports published on programme websites (e.g. EnergyREV, UKERC, CREDS). This may help you recognise where further research is needed before reaching the application phase. This was the case for Northern Powergrid's Community DSO project team, who deferred their Network Innovation Competition (NIC) funding application to undertake an NIA research project to strengthen their knowledge.

Incorporate an early workstream in your project to review the relevant and evolving innovation landscape. This may include a desk-based review of relevant literature and stakeholder engagement.



Explore Intellectual Property arrangements

IP arrangements are essential for supporting the development of your innovation and commercial offering. The majority of projects will comply with the default IP arrangements. However, where necessary, alternative arrangements can be agreed on a case-by-case basis where the default creates challenges for innovators.

The way IP is treated in NIA and SIF projects differs slightly from other sectors. This is due to being funded through customer bills and the need to ensure that knowledge generated through these funds can be shared between networks and implemented at lowest cost to consumers. Therefore, your background IP (generated before the project starts) will be fully protected and the foreground IP (generated during the project and required by other networks for rolling out the innovation) should be shared.

This is outlined in the relevant NIA and SIF governance documents and in the Energy Networks Innovation Process.

You should work with your network company partner in the early stages of project discussions to talk through the IP arrangements, ensuring all parties are happy with the contract (see Create a robust governance framework). Focus on how and why you may benefit from a unique IP arrangement, as the default is in place to provide greatest value to bill payers. For example, some research institutes and non-profit organisations use a combination of funds to facilitate research projects relating to the energy networks. Unique IP arrangements can maximise the benefit of this research by allowing the findings to be shared among all relevant audiences.

It's important to fully understand this area to get it right in the first place, as it may affect procurement of your innovation further down the line (see Plan for scale-up and rollout). It also ensures you can quickly progress the project once funding has been awarded.

Make use of the EIC's resources to help you understand IP within network innovation projects. This includes infographics, guidance and one-to-one legal support to help you to navigate the complexities of IP under the NIA and SIF funding schemes.

Share knowledge widely

As network innovation projects are funded through consumer bills, it's important that insights are shared widely so future projects can build on these and provide maximum benefit for bill payers. It also provides an opportunity to promote your innovation and raise your profile within the energy networks.

While there are certain rules around the IP created during your project (see Explore Intellectual Property arrangements to understand these further), it's a requirement of network innovation funding mechanisms to share knowledge and learnings with other networks and the wider innovation community. Sharing the lessons learned throughout your project is as important as disseminating the end results. Even if it has not yet been adopted into the networks, it could positively shape the direction of other projects. This includes openly discussing your project's challenges and how you overcame them. These learnings are extremely valuable to the wider innovation community and may help others navigate common pitfalls such as regulatory constraints, customer engagement challenges and market access issues.

The 'best' or most appropriate channels for sharing knowledge will depend on who you are sharing insights with, and for what purpose (see Engage with relevant stakeholder groups for more). A range of media types, including videos, podcasts, articles, webinars and progress reports, can be used creatively to share knowledge as widely as possible and to different audiences. Mass media channels are useful, but interpersonal channels are more important when seeking end-user buy-in.

Learn more about how people have put this into practice in the Lessons from the Past and Valve Care Toolbox case studies.

Engage with, and present at, knowledge-sharing sessions to share your insights, promote your innovation and forge key relationships with the networks. This may lead to greater uptake of your innovation across multiple networks, or future innovation projects.

Share knowledge widely

Lessons from the Past

Partners:
Wales & West Utilities
Northern Gas Networks
WSP

Also applies to:

ENGAGE WITH RELEVANT STAKEHOLDER GROUPS

Lessons from the Past was carried out by Wales & West Utilities, Northern Gas Networks and WSP to explore what could be learned from Britain's conversion from 'town gas' to natural gas in the 1960s and 70s, as we begin a new transition away from gas. The research film is now in the public domain and a suite of internal and external communications have been created.

The team found that one of the noteworthy aspects of the previous transition was that changes were communicated in an accessible way to both industry and the public. The language and tone were tailored to different groups while the message itself remained consistent. The key to the success of the Lessons from the Past project also lay in creative communication.

The support of a net zero communications officer was enlisted at the beginning to explore creative ways of sharing the project's findings. The team secured a budget to record a film, drawing on National Gas archive footage. One of the team, a member of the Institution of Gas Engineers and Managers, was also able to gain access to further footage.

Wales & West Utilities is using the findings of this project to engage with relevant stakeholder groups, both internal and external. The team presented the video at an internal Net Zero Co-ordination Group and hosted a company-wide webinar on the project. There are plans for further dissemination with colleagues in British Gas and with regularly engaged stakeholders to share the relevant learnings more widely.

Engage with relevant stakeholder groups

Communicating clearly and regularly with each of your stakeholder groups will be crucial to success, helping you overcome challenges and conveying the benefits of your innovation with potential users. Effective engagement also ensures those people are comfortable and confident using your innovation.

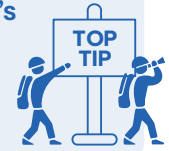
You can start to understand who you need to engage with by mapping out key stakeholders. It's important to identify how and when they should be engaged and tailor your communication to increase its impact.

For some projects, people outside of the energy industry may form a key part of your stakeholder map. If this is the case, make sure you've allowed enough time to properly engage with people from a broad range of demographics to be able to draw out valuable conclusions. This can be challenging and some projects have brought in third-party communication experts.

Sharing progress, outcomes and lessons learned throughout the project, as well as upon completion, will enable you to bring stakeholders along on your journey. This is best done through interactive two-way approaches, rather than simply sharing reports and asking for feedback. This could take many forms, including informal conversations, advisory or steering group meetings, focus group sessions or roundtable discussions. Facilitation techniques such as neutrality, active listening and the use of prompts can support engagement and ensure your stakeholders are able to effectively input ideas without being overly influenced or biased by members of the project team.

Learn more about how people have put this into practice in the Lessons from the Past, Dynamic Reserve Setting and FUSION case studies.

Move away from activities that 'inform' people about your innovation, and toward activities such as workshops, citizens' panels or advisory boards, and even co-production or co-design elements. Decades of social science research have shown that early and participatory approaches to public engagement can result in more impactful and effective innovations. The University of Strathclyde's Moving from 'doing to' to 'doing with' article covers this in more detail.



Engage with relevant stakeholder groups

Dynamic Reserve Setting

Partners:
National Grid Electricity System Operator (ESO)
Smith Institute

Also applies to:

SECURE NETWORK BUY-IN AND SENIOR SPONSORSHIP ›

Starting in 2021, the ESO has been conducting the Dynamic Reserve Setting (DRS) project, which aims to create and use a probabilistic machine-learning model to produce more accurate predictions of reserve. The demonstration will run in parallel to ESO's existing reserve power recommendation for up to a year to ensure it is accurate before being rolled out. In its first usage, DRS was used to inform the decision to cut 1 GW of reserve.

Key to unlocking success was ensuring the new forecasting methods were understood and their value in improving the control room's day-to-day responsibilities were well communicated. This helped with the rollout of the innovation project across different parts of the business. The team did this by thoughtfully constructing engagement activities with the needs of different stakeholders in mind. This included understanding their interests and time constraints.

One particular challenge was engaging with control room staff, who were often too busy to join meetings due to shift patterns and the intensity of their workload. To address this, a single point of contact was established by assigning a control engineer, who worked across various control room shifts, to the project team. The engineer helped to gather input and feedback from across their team.

People & processes

People are central to innovation. The way in which people and organisations work together can impact the overall success of your project. To sustain your innovation journey, you will need to draw on people's time, effort and investments.

The role and importance of different people and organisations varies over the lifecycle of an innovation. As your project develops, you will need to draw on different skills from across, and beyond, the energy sector. This, in turn, can create complex relationships which need to be managed and nurtured. Identifying the skills needed earlier is useful, but not always possible, so an element of flexibility is necessary to allow for changes.

It's beneficial to understand the motivation of the organisations involved and what they hope to get out of the project. This may vary between partners. It's also helpful to consider the role and importance of your project within the wider business model of each organisation involved and try to align the desired outcomes.

Drawing on, and building, your network of contacts within the energy system can help in the rollout of your innovation. These individuals can help advocate for your innovation, informing and influencing the decisions of others in the system. These may be within the energy networks, or in the wider energy system. This is of particular importance for more radical innovations.

It's impossible to perfectly predict how an innovation project will play out. It's therefore important that projects can 'fail fast'.

A focus on responding and adjusting to feedback throughout can help build momentum.

Flexible processes and governance can create a safe and fast way to fail, recognising failure as an essential part of innovation. They can also help to remove roadblocks and speed up decision making, while also protecting and supporting the project team during the innovation journey.

> **With the right mix of people, internal and external, who have a supportive innovation culture, innovation can thrive.**
>
> ENERGY NETWORK REPRESENTATIVE

Factors influencing success

FORGE RELATIONSHIPS WITH THE ENERGY NETWORKS

Engaging with the energy networks early can help you understand their business priorities and identify opportunities for innovations. Relationships and reputation are key.

FIND OUT MORE ABOUT THIS FACTOR ❯

BUILD A MULTI-SKILLED TEAM

The right mix of people can help an innovation to thrive, with each person or organisation bringing a different attribute to your team. Roles and responsibilities need to be clearly defined from the beginning.

FIND OUT MORE ABOUT THIS FACTOR ❯

SECURE NETWORK BUY-IN AND SPONSORSHIP

Innovations often require the networks to change the way they do things. Buy-in and sponsorship from the right people within the network can help to overcome organisational roadblocks and enable timely decision making.

FIND OUT MORE ABOUT THIS FACTOR ❯

CREATE A ROBUST GOVERNANCE FRAMEWORK

Robust governance, including procurement policies, contractual arrangements, team oversight and decision-making structures can clear the path for innovative thinking and help with rollout in the networks.

FIND OUT MORE ABOUT THIS FACTOR ❯

Forge relationships with the energy networks

Building strong relationships prior to undertaking an innovation project can enable open dialogue throughout, which is key to tackling some of the challenges faced on the innovation journey. It can also help create prosperous working relationships for the future.

To work with the networks, you'll need to develop a deep understanding of their business operations (see Align to a well-defined network need), extending beyond the innovation team to procurement, engineering, operations and senior leadership teams. It's important to showcase your skills and how your expertise and track record can support them. Working with the networks, either through innovation projects or supporting their operations, can help to build your reputation as a trusted supplier.

If you're new to innovation in this sector, you can get on the networks' radar by contacting relevant innovation managers and building relationships organically. Use the ENA's biennial Energy Networks Innovation Strategy update as a way to understand more about the energy networks and get in contact with the innovation teams.

After your project has closed down, it's still important to engage with the networks to identify future opportunities for collaboration. If you're successful in getting your innovation adopted into the networks, you may need to provide comprehensive training, resources and ongoing support to help them get the most out of it (see Plan for scale-up and rollout), for example writing policy updates to assist the rollout. Regularly following up with the users of your innovation can also help to identify issues and ensure ongoing engagement.

Learn more about how people have put this into practice in the Low-Profile 132 kV Steel Pole and OHL Power Pointer case studies.

Attend industry events, such as the Energy Innovation Summit and Utility Week Live, to create touchpoints for forging relationships with the networks. Some of the most successful interactions are based on chance encounters or informal meetings, which can lead to unexpected partnerships or co-creation of ideas.

Forge relationships with the energy networks

Low-Profile 132 kV Steel Pole

Partners:
SSEN Transmission
Energyline
Norpower
PLPC

Also applies to:

BUILD A MULTI-SKILLED TEAM

ALIGN TO A WELL-DEFINED NETWORK NEED

The aim of the Low-Profile 132 kV Steel Pole project was to create a stronger design for overhead powerlines at altitudes above 300m, minimising the amount of steel and concrete required during construction and improving safety for operatives. Currently in the testing phase, SSEN Transmission is looking to roll out the product in 2024.

This project acted on a specific need identified by the networks, to produce a solution that could be leveraged by other networks building at higher altitudes. After identifying the need internally, SSEN Transmission reached out to an existing contact, overhead line contractor EnergyLine, to see if it was interested in finding a solution.

EnergyLine had a good relationship with SSEN Transmission and understood the network need, having worked together on the NeSTS project, the learning from which formed the basis for the Low-Profile 132 kV Steel Pole project.

Local powerline specialists PLPC and Norpower were also brought in, owing to their deep understanding of the networks and strong track records working in powerline design and construction. This relationship was developed over time through previous capital delivery projects and through regular, informal conversations at conferences and events.

These relationships enabled project roles to be tailored to build on partners' strengths, while the SSEN Transmission team focused on project delivery and planning for application within the network.

Forge relationships with the energy networks

OHL Power Pointer

Partners:
National Grid Electricity Distribution
Nortech Management Limited

Also applies to:

ALIGN TO A WELL-DEFINED NETWORK NEED

The OHL (Overhead Line) Power Pointer monitoring system and iHost™ software have been transitioned into BAU operations within National Grid Electricity Distribution. They give network operators remote visibility of their network status and help the networks be more proactive and reduce customer interruptions.

In its Innovation Strategy, National Grid identified a clear business need to improve fault location. Historically, it has been difficult for networks to capture data in overhead line networks and fault location was manual and very time intensive.

Nortech had a deep understanding of this business need, working closely with the network operators from the outset. This was aided by the relationships it had built with National Grid over time. In particular, a number of staff had worked with the energy networks before, through secondments and sponsored PhDs. This allowed Nortech to work with the networks, listening to their requirements and co-creating solutions.

By providing multiple products and extensive in-house experience, Nortech has been able to work across multiple innovation projects with a range of network operators, exploring new uses for its products. It has also focused on sustaining these relationships by providing strong support services to the networks after its products have been rolled out. This has enabled the company to continue to innovate and expand its offerings, developing solutions with network need at the heart.

Build a multi-skilled team

Innovation is not a solo act. Projects require diverse skillsets from across and beyond the energy sector, yet they commonly suffer from failing to identify and bring in the right people at the right time. Each skill is unique and has a significant impact on the overall success of the project.

A creatively resourced, multi-functional team will bring a range of valuable skillsets to help realise the success of the project. These skills may not all exist within a single business, and it's important to identify the areas where collaboration could be of benefit. A good team might include project managers, analysts, researchers, marketing and communication managers, engineers and stakeholder engagement experts, to name a few. Some teams cite everyone being motivated by the problem the innovation is trying to solve as a key element in their success. Team-building activities can also be useful in strengthening your project team. Previous innovators have held outdoor activities, away days or residential workshops to build collaborative teams.

Within a project team, each person needs to have a clearly defined role in developing and supporting the innovation. These roles may vary over the innovation journey, and you may need to bring in additional expertise to aid certain elements. This may be in the form of additional project partners, or you may seek to gain the help of an adviser, for legal or commercial insight, for example (see Create a robust governance framework for more).

Learn more about how people have put this into practice in the Low-Profile 132 kV Steel Pole, RESOP, Flexible Plug and Play, Flexible Generation Forecasting, Distrubuted ReStart and Street Score 2 case studies.

If you're new to network innovation, include experienced partners in your project team, such as consultants or academics who have carried out multiple previous projects. Their experience working with network operators will help to shape your business case to suit network operating models. You should also draw on their existing relationships and knowledge of the sector. The SIF provides an example of this in practice, matching innovators with project partners to form strong consortium during the incubation phase.

Build a multi-skilled team

RESOP

Partners:
SSEN Distribution
Dundee City Council
Perth and Kinross Council
Oxfordshire County Council
Derryherk
Arup
Advanced Infrastructure
Regen

Also applies to:

DEFINE A CLEAR END-USER PROPOSITION ›

RESOP aims to draw together data from multiple sources into a single tool that can be used to help local authorities develop decarbonisation pathways, including Local Area Energy Plans (LAEPs). Work to date has successfully led to the exploration of the integration of the LAEP+ tool into SSEN's BAU operations.

The key factor to success was the inclusion of Advanced Infrastructure's LAEP+ tool. The network was able to bring Advanced Infrastructure into the project and shift the scope due to the agility of the NIA funding.

The innovation project manager came across Advanced Infrastructure's work at the Energy Innovation Summit. The tool was identified as a cost-effective alternative to market options, which, at the time, were process heavy. There was little motivation within the network company to adopt something so time and resource intensive. By engaging a third party to support local authorities, SSEN also overcame the legitimacy issue of DNOs creating LAEPs for local authorities.

Advanced Infrastructure attributes its commercialisation to several internal changes, including bringing in an external commercial adviser who supported the company in adopting the MEDDICC sales framework. They also used frameworks such as the government's Service Manual to adopt user-centred design, understanding the customer journey, helping find network 'pain points' and communicating the benefits of the product. By understanding and quantifying the end-user proposition and business need, as identified in SSEN's business plan, the project team were able to get the network operational team onboard, as well as engage with other network operators.

Secure network buy-in and senior sponsorship

Buy-in and sponsorship from the relevant teams in the energy networks are essential for facilitating change in these large organisations. Without these key people being onboard with the innovation, projects can stall and struggle with approval and rollout.

With the networks' primary focus being the safe and reliable supply of energy to households and businesses across the UK, securing people's time and commitment can be difficult. This may be the case even if your innovation offers a solution or an improvement to existing ways of doing things (see Define a clear end-user proposition).

One way to help obtain the resources needed is to find a sponsor who advocates for your innovation and mobilises the necessary resources to support your team. They can help to alleviate organisational roadblocks and trigger decision making, driving your innovation forward. Ideally, this person will have ultimate responsibility for the problem your innovation is looking to solve. This means they are also likely to own the benefits from your innovation, incentivising them to adopt it and provide you with a clear direction to BAU.

To maximise your engagement with them, you will need to clearly communicate the potential benefits of your innovation, your project delivery plan and what support you are looking for. You need to have open discussions, taking on board their feedback and adapting your project to deliver the best solution for them (see Engage with relevant stakeholder groups for more).

Securing network buy-in requires early and consistent engagement. You should look to gather feedback regularly and integrate it into your innovation process, demonstrating that you've taken their feedback on board and acted upon it to improve your innovation.

Learn more about how people have put this into practice in the Dynamic Reserve Setting, Flexible Plug and Play, FUSION and EasyAssist™ ECV case studies.

Talk to your network innovation team to help find an appropriate senior network sponsor and identify when the best time is to engage the wider business. It's the innovation manager's job to help you find a relevant project sponsor.

Secure network buy-in and senior sponsorship

Flexible Plug and Play

Partners:
UK Power Networks, Smarter Grid Solutions, ALSTOM, Silver Spring Networks, Vodafone, Fundamentals, Wilson Transformers, DNV GL, Imperial College London, GE, The Institution of Engineering and Technology, University of Cambridge

Also applies to:

BUILD A MULTI-SKILLED TEAM

ALIGN TO A WELL-DEFINED NETWORK NEED

The Flexible Plug and Play project trialled new Active Network Management (ANM) technologies and commercial arrangements to help connect distributed generation in constrained areas of UK Power Networks' region. ANM has since been rolled out across all the DNOs and Smarter Grid Solutions operate within three of these.

At the time, the network was struggling with growing connection queues in East Anglia due to an increasing number of generation assets in the area. Smarter Grid Solutions was aware of this issue through its ongoing relationship with UK Power Networks and its attendance at public forums, including ENA's Distributed Energy Resource Forum, where UK Power Networks discussed these challenges. It then engaged with the UK Power Networks innovation team to discuss the potential for a project.

A strong team supported the development and delivery of this project. UK Power Networks created a consortium of partner organisations it was already aware of or working with, including academics and supply chain partners. Partners who had been involved in similar work with other DNOs were also identified and contacted.

The rollout of ANM across the business was supported by the innovation project lead. The sponsor was able to see the potential impact of ANM on the network and developed a business case for it, securing funding for its expansion into other areas of the network, linked to Price Control investments and efficiency incentives. Smarter Grid Solutions supported with this, attending UK Power Networks' connection customer events and using the economic value data from the project to quantify the benefit of further rollout.

Create a robust governance framework

Governance is an important factor in regulated innovation, both in terms of the internal project governance and how the project interacts with external governance arrangements. Complex governance can be an inhibitor to innovation, while good governance can clear the path for innovative thinking.

It's important to set up clear internal project governance at the outset. This provides clarity on decision-making processes, roles and responsibilities. It can also support communication between project partners and keep everyone on track. Establishing a governance group or executive committee can help with this and provide focus on what needs to happen for successful rollout (see Plan for scale-up and rollout). This group should have clear terms of reference that align with funding requirements. Regular meetings should be held to review progress and discuss and approve any changes required, which should be well documented to track key decisions.

Contractual arrangements are normally determined by the network company or the funding mechanism. However, there is often scope for you to modify standard contracts to suit your needs. Embracing flexibility in the delivery of your innovation project can encourage projects to fail fast, learn, iterate and improve.

By taking a phased approach to the project, you can evaluate progress and actively incorporate what you've learned into subsequent delivery phases. This approach appreciates that innovation projects may require changes to the original scope as they progress. Strong project management and change control processes are essential, helping to build this into the timeline and guide the project team through changes.

Learn more about how people have put this into practice in the FUSION case study.

Ask your network partner to share draft contracts or collaboration agreements during early stages of preparing funding bids. Each company may use slightly different contractual arrangements and have different timelines – e.g. for approving spend within projects. Once funding is awarded, the timelines for action are very tight, so having early insight into the contractual aspects of the funding mechanism will help prevent delays to project delivery.

Create a robust governance framework

FUSION

Partners:
SP Energy Networks
DNV GL
Origami Energy
PassivSystems
Imperial College London
SAC Consulting
Fife Council
The University of St Andrews

Also applies to:

ENGAGE WITH RELEVANT STAKEHOLDER GROUPS

SECURE NETWORK BUY-IN AND SENIOR SPONSORSHIP

SP Energy Network's FUSION project was tasked with delivering GB's first local flexibility market that adhered to the Universal Smart Energy Framework, which has been successfully trialled in East Fife.

Key to the success of this innovation project was ensuring the end users within SP Energy Networks were engaged and brought along the project's journey. The project team identified relevant stakeholders from across the business, including IT, control room, local district and network planning and regulation teams, and sought their regular engagement. They effectively communicated proposals and disseminated the findings, providing videos and presentations to supplement more traditional reports. This made the interactions more dynamic and the content more accessible. It was a careful balancing act to ensure effective and concise communication, engaging them enough to gain buy-in without overloading them.

The nature of the specific contractual mechanisms SP Energy Networks used in FUSION was also important when new contractors needed to be brought into the project. Rather than traditional collaboration agreements that set out deliverables and milestones up front with a fixed price, they employed the standard Collaboration Agreement but used call-off mechanisms. This allowed the company to issue ad-hoc future instructions for collaborators to complete discrete quantifiable deliverables as and when the need surfaced. While this was more cumbersome from a legal and contractual process, it provided the agility needed in a fast-paced innovation project, where project needs, and supplier capabilities, may change.

Markets & application

The way in which an innovation is deployed and used within a system is key to its success. Many good innovations fail to be rolled out within the networks due to a lack of focus on markets and application; from understanding the end-user proposition to the plan to scale up operations.

Taking an idea and turning it into a commercial proposition can take a long time and a lot of determination. Your innovation must be able to provide an advantage to the end user when compared with their existing way of operating. However, innovations can often be crude, imperfect and expensive in the beginning, so understanding how to foster motivation within the networks is key.

On top of this, innovation in the energy networks is heavily influenced by external factors, such as policy and regulation. As providers of public services, there are measures in place to protect the security and affordability of supply.

Thinking about the pathway to implementation early on will set you up to have informed conversations with the networks and accelerate decision-making processes. You'll need to understand how your innovation requires changes to support its rollout, and the impact of this on the network and other markets. You will also need to demonstrate that your innovation is safe and reliable.

Understanding some key aspects of the network's decision-making process can help you to operate more commercially. Guidance on finding a champion within the networks, identifying the budget holder and gaining buy-in from key decision makers is covered by the BANT sales methodology. This stands for budget, authority, need and timeline. Another useful resource is the government's Service Manual. This is a free resource that helps teams create and run public services, covering topics from understanding users and their needs to adopting agile ways of working.

> **The strength of the use case and the details of the implementation plan have the biggest impact on how successfully the business will realise the benefits from the innovation project.**
>
> NATIONAL GRID ESO

Factors influencing success

ALIGN TO A WELL-DEFINED NETWORK NEED

Early engagement and a deep understanding of the networks can ensure your innovation aligns with their needs and vision. This makes it easier to communicate the benefits to the networks and increases the overall likelihood of rollout.

FIND OUT MORE ABOUT THIS FACTOR ❯

DEFINE A CLEAR END-USER PROPOSITION

Innovators need to have a deep understanding of their end user and tailor the innovation to meet their needs. Understanding how and why the end user would adopt your innovation and communicating the benefits with them are essential steps.

FIND OUT MORE ABOUT THIS FACTOR ❯

UNDERSTAND THE INTERACTION WITH POLICY AND REGULATION

The regulatory and policy context can provide both opportunities and challenges for network innovation. Any barriers should be identified early so you can engage with regulatory or policy decision makers to support the rollout of your innovation.

FIND OUT MORE ABOUT THIS FACTOR ❯

PLAN FOR SCALE-UP AND ROLLOUT

Having a clear plan for scaling up and rolling out your innovation, including the support required to get there, can help de-risk your project. You will need to demonstrate your solution is secure, reliable and offers the best value to the consumer.

FIND OUT MORE ABOUT THIS FACTOR ❯

Align to a well-defined network need

It's important you understand the strategic goals of the energy network you'd like to work with. Where projects have a clear link to the long-term strategy of the network, they are more likely to be able to secure support for rollout. Without this alignment, the networks may be unable to fund your innovation until new business plans are formed in the next price control period.

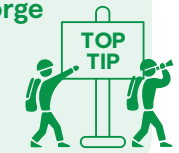
You will need to be prepared to invest time and resources into understanding how the networks operate. If you're new to working with them, a good starting point is to read ENA's Energy Networks Explained and watch the SIF's Introduction to Energy Networks. These provide overviews of the structure of GB's energy network industry, including the roles and responsibilities of the transmission and distribution network operators. Bringing people into your team who already have this knowledge (e.g. consultants or former network employees) can also be a good way to do this (see Build a multi-skilled team).

An innovation should have a well-defined need, targeting a 'pain point', or 'gain point', for the network's BAU operations. Within each regulatory price control period, the energy networks set out their priorities in their business plans and innovation strategies, which are available on their websites. The networks also produce a joint Energy Networks Innovation Strategy.

When preparing to pitch to the networks, you should make sure you understand their operations and the challenges they face. You'll need to work with the network to build a business case and co-develop solutions.

Learn more about how people have put this into practice in the Low-Profile 132 kV Steel Pole, OHL Power Pointer, Flexible Plug and Play and Flexible Generation Forecasting case studies.

Get involved with ENA's Energy Innovation Basecamp, where subject matter experts from within the networks present the key challenges they are facing. By attending, innovators have the chance to raise questions and test their ideas. It's also a good opportunity to forge new relationships with both the networks and other innovators.



Align to a well-defined network need

Flexible Generation Forecasting

Partners:
Wales & West Utilities
LCP Delta (formerly known as Delta-EE)
Afry

Also applies to:

BUILD A MULTI-SKILLED TEAM

The primary goal of Flexible Generation Forecasting was to create a model for managing flexible generation across the gas and electricity networks. This model was tested by the gas networks and has been integrated into their BAU processes.

The key to success of this project was the well-defined problem and obvious network need. Wales & West Utilities noticed that customer gas demand had started to shift before the COVID-19 pandemic, peaking at lunchtime, as well as in the morning and evening. This clearly defined, emerging problem was kept in focus throughout, with senior leadership supporting and actively pushing the project forward.

The outputs of their whole-system modelling had anticipated changes in the patterns of flexible generation, however the impact was seen on the networks much sooner than expected. Wales & West Utilities spoke to other gas networks to see if they were also experiencing this change in demand, drawing on expertise from National Gas and Cadent.

A strong project team was formed, including experienced innovators LCP Delta and Afry. These partners were already on the network's procurement framework and had a good understanding of the need, having worked closely with the networks in modelling energy demand. The companies also had a clear understanding of the NIA process, from previous innovation projects and through building relationships with the innovation team. Bringing in these third parties helped ease resource pressures on the networks, allowing them to target the areas where they could add the most value.

Define a clear end-user proposition

For innovations to be adopted and used they need to be seen as 'better' than previous solutions, or able to solve a problem that current means of working don't address. Talking to end users, understanding their pain points and identifying how these can be overcome is critical to support the commercialisation of innovation in the wider marketplace.

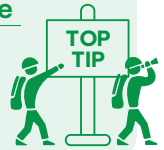
You must have a deep understanding of how and why your end user will adopt your innovation. This end user may be different to your customer - in most cases, it's the network itself, but you may have multiple end users, both within and outside of the networks, including energy consumers.

These end users must view the innovation as either meeting a need or performing better than their existing solution. The innovation must also be compatible with their needs and be simple to understand and use. Clearly understanding and mapping these attributes to the priorities of the end user – what they value and what motivates them to take action – in the early stages of development will ensure your innovation meets their needs. Without this, they are more likely to resist change, no matter how good your innovation is.

User testing and agile development processes can be useful tools to help define and refine your end-user proposition. Your innovation may need to evolve multiple times to ensure it continues to progress in a way that meets the needs of the end user and other key decision makers in the value chain. Embracing a lean approach to create basic demonstrations of your innovation can support further and more in-depth conversations with potential users and other key stakeholders. Feedback on this demonstration can address any issues early and shape future iterations so that they enhance the value proposition.

Learn more about how people have put this into practice in the RESOP, EasyAssist™ ECV and Street Score 2 case studies.

Engage with your target end-user groups at the concept stage to help identify levels of interest and shape initial development (see Engage with relevant stakeholder groups for more).



Define a clear end-user proposition

EasyAssist™ ECV

Partners:
Cadent
Energy Innovation Centre
Oxford Product Design

Also applies to:

SECURE NETWORK BUY-IN AND SENIOR SPONSORSHIP ›

Cadent's EasyAssist™ ECV project aimed to develop a solution to help customers on the Priority Services Register with restricted movement to operate their emergency control valves (ECVs), which can be difficult to turn. Cadent's safeguarding teams are now implementing EasyAssist™ at eligible properties and a further phase is under way – EasyAssist™ Remote Actuation.

As a device that would be installed in people's homes, it was important that customers both wanted and were able to use the innovation. This was achieved by engaging with consumer groups to understand how it could work in different settings. The project sponsor, Cadent's customer safeguarding manager, was passionate about supporting vulnerable customers and approached these groups. This helped ensure the innovation both worked for end users and aligned with business priorities. Securing network buy-in was also aided by allowing staff to hold and interact with the device, which helped bring it to life.

Another key to success was ensuring it could be installed easily in customers' homes. The solution had to be cost-effective, retrofitted to existing ECVs and meet all gas regulations and standards, which required approval from the engineering and safety teams. The innovation team engaged with these teams from the outset, which enabled potential fitting issues to be highlighted during product development. This helped the supplier understand exactly what needed to be done for rollout on the network and allowed Oxford Product Design to improve the innovation.

Understand the interaction with policy and regulation

The energy networks are influenced by the wider regulatory and political environment. Whether this is through Ofgem or the direction of national energy policy, it's important that innovators understand this landscape as it can be critical to either facilitating or blocking innovation success.

Ofgem's principal statutory objectives are to protect the interests of existing and future energy consumers, providing consumer value, ensuring security of supply and supporting the government to meet its legal commitment to net zero by 2050. These are detailed in Ofgem's regulatory framework governing the energy networks for the period 2021-2028 (RIIO-2). Innovation should look to address these core priorities, using regulation as an incentive for rollout.

However, as network innovation projects can provide a useful testbed for exploring change, not all innovations will align with current regulation or policy. In these cases, policy and regulatory change may be required. Ofgem's Innovation Link has a regulatory sandbox that allows innovators to run trials without some of the usual rules applying.

Understanding key policy, compliance and regulatory issues relevant to your innovation and dedicating time to building relationships with those responsible for those areas can help accelerate innovations into BAU. You will need to keep up to date and be able to be responsive to developments. For example, Piclo, a software company providing a virtual marketplace for flexibility, regularly releases market insights on key developments and responds to government and Ofgem consultations.

Learn more about how people have put this factor into practice in the Distributed ReStart case study.

If you anticipate your innovation having policy or regulatory barriers, ask your network partner and Innovate UK to help you identify the right contact in government and/or Ofgem. Meet with them regularly throughout your project to support your understanding and to influence change. You may need to continue to engage them after your project has ended, as you work towards rolling out your innovation.

Understand the interaction with policy and regulation

Distributed ReStart

Partners:
National Grid ESO
SP Energy Networks
TNEI

Also applies to:

BUILD A MULTI-SKILLED TEAM ›

The Distributed ReStart project explored how distributed energy resources such as solar, wind and hydro can be used to restore power to the transmission network in the event of a blackout. The success of the project has led to a live network trial.

The project faced some highly complex issues, in particular around procurement and compliance, owing to its potential to significantly change the electricity system. The innovation has implications for the Connection Use of System Codes at the transmission level and answered questions about protecting participant organisations.

A core procurement and compliance work package was established within the project, with a team of experts who could untangle regulatory issues down to specific grid code modifications and standards, and interface with relevant teams in Ofgem and ESO. They were brought into the project by engaging with them and sharing project progress through regular meetings and updates. Partners were able to sell a positive vision of the future of the electricity system with the innovation embedded. In support of this, project partners also held a 'restoration roadshow' with DNOs, to share policy and regulatory insights.

This close understanding of policy and regulation and dedicated resource helped the project ultimately land impact, demonstrate wider application and influence changes that will allow distributed restoration to become BAU. Several regulatory working groups are now under way as a direct result of the project's regulatory and compliance work to allow for replication of the distributed model on a wider scale.

Plan for scale-up and rollout

The journey into BAU will look different for each innovation, depending on what the project is trying to achieve and how it's trying to innovate within the energy system. Your innovation journey may require significant testing and trialling, or it may focus more on customer engagement and marketing. Other important elements may include upskilling and training or building supply chains.

Building your relationship with the network procurement team can help you develop an implementation plan to address any barriers to this (see Forge relationships with the energy networks for more). The initial motivation for the innovation project may be different from the motivation for BAU rollout and it's important you explore this with the networks. Where this is the case, you should work with them to review project findings to explore how your innovation can benefit the company. You should create your plan with the help of the network teams who will be using your innovation and look to explore the resource needed for rollout, how your innovation fits with internal policies and how you will scale up operations.

Developing your innovation to work across multiple networks can also support in its commercialisation. Start by exploring if there are similar pain points across organisations to understand the market for your innovation (see Align to a well-defined network need) and then introduce a degree of flexibility in your innovation. For example, Advanced Infrastructure developed a common architecture for its LAEP+ tool, but built in flexible elements, such as the branding.

Learn more about how people have put this factor into practice in the Street Score 2 and Valve Care Toolbox case studies.

Assign someone to set up and maintain a risk register to identify where things may go wrong with the project so that early mitigation actions can be put in place. Include a section to keep track of all the things required to get to successful rollout, making sure the innovation is fit for implementation and not just for limited trial. This can help overcome any uncertainty surrounding the outcomes of your innovation and reduce the cost of change, in both time and money.

Plan for scale-up and rollout

Street Score 2

Partners:
Northern Gas Networks
Cadent
Northern Powergrid
SGN
SSEN Distribution
Wales & West Utilities
Steer Energy
Transport for All

Also applies to:

BUILD A MULTI-SKILLED TEAM

DEFINE A CLEAR END-USER PROPOSITION

The Street Score 2 project built on previous engagement which showed that vulnerable individuals, carers, advocates and the wider public often found journeys through and around street works a challenge. The team are currently developing the plan for implementation.

Key to the success of this project was the understanding of the end-user proposition, both for the network engineers and for the vulnerable customers affected by the street works. Supported by Transport for All, the project set up a working group that provided key input to the design, testing and validation of the concepts. This group included disabled individuals, carers and advocacy groups. The team worked with the expression 'nothing about us without us' in mind, which was coined by disability rights activists, to ensure that the network operatives could better understand accessibility.

It was also important to understand how these concepts could be adopted into the field and plan for implementation. Steer Energy organised workshops with the networks, including the operational staff and street works professionals, asking questions about current protocols and testing proposed improvements.

Steer Energy has developed the design code, Making Street Works Accessible, for internal use and Transport for All has developed a training module based on its existing disability awareness course. This module is aimed at street works operatives, to enable them to better lay out and operate works to minimise the impact on the public, in particular disabled people.

Plan for scale-up and rollout

Valve Care Toolbox

Partners:
National Gas
Steer Energy

Also applies to:

SHARE KNOWLEDGE WIDELY

The final phase of the Valve Care Toolbox project sought to develop and deliver field-ready and tested tools that dovetail into National Gas's maintenance systems. The tools are now in operation, with internal training programmes under way to increase uptake across the business.

Shaping the internal journey to BAU was a key ambition of the project. To support this, discussions about an implementation plan commenced early on. This included identifying internal policies affected by the innovation, any changes that may have to be made and how the practice could be taught and picked up across the business. This also included sharing learnings about the project at industry conferences and internal away days as the project progressed. The innovation team worked with the internal policy team to ensure the project could be factored into BAU valve procedures on an ongoing basis.

Steer Energy and National Gas created a comprehensive training package for engineers and developed a 'train the trainer' approach, ensuring that teams were not only equipped to use the technology but also empowered to train others, creating a knowledge cascade. By identifying training needs early and addressing them through collaboration and training programmes, National Gas supported better long-term adoption and impact of the project.

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This Playbook is the result of many people generously giving their time to share their experiences of network innovation with us. We would like to thank everyone who filled in the survey, attended our workshop and spoke with us at the Energy Innovation Summit. Special thanks go to the members of ENA's Innovation Strategy Group and to the individuals who took time to sit down with us one-on-one:

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